



**Statewide Communications
Interoperability Plan**
for The Commonwealth of Massachusetts



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Submitted by:
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Commonwealth of Massachusetts
Statewide
Communications
Interoperability Plan (SCIP)

To:

Department of Homeland Security
SAFECOM

From:

Commonwealth of Massachusetts
Executive Office of Public Safety and Security
One Ashburton Place, Room 2133
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FOREWORD

The contents of the present document are subject to continuing work within the State Interoperability Executive Committee (SIEC) and may change following formal SIEC approval. When the contents of the present document are modified it will be re-released by the SIEC with an identifying change of release date and an increase in version number as follows:

Version YYYY-X.Y.Z. where:

YYYY is the year of the version

Numeral X shall be the release number of the draft re-writes

Numeral Y as the second digit is incremented for all changes of substance: technical enhancements, corrections, updates, etc.

Numeral Z as the third digit is incremented when editorial-only changes have been incorporated in the document.

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REVISION HISTORY

The Massachusetts SCIP is a “living document” and its change history is important in understanding its development and success in guiding statewide interoperability planning and implementation.

Version Number	Date	Description of Revision
V2007-1.1.0	9/21/2007	Initial working draft release, for general commentary. Many subsections needed to be added, revised or moved.
V2007-2.2.0	9/28/2007	Initial draft release to Federal Government for Peer Review. Some subsections need to be revised and moved.
V2007-2.3.0	11/5/2007	Second draft with comments from the Peer Review addressed and incorporated
V2007-2.5.0	11/26/2007	Third draft submitted to SIEC for review
V2007-3.0.0	12/3/2007	Final draft submitted to SAFECOM
V2007-3.0.1	12/30/2007	Errata fixes made post submission to SAFECOM
V2007-3.0.1pv	02/09/2008	Public version with sensitive information redacted

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ACRONYMS

AEAS	Automated Exercise Assessment System
BAMA	Boston EMS Ambulance Mutual Aid Channel
BAPERB	Boston Area Police Emergency Radio Network
CAM	Communication Assets Mapping
CAS	Communication Assets Survey
CASM	Communications Assets Survey and Mapping Tool
CDSS	Collaborative Decision Support System
CHSB	Criminal History Systems Board
CIS	Communications Interoperability Subcommittee
CMED	Coordinated Medical Emergency Direction
CMMI	Capability Maturity Model® Integration
COTS	Commercial Off-the-Shelf
CSF	Critical Success Factor
EAN	Extended Area Network
EO	Executive Order
EOPSS	Executive Office of Public Safety and Security
EMS	Emergency Medical Service
FCECS	Franklin County Emergency Communication System
GBPC	Greater Boston Police Council
GETS	Government Emergency Telecommunications Service
GIS	Geographic Information System
HF	High Frequency
HHAN	Health & Homeland Alert Network
HHS	Health and Human Services
IAN	Incident Area Network
ICJIS	Integrated Criminal Justice Information System
IER	Exchange Requirement
IST	Support Trailer
ISU	Support Unit
JAN	Jurisdiction Area Network
JPOC	Jurisdictional Points of Contact
LMR	Land Mobile Radio
MAPC	Metropolitan Area Planning Council
MassGIS	Massachusetts Geographic Information System
MBHSR	Metropolitan Boston Homeland Security Region
MCS	Multi-Agency Coordination System
METROLEC	Metropolitan Law Enforcement Council
NEMLEC	Northeast Massachusetts Law Enforcement Council
NGO	Non-Governmental Organizations (NGO)
NIMS	Incident Management System (NIMS)
NOAA	National Oceanic and Atmospheric Administration
PAN	Personal Area Network (PAN)
PEOC	Portable Emergency Operations Center (PEOC)
PSAPS	Public Safety Answering Points (PSAPS)
PSIC	Public Safety Interoperable Communications (PSIC)
RCIC	Regional Communications Interoperability Subcommittee (RCIC)

ROM	Rough Order of Magnitude
RPA	Regional Planning Authority
RPF	Raster Product Format
SCIP	Statewide Communications Interoperability Plan
SEMP	Engineering Management Plan
SHSS	Homeland Security Strategy
SIEC	Interoperability Executive Committee
SME	Matter Expert
SOP	Operating Procedure
SWISS	Information Sharing System
T&Ex	Training and Exercises
TICP	Tactical Interoperability Communications Plan
UA	Urban Areas
UASI	Urban Area Security Initiative
USDOT	United States Department of Transportation
WMD	Weapons of Mass Destruction
WPS	Wireless Priority Service

1 Introduction

1.1 Background

Massachusetts is a Commonwealth founded on the New England town meeting form of government. Thus it has a rich and proud tradition of Home Rule. Although this Home Rule tradition has historically led to many of the communications interoperability gaps within the state today, it is also the historic tradition of the Minuteman that has led to the creation of several robust regional interoperability systems among multiple jurisdictions and disciplines. After all, common-language commands, martial discipline, and musket calibers are the revolutionary era parallels to today's NIMS compliant SOPs and shared frequencies and infrastructure. In other words, given the real terrorist and severe weather threats to the Commonwealth, it is time again to continue the tradition of banding together – both literally and figuratively.

Overall, it is believed that every citizen in the state deserves the same level of safety and security for the taxes they pay, whether or not they are in a Home Rule state. The division of the state into five Homeland Security planning regions to “first gain regional interoperability and then link the regions” has not worked as effectively as was hoped. Although the Boston Metropolitan Area and to a significant extent the Northeast Region have had the resources to move forward effectively, there is less progress in the Western, Central, and Southeastern regions. More precisely, there are sub-regions within the designated Western and Southeast regions that have evolved some degree of interoperability – but the Central Region has remained much more fractured.. That being said, there are statewide systems -- though needing enhancements in coverage, reliability, and capacity – that are supported more or less in all regions of the state for a subset of the overall public safety and service community.

In the past, homeland security funds to support interoperability have been spent by the regions and localities and pockets of interoperability have been achieved, the state is now committed to ensuring that future expenditures cross jurisdictional boundaries, follow common guidelines and are governed consistently. This intent is clearly reflected in Governor Patrick's State Homeland Security Strategy (“the Strategy”) issued in September of this year. This Strategy makes clear that planning – beginning with this five year plan – will come before purchases. Future procurements and implementations will be guided by and enforced with consistent leadership and management through a State Interoperability Executive Committee (SIEC) empowered to advise on priorities and approve of all interoperability expenditures and requests for federal funds. The goals and objectives of the strategy reflect the desire to ensure that the jurisdictional boundaries that govern in a home rule state do not impede the safety and security of the citizens of Massachusetts.

Before proceeding to characterize the Commonwealth, describe the Statewide Communications Interoperability Plan (SCIP) methodology, and develop the Strategic Initiatives, it is first necessary to establish some basic tenets regarding what is called

“public safety communications interoperability” and the means developed to “improve” this interoperability where it is lacking.

1 First, it is evident that “information sharing” is at the heart of communications interoperability. If two or more organizations choose not to share information of any kind, except under extreme conditions, then they will not evolve the means to do so as a priority. In this regard, a lack of radio communications interoperability is only a “symptom,” and not the cause, of a lack of interoperability. Thus, solving “interoperability” issues is rooted in agreeing – and achieving – maximum trusted information sharing among participants, i.e., the law enforcement, public safety and service agencies.

For this reason, this SCIP will consider Information Technology (IT) systems that support law enforcement, public safety, transportation, health care, emergency management, etc. as well as radio/wireless systems employed by these organizations in the context of the “Technology” and Standard Operating Procedures or “SOPs” elements in the SAFECOM Interoperability Continuum shown in Figure 1-1. When the following plan discusses “interoperability” we mean that to include at all times, voice, video, and data.

2 Second, the term “interoperability” itself is unfortunate, because it implies there is “operability” – the sort of day-to-day information sharing within an agency - and then under special infrequent conditions, information sharing with others (perhaps unfamiliar) must occur. To achieve this “interoperability,” therefore, requires special equipment as well as regular training and exercises for the infrequent event. Of course, it is preferable to not require special equipment that is rarely used, but to use equipment employed day-to-day (perhaps moment-to-moment) to minimize training and exercise requirements, have confidence the equipment is continuing to operate properly, and develop trusted relationships with others with whom information is being shared. Preferably, it would all be called “operability,” with information exchanges for the best possible informed and safe performance of all agencies involved.

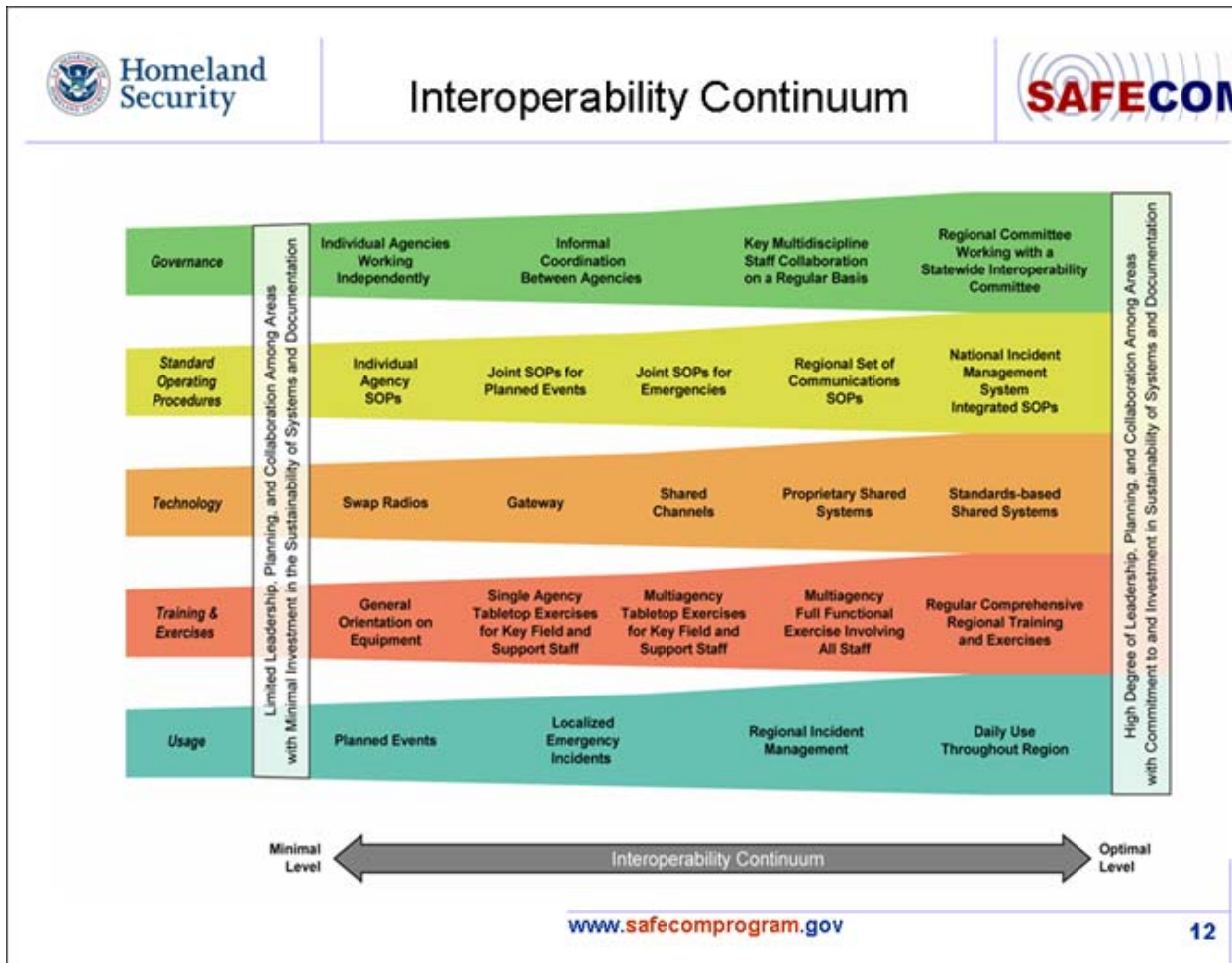


Figure 1-1: SAFECOM Interoperability Continuum

3 Third, we must move away from a procurement model in which equipment is purchased first – due to expiring resources – and then uses for that equipment (if any such uses exist) are found later. It is time to invoke proper planning processes for the implementation of the projects evolving from the Strategic Initiatives described in this SCIP. Failure to do so will not only risk wasting the increasingly scarce resources for this critical work, but also decrease the effectiveness of the resulting interoperability achieved. In procurement we will encourage the continuing support of legacy systems, and developing interfaces among disparate systems, while migrating to newer technologies and thus leverage the reasonable lifecycle of products and technologies.

4 Fourth, the communications interoperability representatives in each region must work together for the improvement of all regions' capabilities. This requirement is sought out of moral requirements as much as smart and arguably regionally focused motivations. It is evident from the many studies of cooperation that if many people with different needs work for the common good rather than individually profit far more on average (e.g., for their region). In other words, each representative should

seek to share information, infrastructure, spectrum, and most importantly a common purpose to better benefit Massachusetts interoperability as a whole. Even when a need somewhere may be geographically remote from that representative, the ultimate return on that investment in his own region will justify that behavior.

These four somewhat intangible tenets of interoperability prove themselves over and over again at the heart of solving communications interoperability problems.

1.2 Plan Content

The Massachusetts SCIP closely follows the template provided by the DHS SAFECOM Program. Section 2 of the SCIP presents an overview of Massachusetts that emphasizes the need, importance, and events leading to the development of the SCIP. It also provides a high-level description of the process that was used to develop the statewide plan and people who were involved in the planning process.

Section 3 of the SCIP provides a detailed methodology for the tools and techniques used. Section 4 describes the interoperability status of Massachusetts today across the elements of the Continuum. Section 5 presents the new work of the SIEC and development of their Strategic Initiatives. Section 6 presents a detailed project plan with high-level Work Breakdown Structure (WBS) and timeline; while Section 7 describes various funding options. Section 8 presents some closing comments and summarizes next steps.

Several Appendices are provided where the inclusion of the level of detail contained in the appendix detracted from the readability of the document.

Some content material that includes specific information about the network and telecommunications architecture of public safety agencies has been removed from this version of the Massachusetts SCIP.

2 Background

The development of the initial SCIP (a “living” document) was performed through:

- Four collaborative sessions with the expanding State Interoperability Executive Committee (SIEC);
- 20 focus groups spanning disciplines, regions, and levels of government (local, county, regional, state, and Federal); and
- Interoperability analysis of all relevant state and regional public safety and service radio/wireless communications and IT systems.

The Strategic Initiatives developed for the SCIP have been drawn from across this Home Rule state, where the tradition of local rule is arguably more entrenched than in any other state. To improve communications interoperability in Massachusetts, therefore, it is first necessary to understand the complex geo-political segregation of the state, including its many jurisdictions, authorities and public safety organizations.

2.1 State Overview

Regions - Massachusetts is at the center of the New England region and is divided into 14 counties as shown in Figure 2-1. Each county has unique landscape, borders, and environment which – when combined with the lack of strong county government in most counties - directly affect the interoperability “landscape” in Massachusetts.

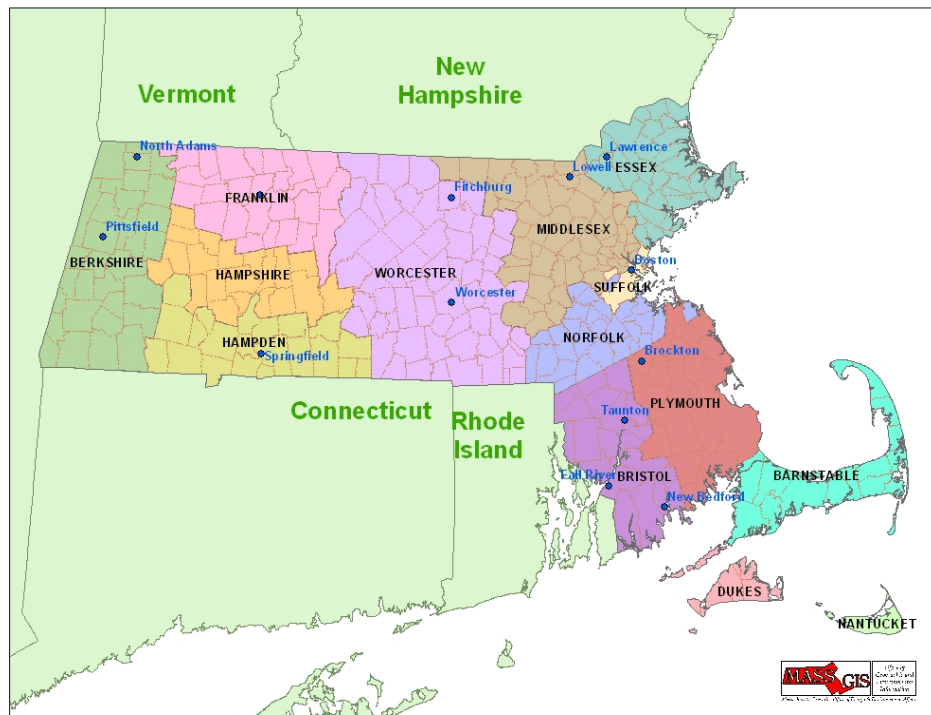


Figure 2-1: Massachusetts Has Fourteen Counties

- **Berkshire** – Berkshire is the westernmost Massachusetts County located in a hilly region extending north to the Vermont border and south to Connecticut, with New York State on its western border - populated with 30 rural towns and two small cities, Pittsfield, the Berkshire County seat, and North Adams.
- **Franklin** - Franklin County is the most rural county in Massachusetts, with rolling forest-covered hills and hidden valleys bordered by the Massachusetts counties of Worcester to the east, Hampshire to the south, and Berkshire to the west – and with the counties of Bennington and Windham in Vermont and Cheshire in New Hampshire along northern boundary.
- **Hampshire** - Hampshire County, with County seat in the City of Northampton as one of its 22 cities and towns, is surrounded by other Massachusetts counties, namely Franklin (north), Berkshire (west), Hampden (south), and Worcester (east).
- **Hampden** – Contains Springfield, one of the largest cities in the State, borders Berkshire (west), Hampshire (north), and Worcester (east as well as Connecticut to the South).
- **Worcester** – Located in central Massachusetts, Worcester is bordered on the north by the State of New Hampshire and in the south by both Connecticut and Rhode Island, contains the City of Worcester, which is built on seven rolling hills and ranks as the second largest city in New England.
- **Middlesex** – includes the county is in the Boston-Cambridge-Quincy metro area, borders Worcester, Essex, Suffolk, and Norfolk Counties, and is the most populous county in Massachusetts with about 1.5 million people.
- **Essex** – Essex forms the North Shore region of the state, includes in the Boston-Cambridge-Quincy-Revere metro area, contains the Salem, Marblehead, and other historic cities and towns bordering with Middlesex (west), Suffolk (east) and State of New Hampshire (north).
- **Suffolk** – Suffolk contains borders on Middlesex County in the north, Norfolk County in the south, and the Massachusetts Bay in the east – it contains the City of Boston and the surrounding metro area and Logan International Airport – one of the largest international airports in the Northeast US.
- **Norfolk** - Norfolk County includes 28 Massachusetts communities located to the south and west of Boston with its towns of Cohasset and Brookline not contiguous with the remainder of the County – known as the birthplace of four US Presidents.
- **Bristol** – Bristol County borders on Suffolk, Middlesex, Worcester, and Plymouth Counties, the State of Rhode Island (west), and faces Dukes County (and Martha's Vineyard) across Buzzards Bay, with its County Seat in the City of Taunton.
- **Plymouth** – Plymouth borders Norfolk (north), Bristol (west), and Barnstable (east) counties and is separated from Dukes County by the northern end of Buzzards Bay and Cape Cod bay to the east.

- **Barnstable** - Barnstable County consists of the 15 coastal towns located on Cape Cod (a large, sandy, arm-shaped peninsula) bordered north by Cape Cod Bay, east by the Atlantic Ocean, and south by Nantucket Sound; it is the easternmost point of land in Massachusetts with over 550 miles of shoreline and more than 360 lakes and ponds.
- **Dukes** - The County of Dukes County consists of 11 islands off the southeast coast of Massachusetts, within sight of Cape Cod, with more than 99% of the County's population on the largest island, Martha's Vineyard, an international tourist destination and vacation-home resort.
- **Nantucket** - Nantucket Island - 14 miles in length and 3 1/2 miles wide - translated from the language of the native Wampanoag tribe means "The Faraway Land" and is located 30 miles from the southern coast of Cape Cod.

Geography/Size. The Commonwealth of Massachusetts is approximately 8,257 square miles, with land area of 7,838 square miles. Massachusetts is a coastal New England state (See *Figure 2-2*), where Cape Cod defines a wide bay that is flanked on the western shore by the Boston metropolitan area, the only Urban Area Security Initiative (UASI) region in the state straddled by several historic North and South Shore communities.

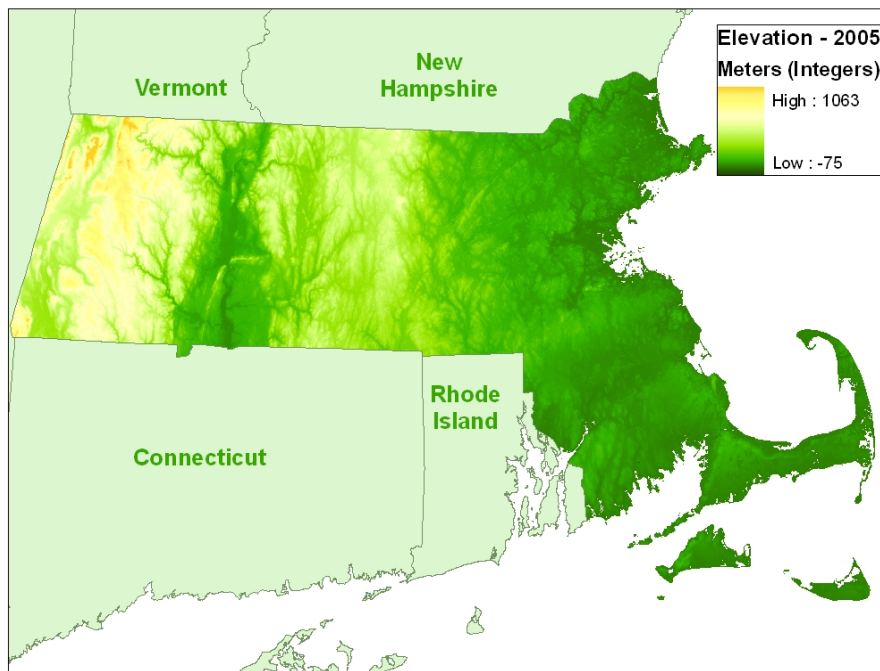


Figure 2-2: Massachusetts Topographic Map

Moving west from the Boston metropolitan area and the North and South Shores, the terrain rises from sea level to slow rolling hills with large forested areas. The next major metropolitan area is the city of Worcester. Built on seven hills in south central Massachusetts is the City of Worcester, which has the second largest metropolitan area in New England. Springfield is the state's third largest city situated in the western third

of the state. Moving west from Springfield, the Berkshire mountain range includes the highest point in the state, Mt. Greylock (3,491 ft). Thus, Massachusetts terrain varies in height from sea level to about 3500 feet, with a mean height of about 500 feet above sea level.

Demographics/ Population -

Massachusetts has a total population (2000 census) of 6,349,097, ranking 13th in the US, for an average population density of 810 people per square mile. The highest density population in Massachusetts is within the 495 Interstate Highway corridor, which is considered the eastern third of the state. This geographic area includes of the counties of Essex, Middlesex, Norfolk and Suffolk, whose cities and towns form three of the established Homeland Security Planning Councils. Within those counties, the population represents 55% of the total state's population.

Massachusetts Population by County July 1, 2006	
County	Population
Barnstable County	224,816
Berkshire County	131,117
Bristol County	545,379
Dukes County	15,515
Essex County	735,958
Franklin County	72,183
Hampden County	460,520
Hampshire County	153,471
Middlesex County	1,467,016
Nantucket County	10,240
Norfolk County	654,753
Plymouth County	493,623
Suffolk County	687,610
Worcester County	784,992
TOTAL	6,437,193

Table 2-1: Massachusetts Population by County

Table 2-1 shows the distribution among counties of the state's population as of July 1, 2006. Massachusetts coastline totals 1,519 miles and is therefore a popular attraction of people from around the world. Cape Cod, including the Islands of Martha's Vineyard and Nantucket, see a large growth in population in excess of during the summer months (June –August). On the North Shore, the towns of Gloucester, Rockport, Newbury Port and Salisbury Beach experience a similar population growth during the same period.

As shown in Figure 2-3, most of the population resides in the Boston metropolitan area, which ranks eleventh in population with 4,411,835 inhabitants (2005 estimate). Since the region has a total surface area of about 4,674 sq. mi., there is an average population density of 947 /sq. mi. Thus, although ranking 44th in the US in land area (25.7% of the area being water), it ranks third of all 50 states in population density.

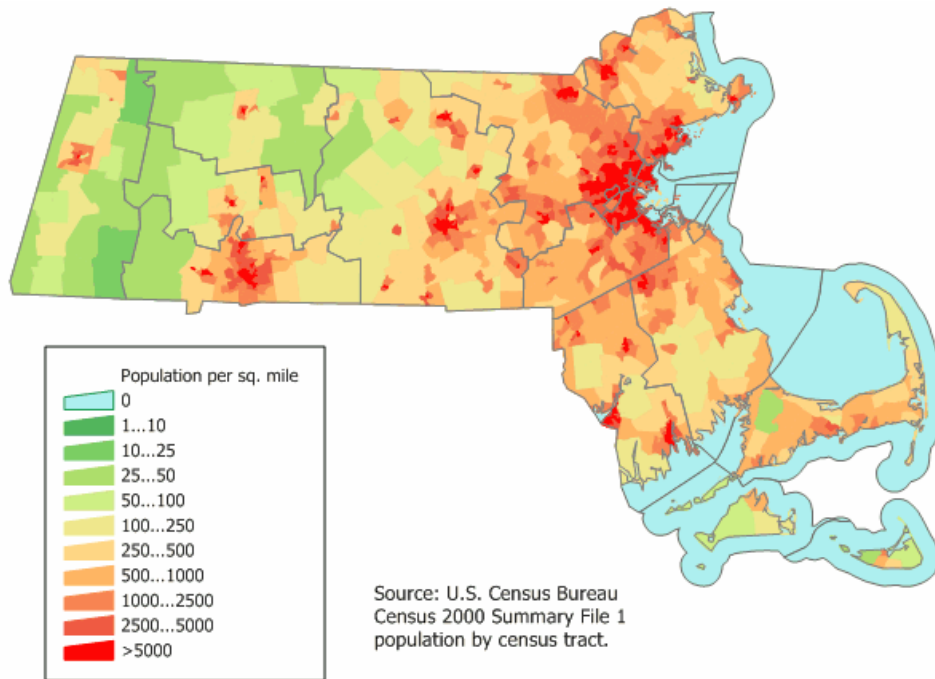


Figure 2-3: Massachusetts Demographic Map

First and Supplementary Responders and Public Safety Service Personnel - There are 351 cities and towns in the Commonwealth, and most have their own Police, Fire, Public Works/Highway, EMS, Public Health and Emergency Management Departments. There are approximately 40,000 police officers, 25,000 firefighters and 15,000 EMTs in the state. In addition there are a number of State Level Responders including State Police, Fire Services, MEMA, Mass Highway, National Guard and several others. These account for probably another 15,000 personnel. Summing these numbers, plus some other groups such as dispatchers, utility workers and other support staff to emergency responders, there is a total of approximately 120,000 emergency personnel in the Commonwealth of Massachusetts.

Climate - Winters are cold, but generally less extreme on the coast with high temperatures in the winter averaging above freezing even in January, although areas further inland are much colder. The state does have extreme temperatures from time to time with 90 °F in the summer and temperatures below 0 °F in the winter.

The state experiences extreme weather, prone to “Nor’easters” and to severe winter storms bringing heavy snowfall. Summers can bring thunderstorms, averaging around 30 days of thunderstorm activity per year. Massachusetts has also experienced destructive tornadoes, with the western part of the state slightly more vulnerable than coastal areas in the east. Massachusetts, like the entire United States eastern seaboard, is also vulnerable to hurricanes. Even though Massachusetts is located farther east in the Atlantic Ocean than other states further south, Massachusetts has suffered a direct hit from a major hurricane three times since 1851, the same number of

direct hits suffered by the southern Atlantic state of Georgia. More often, hurricanes weakened to tropical storm strength pass near Massachusetts.

Critical Infrastructure - Massachusetts has developed a Fusion Center where all Critical Infrastructure information is assessed and stored. Given the sensitivity of this information – and apart from the obvious concern over airports, bridges, tunnels (many lie under Boston and are described below); it will not be discussed further in this report.

Major Bridges - Massachusetts has 5,500 bridges with the largest and most prominent ones serving the Boston area. Connecting the North Shore is the Tobin (Mystic River) Bridge. Just west of the TD Banknorth Garden is the new Zakim Bunkerhill Bridge located on I-93 which was completed as part of the “Big Dig” project. There are several bridges over the Charles River that connects Boston to Cambridge. In the Southeast Region of the state there are two bridges the Bourne and the Sagamore, which connect Cape Cod to the mainland. Along the many highways in the western part of the state there are bridges that transverse the Connecticut River. Of the 5,500 bridges a recent report indicates that 10% of these bridges are in need of repair.

Major Tunnels - The most recent tunnels built in the Massachusetts include the Thomas O’Neill which replaced the partially elevated Central Artery (I-93) and the Ted Williams which goes under Boston Harbor and is an extension of I-90 (Mass. Turnpike) and connects to Logan International Airport and several routes that lead to the North Shore. Both of these construction projects were part of the \$14 + billion dollar “Big Dig”. There are two other tunnels, the Callahan and the Sumner, both which also go under the harbor and connect to Logan International Airport.

Public Transportation - The Massachusetts Bay Transportation Authority (MBTA) services the public transportation needs for the Greater Boston Area and is one of the oldest Public Transportation Systems in The United States. Services include; Bus, Light Rail, Commuter Rail, Water Shuttles and Handicap/ Elderly vans. There are 15 Regional Transportation Authorities (RTAs) as well as many College Campus transit systems that provide primary bus service in the remaining parts of the state.

Bus Terminals, Train Stations and Airports (Inter-Modal) - South Station is Boston’s most comprehensive “inter-modal” facility providing Bus, Commuter Rail and Amtrak Train services. North Station links the Commuter Rail service for the NW and North Shore with the MBTA’s Light Rail Orange Green Line (trolleys). Logan International Airport is under the jurisdiction of MassPort and located in East Boston and functions as the primary airport for the population east of Worcester. Residents from the northeast region of the state have the option to use the Manchester, New Hampshire airport. Those residents living in the Western Region can use the airport in Springfield, MA/Hartford Ct. or the Airport in Albany, NY. Residents in the southeastern part of the state can choose to fly from Providence/Warwick, using T.F. Green Airport.

Annual Bus Terminals, Train Stations and Airports (Inter-Modal) - South Station represents Boston’s most comprehensive “inter-modal” facility providing Bus, Commuter

Rail and Amtrak Train services. North Station links the Commuter Rail service for the northwest and North Shore with the MBTA's Light Rail Orange Green Line (trolleys). Logan International Airport is under the jurisdiction of MassPort and located in East Boston, functioning as the primary airport for the population in the region.

Major Roadways - Massachusetts has 31,300 miles of highways (See Figure 2-4) including the Massachusetts Turnpike (Interstate 90) that stretches the width of the state, from east to west, connecting Massachusetts with upper New York State and roads that lead to Connecticut. Interstate 95, which circles Boston, runs the length of the state from Rhode Island to New Hampshire. Interstate 93 connects Massachusetts with New Hampshire, and Interstate 91 connects western Massachusetts with Vermont and Connecticut.

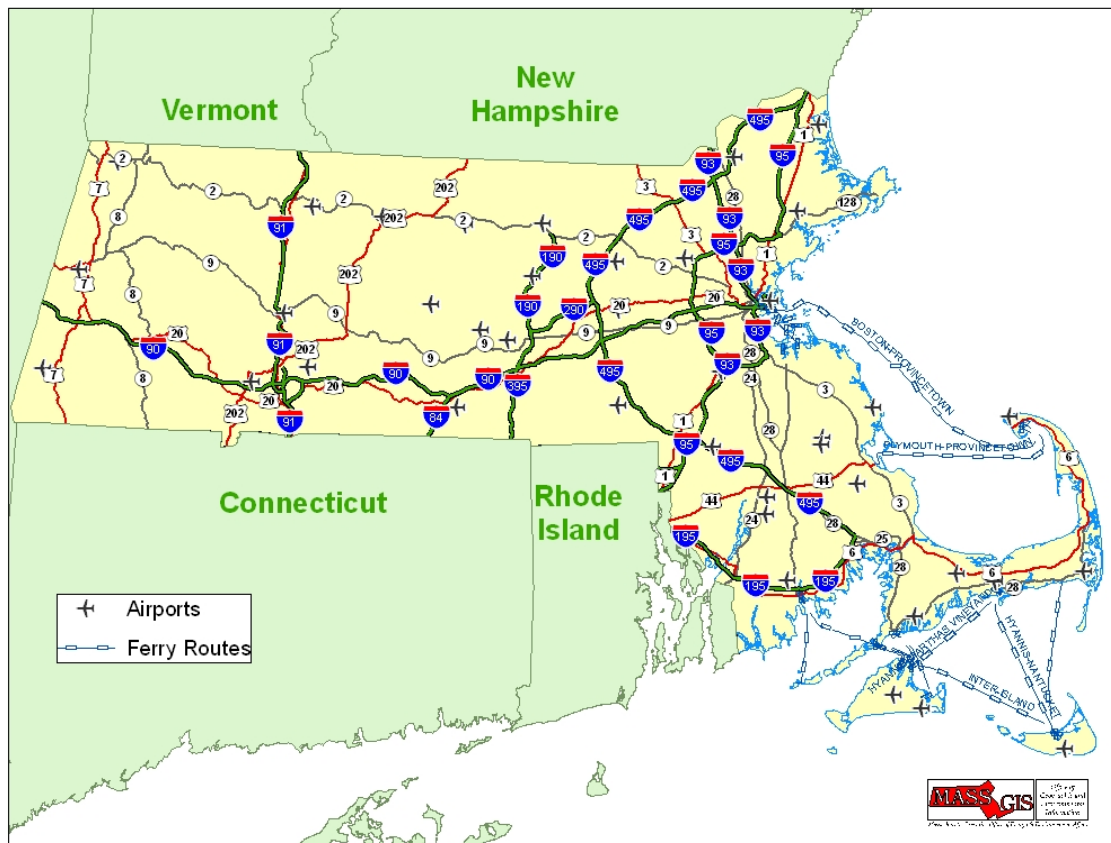


Figure 2-4: Massachusetts Major Road Ways and Transportation Channels

Major Waterways, Harbors, Lakes, Ponds and Reservoirs - Massachusetts has several inland waterways (See Figure 2-5) that are used for both recreation and or commerce; however the majority of recreation, commerce and transportation activities occur on the Atlantic Coast and seaports. Boston Harbor, New Bedford and Gloucester are the largest ports supporting the seafood industry. Boston Harbor, New Bedford,

Gloucester, Hyannis, Woods Hole (Falmouth), Provincetown, Plymouth also provide the most significant amount of transportation and or recreational vessel services. These vessels include ferries (the largest being service to Martha's Vineyard and Nantucket), fishing boats, and tours.

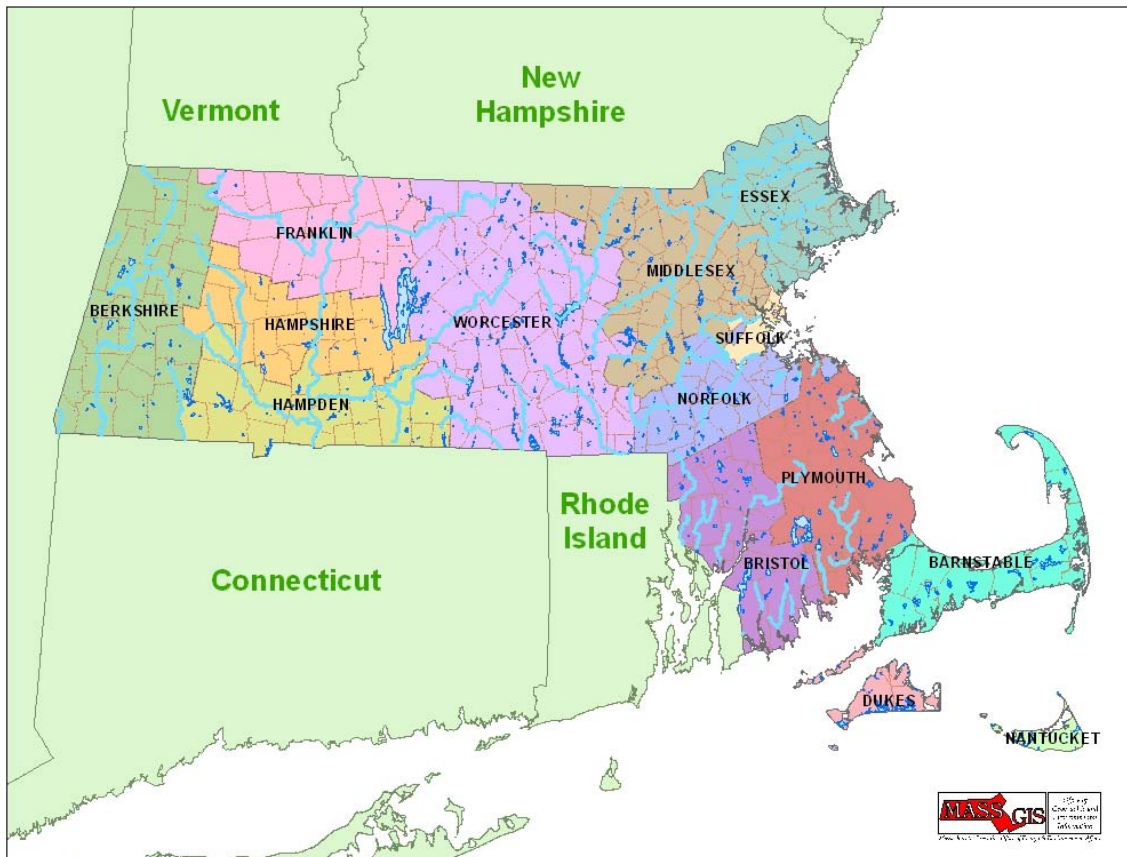


Figure 2-5: Massachusetts Major Waterways

There are approximately 155 harbors under the jurisdiction of 65 harbormasters along the 1,519 miles of Massachusetts coastline. This encompasses all of those from Salisbury in the north to the Taunton River in the south, and includes Martha's Vineyard, Nantucket and the Elizabeth Islands. The number of harbors per town varies from 1 to as many as 14 in the case of Falmouth. These also vary in capacity from very small with only 44 boats at Eastham, to the major international shipping port of Boston, with its piers and support facilities for liquid, dry bulk and containerized shipping and offshore fisheries. The US Coast Guard had jurisdiction over the major coastal ports and waterways.

The state is dotted with 1,543 ponds and 12 lakes that add to an extensive system of reservoirs. The Mass Water Resource Authority (MWRA) oversees the operation of

extensive aqueduct systems that bring water from the Central part of the state (Quabbin Reservoir) to the Boston area.

State Parks - The Massachusetts Department of Conservation and Recreation lists 176 state and urban parks. The National Parks Service shows 22 parks within the state. In addition, there are 10 amusement and theme parks.

State and Foreign Country Borders - Massachusetts, the 7th smallest state in the United States, is bordered on the north by New Hampshire and Vermont, on the west by New York, on the south by Connecticut and Rhode Island, and on the south and east by the Atlantic Ocean.

Recurring Large Events (Parades, Sporting Events, Musical Events, etc. - All of the areas of the state conduct recurring large events that require coordination and interoperability: These events include

The Big E. The Big 'E' is the largest fair and exposition in western Massachusetts. This annual event is held in West Springfield. In 2007, attendance exceeded 1.2 million visitors.

Concerts at Tanglewood. The Tanglewood Music Center in Lenox, Massachusetts is the summer home of the Boston Symphony Orchestra and the setting for a wide variety of musical performances each year. More than 300,000 people attended concerts at Tanglewood in the summer of 2006.

Halloween in Salem. Nobody celebrates Halloween quite like Salem, Massachusetts. The month long celebration of Halloween in America's most famous city of witchcraft causes an increase in motorists as well as population.

St. Patrick's Day Parade. Colorful floats, music, and good cheer celebrate the City of Boston's Irish heritage. The parade draws more than 600,000 visitors to Boston--a city with a long-standing Irish tradition.

Sporting Events – New England Patriot's and Boston Red Sox. Massachusetts is the home of the World Champion Boston Red Sox and the undefeated New England Patriots. Each of these teams host sporting events at their home fields of Fenway in Boston and Gillette Stadium in Foxboro. The 2007 World Champion Red Sox held a victory parade in Boston that attracted in excess of 1 million celebrants. Each of these events presents unique opportunities for planning and interoperability.

Boston Marathon. Massachusetts conducts two of the nations' largest and most prestigious events of their kind: *The Boston Marathon* and the *4th of July Boston Pops Concert*. *The Boston Marathon* requires:

- Transportation of up to 20,000 participants to the start of the race;
- Crowd control for up to 1,000,000 spectators;

- Traffic control for 26 miles of roads and streets during a business day; and
- Cleanup along the route following the event.

This event involves coordination of race officials, local public safety officials from the eight communities through which the race is run, as well as State Police, EMTs, Public Transportation, private transportation, National Guard, FAA, equipment rental services, Statewide-911, Nextel Communications and ham radio operators. The Massachusetts Emergency Management Agency (MEMA) aids in the planning and coordination of the event, as well as monitoring the marathon from the State EOC and ensuring proper communication on race day among the many entities involved.

The Boston Pops Concert. This concert is held every July 4th on the banks of the Charles River and presents a different set of challenges. Although the event is held within the Boston City limits, up to 1,000,000 spectators attend, spilling over to the Cambridge side of the river. MEMA provides coordination of multiple agencies and development of a communication plan among them. As with the marathon, local, state, federal, private and volunteer agencies and organizations must share information continuously to coordinate transportation, crowd control, medical assistance, security, and the ultimate clean-up following the concert.

One Time Events. In the *Sail Boston 2000* event, which extended over a two-week period in the summer of 2000, more than seven million visitors came to view what was characterized as the greatest assemblage of sailing ships ever in the history of the United States. The international flotilla of over 130 ships from 35 countries arrived in Boston on July 11th, tying up at over twenty wharves, piers and docks throughout the inner harbor. In addition to the Tall Ships, Boston was home to ten international warships, led by the immense aircraft carrier USS John F. Kennedy. This set off ten days of parades, concerts, fireworks displays, sporting competitions between the thousands of young sailors, receptions, balls and long lines to board these vessels, a potential logistics nightmare.

To address this event, MEMA officials met continuously with Emergency Management Directors (EMDs) and Harbormasters from the dozens of coastal communities impacted by this event. Many months of planning, preparation and cooperation among local, state and federal Public Safety Organizations enabled this major event to run seamlessly. In addition, frequent (weekly) meetings were held at ***Sail Boston 2000*** Headquarters for all of the major players.

A wide range of agencies and organizations from all levels of government were engaged for this event. Federal agencies included the US Navy, US Coast Guard, Army Corps of Engineers, FEMA, FBI, FAA, FCC, INS, US Marshals, National Park Service, ATF, NCIS and the State Department. The Commonwealth was represented by MEMA, Executive Office of Public Safety and Security (EOPSS), National Guard, Mass State Police, Mass Environmental Police, Mass Port Authority, Mass Bay Transit Authority, Mass Turnpike Authority, Mass Highway Administration, Mass Water Resource Authority, Mass District Commission, Coastal Zone Management, Department

of Environmental Management, Department of Fire Services, and Mass Maritime Academy. Local communities were represented by EMDs and Harbormasters, Boston Emergency Medical Services, Boston Basic City Services, Boston Police, Boston Fire, Municipal Police, Boston Redevelopment Authority, Public Works, and Boston Transportation.

Over 25 agencies and organizations staffed the Unified Command Center at Logan Airport. Additional Tactical Command Posts, Operations Centers and Mobile Command Posts were strategically deployed throughout the area. MEMA, State Police and National Guard manned Mobile Command Units. A Joint Information Center, to coordinate information to the Media and disseminate pertinent weather information, was set up at the Black Falcon Terminal, for easy access to the Press. Communication among all the players was constantly maintained by the use of hundreds of mobile telephones supplied by Nextel Communications. Due to the great amount of planning and cooperation from all of the entities involved, the event was conducted successfully and safely.

2.1.1 NIMS/Multi-Agency Coordination System Incorporation

The Massachusetts Executive Office of Public Safety and Security (EOPSS) has established a multi-jurisdictional/disciplinary National Incident Management System (NIMS) advisory group that develops NIMS-related policy for Massachusetts and its municipalities. This advisory group meets on a monthly basis to work on policy matters surrounding all NIMS components (e.g., adoption, command and management, preparedness: planning, preparedness: training, preparedness: exercises, resource management, and communication and information management). In addition, the advisory group reviews federal NIMS “implementation activities” and disseminates these activities along with relevant U.S. FEMA “NIMS Alerts”, to state and local authorities.

With respect to command and management, Massachusetts, at the state-level, implements NIMS-prescribed ICS for all-hazards response, utilizes and encourages the Multi-Agency Coordination System (MACS), and the State’s Comprehensive Emergency Management Plan has been revised accordingly.

http://www.mass.gov/Eeops/docs/mema/state_cemp-full_plan.pdf

The Massachusetts Emergency Management Agency (MEMA) operates the State Emergency Operations Center in Framingham, MA. From this facility, which is a secure, self-sustaining structure, they have the ability to act as both the coordination point for state entities, as well as a MAC for their regional offices and local EOCs. MEMA leverages technology in the form of WebEOC, which is a web-based system that every community, and many state agencies, has access to. This allows MEMA to share real-time information with stakeholders in a fast-moving environment.

NIMSCAST is the National Incident Management System Capability Assessment Support Tool, which was designed by the U.S. Federal Emergency Management Agency. MEMA's website hosts the statewide exercise calendar and the training

calendar. Both can be found in complete form at www.mass.gov/mema under 'Training Department.'

2.1.2 Regions/Jurisdictions

Massachusetts is composed of 50 cities and 301 towns grouped into 14 counties, although 11 towns are actually “cities” based on their mayor-council or manager-council form of local government (see *Figure 2-6.*)

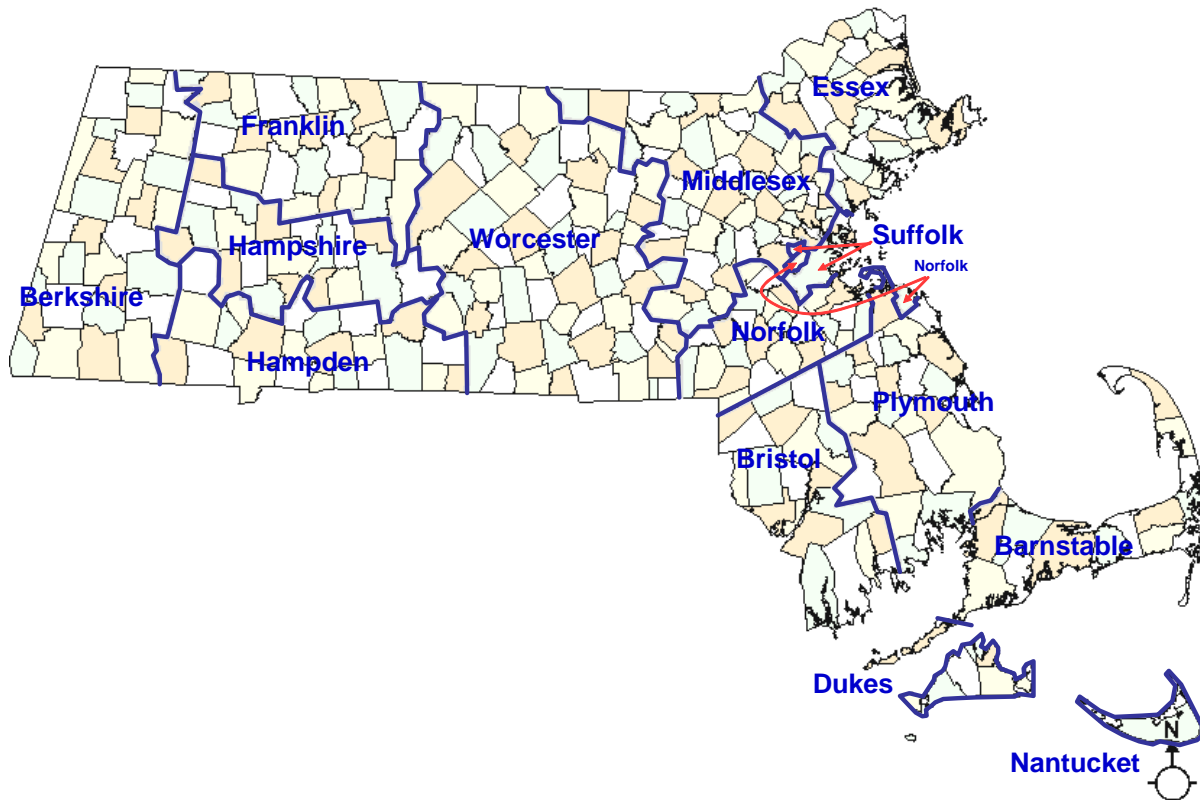
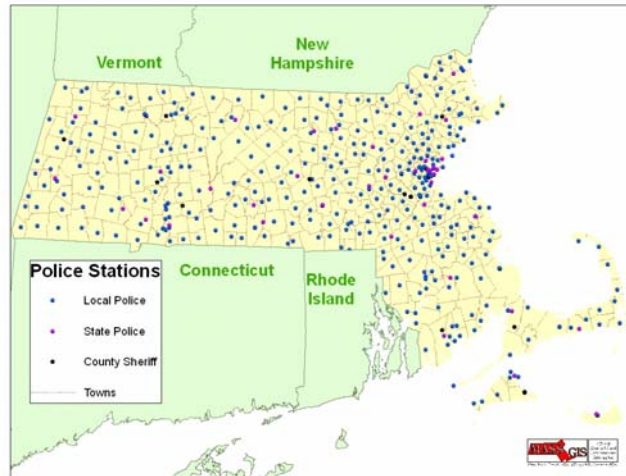
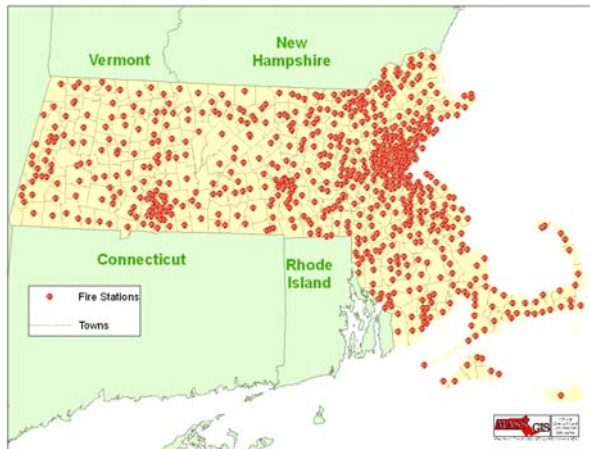


Figure 2-6: Massachusetts County, City, and Town Boundaries

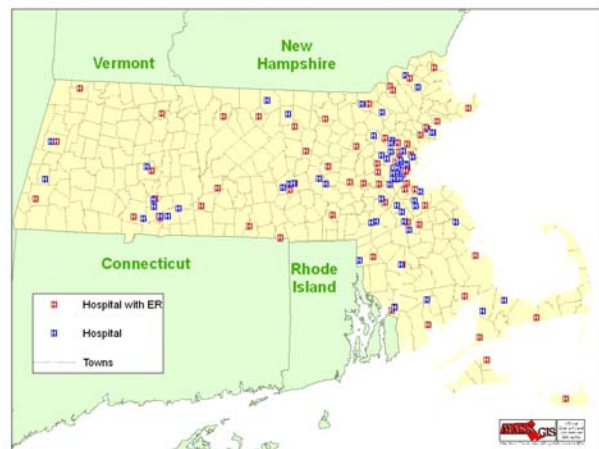
Current Status of Interoperability - This Massachusetts Home Rule tradition and the corresponding history of each town responsible for the welfare of its inhabitants, has led to significant interoperability challenges when attempting to develop common communication systems and protocols statewide. As a result, there are now 264 Primary 9-1-1 PSAPs in Massachusetts covering the 351 cities and towns – with most PSAPS covering police and fire departments in a single town (see *Figure 2-7*). This “local control” and lack of strong county governments has arguably led to independent regionalization on the part of First and Supplementary Responders, setting the stage for interoperability gaps. Nevertheless, there are consolidated dispatch centers operated by the state police and county sheriffs for many towns that either cannot afford their own PSAP/dispatch capability or they understood the benefit of consolidated dispatch to public safety and security.



Police Departments



Fire Stations



Hospitals

Figure 2-7: Police, Fire, and Hospital Locations in Massachusetts

A 2003 report assessing public safety communications interoperability in Massachusetts considered the regional approach as necessary to improve interoperability¹.

With the use of a “regional” approach to interoperability, the Commonwealth’s structure provides an excellent multi-tiered approach to support large-scale emergency communications. Once the local agencies have been properly supported to provide internal communications up to the regional level, the

¹ Massachusetts Executive Office of Public Safety and Security, State of Readiness: Public Safety Interoperability in Massachusetts Analysis and Recommendations Regarding Public Safety Interoperability in the Commonwealth of Massachusetts, 2003, p. 20.

interaction of the regions to support a Commonwealth-wide communications system is a relatively simple process.

In addition, a consequence of weak county governments has been a significant diversity in regionalization plans by various state agencies and other organizations. Figure 2-8 presents a collage of regional maps for Political, Police, Fire, Emergency Medical Service (EMS), Hospital and Transportation regions as well as EOPSS-defined Homeland Security Planning Regions. When considering the 261 PSAPs spread across the 351 cities and towns, most with their own police and fire departments (with about half of the fire departments handling EMS and the remainder provided by both Corporate and non-profit concerns), and a concomitant number of Emergency Management, Public Works, Hospitals, and other Supplementary Responders and Receivers, the complexity of achieving interoperability Massachusetts becomes apparent.

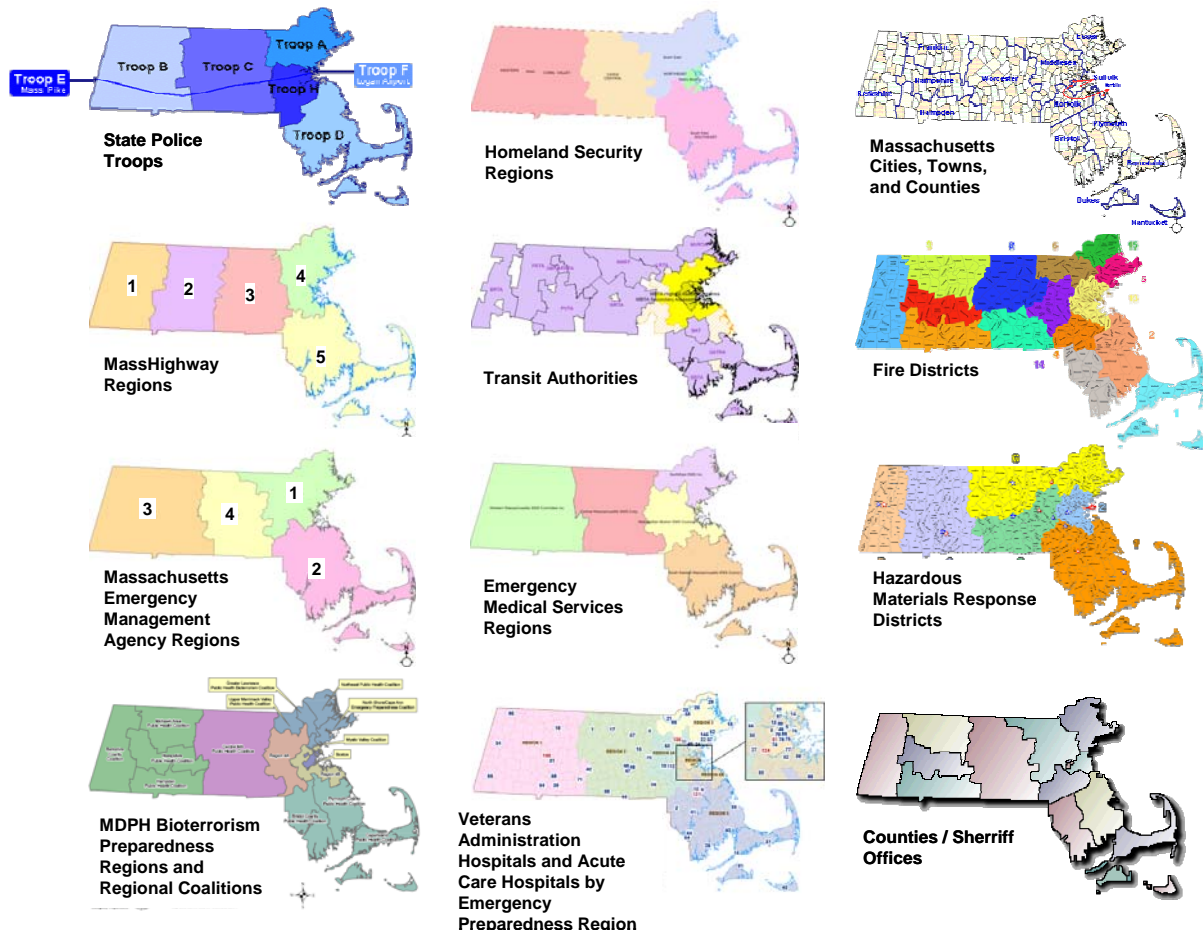


Figure 2-8: Law Enforcement, Public Safety, and Transportation Regions

Figure 2-9 shows an expanded view (from top center map in Figure 2-8) of the five Massachusetts Homeland Security Planning Regions used to supplement the weak county governments for regional homeland security planning, including

communications interoperability. The five regions (with counties also shown) are active in communications interoperability planning. Each region has a primary representative plus at least one alternate representative participating in the SIEC and the development of the SCIP.

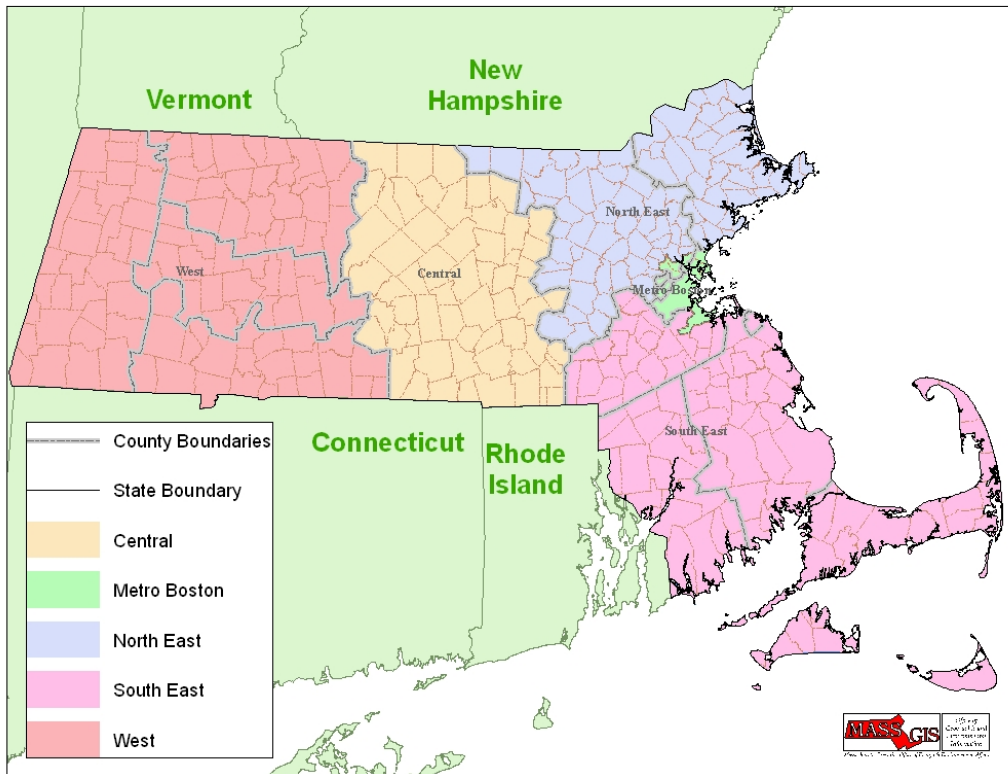


Figure 2-9: Massachusetts Homeland Security Planning Regions

There are numerous natural and technological hazards, which that threaten the Commonwealth. Although some of these hazards occur more frequently than others, all hazards have the potential to impact Massachusetts. The challenge of dealing with all of these hazards is not a question of whether they will happen; rather it is when they will happen. Hazards are grouped into eight (8) major categories:

1. **Flood Related Hazards** – heavy rain, dam failure, riverine, coastal, basement/roadway/ storm water;
2. **Wind Related Hazards** – hurricane, tornado, Nor'easter, severe thunderstorm;
3. **Winter Related Hazards** – heavy snow, ice damage, blizzard conditions, extreme cold, ice jams;
4. **Fire Related Hazards** – wildfire, structure fires, conflagrations, drought;
5. **Geologic Hazards** – earthquakes, landslides;

6. **Man-made Hazards** – hazardous materials, nuclear power, energy shortages, transportation accidents, infrastructure disruption, civil disturbance/riot;
7. **Terrorism** – weapons of mass destruction / biological, nuclear, incendiary, chemical, explosive (BNICE); and,
8. **Health** – disease outbreak, mass casualty, mass fatality, contamination, foreign animal disease.

The Commonwealth of Massachusetts has been divided into five Homeland Security Planning Regions (HSP.) Every Region of the State is vulnerable to all ten hazards identified in the previous section. Table 2-2 outlines each region’s vulnerability in rank order based on frequency and potential impact.

Table 2-2: HSP Region Hazard Vulnerability²

Hazards Ranking	Northeast	Metro Boston	Southeast	Central	West
1	Structural Fire	Structural Fire	Structural Fire	Structural Fire	Structural Fire
2	Hazardous Materials	Hazardous Materials	Hazardous Materials	Wildfire	Wildfire
3	Earthquake	Earthquake	Wildfire	Snow/Ice Storm	Flood
4	Snow/Ice Storm	Terrorism	Flood	Severe T-Storm / Tornado	Severe T- Storm / Tornado
5	Flood	Snow/Ice Storm	Hurricane / Tropical Storm	Flood	Snow/Ice Storm
6	Terrorism	Flood	Nor’easters	Hazardous Materials	Hazardous Materials
7	Severe T-Storm / Tornado	Nor’easters	Severe T-Storm / Tornado	Terrorism	Terrorism
8	Nor’easters	Hurricane / Tropical Storm	Terrorism	Hurricane / Tropical Storm	Hurricane / Tropical Storm
9	Hurricane / Tropical Storm	Severe T-Storm / Tornado	Snow / Ice Storm	Earthquake	Earthquake
10	Wildfire	Wildfire	Earthquake	Nor’easters	Nor’easters

Western Region. The Western Region employs two UHF radio interoperability systems, the Franklin County Regional Emergency Communications System (FCECS)

² NOTE: The information contained in this table is subjective and was based upon the best information available at this time. In addition, this ranking structure addresses a “global” view of risk in each Region. It did not look at specific communities or parts of the Region involved.

and the Western Mass Law Enforcement Council (WEMLEC) radio communications system. Regional dispatch centers located at Shelburne and Northampton Control are operated by the Massachusetts State Police. In addition, there is a single VHF channel covering a significant portion of Berkshire County with consolidated dispatch provided by a new center at the Berkshire County Sheriff's Office.

A lack of spectrum in the VHF band and proximity of Albany, New York, limit the expandability and extendibility of the Berkshire System, while lack of spectrum and financial resources currently limits all three systems from expanded coverage or extension to further disciplines. At present, these regional dispatch centers do not have full redundancy and they all employ single-threaded telecommunications infrastructure. There is no information sharing capability or network other than voice and telephone lines among the Massachusetts Centers or among the Tri-State Command Centers.

An example of multi-state regionalization, the Tri-State Fire Mutual Aid Association has been in existence in the region for more than 50 years. It is a Fire Mutual Aid group with members in Southern Vermont and New Hampshire, Franklin County (Massachusetts) and several Massachusetts communities outside Franklin County.

Central Region. The Central Region does not use a consortium based wide-area radio system, but is beginning to plan for such a system under the auspices and direction of this SCIP and (potentially) linking BAPERN to the Franklin County system. The new initiatives outlined in this plan, which are following the SAFECOM and NIMS guidelines, will inevitably allow the Central Region, among others, to gain from the "lessons learned" and "best practices" utilized by other regions. More importantly, the SCIP will direct the cross-region integration between systems to mitigate the risk of developing isolated regional system with no statewide architecture.

The Northeast Region and the Metropolitan Boston Homeland Security Region (MBHSR) have made significant progress in the planning and implementation process for the former Homeland Security initiatives, including interoperability using a long-standing regional radio system called the Boston Area Police Emergency network (BPAERN) – which has recently been expanded to other disciplines. The Southeast Region – particularly Barnstable County - was arguably approaching the optimal level of interoperability before this regionalization because the State Police proprietary 800-MHz trunked system is used on a moment-to-moment basis by local First and Supplementary Responders on Cape Cod.

The risk of such an approach is that without a cross-regional operational and systems architecture for interoperability, independent systems in different frequency bands with unique Standard Operating Procedures might result – increasing interoperability gaps where they might not otherwise have existed. If so, the complexity and expense of creating this cross-regional interoperability might exceed the cost of having developed a single statewide architecture in the first place. This problem was recognized and a

solution plan addressed in the 2007 Massachusetts Homeland Security Strategy³ as a critical objective to enhance interoperability capacity. This objective was included as a priority Objective of Goal #1, to create a Common Operating Picture (COP) among Homeland Security and Public Safety Stakeholders. As the State Homeland Security Strategy (SHSS) states:

Interoperability, the ability to communicate during an emergency or crises, is a priority in the Commonwealth's homeland security and public safety agenda. The Commonwealth is committed to enhancing critical information sharing between responders and other stakeholders and creating a comprehensive state and local solution. While homeland security funds to support interoperability have been spent by the regions and localities, the state now needs to ensure that future expenditures cross jurisdictional boundaries and are steered towards a common goal: to efficiently and effectively share a variety of information, including situational awareness, resource status, strategies and solutions, warnings, and alerts, in any format by integrated communications systems and methods. The state will ensure that the jurisdictional boundaries that govern in a home-rule state do not impede the safety and security of our citizens.

The strong commitment of the Massachusetts leadership to interoperability for information sharing – which defines the importance of this 2007 Strategic Interoperability Communications Plan – is evident when the SHSS states⁴:

We must know now the weaknesses in regional and state radio systems to address single points of failure and to mitigate the potential for communications failure at critical infrastructure. That process began in June, 2007, when the State Interoperability Executive Committee (SIEC) developed the central components of a five-year plan, utilizing the U.S. DHS SAFECOM guidelines. The final draft of the SAFECOM plan will serve as a template for future interoperability projects throughout the state, provide a governance structure for the SIEC to guide public expenditures, and ensure consistency of spending and cross-regional functionality.

2.1.3 UASI Areas/TIC Plans

The only Tactical Interoperability Communications Plan (TICP) in Massachusetts was done for the Metropolitan Boston Homeland Security. This TICP includes interoperability initiatives that employ all Technology and SOP elements in their move toward optimal interoperability.

³ Kevin M. Burke, Secretary of Public Safety and Security, and Juliette N. Kayyem, Undersecretary for Homeland Security, *The Commonwealth of Massachusetts State Homeland Security Strategy*, September 2007, p. 13.

⁴ *Ibid.* p. 14.

2.2 Participating Agencies and Points of Contact

Many organizations and agencies from Massachusetts as well as the surrounding states participated in the development of the SCIP. Table 2-3 shows the members of the Statewide Interoperability Executive Committee. Tables 2-4 through 2-9 show the focus group attendees.

Table 2-3: Members of the Massachusetts Statewide Interoperability Executive Committee

<i>Agency POC</i>	<i>Agency Name</i>
Chris Beaurpere	EOPSS
Scott Billings	Plymouth County Sheriffs Department
Mark Cady	Worcester Fire
Terry Dun	Region 5 Interops
George Fosque	Cambridge PSAPS
Phil Mahoney	GBPC/NERAC/NEMLEC
Robert McElhane	ITD IPG
Rick McDonald	EOT
Ed McNamara	Region 2 EMS
Timothy Nau	MSP
Dana Ohannessian, MPA	MDPH, Hospital Emergency Preparedness Communications Coordinator
Kevin Partridge	DFS
Gerald Reardon	Cambridge FD
Nancy Ridley	DPH
Mike Saltzman	Major MSP
Jim Slater	EOPSS
Blair Sutherland	EOPSS
Ralph Swenson	Barnstable Sheriffs Dept
Joni Tam	EOT
Peter Thomas	Barnstable Sheriffs Dept
John Tommaney	MEMA
David Troup	Boston PD
Tracy Varano	CHSB

Massachusetts Statewide Communications Interoperability Plan

Table 2-4: Members of the Western Region Focus Group

<i>Agency POC</i>	<i>Agency Name</i>
Stephen E. O'Brien, Chief	Town of Lenox
Alan Zawistowski, CIS	City of Pittsfield
Gary Cromack	Consultant
Ronald Reents	CEM HS Mngr.
Zachary Smith	Ops Mngr.
Terry Dun	Chief
John Taylor	
Stephen Cote	Com. Coord.
Linda Moriarty	Ex Dir. WMEMS
Russ Sienkiewicz, Chief	Northampton Police

Table 2-5: Members of the Central Region Focus Group.

<i>Agency POC</i>	<i>Agency Name</i>
Cady, Mark	Worcester Fire Dept.
Clemons, David	City of Worcester Emergency Communications Director
Coggins, Charlie	Leominster Emerg mgmt CHSAC
Colonies, James	Shrewsbury Fire Dept.
Hart, John	Harrington Hosp.
Janssens, Scott	Heywood Hospital
Keeney, Ken	MSP
McNamara, Ed	Central Mass EMS Corp
Reents, Ron	MEMA
Ridley, Nancy	DPH
Smith, Gina	UMMHC
Montiuerdi, Christopher	Worcester MMRS

Table 2-6: Members of the Northeast Region Focus Group.

<i>Agency POC</i>	<i>Agency Name</i>
Leo Sacco	Chief Medford PD / NERAC Interop
Mark Foster	Town of Beverly
Ron Reents	HS Manager
Jonathan Epstein	Executive Director NERAC Interop
Victoria Grafflin	MAPC Project Director
Diana Chidsey	GBPC Dir. of Planning & Operations
Brenda Jones	MAPC Project Coordinator
Nancy Ridley	Assoc. Comm Bureau Director
Phil Mahoney	Chief, Woburn PD, GBDC/NERAC/NEMLEC
Jonathan Dillon	MEMA Regional Local Coordinator
Thomas G. Carbone	Director Pub Health Comm Dev. & Planning

Table 2-7: Members of the Southeast Region Focus Group.

<i>Agency POC</i>	<i>Agency Name</i>
Lt. Scott Billings	Plymouth County Sheriff's Dept
James Muscato	Plymouth County Sheriff's Dept
James Murphy	Plymouth County Sheriff's Dept
Kevin Feyler	Town of Marshfield PD
Steve Pike	Mass State Police
Michael Antoine	Town Of Hingham Fire/EMS
Suzanne Dagesse	SE Region Planning & Eco Dev
T. Andrew Reardon	Norwell Fire Department
Kenneth Blanchard	Hanover Fire Dept
Richard E. Ferreira	Taunton EMA
Diana Chidsey	GBPC Dir. of Planning & Operations
Glen Pinchbeck	Bristol County Sheriff's Dept
Marc Duprey	Bristol County Sheriff's Dept
Peter Flynn	Town of Plymouth Police
Howard B. Anderson	Wareham-Onset Fire Dept
Chad Hunter	Plymouth Police (Harbor)
Peter Thomas	Barnstable County Sherriff's Off
Steve Wallace	Town of Braintree
Kevin Robinson	Town of Marshfield PD
Mark Duff	Town of Hingham Fire/EMS
Robert Olsson	Town of Hingham Fire/EMS
Charles Souther	Town of Hingham PS S/E
Blake Haskell	Consultant for Higham
Jeff Marani	American Medical Response
David Evans	Town of Wareham -EMS
Michael Manoogin	Town of Halifax PD
Richard Stillman, Chief	Town of Walpole PD
William Shallies	Town of Rockland PD
Gregory Lennon	Town of Cohasset PD
Thomas Wigmore	Town of Cohasset PD/Fire/EMS
Robert Sawtelle	Town of Hull PD Dispatch
Joseph Griffin, Chief	Dover PD
Lt Paul Taber	Marshfield PD
Lance Benjamino	Town o Halifax Fire/EMS
Stephen A. Hooke	Fire Alarm Supervisor Holbrook Fire Department
Fred Fowler	SE MA EMS Council

Table 2-8: Members of the Metro Boston Focus Group.

<i>Agency POC</i>	<i>Agency Name</i>
Brendan Kearney	Supt. Field Support/Boston EMS
Scott Wilder	Director of Technology Brookline Police
John A. Cowhig	IT Director Chelsea Police
George Fosque	Emergency Comm Director
Gerald Reardon, Chief	Cambridge FD
David Troup	Boston Police
Neil MacGaffey	MassGIS

Table 2-9 Members of the Discipline Focus Groups

<i>Agency POC</i>	<i>Agency Name</i>
State Agencies	
Gary Gutowski	Massachusetts State Police
Tom Ashe	Systems Analyst
Bryan Corbett	Massport Operations
Jim Delashmit	MassPike Communications
Allan Hinds	MassPike Communications
Paul Connelly	EOPSS
Jeffrey Timperi	EOPSS
Fire	
David Keefe	South Hadley Fire Dist 2/Fire Chief
W. Tim Nelson	Holyoke Fire Dept/Dep Chief (rep: Chief Lafond)
Kevin Carter	DFS
Richard Rocho	Westford/Fire Chief
Lt. Ken Desjean	Fitchburg Fire Dept
Phillip A.J. Charron	Lowell Fire Dept./Field Comm 60
Kevin P. Partridge	Dept of Fire Services

Massachusetts Statewide Communications Interoperability Plan

Table 2-9 Members of the Discipline Focus Groups (Cont'd)

<i>Agency POC</i>	<i>Agency Name</i>
Roy E. Jones IV	Brewster Region 2 Mobilization Co./Fire Chief
Stephen A. Hooke	Fire Alarm Supervisor Holbrook Fire Department
Edward J. O'Brien	Holbrook Statewide Fire Mobilization Chairman/Fire Chief
Brian Duggan	North Hampton Tech Comm Chair/Fire Chief
Public Health and Hospitals	
Nancy Ridley	DPH
Rick Hampton	Partners Healthcare/Wireless Manager
Gail Bienvenue-Mailhort	MDPH/Regional Hospital Coordn.
Robert O. Moore	Holyoke Medical Center/ Emergency Preparedness
Ann M. Carroll	Mercy Medical Center/Switchboard Supervisor
Robert Lewis	Senior Director IT
Christian Lanphere	Emergency Preparedness Manager
David Dennenno	Sturdy Memorial Hosp./Emergency Preparedness Coord.
Brian LaGrasse	Methuen Health Director
Kathy Shubitowski	Faulkner Hospital/Emergency Mgmt. Coordinator
Maria Ruggiero	Lowell Health Department
Frank Singleton	Lowell Health Department
Mary Kersell	Hampshire Public Health
Sandra Martin	Berkshire BCBOHA
Peter W. Cole	Lawrence General Hospital
Barry Wante	Brigham & Women's Hospital
Bryan Eustis	Region 4b
Chris Webb	Region 3
Joanne Scott	Salem Board of Health/NSCA EP Coalition Chair
EMS	
Abdullah Rehayem	OEMS Director
Stephen Cote	Communications Coordinator
Glen Pinchbeck	Assistant Director Communications
Brian Connor	Mass Ambulance Association President
Mike Kass	MDPH Deputy Hospital Preparedness Coordinator
Gregory Hayes	Coordinated Systems International

Table 2-9 Members of the Discipline Focus Groups (Cont'd)

<i>Agency POC</i>	<i>Agency Name</i>
Allen Phillips	MEMA
Frederick E. Fowler	Southern MA EMS Council
Elliot Derdak	Boston EMS Comm. Systems Engineer
John Schaeffer	SSG
Ed McNamara	EMS Region 2
Linda Moriarty	EMS Region 1
Jim Matthews	WPI
Border States Group	
George Pohorilak	Director CT DOP
George Carbonell	Supervisor Highway Ops
Keith Victor	Command Manager W Hartford Police
Bill O'Connell	Consultant CT
William Kramer	Consultant CT
Brian Glancy	RI State Police
Thomas Crotty	RI State Police
Dean Hoxsie	Narragansett Police Department
Federal Agencies	
Scott Masaschi	FBI Technology
Mike Pettis	FBI - Telcom Mngr.
Nathan Greene	DHS/FEMA Chief IT
Nick Begin	DHS/FEMA IT
Donald Tucker	US Coast Guard
Lynn Wright	DHS
Police	
Carl Prairie	Springfield Police
Patrick Archabald	Deputy Chief UMass Amherst
Richard Lee	UMass Boston
John Hannon, Detective	Foxborough Police Depart
Brian Egnitz	Commonwealth Fusion Center, MSP
Stan Stuart	UMass Boston
David Clemmons	City of Worcester Emergency Communications Director

Table 2-9 Members of the Discipline Focus Groups (Cont'd)

<i>Agency POC</i>	<i>Agency Name</i>
Ron Burson	West-Tisbury Police Department (MVPSIS)
Kevin Bourque	Sgt BUPD
Robert Gaffney	Lt. BUPD
Michael Saltzman	Major MSP
Beverly Mimeault	MSP – New Braintree
Regional Planning Authority	
Elaine F. Cristoferi	SRPEDD
Suzanne Dagesse	SRPEDD
George Lear	CMRPC
Victoria Grafflin, Project Director	MAPC
Teri Koopman	Franklin Regional Council of Governments
Brenda Jones	MAPC
VOAD	
Chris Thatcher	Lutheran Community Services
Bob DeMattia	Minuteman Repeater Association
Paula Ferrer	United Way MB & MV
Steve Telsey	Amateur Radio Emergency Services
Mike Neilsen	MENT/MVOAD
Antone D.Duarte	Acushnet EMA-ARES
Rob Macedo	Eastern Mass ARES Section/Sky Warn
Tribal	
Al Curtis (Sea Wolfe)	Sagamore/Chappaquiddick Tribe
Linda Morceau (Squa Yellow Feather)	Peaceful Gathering Place (Pocassett)
Patricia R. Rocker-Potter	Chappaquiddick Tribe
Colleges and Universities	
David DiNapoli	Stonehill College
Paul Walter Sousa	Brandeis University
John McCune	Umass Lowell
June Kevorkian	Boston Consortium

Table 2-9 Members of the Discipline Focus Groups (Cont'd)

<i>Agency POC</i>	<i>Agency Name</i>
Public Works	
John Nardone	Cambridge DPW
Judy Curby	Wellesley DPW
Paul Bokoski	Blackstone DPW
Transportation	
Bob Parfrnose	MBTA
Bryan H. Corbett	Massport/Operations
Allan E. Hinds	MTA
Michelle Maffeo	MHD
William Nordstrom	MTA
Russ F. Bond	MHD
Thomas J. Loughlin	MHD
Lt. Donald L. Place, Jr.	MTA/State Police

2.3 Statewide Plan Point of Contact

Currently, Massachusetts has an acting Interoperability Coordinator, Mr. Blair Sutherland – a long-time leader of the Massachusetts State Public Safety and Law Enforcement communities.

C. Blair Sutherland
State Interoperability Coordinator
Executive Office of Public Safety and Security
Framingham Office (508) 820-2264
blair.sutherland@state.ma.us

The Governance Strategic Initiative (discussed in more detail later) will assign a full-time Interoperability Coordinator who will not represent any one particular discipline, and will not have to balance the coordinator duties with other responsibilities.

2.4 Scope and Timeframe

The Massachusetts SCIP – which puts forward Strategic Initiatives – each comprised of two or more projects – includes the full range of Continuum Elements as follows:

- **Governance** – complete all necessary charters and expand memberships in the SIEC and regional committees following SAFECOM recommendations and unique aspects of Massachusetts governance.
- **Funding** – a purposeful (low-cost) project to develop and assure funding resources for all acquisition and, as importantly, capability sustainment resulting from these initiatives as a critical feasibility gate to system implementation.
- **Information Sharing** – the development of information sharing and command/control requirements in the context of an overall Law Enforcement, Public Safety and Emergency Response architecture and the shared reliable and survivable broadband backbone necessary to support it.
- **Mobility** – the expansion of existing wide-area Command and Control channels statewide (e.g., BAPER), detailed channel planning for 700 MHz (considering the Southeast Region model), mobile data/gateway systems for information sharing irrespective of the RF/wireless capability available, and Continuity of Government wireless interoperability systems (e.g., satellite, HF radio, mobile communication centers).
- **Protocols** – Standard statewide SOPs and NIMS-compliant training with special emphasis on the Communications Unit leader (COML) and associated interoperability included in verification during exercises.
- **Innovation** – Capture and educate regions, disciplines, etc. on the use of advanced Information Sharing and mobility technologies, such as WiMAX, ultra-

wideband, Service-Oriented Applications, and “Sense and Respond” incident management under NIMS.

These initiatives are designed to establish routine operability on a moment-to-moment basis between whichever organizations must share information and tactical command and control. As in a trunked system, these capabilities can support individual organizations under certain situations (e.g., the Southeast Regions use of the State Police system), but classic radio “interoperability” is then “only a knob click away.”

This SCIP is designed to be implemented over a five-year period. In fact, this is a “sliding window” in that it will be updated on a yearly basis and “slid” another year to the right. Projects will be initiated, executed, completed, and new projects added as required over subsequent years. In this way, the SCIP is consistent, always forward looking, and adapted to achievements of previous projects and years.

3 Methodology

Several diverse approaches have been – and continue to be - followed to collect the necessary information and encourage cross-jurisdictional and cross-disciplinary participation in developing the statewide plan, including:

- Web searches for Massachusetts organizations (such as the Homeland Security Councils), capabilities, systems, and services;
- Requests for existing and planned system data submitted to the EOPSS;
- Requests for existing and planned system data submitted to the Massachusetts Interoperability Coordinator and SIEC;
- Requests for existing and planned system data from focus groups conducted regionally and statewide¹;
- Interviews with key individuals who lead relevant associations in the state, such as municipality and public safety and service discipline associations;
- Initial and expanding membership on the project Collaborative Site <https://collaboration.saic.com/sites/MA-INTEROP>;
- Personal follow-up contacts to identified individuals identified in any data collection solicitation (as those above); and
- Site surveys of key state, regional, and local command and control, such as dispatch centers and emergency operations centers and well as day-to-day operations centers for relevant critical infrastructure agencies.

3.1 Collaborative Decision Support

The SCIP Planning Guide recommends the use of collaborative sessions to meet planning criteria requirements because²:

- There are structured recommendations from the emergency response community on how to improve voice and data communications across the state.
- There is an enhanced sense of community among the statewide emergency response communications plan participants.

¹ Science Applications International Corporation, *Massachusetts Communications Interoperability Plan: Draft Planning Document for the Strategic Planning Collaborative Session and Draft Planning Document for HLS Region Focus Groups, Deliverable 4.1*, Executive Office of Public Safety and Security, 23 August 2007.

² *Ibid.*, p. 5.

- There is a publicly-available path forward that can be shared with industry so that industry understands the major technical initiatives that the state is driving in support of its vision and interoperability goals.
- There is a shared understanding of the roles and responsibilities of everyone involved and the dependencies within and among initiatives.

A Collaborative Decision Support System (CDSS) was used with the SIEC to develop the Vision for interoperability in Massachusetts, the Mission of the SIEC in achieving this Vision, the specific Goals needed to execute this Mission in action, and the more Massachusetts-specific near- and long-term Objectives associated with these Goals.

Using the CDSS, each individual is sitting in the collaboration space at a laptop (see Figure 3-1) or is helped by an assistant who captures that individual's input on the laptop. In this way, the individual contributions of all are electronically captured and displayed. This approach is better than a simple round-the-table discussion-limited conference alone. In the discussion-based scenario, would-be contributors can be easily prevented from expressing their views by domineering participants or other reluctance to speak – particularly in large groups.



Figure 3-1. Typical CDSS Configuration.

- The CDSS is a state-of-the-art, facilitated set of collaborative software tools that provide clear and systematic pathways to strategic direction. The CDSS employs the Thinktank™³ application from GroupSystems (<http://www.groupsystems.com/>). Thinktank™ provided several key capabilities including:
 - Categorizer (see Figure 3-2) - Assists meeting participants in three common group activities: generating lists of ideas, brainstorming comments that elaborate on/or support the ideas, and organizing the ideas into categories.

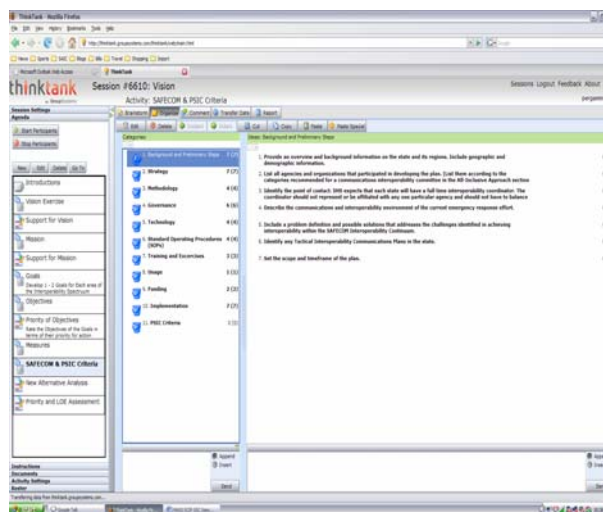


Figure 3-2: Categorizer

³ ThinkTank™ is a basis for progress through a structured process for collaboration that supports continuous growth inside the organization. ThinkTank™ is used for brainstorming, organizing, prioritizing, evaluating, identifying and documenting the innovation process. ThinkTank™ is a business collaboration tool that creates a clear, custom output of the content created during the innovation process for alignment on action or for future reference.

- Multi-Criteria Voting (see Figure 3-3) - Enables meeting participants to rate a list of alternatives against as many criteria as desired, then immediately view the degree of group consensus on an item.
- Meeting Reports - Dramatic charting and visual graphing plus organization of information to enhance group reports (charts, graphs and reports are instantly available)

This approach is valuable because it assists meeting participants in three common group activities: generating lists of ideas, brainstorming comments that elaborate on/ or support the ideas, and organizing the ideas into categories. The voting capability is particularly important to build consensus while avoiding the many drawbacks of live collaborative sessions, and it produces automatically documented results.

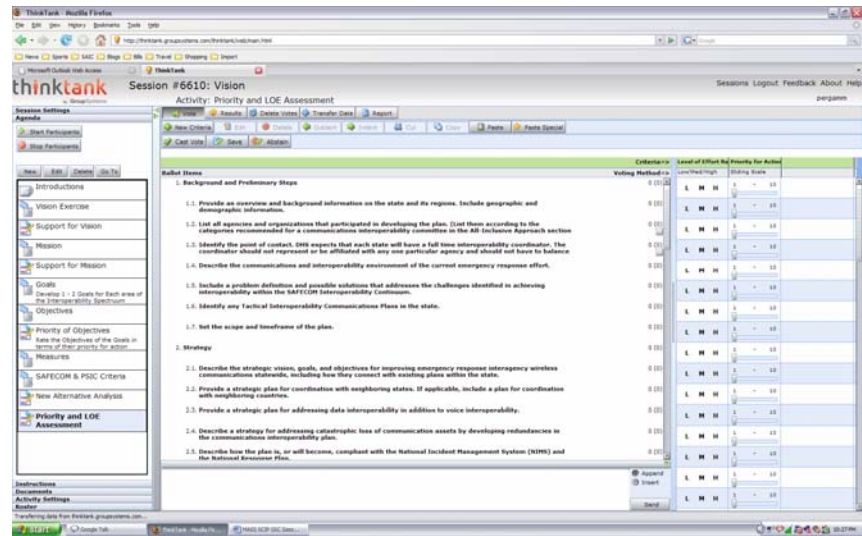


Figure 3-3: Multi-Criteria Voting

This approach captures all participants input in a non-obtrusive manner, and the facilitated discussion that does occur sharpens group awareness and understanding. In this way, development of the Vision, Mission, Goals, Objectives, and Measures Report - and later (with Team consensus) the Interoperability Strategic Initiatives – will be developed much more quickly, with results more rigorously analyzed, and more completely developed and documented than an audio-only approach. In this unique collaborative environment, our Strategic Planning Session participants will therefore likely achieve breakthroughs in creativity and decision making. These benefits will be achieved because the environment for interoperability planning collaboration will then be best tailored to fit the culture, goals, size, and physical location of the participants utilizing the CDSS.

In summary, the CDSS process provides several distinct advantages, such as it:

- Encourages groups to stay on task and to quickly lie out a potential framework for implementation;
- Leavens the field to allow for full involvement of all participants – increasing the buy in to group-decided approaches;

- Expresses the conceptual framework in the language of the participants;
- Produces an immediate comprehensive product for all of the participants to take with them; and
- Increases group cohesiveness and commitment to direction – a critical requirement to change the stand-alone culture of individuals in large groups.

The CDSS was used to develop the Vision, Mission, Goals, and Objectives of the SIEC in executing the SCIP. The specific language from the SCIP methodology was employed to ask SIEC participants to specify vision statements, and then work through them as a group until final wording was accepted. This process continued as well with development of the SIEC Mission and the Goals and associated Objectives to be identified in the SCIP. These Objectives were analyzed into a preliminary set of Strategic Initiatives, that is, high-level implementation programs to be vetted and further refined from focus group results.

3.2 Focus Groups

To maximize the effectiveness of the SCIP working sessions, representatives from all stakeholder focus groups identified by the SIEC were included in focus groups. These agencies/organizations were selected based on a legal, statutory, or otherwise vested interest in interoperable communications across the State of Massachusetts. Focus groups included regional representatives from the Boston/UASI region, Central, Western, Northeast, and Southeast. There were sessions conducted with the Police, Fire and EMS disciplines to address concerns and develop strategies surrounding a communications plan. Public Health and Hospitals had their own focus groups in addition to one specifically for Emergency Medical Services (EMS). Massachusetts' Border States (CT, RI, VT, NH, and NY) were included as well as Native Tribes, Volunteer Organizations, Department of Public Works, Utilities, and non-governmental organizations (NGOs) such as Amateur Radio groups, Red Cross, etc. Focus groups sessions were also conducted for Federal and State Agencies as important stakeholders in planning communications interoperability.

During the research for the strategic plan, 22 Focus Groups were held representing various organizations, agencies and disciplines within the Commonwealth of Massachusetts listed in Section 2.2. The groups were comprised of individuals as diverse as first responders, emergency managers, volunteers, Native Americans, private enterprise and regional planners. In each case, the participants were:

1. Introduced to the SCIP development project and the SIEC Vision and Mission
2. Presented a brief description of the scope of interoperability being addressed, i.e. including information sharing of all types, not simply radio alone
3. Asked to individually respond to three questions within the domains of the elements of the SAFECOM Interoperability Continuum, namely Governance, SOPs, Technology, Training and Exercises, and Usage, as follows:

- i. What aspects of existing systems “work well” in addressing interoperability issues?
- ii. What interoperability “gaps” still needed to be filled?
- iii. What approach should be used to fill these gaps?

The Goals and Objectives developed by the SIEC were not shared with the Focus Groups to prevent them being influenced in thought by their results, which largely represented interoperability gaps to be corrected (Goals) themselves and corresponding recommendations as to what actions were required to fill those gaps. Focus groups were conducted with the following organizations:

- Homeland Security Council Interoperability Committees
 - Western Region
 - Central Region
 - Northeastern Region
 - Southeastern Region
 - Boston Metro Region
- State and Local Public Safety Disciplines
 - Local Fire Departments
 - Local Hospitals and Boards of Health
 - Local Police Departments
 - Local Emergency Medical Services
 - Local Emergency Management Agencies
 - Local Public Works agencies
 - State Transportation agencies
 - State Agencies
 - Volunteer Organizations Active in Disaster (VOAD)
- Other agencies
 - State Fiduciary and Regional Planning Authorities (RPAs)
 - Tribal representatives
 - Border State public safety representatives
 - Federal agencies
 - Private sector organizations (e.g., telecommunications companies)
 - Utility companies

Next, the hundreds of comments from the focus groups were analyzed for common themes used with the SIEC Objectives to define specific Strategic Initiatives and associated projects. Next, the raw focus group comments were used to build histograms of focus group support for each identified project. These histograms were generated for focus group themes as well as identified Strengths, Gaps, and Improvements to existing interoperability capabilities.

3.3 Communication Assets Survey and Mapping

The Interoperable Communications Technical Assistance Program (ICTAP) enhances communication between local, State, and Federal emergency responders and public

safety officials, and is associated with the Department of Homeland Security's State and Urban Area Security Initiative (UASI) programs. The goal is to enable public safety agencies to communicate as they respond to major emergencies. An outgrowth of our Nation's examination of emergency services since 2001 has been a realization of the need for disparate emergency agencies to be able to communicate with each other. In major incidents, first responders from a large geographic area are brought to bear. Repeatedly, in exercises and actual emergencies (e.g.; Hurricane Katrina), a critical stumbling block has been linking this assortment of agencies together as a cohesive focused force to serve the affected citizens.

To automate portions of that process, the ICTAP team produced the Communication Assets Survey and Mapping (CASM) tool. It serves as the basis for State and Urban Areas to: (1) inventory and visually display first responder communications assets, (2) analyze existing interoperable communications pathways per the SAFECOM Interoperability Continuum, and (3) identify interoperable communications gaps between first responder agencies. Provided at no cost, it is a web-based tool an agency can populate with detailed, specific information about the communications infrastructure it uses. CASM presents a large volume of complex data in a form civil authorities use to make effective decisions for their community. CASM was fielded by a government-industry integrated product team at SPAWAR Systems Center-San Diego (SSC-SD). The server host computer is located at SSC-SD and maintained in accordance with applicable SSC-SD security requirements. The program sponsor is the Office of Emergency Communications in the Department of Homeland Security.

CASM strengthened the ability of States/Urban Areas to visualize their communication asset inventory and interoperability. As an access-controlled web-base interface, it provides a collaborative tool for First Responders to quickly view shared resources within and across agency disciplines (Fire, Police, EMS, etc). Before CASM, spreadsheets and tables were the predominant means of inventory and there was no effective available display. Since its release on July 18, 2005, use of CASM has grown to 58 States and Urban Areas. There are now more than a 1000 user accounts, averaging 1100 logins and 20,000 data entries per month. Within these 58 Urea Areas/States, more than 4500 jurisdictions (federal, DoD, state, county, city, etc.) and 11,000 agencies (Police, Fire, Sheriff, Public Health, Public Safety, etc.) have entered agency and communication data. Figure 3-4 shows states in the northeast US with licensed CASM users.

The benefits of CASM include:

Sharing Data. CASM makes communication assets and interoperability data available to users within an urban area or state, assisting participating public safety agencies in understanding the interoperability methods used by neighboring agencies – most importantly, it enables assessment of the state of interoperability in Massachusetts.

- **Access to Up-to-Date Data.** Repetitive data collection efforts that disturb communities already overtaxed with surveys will not need to be repeated extensively

now that data has been entered into CASM, because maintenance of existing data is straightforward and may be done at any time

- **Identifying Gaps.** CASM provides a number of different ways to visualize potential interoperability – or lack of interoperability - between agencies in an urban area or state, which will then be used (in our case) to design solutions to identified interoperability gaps.
- **Reporting Options.** CASM provides seven different pre-formatted reports that may be converted to standard word processing or spreadsheet documents for further customization by individual users
- **Standardizes Nomenclature.** Federal, State, and Local agencies from many disciplines across the State will have a common reference for system, talk group, and shared channel naming and terminology.

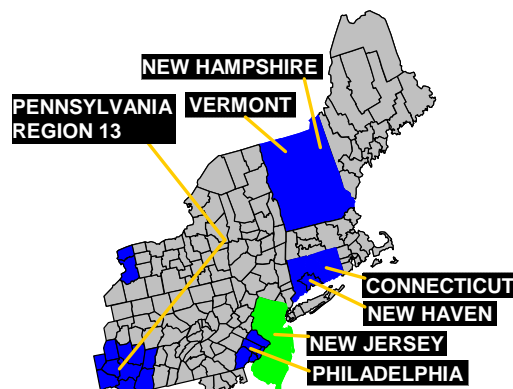


Figure 3-4. CASM Users in the Northeast US

The Communication Assets Survey (CAS) component in CASM (see Figure 3-5) is a Web-based data collection component installed on a user's computer or laptop. It may be used either directly by State agencies capable (and requesting) this capability, or indirectly through third-party data collection and uploading. In either case, Web browser-independent data is entered into a centralized database by geographically disparate users, where and when it is convenient for the agencies or SAIC data collectors. CASM uses a form-driven data entry with numerous pick-lists and prompts to assist users in entering uniform data. Data duplication is minimized, so data entered on one form reappears on other forms as selection choices. Data entry process is organic; when one user enters data, it is viewable and, in some cases, selectable to other users.

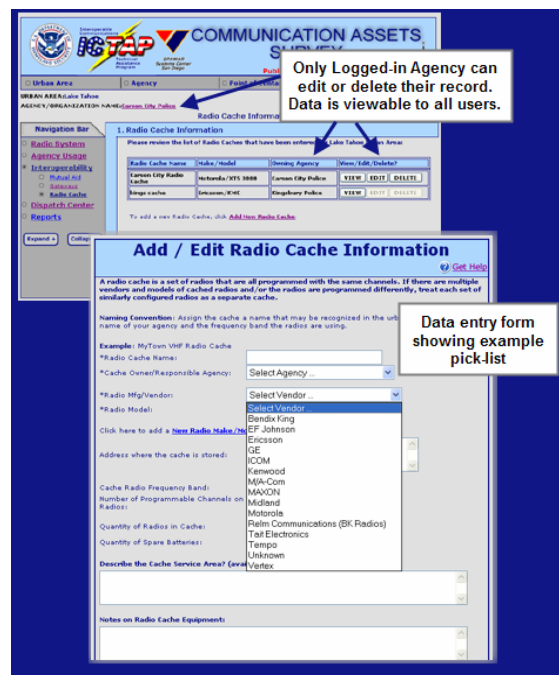


Figure 3-5: Typical CAS Screens

Since users also input their actual frequency data, CASM becomes a repository for State frequencies accessible by anyone with proper username and password authorization. Since CASM also accesses FCC files, a comparison of CASM-input and FCC-downloaded databases could also be performed.

The Communication Assets Mapping (CAM) component is another Web-based application installed on user's computer. It provides the following important tools for assessment of existing systems and vetting alternative interoperability initiatives:

Asset Mapping. CAM displays the newest data entered through the CAS component agencies. Communication assets and interoperability methods are viewable in a map-based interface, while more detailed information is available by clicking map icons and drilling down through text screens. The CAM tool provides disaster management value of knowing what agencies, radio systems, towers, dispatches, gateways, and radio caches that exist in the surveyed area.

Interoperability Analysis. The CAM tool performs analysis on the use of interoperability methods in an urban area and displays this information in terms of the SAFECOM Interoperability Continuum. The Interoperability View, Interoperability Matrix, View by IC Method and the Compatibility tool all rely on the CASM Interoperability Analysis and the SAFECOM Interoperability Continuum framework. In particular (see Figure 3-6) urban area or state interoperability is displayed in a clear, color-coded format. Inter-agency interoperability is illustrated using the Interoperability Matrix or Compatibility Tool and is calculated based on data entered by agency representatives.

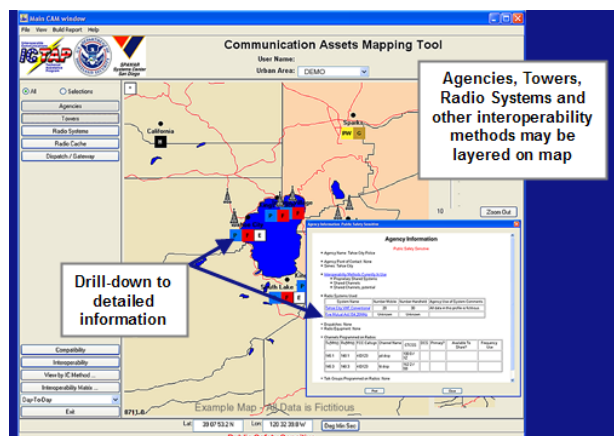


Figure 3-6: Typical CAM screens

In this way, the interoperability and communications compatibility between agencies is visualizes. This assessment is based on agency use of radio systems and interoperability methods such as mutual aid channels and gateway devices. The assessment reflects agency interoperability potential in accordance with the SAFECOM Interoperability Continuum (April, 2005) framework. With this tool, possible geographic locations where an Interoperability Gap might exist can be identified, correlated that with demographics, Critical infrastructure, or other factors, and produce the necessary Strategic Initiatives and their associated Action Plans.

What-If Analyses. The CAM tool can also be used to perform What-If Analysis (Figure 3-7). Users can add, edit or remove communication assets data in the What-If Analysis Workspace, without affecting the real data. They can utilize this CAM What-If Analysis feature to predict how alternative (potential) interoperability solutions would impact the Interoperability Continuum in the affected area. In addition, the What-If Analysis will be used to model changes in communication assets that could occur as a result of a physical disaster, and then make equipment decisions that could reduce their systems susceptibility to outage from a single cortical failure. Users are able to visualize the newest state of interoperability, based on those limited resources. With this information,

managers can easily visualize the communications assets that still exist and make informed decisions about the type of resources to potentially request from outside sources.

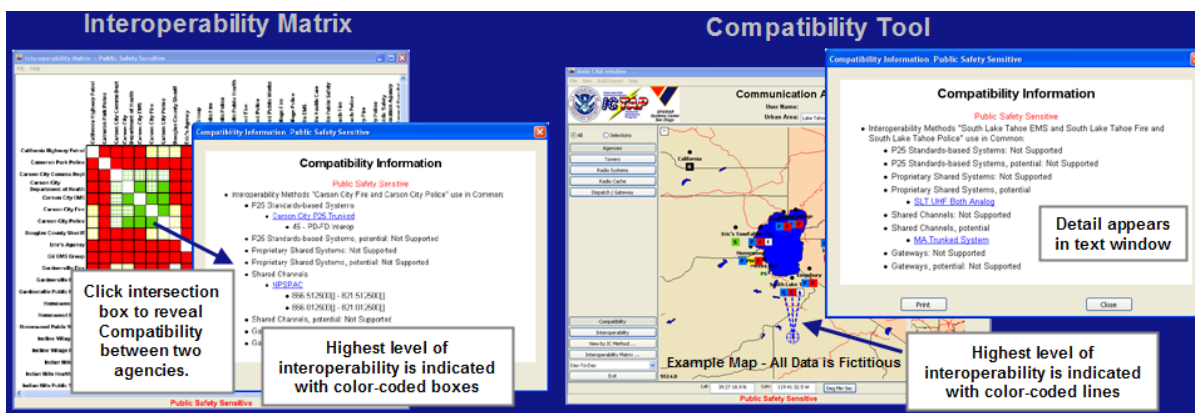


Figure 3-7: Interoperability Analysis

Tactical Interoperable Communications Plan. The Interoperable Equipment portion of the TICP Report can be generated directly from CASM data as depicted in Figure 3-8. Finalized TICP documents may be uploaded and stored in CASM.

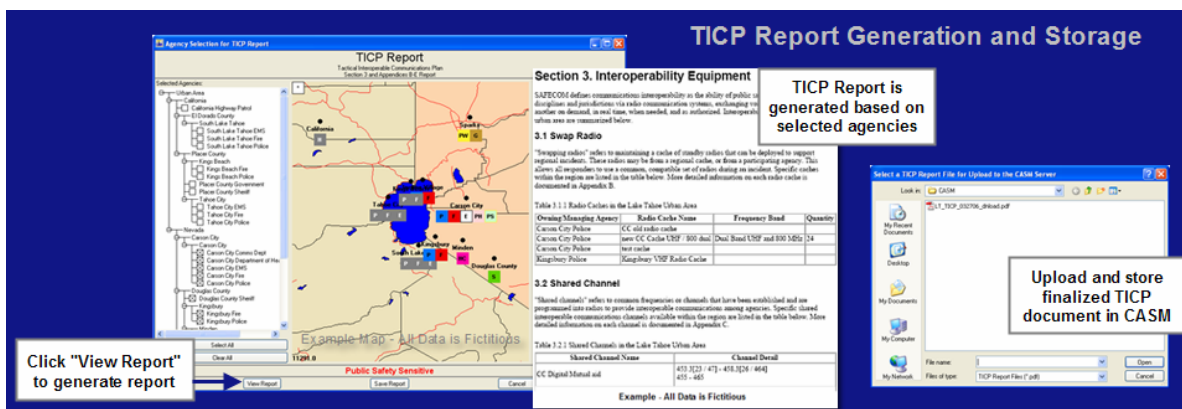


Figure 3-8: TICP Report Generation

CASM data include asset survey information such as:

- Land mobile radio (LMR) assets (tower locations, channels, talkgroups, etc.)
- Radio equipment data (number of radios, manufacturer, model, etc.)
- Type of radio system (conventional, P25, trunked, type of trunking)
- Gateway information (type, location, channels, etc.).
- Radio Cache information (number of radios, manufacturer, model, etc.).
- Use/type of encryption, use of repeaters, simulcast channels, etc.
- Date of purchase of various radio assets.

- Other agencies (ability to communicate with other agencies via mutual aid frequencies, cooperation agreements, etc.)

CASM is structured on data types and format. CASM collects information on the following:

- Agencies
- Radio systems
- Tower sites
- Gateways
- Dispatch facilities
- Radio caches

Most entries allow for additional notes or comments.

Data can be imported into CASM from local databases, but the data is not synchronized with the local database. Importing is done by Federal DHS-sponsored personnel at SPAWAR in San Diego, and it is reserved for large regional or statewide data transfers. Local agency radio systems and other data must be entered at the local — or perhaps regional — level. To date, there have been several trainings already in the state, and very likely there will be several more. The use of CASM is recommended by DHS SAFEOM and our approach to overlay critical infrastructure with interoperability gaps is an innovative and desirable approach.

Use of CASM in Massachusetts. The CASM tool provides an important well-vetted data collection and analysis capability which has been expanded from UASI support to statewide support. The tool provides a long-term capability for system owners to properly document their system infrastructure and identify using agencies. As a result, the SIEC and CIS subcommittees have a capability to accurately access the current state of technical interoperability, but also to be able to perform “what-if” scenarios designed to measure the impact of investments (cost-benefits analysis). By evaluating levels of interoperability using CASM in the different Regions, it is evident where priority needs should be addressed by available resources. This CASM interoperability performance capability provides a means of evaluating the cost-benefit as part of investment justifications (IJs).

As of this writing, there are over 60 trained CASM users in Massachusetts spanning all state and regional interoperability systems, including both IT (data sharing) and radio systems (see SCIP Section 4). The complexity of the CASM tool depends upon the perspective of the user. For radio system owners, the use of CASM for system documentation is straightforward, is aided by the extensive in-tool Help system, and in fact has been used effectively by some users with little or no training. In addition, the Worcester Polytechnic Institute (WPI), a major private technical university located in Central Massachusetts involved in SCIP development, has well-trained CASM users who have supported – and will continue to support – all Massachusetts local, regional, and statewide agency subscribers in their use of CASM during and following strategy

development. In addition, these WPI staff will verify data input, consistency, and validity.

In addition, the Federal Government offers free training and database upload support to the state, already used in collecting system data. In this way, these users will continue to employ CASM in the long run to maintain all system data, including accurate spectrum use. In fact, all Homeland Security Planning Regions, and state agencies such as the Massachusetts Emergency Management Agency (MEMA), will be granted administrative access to CASM as their interoperability database and analysis/mapping tool. The use of a single federally provided nonproprietary tool will support interoperability in system planning between Regions, enable interoperability analysis by regional and state agencies.

A proprietary data collection tool was developed to collect MBHSR communication system data, which is incompatible with the nonproprietary CASM tool recommended by DHS SAFECOM for this purpose. Access to this data, data which belongs to the MBHSR, is unavailable for inter-Regional interoperability analysis unless a translation is made between this proprietary tool and CASM. Soon, a translation capability will be available so data from the proprietary database can be uploaded to the non-proprietary free-use CASM tool. This translation will allow proper interoperability between the proprietary database used in the MBHSR and the DHS-recommended CASM tool, further simplifying integration of the MBHSR TICP with the SCIP and the interoperability plans of other Massachusetts Homeland Security Regions.

3.4 Integration with MBHSR TICP

The MBHSR (a UASI Region) Tactical Interoperability Communications Plan (TICP) has been integrated into the Massachusetts SCIP Strategic Initiatives by including its Strategic Initiatives and Action Plans directly within those of the other Homeland Security Regions and the State. In this way, IT/communication systems being built upon from existing successes in the state will be directly integrated with those of the USAI Region. For example, development of a broadband Public Safety network (PSnet) is also a priority project in the MBHSR – and the extension of this network statewide is also a key Strategic Initiative in this SCIP. Furthermore, the MBHSR Communications Interoperability Subcommittee (CIS) leadership provides key members of the State Interoperability Executive Committee (SIEC) and support the definition of SCIP Strategic initiative and the associated projects. As stated in Section 5 below, the SCIP Strategic initiatives support and integrate with the MBHSR TICP, and more specifically, with the MBHSR Five-Year Strategic Plan. This integration was performed in five ways:

1. MBHSR (UASI Region and source of the TICP) representatives to the SIEC were an integral part of the SIEC Collaborative Sessions that produces the SCIP Goals and Objectives, from which Strategic Initiatives and the subordinate statewide Work Project Guidelines (i.e., types of allowed Work Projects sanctioned by the SIEC to provide needed interoperability solutions) were derived and vetted with the SIEC.

2. A Focus Group was held with the UASI regional representatives who developed the MBHSR TICP to determine the existing strengths, gaps, and recommendations for improvement in the current UASI interoperability capabilities.
3. Existing system and capabilities information from the UASI Region (source of the TICP) were uploaded into the Massachusetts CASM database for subsequent interoperability analysis that supported development of the Work Project Guidelines within each Strategic Initiative developed above in subsection 5.3.
4. The TICP was reviewed in detail to capture potential Work Project Guidelines from the specific strategic initiatives described in the TICP.
5. The MBHSR who developed the TICP received the Investment Justification package for the NTIA PSIC grant and asked to directly identify and provide cost estimates for the specific Work Projects (or Action Plans) they recommended for this major federal grant program and beyond, within the context of the SIEC-vetted Work Project Guidelines.

These five steps ensured that the TICP was well integrated with the 2007 Massachusetts SCIP. The UASI TICP is – and will continue to be - well integrated into the Massachusetts SCIP.

3.5 Continued Involvement

In order to sustain the momentum that has already been generated, all stakeholders must remain involved. Regular SIEC meetings will occur based on the implementation strategy for Governance laid out in Section 6. Along with the continued sessions, the SIEC will also continue to employ the use of an online repository or web site that organizes important information for the plan. This repository will also contain message boards and an email listserv that will be used to share comments and feedback to the committee members throughout the months or years. This site will be maintained by a webmaster and membership will be granted to any new members through a designated administrator.

Focus groups will also be held at various intervals (i.e. every two to three months) to elicit feedback from the discipline and agencies to gauge the effectiveness of the strategic plan implementation as a whole. The focus groups will be designed in the same manner, run by a SME (subject matter expert) and a facilitator not associated with the SIEC. The discussion of the focus groups will be guided in the same way as in SCIP development. The facilitator will lead the discussion in asking about the successes, gaps and possible solutions to issues surrounding the strategic plan implementation. The information will be then be collected and shared with the SIEC in order to shape and direct future decision making.

The focus groups will be made of a few representatives of each of the discipline/agencies that were formed before. These representatives will appear on behalf of a larger group and be able to voice concerns to the facilitator throughout the sessions. The focus group disciplines will self select a representative for each of their organizations. By having the individual focus groups self organize leadership it will make them feel autonomous yet still connected to the larger SIEC.

The ability for the groups to self organize will be a key building block in developing continued participation and feedback for years to come. The key to continued success in involving the participants in the future is to keep pushing the two side of the collaboration effort. We need to focus and reinforce the power of collaborative thinking in conjunction with providing opportunities for people to share and communicate their ideas. It is important that all participants come to trust the process and this will come about through careful facilitation and successful self-organization.

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4 Current Statewide Assessment

4.1 Governance Structure

As early as 2003, a small committee of subject matter experts were assembled to consider interoperability issues in Massachusetts and to make recommendations on how to address lingering gaps. In fact, the first recommendation of a 2003 report on the state of readiness in Massachusetts stated¹:

Recommendation One: Establish a Formal Interoperability Working Group for Administration of Interoperability Communications, Engineering, Coordination and Oversight. The desire for direction is a theme seen throughout the survey. This is tempered, however, by a desire to have authority over system selection and procurement processes. Formalization of a state level "Interoperability Working Group" with membership comprised of public safety and public services agencies (including representation from the regional groups) would serve to standardize the goals of the Commonwealth and monitor progress.

Since many agencies are already engaging in the procurement of interoperable communications equipment, coordination of equipment use becomes necessary. Recognizing duplication of capability can make more efficient use of available funding. Continued oversight is necessary to ensure that the most cost-effective and efficient methods are employed.

The inclusion of all entities in the decision-making process is paramount to ensuring that agencies realize the importance of a statewide strategy to bring the necessary public agencies together in times of crisis, be they EMS, Police, Fire, Emergency Management, Public Health, Public Works, or any other agency involved in providing assistance to communities in the time of need.

In 2004, the Massachusetts Executive Office of Public Safety (EOPS), an Executive Office of the Governor, defined five Homeland Security Regions to compensate for the generally weak county governments in Massachusetts and to oversee homeland security improvements across the state. Within the past two years, the combination of several factors enabled EOPS to form a state interoperability committee, namely:

- Increasing awareness of the criticality of public safety communications interoperability
- Growing Impact of strongly regionalized interoperability planning on the state of radio communications in Massachusetts
- DHS SAFECOM implied pre-conditions for grant support founded on a top-down Governance structure with strong bottoms-up representation

¹ Massachusetts Executive Office of Public Safety, *State of Readiness: Public Safety Interoperability in Massachusetts Analysis and Recommendations Regarding Public Safety Interoperability in the Commonwealth of Massachusetts, 2003*, p. 30.

- Massachusetts homeland security regions voicing the need for strong centralized statewide coordination and leadership in ensuring ubiquitous interoperability standards statewide.

The ad hoc committee included primary and alternate representative from each of the five Regional Homeland Security Councils of Massachusetts (see Figure 4-1) as well as several state agencies. The committee membership from the regions included individuals with strong public safety communications experience within their respective regions.

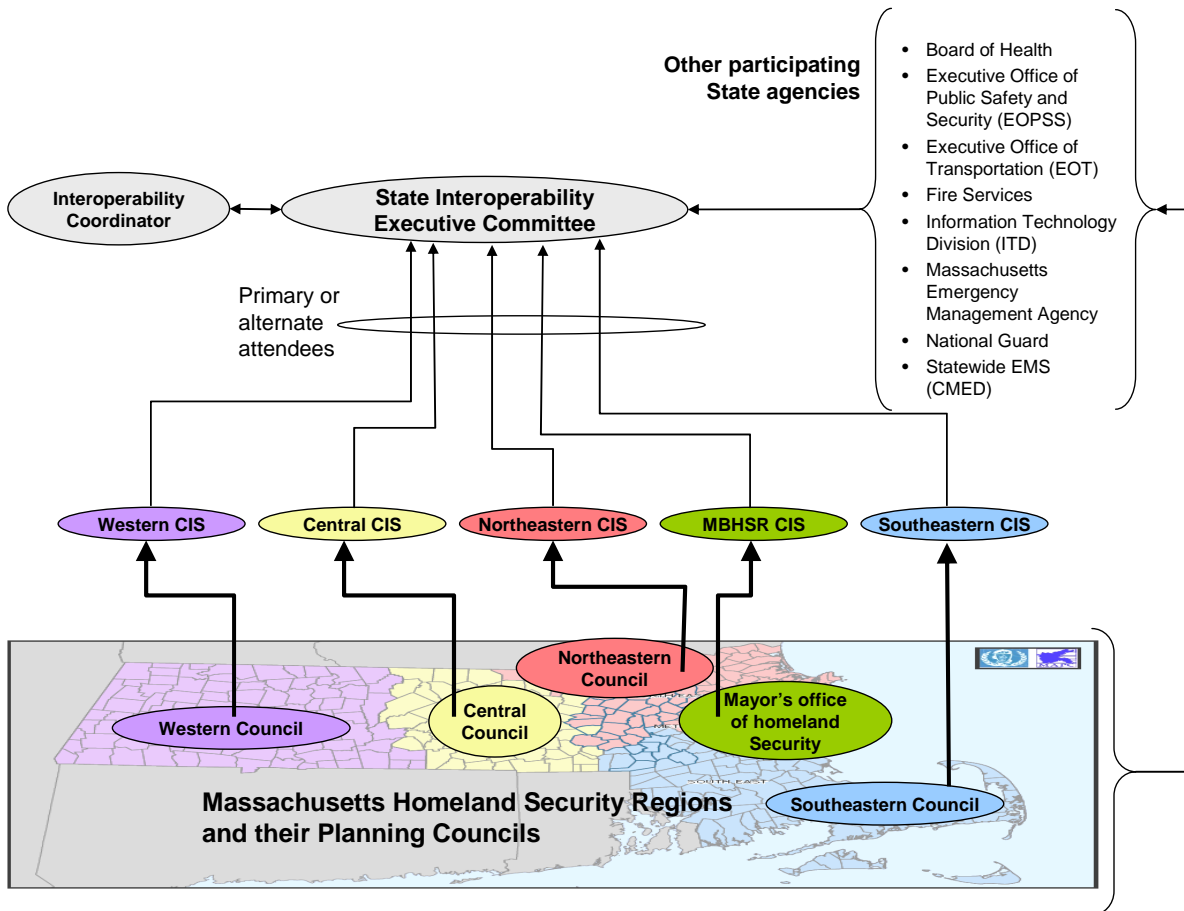


Figure 4-1: Interoperability Governance in Massachusetts

In 2007, as the Commonwealth prepared to develop a comprehensive Interoperability Strategy, this ad hoc state interoperability committee was expanded and the scope of their mission broadened. Indeed, this committee was instrumental in developing the central components of this 2007 Statewide Communications Interoperability Plan (SCIP), which will serve as a template for future interoperability projects throughout the state.

In recognition of the essential and exceptional work this committee has provided the Commonwealth, and in recognition of the need for a strong, consistent and clear

governance structure addressing interoperability issues statewide, Governor Patrick issued Executive Order on November 29, 2007 formally creating and empowering a State Interoperability Executive Committee (SIEC), as well as outlining the SIEC structure, membership and responsibilities. This Executive Order is provided in Appendix I. The SIEC will give the state the ability to assess and review the interoperability priorities throughout the Commonwealth and ensure that spending and focus are consistent with this strategy.

4.1.1 Organizational Charters

4.1.1.1 State Interoperability Executive Committee

The ad hoc interoperability committee - which forms the core membership of the SIEC - developed its Vision and Mission in a Collaborative Session conducted in July 2007, which provides its purpose as an organization, as well as Goals and Objectives. More recently, the SIEC has developed the draft Charter provided in Appendix F. It will be defined, voted, and adopted as a critical task in the Action Plan of the SCIP Governance Strategic Initiative derived in Sections 5 of this SCIP. The specific development of the SIEC-vetted charter was detailed in a corresponding project task defined in the Implementation Plan provided in Section 6. This project will develop Charters for all levels of interoperability planning in the Homeland Security Regions which will in turn be well integrated with the SIEC Charter.

4.1.1.2 Regional Homeland Security Councils

Appendix B provides the Homeland Security Regional Responsibilities document (charter) that defines the roles and responsibilities of the Regional Homeland Security Councils relative to branches of state government. As the document states, it was developed:

In order to carry out the strategic vision of the State Homeland Security Strategy, specific roles have been created to ensure a working partnership with the federal, state, and regional sectors to enhance statewide capabilities to detect, prevent, respond to and manage the consequence of acts of terrorism and other critical incidents.

The specific roles and responsibilities were defined as follows:

The Homeland Security Regional Advisory Council shall:

- Be designated as the governing body for the designated region
- Exercise due diligence in adhering to the grant guidelines
- Exercise due diligence in adhering to the State Homeland Security Strategy
- Update threat and vulnerability assessments as needed
- Update evaluation reports as needed
- Develop and review spending and strategic plans
- Request through channels proposed grant purpose area changes
- Develop a regional implementation plan
- Determine the allocation of funds as appropriate
- Approve and oversee the fiscal/procurement process
- Conduct briefings to the regional and state constituency

- Implement project plans and report to EOPS on progress made on projects
- Council members shall act as a link to EOPS/Homeland Security Division Program Coordinators on programmatic issues
- Council Chair is responsible for monitoring Council members' attendance, participation, and contributions, and adjusting membership, as necessary, for the benefit of the Council
- Council members shall act as a link to fiduciary agents on fiscal issues.

The roles and responsibilities of the fiduciary agents identified in the last bullet were also defined.

The Fiduciary Agent shall:

- Act as the fiscal pass through to the council;
- Provide fiscal reports as required to the council;
- Provide fiscal reports to the council and EOPS when requested;
- Adhere to the council's direction for the coordination of the procurement process;
- Adhere to Massachusetts General Laws Chapter 30B *Uniform Procurement Act*.
- Prepare and coordinate meetings/agendas for the council;
- At council direction call meetings;
- Carry out the notification process for scheduled meetings;
- Take the minutes of all meetings attended;
- Be aware of programmatic and investment areas of the grant awards;
- Act as the link to EOPS Homeland Security Division Program Coordinator regarding fiduciary issues;
- Act as the link to the council regarding all fiduciary issues;
- Provide Homeland Security Division Program Coordinator on a quarterly basis updates on equipment acquisitions and final installation locations, programmatic progress and fiscal spending to date;
- Provide regional acquisition reports as requested by EOPS;
- Develop and update the regional Homeland Security Strategy/plans, in coordination with MEMA and EOPS;
- Submit Biannual Strategy Implementation Reports;
- Utilize no more than 3% of total regional Homeland Security Grant Program (HSGP) award for Management and Administration purposes and no more than 7% of regional HSGP award for planning purposes; and
- Track National Incident Management System (NIMS) compliance.

The document describes the member disciplines of each Regional Council and their voting rights in decision-making as follows:

Each regional council shall be made up from the following disciplines:

- Law Enforcement (3 representatives)
- Fire Services (3 representatives)
- Emergency Management (1 representative)
- Public Health (1 representative)
- Hospital (1 representative)
- Emergency Medical Services (1 representative)

- Public Safety Communications (1 representative)
- Local Government Administration (1 representative)
- Public Works (1 representative)
- Regional Transportation Authority (1 representative)
- Correctional Services (1 representative)

Each of the representatives mentioned above shall have voting rights concerning matters before the council. No fiduciary, advisor or coordinator shall have voting rights on any regional council matters.

Note: Council representation should be expanded to include non-voting members from vulnerable populations, such as an individual with a disability, or an individual working within the disability community; a person within, or who works with, the elderly community; and an individual within, or who works with, the refugee/immigrant and multicultural community.

The document also requires that state agencies participate in all regional council meetings, but denies them voting rights:

In order to enhance statewide capabilities each regional council shall ensure that representatives from state agencies, with statewide response responsibilities, are included during the regional council meetings to provide technical/tactical assistance. The following agencies shall designate a representative to attend all regional council meetings:

- Massachusetts State Police
- Massachusetts Emergency Management Agency
- Massachusetts National Guard
- Massachusetts Department of Fire Services
- Massachusetts Department of Correction
- Massachusetts Department of Public Health
- Massachusetts Executive Office of Transportation and Construction

The representative(s) mentioned above shall not have voting rights on the councils.

Western Homeland Security Region. A charter for the Communications Interoperability Subcommittee of the Western Region will be developed as part of the Governance Initiative being conducted in Massachusetts communications interoperability planning.

Franklin County Emergency Communication System. Within the Western Region, the Franklin County Emergency Communication System (FCECS) is a multi-disciplinary system within the Western Homeland Security Region. Its bylaws state its purpose and responsibilities in two of its Articles as follows:

Article 2 – Purpose

The purpose of the FCECS Committee shall be to implement, oversee, manage, improve and maintain in good working order the emergency communication equipment and infrastructure, owned by the FRCOG.

Article 5 –Responsibilities

The FCECS Committee shall be responsible for the following:

1. To convene and conduct regularly scheduled meetings bi-annually and as called by the Chair, as necessary.
2. To regularly monitor the condition of the System.
3. To prepare an annual report, including a maintenance plan and budget for submission to and approval by the FRCOG Executive Committee.
4. To recommend to the FRCOG all maintenance and emergency expenditures as needed to assure the ongoing operation of the System within budgetary limits.

Central Homeland Security Region. A charter for the Communications Interoperability Subcommittee of the Central Region will be developed as part of the Governance Initiative being conducted in Massachusetts communications interoperability planning.

Northeast Homeland Security Region. The Northeast Homeland Security Region has amended the By-Laws authorizing the Councils operation to include the definition of subcommittees. These amendments include formation of the²:

Communications Interoperability (CI) Subcommittee – The CI subcommittee shall be responsible for the development and implementation of a regional communications interoperability plan adopted, approved, and to the extent possible and necessary, funded by the Council. The subcommittee shall also be responsible for the procurement of interoperable communications resources and the establishment of user protocols and procedures. This subcommittee also facilitates the removal of non-technical barriers by providing a forum for the discussion of a wide range of communications interoperability issues across disciplines and geographical boundaries.

This CIS definition is the first step in establishing a Charter for that organization.

Southeast Homeland Security Region. A charter for the Communications Interoperability Subcommittee of the Southeast Region will be developed as part of the Governance Initiative being conducted in Massachusetts communications interoperability planning.

Metropolitan Boston Homeland Security Region. The Communications Interoperability Subcommittee (CIS) of the MBHSR Council has a Charter³ defining its roles and responsibilities. The Charter⁴ defines the purpose of the committee as follows⁴:

- a. This subcommittee exists to address the challenges facing interdisciplinary communications across multiple jurisdictions. It was established to create a centralized interoperable communications planning and implementation capacity for the Metro-Boston Homeland Security Region. It is the goal of this subcommittee to identify initiatives that will help the Metro-Boston region enhance its communications

² Northeast Homeland Security Regional Advisory Council, Northeast Homeland Security Regional Advisory Council: Addendum to Bylaws re: Subcommittees, September 2007.

³ Communications Interoperability Subcommittee, *Charter of the MBHSR Communications Interoperability Subcommittee*, Metropolitan-Boston Homeland Security Region, August 2007.

⁴ *Ibid.*, p. 1.

interoperability and improve the efficiency and effectiveness of its overall response capabilities.

- b. It is necessary for public safety organizations to communicate or share critical voice or data information with other jurisdictions in day-to-day operations, natural disasters, emergency response scenarios, and terrorist incidents. Failure to accomplish the mission in each situation can result in the loss of lives and property.
- c. This subcommittee exists to establish a partnership among public safety organizations, governments at all levels and regional planning organizations in order to enhance communications interoperability capabilities.
- d. This subcommittee provides a forum for each jurisdiction to discuss public safety communications initiatives developed at the jurisdictional level. This helps to ensure that individual projects have an opportunity to align with the regional plan.

The MBHSR CIS authority is specified as⁵:

- a. This subcommittee has the authority to evaluate the state of both current and emerging communications interoperability in the region, create a plan for region wide communications interoperability, oversee implementation of the plan, and develop appropriate policies, procedures, and guidelines.
- b. All policies, plans, and projects will be submitted to and approved by the MBHSR Jurisdictional Points of Contact (JPOC).
- c. This subcommittee can make recommendations to help direct the use of local and state funds earmarked for capital improvements and operational upgrades to improve regional public safety communications and interoperability.
- d. This subcommittee should identify additional sources of funding allotted through cross-discipline and cross-jurisdictional coordination.
- e. The members of the subcommittee were selected by jurisdiction officials and given the authority to make recommendations that will benefit their jurisdiction and the region as a whole. Although the individuals may come from one particular discipline, they will represent the overall interests of all disciplines on the subcommittee.

The Charter also includes defining sections on the committee's desired Outcomes as well as its Scope, Operating Principles, Membership, Management, and Logistics. It serves as a basis for the definition of Charters required in the formalization of the CIS within the other four remaining Regional Councils. This definition and adoption is a critical immediate action in the Governance Strategic Initiative (see Sections 5 and 6).

4.2 Technology

As discussed in Sections 1 and 2, this SCIP plan addresses Information Sharing I(IS) systems as well as radio and wireless capabilities, as Information Sharing – or the lack of it – is at the heart of interoperability problems in Massachusetts. The diversity of these interoperability capabilities further highlights not only the strong progress made in

⁵ *Ibid.*, p. 2.

the state, but also the need for overarching coordination by the empowered SIEC to avoid inter-regional interoperability gaps.

4.2.1 Radio Communication Systems

4.2.1.1 Overview of City and Town Systems

A detailed public safety communications assessment was completed covering all statewide systems in 2003⁶. This study included a statewide LMR communications survey that was used to derive recommended interoperability solutions. Although this study was completed in 2003 and focused on high-level radio interoperability issues (no SAFECOM Continuum yet existed), it nevertheless provides a good “snapshot” of conditions largely continuing at present (November 2007) as these systems change very slowly. The organizations supporting the data collection efforts in 2003 included:

- Metropolitan Law Enforcement Council (38 agencies)
- Martha’s Vineyard Law Enforcement Council (8 agencies)
- Northeastern Massachusetts Law Enforcement Council (38 agencies)
- Western Regional Fire Defense, Inc. (80 agencies)
- Western Massachusetts Law Enforcement Council (27 agencies)
- Greater Boston Police Council (150 agencies)
- Metrofire (34 agencies)
- Massachusetts Fire District 7 (26 agencies)
- EMS Region 1 (57 agencies)
- Central Massachusetts EMS Corp. (70 agencies)
- Metropolitan Boston EMS Council, EMS Region IV (95 agencies)
- Barnstable County Regional Emergency Planning Committee (80 agencies)
- Berkshire County Fire Chief’s Association (32 agencies)
- Essex County Fire Chief’s Association (34 agencies)
- Plymouth County Control/Fire District 2 Mutual Aid Center (22 agencies)
- Massachusetts Fire District 14 (23 agencies)
- Massachusetts Department of Public Health Region 2 EMS (70 agencies)
- MassHighways (statewide)
- Berkshire County Communications (24 agencies)
- Berkshire County Sheriff’s Communications Center (50 agencies)
- Shelburne Control Dispatch (61 agencies)
- Northampton Control (34 agencies)
- State Police Middleboro Dispatch (3 agencies)

⁶ Massachusetts Executive Office of Public Safety, *State of Readiness: Public Safety Interoperability in Massachusetts Analysis and Recommendations Regarding Public Safety Interoperability in the Commonwealth of Massachusetts*, 2003.

Most Fire and Police organizations in the cities and towns operate on high-band VHF (150-162 MHz) and UHF low band (450-470 MHz). Several jurisdictions employ 800-MHz systems, either city-wide systems (e.g., City of Worcester) or regional systems (Massachusetts State Police 800-MHz and VHF low band systems). EMS organizations employ both UHF and VHF networks for ambulance coordination and task force response, respectively. Thus, radio systems that will permit the Massachusetts cities and towns to interoperate need to address all three of these RF bands as well as the dispatch and deployable system patches.

Figure 4-2 shows a histogram of Record Management Systems (RMS) employed by many of the cities and towns statewide. From an Information Sharing perspective, the diversity of Record Management Systems (RMS) operated by individual Police Departments statewide is illuminating. The implication of individual towns owning and operating their own RMS, combined with the use of non-interoperable vendor products, is indicative of the historically poor information sharing between adjacent towns - despite the ease of movement of these criminals through these towns.

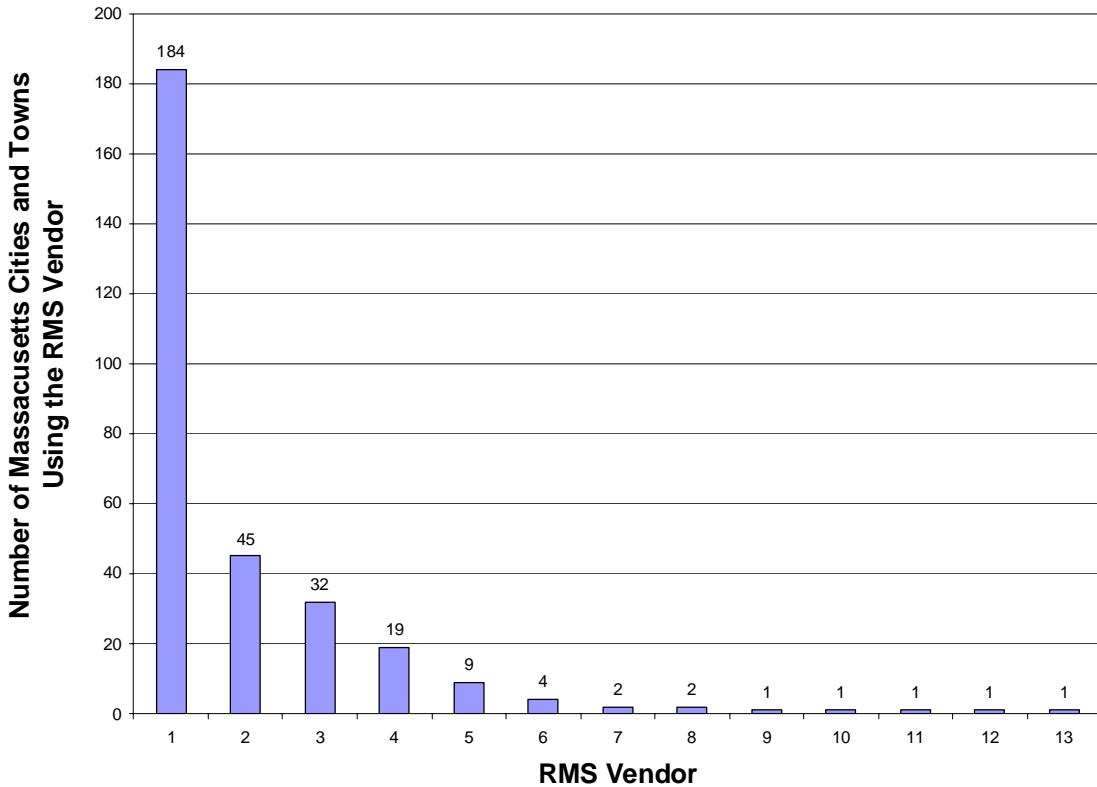


Figure 4-2: Histogram of Police RMS Vendor Implementations in Massachusetts Communities

4.2.1.2 Boston Area Police Emergency Radio Network

The Greater Boston Police Council (GBPC) provides and maintains a reliable and effective radio communication system capable of interagency communications on both a wide-area and district-wide mode. The main priority of the GBPC is to enhance and expand this system, called the Boston Area Police Emergency Radio Network

(BAPERN), improving its reliability and provide a seamless moment-to-moment (7×24) radio communication system for existing and future members. The BAPERN system was designed and built in the early 1970's, after a series of large scale incidents occurred in the greater Boston area and highlighted the inability of police officers responding from different agencies to communicate with each other on scene. These events led to a series of planning sessions and policy meetings in which it was determined that a new radio system was needed to improve interdepartmental police services.

System Overview. Today, BAPERN members communicate through two wide area channels (BAPERN Area-Wide 3 & 4), and five District channels (North District, Northwest District, West District, Central District & South District). All of these channels utilize voting receivers that terminate at Boston Police Headquarters via leased telephone & microwave facilities. The nature and extent of BAPERN operations are best understood in the context of how it is actually employed to achieve true interoperability. The network offers its members three levels of interoperability as follows:

1. Day-to-day usage for immediate communication of criminal activity, flight, and other inter-agency communications
2. Mutual Aid communications in the event police officers are called to another community and need on-scene radio communications, or to provide instant wide area notification of critical incidents to enable a timely response
3. Task Force and Investigative operations, for coordination of efforts during special events and operations.

Again, GBPC members use the network daily and for mutual aid as well as special events and operations. The network is tested and utilized heavily on a daily basis; meeting DHS SAFECOM Interoperability Continuum requirements for "Optimum" Usage.

The Greater Boston Police Council (GBPC), a 501(c) (3) organization, operates and maintains BAPERN and directs strategic planning efforts to ensure the reliability of the Network into the future. Long before the events of 9/11, GBPC recognized the critical need for interoperability. By implementing design principles intended to provide uniformity, performance, and enhanced officer safety, the BAPERN system has been relied upon for more than 30 years by its users to allow for effective communication and incident command during major events. Significant investments have been made by GBPC through the years to modernize the radio infrastructure equipment and maintain its reliability. While equipment upgrades are implemented frequently and seamlessly without user interruption, some of the more notable projects are described below.

In 2005, the system infrastructure was expanded to include access by the full membership of the North Eastern Massachusetts Law Enforcement Council (NEMLEC)

and the Metropolitan Law Enforcement Council (Metro-LEC), and portable radios were reprogrammed for Metro-LEC members. In 2006 and 2007, additional system enhancements and infrastructure improvements were implemented across the Northeast Region and the MBHSR, including the implementation of a microwave link in the Northeast Region and the development of a backup site in Boston.

The GBPC recognizes that if a major terrorist event occurs in the greater Boston area, it is arguably the BAPERN system that will be called upon and utilized by all responding law enforcement agencies to communicate effectively. For this reason, GBPC is continuously assessing the network and working towards expanding and upgrading the BAPERN system infrastructure and user communications capabilities. The GBPC is also expanding BAPERN access to non-police disciplines for command and control purposes only, during emergency events affecting multiple communities. While the recent Network expansions, enabled through homeland security dollars, have helped to strengthen the infrastructure for users to access the Network, the GBPC is making it a priority to ensure all members are equipped with the required dispatch and user-level equipment required to access and use BAPERN most effectively.

Disciplines and Jurisdictions Served. BAPERN is used by law enforcement on a daily basis. The GBPC has expanded BAPERN access to non-police disciplines for command and control purposes only during emergency events affecting multiple communities. This level of access is currently provided to fire service personnel in the MBHSR and Norfolk County, and Board of Health Directors and Public Works Directors in the Northeast Region. Note that the “Highway Patrol” in the legend does *not* represent the Massachusetts State Police (MSP) in this figure and all those to follow. MSP will be displayed as a ‘P’ as will all other Police Departments (PDs).

BAPERN serves law enforcement agencies at all levels of government – local, county (Sheriff’s Departments), state and federal. In addition, BAPERN access is also provided to private colleges and universities, and hospital police. At present, there are currently 143 GBPC member agencies with access to the BAPERN system. This includes 112 municipalities, 13 campus police agencies, 5 Sheriff’s Departments, 7 federal agencies, 4 state agencies, and 2 hospital police. BAPERN members are represented in three Homeland Security Regions: 77 law enforcement agencies in the Northeast Region, 35 law enforcement agencies in the Southeast Region, and 20 law enforcement agencies in the MBHSR.

MOUs and SOPs. The *Memorandum of Understanding Regarding the Use of the Boston Area Police Emergency Radio Network for BAPERN Members* is signed by each member agency and outlines the roles and responsibilities for BAPERN usage by the member police agency and system operation by the GBPC. The MOU includes clauses relating to: the standardized channel plan, dues and membership requirements, programming requirements, adherence to NIMS and Incident Command System (ICS) guidelines, and proper monitoring and use of BAPERN, among others.

The *Boston Area Police Emergency Radio Network Policy and Procedure* provides the direction and requirements needed to effectively operate BAPERN. The MOU incorporates this document by reference. Included in the BAPERN Policy and Procedure are sections relating to: the BAPERN channel plan, radio programming guidelines, monitoring, roll call procedures, use of interagency BAPERN channels 3-9, radio procedures, emergency switch use, and use of BAPERN for special operations, among others.

The *Memorandum of Understanding Regarding the Use of the Boston Area Police Emergency Radio Network for Non-Police Users Members* is signed by each non-police user and outlines the roles and responsibilities for BAPERN usage by the non-police user and system operation by the GBPC. The MOU is similar to the MOU for BAPERN Members, but includes additional clauses regarding authorization, training, and usage.

The *Boston Area Police Emergency Radio Network Non-Police Policy and Procedure* provides the direction and requirements needed to effectively operate BAPERN. This document is similar to the BAPERN Policy and Procedure for BAPERN Members, but includes additional requirements regarding authorization to access BAPERN, and specific use requirements for non-police users.

Funding. Equipment procurements and recurring system operation expenses have traditionally been funded through dues paid by GBPC member agencies. Recognizing the radio interoperability capabilities that BAPERN offers, the Commonwealth of Massachusetts has invested homeland security dollars into expanding and improving the Network's core infrastructure.

4.2.1.3 Massachusetts State Police Radio Systems

The Massachusetts State Police (MSP) employs an 800-MHz trunked radio network, 800-MHz conventional, and VHF low-band radio systems for intra- and inter-agency communications throughout much of the state as shown in Figure 4-7.

800-MHz Trunked System. MSP has been upgrading their statewide communications system to the 800-MHz spectrum on a troop-by-troop basis over the last several years, with least coverage in the tree-covered mountainous Western portion of the state. While MSP currently employs a primarily analog trunked radio system for voice communications, much of the infrastructure equipment in place is capable of supporting either analog or digital (Project 25) communications depending on the software version and subscriber equipment (analog or digital). While the majority of the subscriber equipment in use by the MSP is analog, select users are testing digital subscriber equipment. Wireless mobile data communications has been supported by a separate system.

In addition to being the primary communications system for the MSP, over 100 state and local agencies also use the network. The major day-to-day state agencies using the network include:

- Massachusetts Water Resources Authority;
- Department of Conservation and Recreation;
- Department of Fire Services;
- Massachusetts Emergency Management Agency;
- Massachusetts Turnpike Authority;
- Massachusetts Department of Corrections;
- Massachusetts Convention Center Authority;

The 800-MHz *Smartzone* network provides day-to-day shared proprietary system communications for local organizations in the Southeast Region, namely all city and town fire and police agencies in Barnstable County and Sheriff's Departments in counties throughout the state. Interoperability is provided through using both established talkgroups on the trunked system as well as 800-MHz repeaters and direct mode (talk-around) using ICALL and ITAC channels as follows:

- City of Boston
 - MSP talkgroups & ICALL/ITAC channels
 - Two ICALL/ITAC repeaters
- City of Cambridge
 - MSP talkgroups & ICALL/ITAC channels
 - Also has one ICALL/ITAC repeater
- Massport
 - MSP has Massport talkgroups
 - Massport has MSP talkgroups & ICALL/ITAC
- Massachusetts Bay Transportation Authority (MBTA)
 - M/A-COM 800-MHz (incompatible) 800-MHz trunked system with ICALL/ITAC channels
- City of Worcester
 - M/A-COM (incompatible) 800-MHz trunked system with ICALL/ITAC channels

The technical and support capabilities of the system include:

- Motorola 4.1 SmartZone platform
 - 50 sites (trunked and conventional repeaters)
 - 16,000+ trunked subscribers - Inventory Status ~99% Validated
 - Numerous control stations at local dispatch centers
- Support
 - Motorola maintains the infrastructure
 - MSP technical staff – 1 radio engineer and 11 technicians

Massachusetts State Police ICALL/ITAC System. Through national and regional planning committees, the Federal Communications Commission (FCC) established that five (5) common radio channels be made available for interagency communications in times of disaster and mutual aid situations. These channels were assigned by the National Public Safety Planning Advisory Committee (NPSPAC). The NPSPAC common channels were authorized for use in Massachusetts by all eligible agencies for coordinating activities during emergency, disaster or mutual aid events. Operation on

these channels is limited to non-routine communications, which are required to improve coordination between agencies.

In Massachusetts, use of the NPSPAC channels on fixed or portable repeaters is coordinated through the MSP in order that interference is minimized between repeaters during disaster or mutual aid events. The MSP used the Regional Public Safety Plan for the New England Area (Region 19) as the basis for the Massachusetts ICALL/ITAC implementation plan. The Massachusetts plan is intended to both comply with the Region 19 plan and give additional guidance to Massachusetts's users for coordinated and effective use of these international common 800-MHz channels. As established by mutual understanding between the United States and Canada.

Any agency, or joint agencies authorized under Part 90 of the FCC Rules and Regulations to operate five or more 821-824/866-869 channels, is required for each multiple of five channels to implement the National NPSPAC standard Common Calling (ICALL) and Tactical Channels (ITAC) in accordance with the Regional Plan. In other words, for each four ITAC channels, the MSP had to implement:

- One Calling Channel - tone remote-controlled repeater/base stations) with talk-around receive
- Tactical Channel - four frequency-selectable tone-remote-controlled repeater/base stations with talk-around receive.

Thus, the proper use of these Common Tactical Channels required that the MSP implement the Calling Channel, or be joined into a monitoring method of the Calling Channel within its area, for the express purpose of:

- Responding to non-routine inquiries as defined in paragraph below
- Turning on its Tactical Channel upon the request of a duly authorized agent of the agency requiring its use.

It is the responsibility of every licensee of a Calling or Tactical Channel (the MSP in this case) to keep its repeater function disabled at all times other than when assigned for conducting a given mission where wide-area repeater operation is necessary. The Calling Channels must then be monitored at all times by the licensee and can only be used to handle brief, itinerant traffic and requests for use of a Tactical Channel for an authorized, appropriate mission. Currently, over 2000 ITAC subscribers (conventional only) are in the state employing an operational plan that has been in place for several years.

Unless incidental to an approved multi-agency mission, the use any of the ITAC channels for intra-agency communications is prohibited, whether in a repeated or talk-around mode. Use of any of the Common Channels for routine or trivial uses, whether repeated or talk-around, is also prohibited even if it is intended for inter-agency communications. Thus, a given mission for Common Channel operation shall be defined as "use for non-routine communications by agencies requiring interoperability

for inter-agency purposes only.” Routine is defined as “a normal established method of message exchanging, i.e., frequent or regular use.”

VHF Low-Band Network. The MSP employs a VHF low-band radio network, but is gradually replacing it with the 800-MHz trunk radio system⁷ described above. Most, if not all, cruisers have both 800-MHz and low-band radios, and both radios will be employed for several years before the 800-MHz system is completed statewide. The MSP continues to employ low-band radios in new cruisers, but they are only used sporadically. Low-band usage is primarily for car-to-car communication or in the event of an 800-MHz trunk failure. However, west of Interstate 91, the use of the VHF low-band system rises sharply because the 800-MHz network has not yet been completed.

4.2.1.4 Massachusetts Department of Public Health Radio Systems

The Massachusetts Department of Public Health (MDPH) has established a health system communications network that includes some of the following technologies: a push-to-talk device and satellite phone network, hospital capacity website, emergency contact flash drives and an automated alert network. This redundant and interoperable communications system allows connectivity in preparation for and during an emergency among healthcare facilities; federal, state, regional and local health departments; emergency medical services; emergency management agencies – the State Emergency Operations Center (SEOC); public safety agencies; and neighboring jurisdictions. MDPH may use any or all communications outlets when pushing an alert, instruction or informational updates to its healthcare partners. Communications staff is available 24/7/365 via cell and portable tablet in the event the communications network is needed after regular business hours.

Centralized Emergency Medical Direction. The mission of the Office of Emergency Medical Services (OEMS), part of the MDPH, is to promote a statewide community-based emergency medical services (EMS) system.

Purpose and Objectives. The purpose of this system is to reduce premature death and disability from acute illness or injury through the coordination of local and regional EMS resources. OEMS licenses all ambulance services that are based in, or regularly operate in, Massachusetts, and it certifies ambulance vehicles. Ambulance services may be private for-profit enterprises, private non-profit entities, municipally managed, or volunteer services.

Jurisdictions Served. As shown in Section 2, Massachusetts today is divided into the five distinct EMS Regions depicted in Figure 4-3 as designated by the OEMS. Each EMS region is administered by a regional office dedicated to promoting patient care by coordinating communication among and enhancing the efficiency of EMS providers including ambulance services, First Responders and hospital emergency departments. The EMS regional offices are 501c3 non-profit corporations that are chartered by the state and written into legislation. Region 5 is divided into three sub-regions: Plymouth County, Barnstable County, and Bristol County, including Fall River and New Bedford.

System Overview. Communication between ambulances and hospitals in Massachusetts is controlled and facilitated by a communications center in each EMS Region referred to as Coordinated Medical Emergency Direction (CMED). Each CMED region is responsible for maintaining and operating CMED capability in its respective area. Each CMED Center acts as a switchboard, or router, connecting the wireless ambulance radio link with a wireline (telephone) hospital link. This interoperability approach is more efficient and cost effective - as well as interference-limiting - than having all ambulances try to talk to all hospitals directly over-the-air, and it allows the CMED Center to exercise control over the assignment of ambulances to hospitals. About 200 calls per day, ten per hour, are handled in Central Massachusetts alone. CMED does not handle the initial ambulance dispatch; this remains a community or consolidated dispatch function.

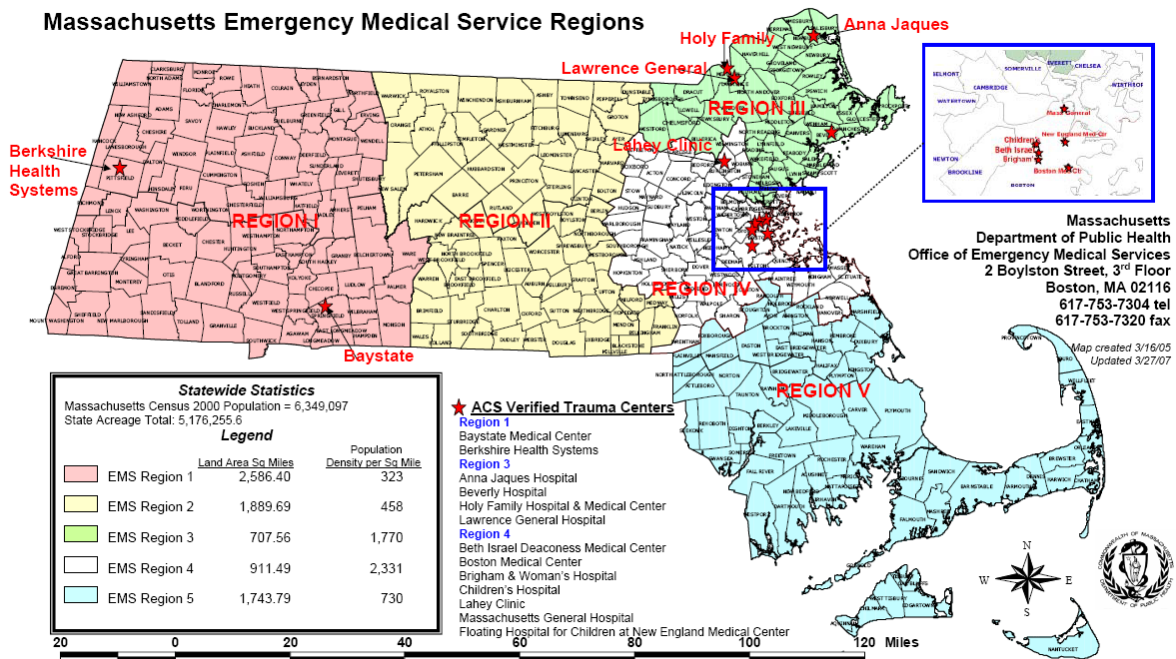


Figure 4-3: EMS Regions in Massachusetts.

In addition to managing the communications, CMED is responsible for recording all voice communications, providing support and coordination in the event of a Mass Casualty Incident (MCI), and being a resource for information; e.g., hospitals' emergency department loading, bed availability status, specialty care facilities and ambulances. CMED is also responsible for dispatching Regional Mass Casualty Support Unit (RMCSU) trailers in the event of an MCI. Help from other Regions may be needed, so coordinated communications between the regional CMEDs is required.

The Regional Medical Coordinating Center (RMCC) is a joint trial project by the Regional Homeland Security Councils and MDPH. The RMCC functions as a medical emergency operation center (EOC) in the event of a major incident. It will coordinate

operations and communications in getting patients to hospitals, and, if necessary, patients out of hospitals to other regional hospitals. It will also coordinate medical activities with MEMA and the State. Currently, only one RMCC exists, and it is at the Central Mass (Region 2) CMED Center in Holden, Massachusetts.

Radio Systems. CMED employs both UHF and VHF radio systems. The CMED system covers regions are covered by 44 radio transmitter sites that support 57 base stations, providing radio coverage over most geographic and populated areas. It is composed of regional systems that maintain base stations on eight UHF pairs and, generally, two VHF channels, in addition to other communications assets. The older VHF network is half-duplex, while the UHF network is capable of full-duplex operation. The full-duplex network allows for simultaneous transmission and reception, like a wireline or wireless telephone, and it is in contrast to the half-duplex, push-to-talk radios common in public safety.

CMED UHF Network. The FCC set aside 10 frequency pairs in the UHF band to be used on a nationwide, shared basis for CMED. The first 8 channels (MED 1 – Med 8) are for medical voice and telemetry, while channels MED 9 and Med 10 are reserved for ambulance dispatch and other emergency administrative purposes. Full-duplex operation is permitted on the UHF medical channels, and transmit and receive frequencies are separated by 5 MHz to provide a measure of isolation. With the advent of narrow-banding, these 25-kHz channels will be reduced to 12.5 kHz, but the total number of CMED channels will double to 20.

In practice, a voice message received at a tower from an ambulance on an uplink frequency and “turned around” for transmission on the paired downlink frequency. It can do this as well as sending the message on to the CMED Center or the hospital; and it can do this in a fashion that allows a message from CMED or the hospital to preempt the “repeated” ambulance message. This repeating operation in a full-duplex system is known as mobile relay.

During normal operation, this mobile relay capability is turned off to prevent ambulances from hearing each other, so their only knowledge of a call taking place is when the CMED console operator or hospital responds from the other end of the link. The mobile relay is activated:

- During an MCI where there is high call volume and potential for interference
- Two or more ambulances are talking to the same hospital on the same channel

The call-in channel, MED 4, is supposed to be repeated in all the Regions, and in Boston, some of the other MED channels are always repeated.

The communications backbone for the Regional CMED Centers is comprised of leased telephone lines. These leased lines connect remote base stations at each antenna site to the CMED Center, and leased telephone lines connect the CMED Center to the area hospitals. The remote base stations can also be controlled through the audio lines. Unreliable operation of leased lines is one of the major problems facing CMED in

Massachusetts. Metro-Boston is an exception, and to a lesser extent so is Region 2, because of some use of fiber. When there is an outage, the problem generally occurs at the telephone central office when maintenance and repairs disrupt CMED lines. Because all communications go through the CMED Center, the Center is a potential single-point-of-failure in the primary regional EMS communication system.

CMED VHF Network. The CMED VHF statewide network consists of two channels in the 150 MHz and possibly other VHF frequencies. The first is known as the Hospital Emergency and Administration Radio (HEAR) channel, and it was the primary EMS channel prior to the development in the early 1970s of UHF radio for EMS. HEAR is also a trademark of Motorola, Inc. Both channels are still in widespread EMS use in Massachusetts and throughout the country. Communication is handled by simplex, push-to-talk radios that employ dual-tone-multiple-frequency (DTMF) encoders for selective addressing.

Fire and Ambulance Travel Channel. The Ambulance Task Force (ATF) enables the movement of large numbers of ambulances in support of mass casualty incidents or other major emergency situations. Each ATF consists of a Leader, an Alternate Leader five member ambulances and an alternate member ambulance. Ambulances come from both public and private services. There are 58 ATFs throughout the Commonwealth that provide statewide coverage.

When Incident Command generates a need for ambulance resources, they will seek this support from their local department dispatch. If no further resources are available from the local department, the department's dispatch will forward the request to the District Mutual Aid Center, which manually references a notebook containing a predetermined listing (Running Card) of potentially available aid. Next, NAWAS is used to notify those Mutual Aid Centers with Task Forces listed on the Running Card to respond – or it may be accomplished through passing the request to MEMA and letting them perform the notification. Either way, MEMA is informed and prioritizes the use of FAMTRAC with DCR. As they assemble the Task Force Leaders log on with Responding Task Forces using their local Mutual Aid Centers on their local Mutual Aid channels and with MEMA – and then travel in convoy to the staging area.

ATF communications with MEMA and other points statewide is performed using the Fire and Ambulance Travel Channel (FAMTRAC), which is a VHF repeater radio system allowing radio control for emergency resources being moved statewide. A major goal in FAMTRAC development has was to provide long-range (statewide) coverage with minimal infrastructure. The infrastructure for FAMTRAC was built upon the Department of Conservation and Recreation (DCR) VHF radio network. The DCR network operates in the VHF high-band near 150 MHz, and it provides statewide coverage through nine regional repeater sites. Each repeater site uses a different PL code, and one must be cognizant of location in order to use the network.

The system has two repeater channels and a number of simplex channels. FAMTRAC shares one of the repeater channels with the DCR, but FAMTRAC has priority. The

repeater sites are connected to the DCR radio control center over telephone landlines. No voting is required at the center because each site is accessed with a unique PL code.

The use of the DCR System was authorized in the early 90's to be used in Mobilization Situations, but was never completed. The system was in regular use across the state by DCR at that time, but several site upgrades were recommended and completed at the same time the MEMA VHF System was being brought to completion, which provided redundancy for the system as all FAMTRAC radios that are programmed with the MEMA channels. In fact, MEMA, acting as the control point, can talk to units in any part of the state - as DCR can do as well from their center. Several Fire Mutual Aid Control Centers (MACCS) have also added the FAMTRAC channels to their VHF systems.

MEMA is the net control for FAMTRAC on the DCR network and responsible for mobilization under Executive Order. There is no direct landline or microwave connection from MEMA headquarters to the repeater sites; rather, MEMA has direct RF connection to the repeaters with their radios in Framingham. In turn, as long as a field user can reach one of the repeaters, they can access MEMA headquarters in Framingham. FAMTRAC is intended for base station and mobile use; there is no guaranteed coverage for portable handheld radios.

User response to FAMTRAC has been positive. In exercises, task force leaders traveling from Cape Cod to Worcester and from the Worcester area to northwestern Mass. (Turners Falls) have had good radio connection with MEMA throughout the trip, as was maintained with the staging manager in Worcester. This continuous contact was possible because MEMA monitored the travel and advised the Task Force Leader when tower changes were needed. MEMA also maintains its own VHF high-band repeater radio system. All FAMTRAC radios are programmed with the MEMA channels to allow switching to the MEMA system if a problem is encountered. A large numbers of Fire/EMS agencies already operate on VHF high-band, so the capability was provided to allow placement of the FAMTRAC channel in their radios. Many Radio Command vehicles have added the channel, as have some Mutual Aid Control Centers.

Thus the principal goal in the system has been achieved, to provide separate radio control of the task force resources until they are to be committed to the Incident. Currently, the ATF alone uses FAMTRAC, although the expectation is that the Fire Mobilization Task Force will also do so in the near term. FAMTRAC radios are deployed in the fire community. About half the ambulances in the state report to Fire Services. Fire Services' vans, and their command post vans have the radios, but the control centers and the task force leaders do not yet have them.

Several Massachusetts agencies have supported the continued development of FAMTRAC. It has been a joint communication project of the Massachusetts Department of Fire Services (MDFS), MEMA, the MDPH and the DCR to provide statewide, en route communications for task forces and other special units. Use of the

DCR system was authorized for mobilization situations in the early 90's, but it was never completed. With the initiation of the ATF, resources were provided by MDPH to do the necessary upgrades and refurbishing of repeater sites. DCR received new infrastructure, while fire and EMS gained the FAMTRAC travel channel. This example shows the benefit of shared system planning.

FAMTRAC provides a low-cost network allowing resources moving across the state to maintain communications with the state EOC and on-scene commander for progress reporting, assignment, or contingency actions. Further development of the system includes the purchase and installation of FAMTRAC base, mobile, and portable radios.

Hospital Communications Network. The Hospital Communications Network (HCN) provides communication between the MDPH, hospitals, regional communication centers, state agencies and other partnering agencies and supporting units in the event of a disaster or emergency situation requiring coordinated hospital communications and response. As part of cooperative agreement, funds awarded from the federal Health Resources and Services Administration (HRSA) National Bioterrorism Hospital Preparedness Program, the Massachusetts Department of Public Health (MDPH) has purchased satellite phones and accompanying service for use by Massachusetts's hospitals, EMS CMED Centers, and selected partner organizations. These satellite phones are part of the HCN and enable each of the recipients to communicate via satellite connections that are much more stable and reliable than commercial telephone service. MDPH, hospitals, EMS Regional Directors, and CMED Centers will be able to use these satellite phones as an additional method of communication during emergencies, when conventional phone services (landlines and wireless) may be unavailable. MDPH will deliver special alerts from the MDPH Health and Homeland Alert Network (HHAN) to hospitals via the phone devices. The CASM plot of the HCN satellite phone network is shown in Figure 4-4.

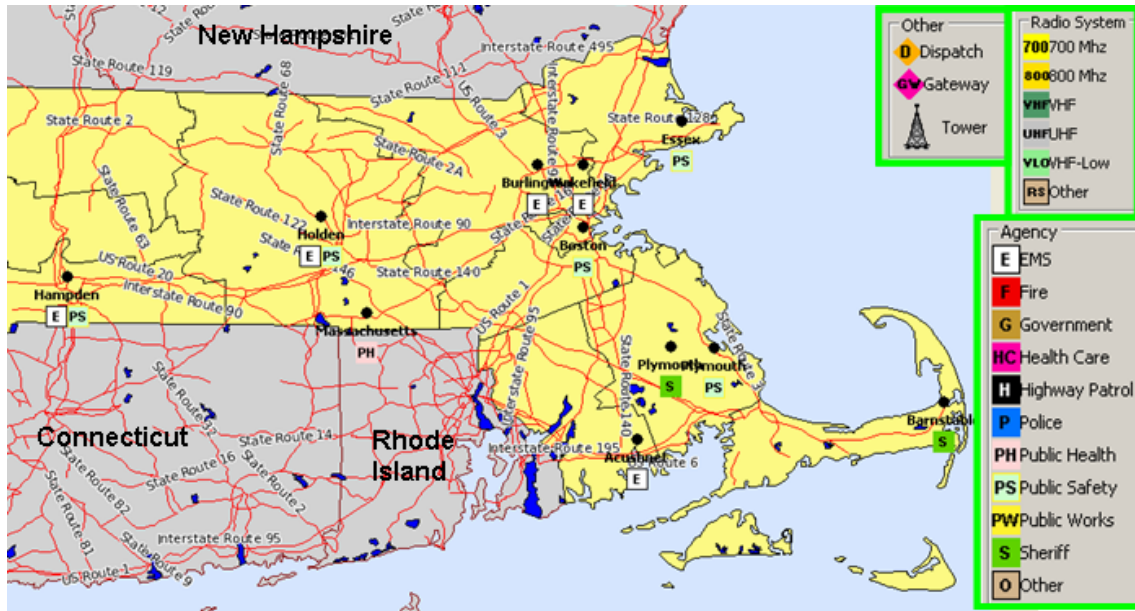


Figure 4-4: HCN Satellite Phone Network.

Nextel phones are also employed as part of the HCN. Nextel phones have been distributed to acute hospitals with emergency departments, CMEDs and EMS Regional Directors to provide wireless direct and talk group emergency communications. The Nextel phones are not intended to replace existing CMED or EMS communications systems. The phones are normally used to communicate health alerts and updates, but in the event of an emergency, they may be used to coordinate resources. The phones are not replacing existing traditional hospital, CMED or EMS communication systems. They will provide redundant communications to aid in the dissemination of information to various parties during emergencies.

During a disaster, the MDPH role is to utilize the communications network, including the satellite phones, in acting as a communications liaison between hospitals, the Hospital Association, state health officials and federal health resources to provide assistance and support as needed. During non-emergency operations, MP3's role is to coordinate and participate in testing and exercises. MDPH will use the satellite phones to issue alerts and updates from the Massachusetts Health and Homeland Alert Network (HHAN) using both text messaging, and the automated voice broadcast communicator functions. EMS Regional Directors and CMEDS will participate in the communication network on a standby basis for emergency communications and routine testing (24/7/365), and participate in any drills and/or exercises.

Each hospital's role during non-emergency operations is to function as a participant in the communication network on a standby basis for emergency communications and routine testing (24/7/365) and to participate in any scheduled exercises. Participating in routine drills will help familiarize staff with the phones use and increase proficiency in the event of a true emergency. During a disaster, each hospital's role is to ensure that

each satellite phone is powered by a functioning emergency power source; and standby for satellite communications with MDPH, MHA or other HCN emergency response agencies. Hospitals are expected to inform MDPH in writing of general or widespread reception problems with the phones; MDPH will then report these to the provider. Barring disruption in satellite phone service, Hospitals must ensure that the phone is operational 24/7/365. In addition, Hospitals must ensure that the phone volume is sufficiently high to receive any calls or alerts. These phones should be used for disaster preparedness and response purposes only.

4.2.1.5 Massachusetts Emergency Management Agency

The Massachusetts Emergency Management Agency (MEMA) operates and maintains several statewide radio systems spanning the MEMA Regions (see Figure 4-5.)

VHF Radio Networks. MEMA has two statewide VHF systems to provide emergency management communications. The first system is an existing VHF Low Band System, which has been in use for over 30 years by MEMA. This system is a simple two channel VHF Low-Band System with four remote transceivers linked via microwave to MEMA Headquarters in Framingham. Each remote site has both channels plus additional other agency operating channels in the geographic area (i.e., State Police, Mass Highway, Red Cross, National Guard, etc.) which can be remotely changed from MEMA HQ. In addition there are five transmitters at each of the MEMA facilities and mobile units are installed in all agency vehicles. This system was upgraded in 1999 to replace aging equipment and provide a backup in case of communications failures due to Y2K. Local governments can use the system with permission from MEMA.

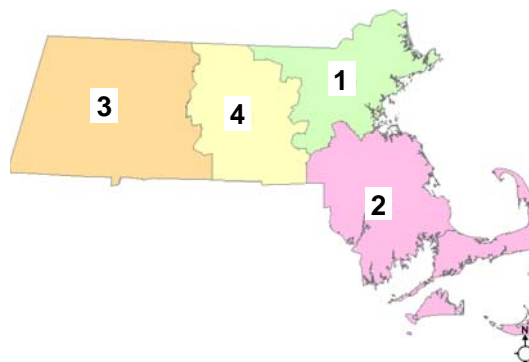


Figure 4-5: MEMA Regions.

The second system is a VHF High-Band System which was developed after the Blizzard of 1978 with which local governments may coordinate emergency communications. Each of the four MEMA Regions was assigned a frequency for use by local governments and MEMA units operating in the geographic area. The system was a simplex (no repeater) system, which greatly reduced the coverage and usability. Initially, this system was to be used for day-to-day administrative and emergency operations uses by every city or town emergency management program as well as the Massachusetts emergency management program. This original planning included the ultimate expansion of system coverage via fixed repeaters.

The MEMA VHF Radio System is a shared communications capability between state and local government organizations for day-to-day and emergency operations. MEMA has procured the infrastructure and necessary subscriber equipment for all 351 cities and towns to access the system. The system is available for use by other state entities

such as the Department of Fire Services (DFS), Department of Conservation and Recreation (DCR), and many other organizations to be able to communicate directly with other State and Municipal public safety agencies. The statewide CASM plot showing the city and town EMDs who employ the MEMA VHF system is shown in Figure 4-6. Note that “O” for “Other” in the legend refers to a city or town EMD.

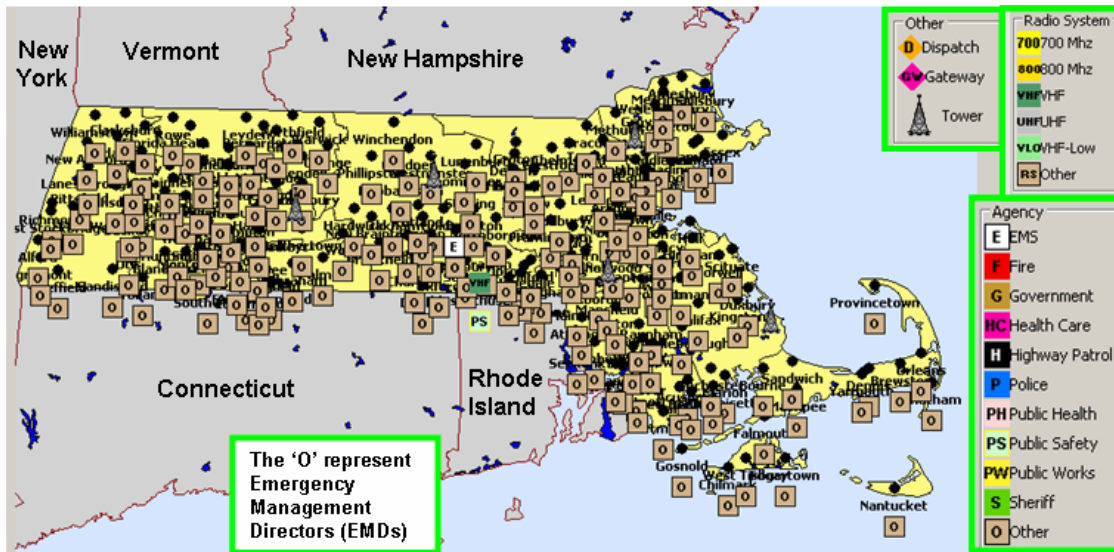


Figure 4-6: EMDs Employing the FEMA VHF Radio Network

The VHF high-band system is divided into four geographical operating areas following the four MEMA regional districts, with each area having a dedicated repeater frequency and a dedicated simplex channel for operation within the MEMA designated region. The system is used to disseminate emergency information from MEMA to cities and towns. During business hours, cities and towns may communicate directly with their MEMA regional office. After hours communications will be handled by the SEOC in Framingham. The VHF Radio system is designed for fixed and mobile communications; it is not intended for portable radio use.

Communities operating on MEMA frequencies will be operating under the MEMA License issued by the FCC. No community may add additional radios programmed to operate on the MEMA VHF system without the expressed written permission of MEMA. Communities may at their discretion add other channels to these radios, but must maintain the basic channel programming as provided by MEMA.

VTAC Channels are new nationwide VHF interoperability channels added to the existing 800-MHz ITAC channels. VTAC channels are narrowband only and, as for ITAC channels, interoperability is their primary use.

These channels specifically are not to be used for communications internal to one agency but rather for multiple agencies, be they neighboring towns or from different parts of the country to talk to each other even if they don't have any other common channels. Agencies make contact on the calling frequency V-CALL, and then switch to

a "TAC" channel to communicate. Many of the VHF channels are already licensed and in use by agencies in Massachusetts.

NOAA Weather Radio. NOAA Weather Radio All Hazards (NWR) frequencies have been programmed into the VHF radios provided by MEMA. In this way, MEMA has receive-only "broadcast information sharing" channels so local officials can monitor the latest information on a wide range of potential threats to their communities. The NWR system is a nationwide network of radio stations broadcasting continuous weather information directly from a nearby National Weather Service office. NWR broadcasts National Weather Service warnings, watches, forecasts and other hazard information 24 hours each day. Working with the Federal Communication Commission's (FCC) Emergency Alert System, NWR is an "All Hazards" radio network, making it a single source for comprehensive weather and emergency information.

In conjunction with Federal, State, and Local Emergency Managers and other public officials, NWR also broadcasts warning and post-event information for all types of hazards – including natural (such as earthquakes or avalanches), environmental (such as chemical releases or oil spills), and public safety (such as AMBER alerts or 911 telephone outages).

Known as the "Voice of NOAA's National Weather Service," NWR is provided as a public service by the National Oceanic and Atmospheric Administration (NOAA), part of the Department of Commerce. NWR includes more than 940 transmitters, covering all 50 states, adjacent coastal waters, Puerto Rico, the U.S. Virgin Islands, and the U.S. Pacific Territories.

Radio Amateur Civil Emergency Service⁸. As its Massachusetts emergency communications plan states, the Radio Amateur Civil Emergency Service (RACES) is an organization of Federally licensed amateur radio operators who volunteer to provide radio communications for state and local governments during times of emergency. Created in 1952 primarily to serve in civil defense emergencies, RACES provides essential communications and warning links to supplement State and Local government agencies during emergencies.

RACES is a special part of the amateur radio service sponsored by the Federal Emergency Management Agency (FEMA) and is conducted by amateur radio operators using their primary station licenses or by existing RACES stations. It is organized to provide emergency communications for civil preparedness purposes only. During an emergency, RACES is operated under the direct control of the local emergency management director, or under the direct control of the director of MEMA as authorized by the FCC. The RACES network operates on both voice and packet data on HF, low-band VHF, and high-band VHF radio networks.

⁸ Background information adapted from Tom Kinahan, N1CPE, *Massachusetts Amateur Radio Emergency Communications Plan*, Version 2.0, July 1, 2003, p. 3.

Radio Caches. The MSP operates 42 fixed ICALL/ITAC Repeater Sites statewide to enable both base stations and caches of portable radios to work within a radius of the repeater site. MEMA has provisioned caches of portable radios at emergency management agencies throughout the state. Each cache consists of six portable 800-MHz radios, a rack charger, spare batteries and associated equipment, housed in a waterproof travel case. All radios in these caches are programmed with the six five national conventional channels (ICALL and four ITAC channels) and are also capable of operating on the local MSP 800-MHz trunked channels.

These caches of portable radios are maintained by local emergency management agencies throughout the state and are available 24 hours a day (by letter of agreement) for response to any situation in Massachusetts. In addition to these caches, there are portable radios configured for conventional channel operation only (i.e., not on the MSP trunked network), but will operate with the repeaters and other caches. It is important to note that the use of this system must be coordinated because there are users across the state and across the New England Region who have a right to and regularly use these frequencies. Part of the development of this program was a closely coordinated and monitored use plan for these radios in Massachusetts. Portable caches are distributed throughout the state. In particular, caches are available in several regions as depicted in Figure 4-7.

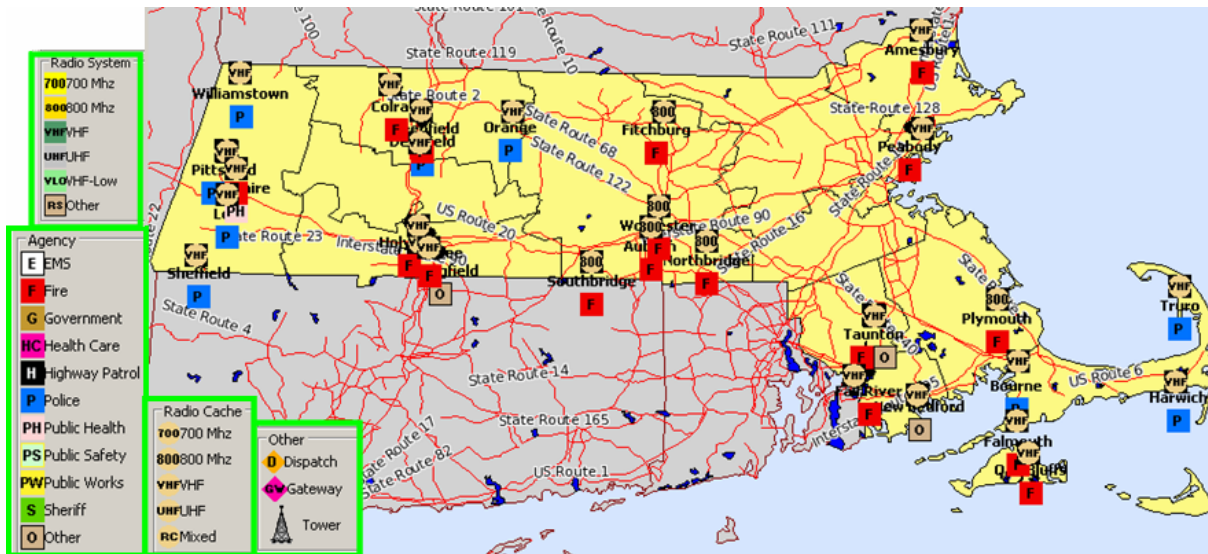


Figure 4-7: Massachusetts Radio Caches and User Agencies.

Mobile Emergency Operations Center. There are many “command posts / support units” owned by various agencies throughout Massachusetts. Due to MEMA’s authority, any of these units can be requested by MEMA to support any emergency event. However, many of these vehicles are designed for specific purposes and may already be in use to support the emergency. In addition, because of their design, most of the vehicles are not able to accommodate or support all organizations involved in the event.

In March of 2004, MEMA took possession of a Mobile Emergency Operations Center (MEOC) to provide the necessary field capabilities for emergencies. This unit was also designed to provide support to the Executive Branch of State Government, most notably being the Governor and Secretary of Public Safety. It can be used as a mobile office in the field during emergencies and also as a Continuity of Operations/Continuity of Government (COOP/COG) facility, if the State House and/or Boston were unavailable or affected by an event. It is available to go just about anywhere in State on short notice and provide an essential command, control, and communications function in the field. It is available on a continuous basis.

The MEOC communications systems include landline, cellular and satellite phone and fax capabilities; on board computer network with laptop computers, printers and satellite internet access; video teleconferencing, recording, playback and broadcast/satellite television reception. The MEOC is designed to run for more than a week off its onboard support systems if necessary. These systems include generator power, heating, air conditioning, onboard bathroom facilities, limited kitchen facilities and extensive communications.

4.2.1.6 Massachusetts Fire Districts⁹

Under Chapter 48, Section 59A of the General Laws of the Commonwealth of Massachusetts - a fire department from one community is allowed to work within the jurisdiction of another for rendering aid. As a result of large-scale forest fires in the early 1950's, Governor Foster Furcolo signed an Executive Order creating Fire Mobilization Districts. The districts were formed to create a better organization to deal with large-scale fires and other disasters. Under executive order from the Governor in the Acts of 1950 - Chapter 639, individual Fire Districts were created. Within each Fire District is a "Control Point" that coordinates the mutual-aid activity for its district. The original plan split the state into four areas containing a total of 14 fire districts. Each district set up fire battalions to supply mutual aid for large-scale problems. Over the years, the plan became hopelessly out of date as it did not stay current with equipment, communications, or organizations.

In 1980, the Fire Chiefs' Association of Massachusetts activated a group called the State Fire Mobilization Committee to review the original executive order and plan. The committee revised the entire executive order to bring it up to today's standards. On June 30, 1982, the then Governor Edward King established the existing 15 fire mobilization districts in Massachusetts by Executive Order. The organization of contractual and voluntary mutual aid systems among the fire departments had reached such a stage of development that it was practicable and desirable, and in the best interests of the civil defense program of Massachusetts, to utilize mutual aid systems as the basis for mobilization of fire fighting forces during periods of emergency. A new Executive Order was enacted in 2001.

⁹ Adapted and excerpted from Commonwealth of Massachusetts, Statewide Fire Mobilization Plan, Chief Edward J. O'Brien, Statewide Coordinator, February 2003.

Under the Mobilization Plan, dispatched personnel and equipment are under the command of the Chief of the Fire Department in the jurisdiction requesting assistance. Key operational criteria essential to the mobilization of Fire Task Forces includes:

- The Statewide Mobilization Plan only comes into effect when the local community resources and those of its normal mutual aid system have been expended.
- The Plan sends apparatus and personnel in task forces or strike teams. Each task force or strike team has its own commander.
- The task forces or strike teams meet at a dispersal point and travel together. They report to a designated staging area for assignment.
- Task forces or strike teams may be used for cover assignments.
- The Incident Commander or their authorized representative must initiate the request for the plan to be implemented; the Incident Commander assumes overall responsibility.
- Notification must be made to MEMA when the plan is activated.
- Task force or strike team apparatus should, if possible, consist of the best-equipped apparatus a community can send.
- All Fire Departments and mutual aid control centers (MACCs) must issue procedures that reference this plan.
- Authority for this plan is the Massachusetts Governor, as conditioned by Executive Order.
- Task force or strike team commanders are to be regular chief officers. Alternate commanders are recommended to be used if a company grade officer is acting as a chief officer.
- District control centers are authorized to communicate on the NAWAS to dispatch and coordinate resources.
- Strike teams consist of the first five units of the type requested from any task force list.

Each fire mobilization district can be authorized to send fire fighting assistance anywhere in the State through appropriate operating procedures using these channels. The CASM plot for Fire agencies and Fire Control Points spanning the state across the 15 Fire Districts is shown in the following figures:

- Figure 4-8: Fire Districts 7, 8, 9, 10, 11, and 12 (west and central Massachusetts)
- Figure 4-9: Fire Districts 1, 2, 3, and 4 (southeastern Massachusetts)
- Figure 4-10: Fire Districts 5, 6, 13, 14, and 15 (northeastern Massachusetts)

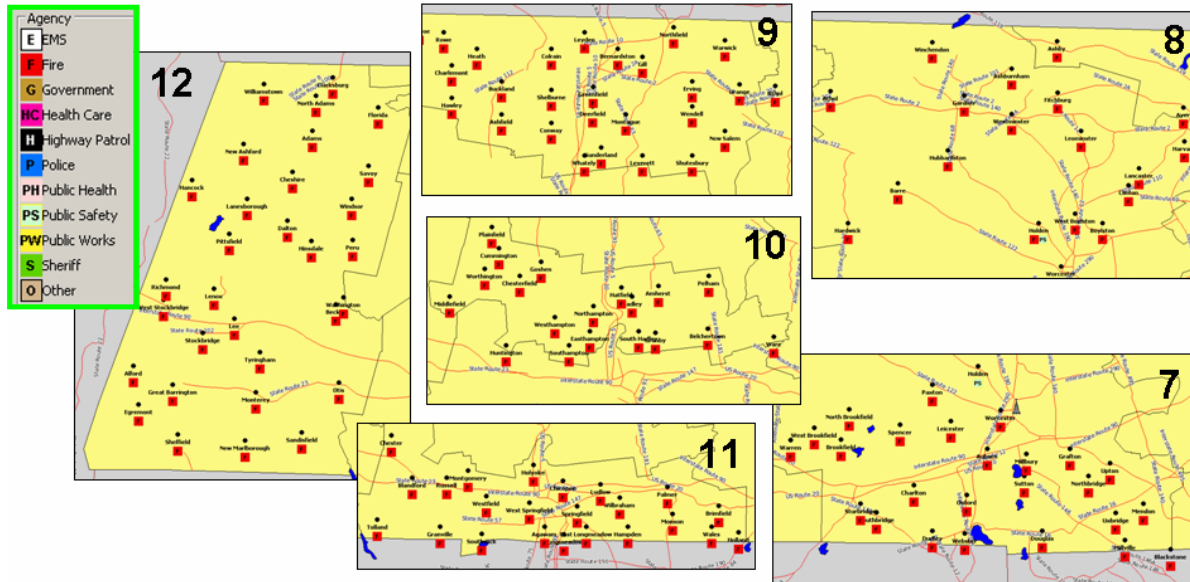


Figure 4-8: Fire Districts 7, 8, 9, 10, 11, and 12 (West and Central Massachusetts).

The mutual aid fire communication networks in Massachusetts used by the Fire Districts are in VHF UHF, 800 MHz, and low band. It is the intention to link all 15 fire district control center together with a VOIP system and provide the capability to allow for instance access to view or update real-time use and movement of mutual aid fire equipment. In fact, it was the fire mobilization plan that secured the use of their repeated VHF radio system through joint memoranda with DCR for the creation of FAMTRAC (see subsection 4.2.1.4 above).

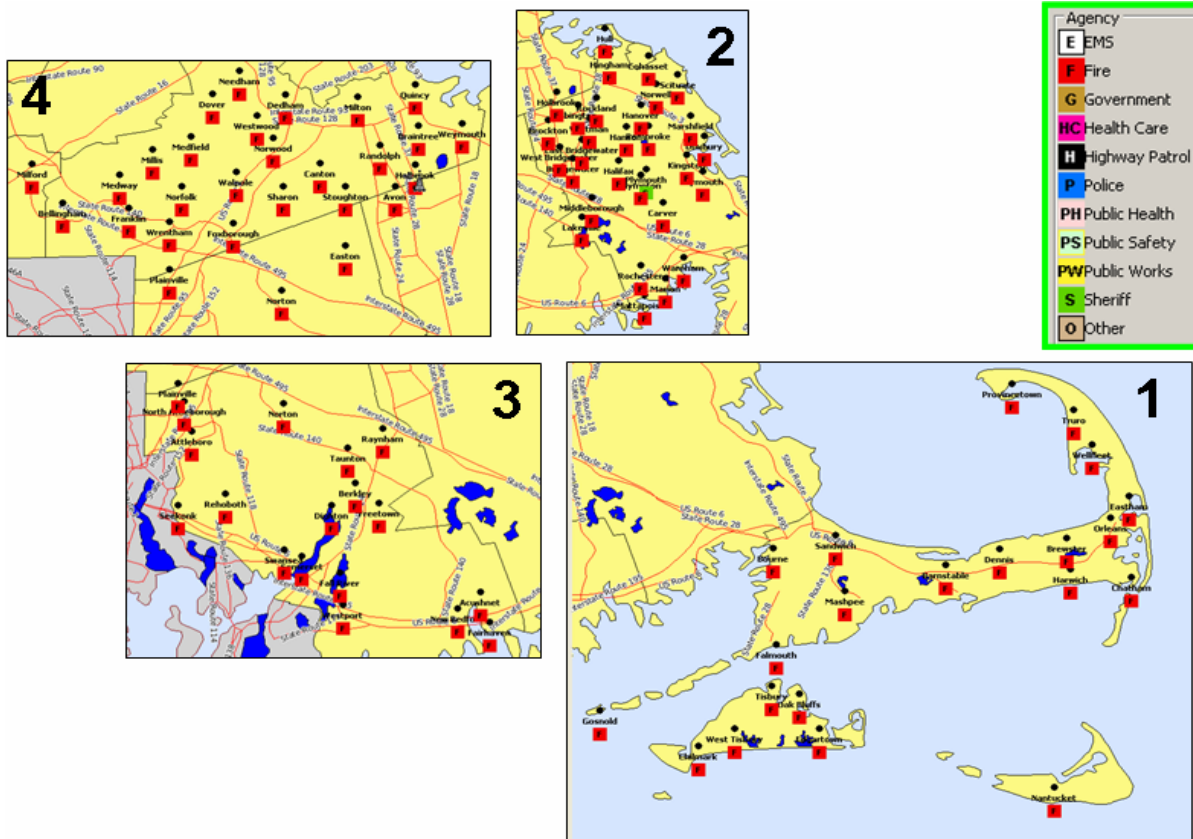


Figure 4-9: Fire Districts 1, 2, 3, and 4 (Southeastern Massachusetts)

4.2.1.7 Metrofire¹⁰

Metrofire is an association of 35 metropolitan Boston fire departments that provides coordination of mutual aid response to improve the effectiveness of fire services coincident with Fire District 13. The primary mission of Metrofire is to provide proper coordination, communication, and response of the region's mutual aid firefighting and emergency medical forces. These fire departments, with the support and approval of their local governments, formed Metrofire in 1976, had it expanded in 1980, and finally had it incorporated in 2003. Metrofire is authorized under provisions of the Massachusetts General Laws. Its service area encompasses the area within the Route 128 perimeter, serving an area of 351 square miles and 30% of the state's residents. Metrofire's mission critical activities include:

¹⁰ Excerpted from <http://www.massmetrofire.org/info.html>.

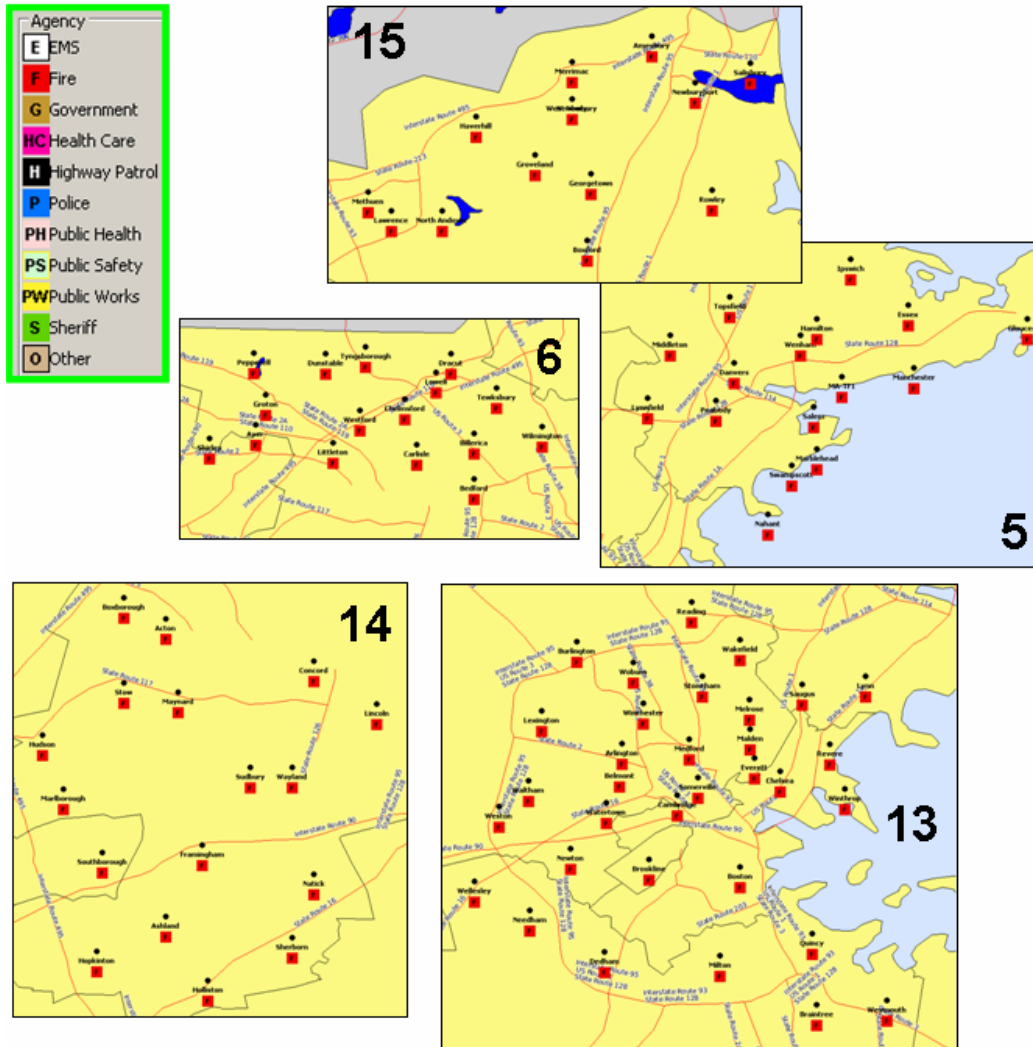


Figure 4-10: Fire Districts 5, 6, 13, 14, and 15 (Northeastern Massachusetts)

- Coordination of multi-community fire and EMS response
- Provision of an interoperable and integrated radio communications network
- Planning and training for fire and medical response
- Responding to major incidents with specialized equipment and staff
- Homeland Security coordination
- Disaster response
- Mutual Aid Statewide Fire Task Forces
- Statewide EMS Ambulance Task Forces
- Statewide Mass Decontamination Trailer Hospital Deployment
- Radio Command and Control for multi District response.
- Hazardous materials HAZMAT deployment for regional response

Massachusetts Statewide Communications Interoperability Plan

- Deployment of Specialized Response Teams, Tunnel, Collapse, Hi-Angle, Dive Rescue, Confined Space Operations

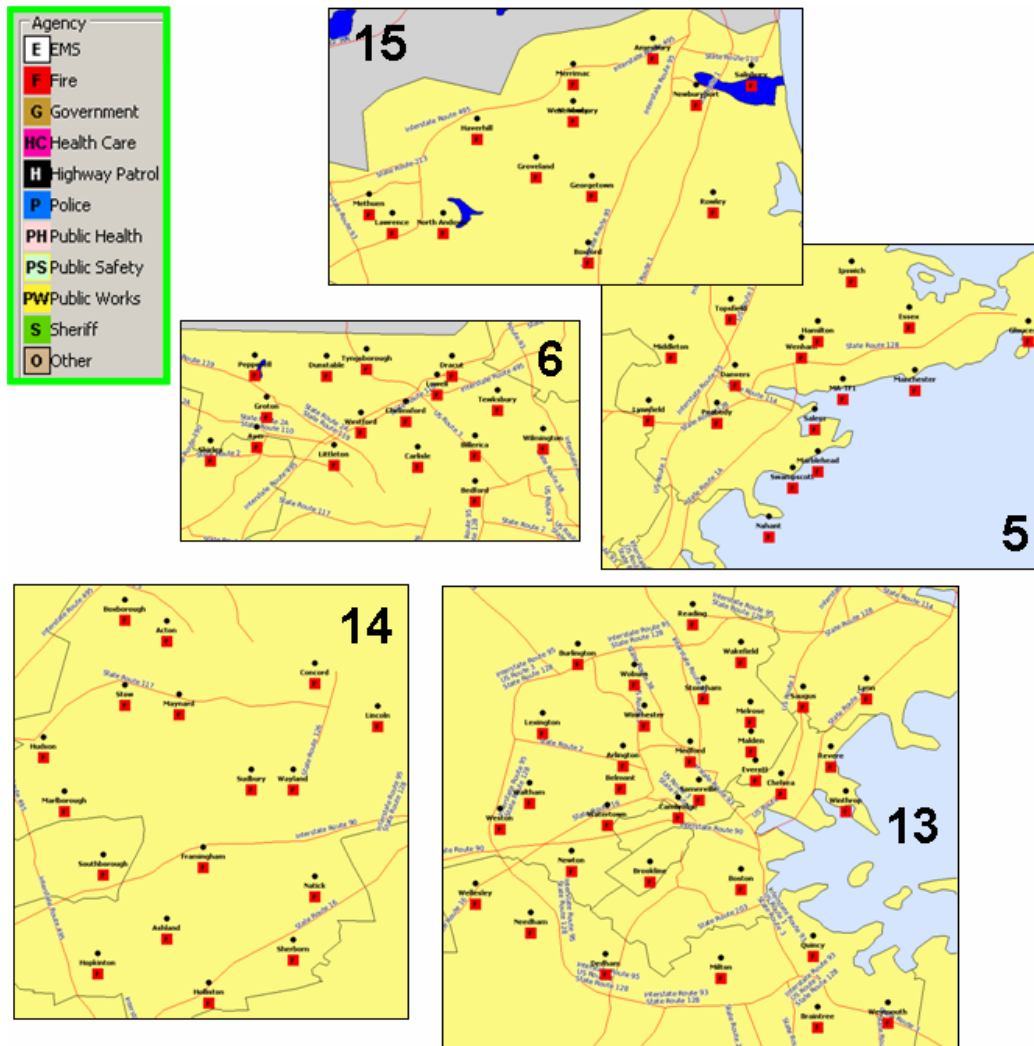


Figure 4-10: Fire Districts 5, 6, 13, 14, and 15 (Northeastern Massachusetts)

The Metrofire Control Center (see Figure 4-11) is incorporated into the operation of the Boston Fire Department. Fire Alarm Operators monitor the activity of Metrofire's departments and coordinate response within the region. From this center, Metrofire operates a UHF and VHF radio system for dispatch and coordination of firefighting apparatus and emergency medical units. Departments linked to the Metrofire Control Center are depicted in the CASM plot of Figures 4-12. Metrofire provides several capabilities available to member communities, including an Incident Command Post - a mobile command post with extensive communications equipment and space for staff conferences" that can be "dispatched to any incident where the Incident Command System (ICS) is employed to mitigate an emergency situation, including large-scale fires and events"¹¹.



Figure 4-11: Metrofire Control Center

4.2.1.8 Executive Office of Transportation

The Executive Office of Transportation (EOT) provides guidance in setting the Commonwealth's mass transportation agenda, including the development of transportation policy, coordination of interagency programs, and promotion of economic development through improved transportation. In addition, the Secretary of Transportation has direct management responsibility for the Department of Highways (MassHighway) and the Massachusetts Aeronautics Commission (MAC), oversees the Massachusetts Bay Transportation Authority (MBTA), 15 regional transit authorities, the Intercity Bus Capital Assistance Program, the Mobility Assistance Program, and the Freight Rail Programs. Significant advances in interagency coordination have strengthened the Commonwealth's ability to respond to terrorism threats and special events.

¹¹ *Ibid.*

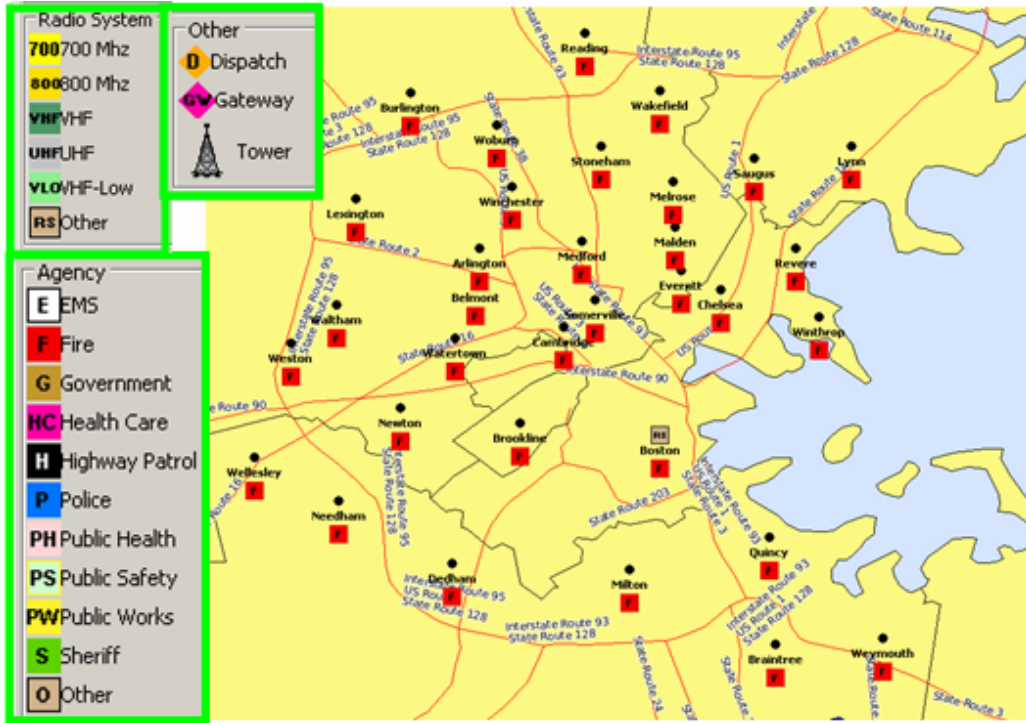


Figure 4-12: MetroFire User Agencies.

Massachusetts Highway Department. The Massachusetts Highway Department (MHD, or *MassHighway*) employs a state-wide wideband (25-kHz FM) four-channel VHF low-band (25-50 MHz) radio system for voice communication between MHD vehicles, technical support (electricians and technicians), environmental, engineering, safety, supervision, and operations. The VHF network backbone is provided by the *MassHighway* state-wide microwave radio system, which provides communications between radio tower sites in the VHF network, a central continuously-staffed Traffic Operations Center (TOC), the Boston (headquarters) of MHD, and each of the five Dispatch systems located at the MHD District Offices. The District Offices are in the following locations (municipalities): Lenox (D1), Northampton (D2), Worcester (D3), Arlington (D4), and Taunton (D5).

The microwave network, initially installed in the 1950s, is displayed schematically in Figure 4-28 and co-exists with a fiber optic network with redundancies provided for some links. The network consists of microwave radio sites at 10 Park Plaza, Arlington, Concord, Mount Wachusett, Mount Lincoln, Windsor, Monterey, Lenox, Northampton, Worcester, Mount Nebo, Foxborough, Taunton, Copicut, and Plymouth. As can be seen in the figure, all microwave links have the digital data capacity of STS-1 (51.84 Mbps), with the exception of the links from Foxborough extending South, Mount Wachusett to Worcester, Mount Lincoln to Northampton, and west of Windsor. The three links connecting 10 Park Plaza to Arlington to Concord to Mount Wachusett were upgraded to a digital capacity equivalent to three STS1's (155.52 Mbps).

The radio equipment at each site consists of digital microwave radios and associated multiplexers/demultiplexers and channel banks. These radios were designed for integration into SONET fiber optic networks, so these radios are often deployed into fiber optic networks as a means to fill a geographic gap that cannot be filled with fiber, and/or to provide media redundancy for a fiber optic network.

Massachusetts Bay Transportation Authority. The Massachusetts Bay Transportation Authority (MBTA), known also as the 'T', has the fourth highest transit ridership in the country and transit usage is three times the national average as a percentage of total travel. The transit system comprises over 125 transit stations that provide over 650,000 trips each weekday, a bus/trackless trolley system consisting of over 170 routes that provide over 375,000 trips each weekday, and a commuter rail system consisting of 265 miles and 118 stations that serve over 36 million riders annually. The MBTA, as the public transit provider, operates an extensive bus, subway and commuter rail network in metropolitan Boston.

To support its operations, the MBTA has an extensive existing communications network including leased communications circuits, radio networks, twisted-pair (multi-pair) copper cable, and fiber optic communications systems. The majority of the fiber network is deployed throughout the subway system interconnecting numerous stations throughout the City. The MBTA is currently expanding and improving its wide-area communications network. In particular, the MBTA is in the process of upgrading the two-way radio systems on both their bus and rail services. A contract has been executed with M-A/Com to construct and implement a three-site 800-MHz digital trunked radio network that, aside from providing primary voice communications, will also run automatic vehicle location (AVL) data in all buses and subway vehicles. The Transit Police will also be converting from the current two-channel UHF radio system to the 800-MHz network. The first component of this system should be operational in 2007.

In 2005, the MBTA joined the MBHSR, or UASI Region, CIS to begin designing improved communications for the subway system in Boston and Cambridge. Although still in progress, the project plan includes a phased-in approach to provide underground communications for all primary and "mutual aid" agencies that respond to incidents in MBTA tunnels. The first phase of this project will expand the tunnel antenna system to facilitate additional channels for the Boston Fire Department, Cambridge Police and Fire, and State Police (on ITAC channels). Furthermore, the Transit Police and the Boston Fire Department are working with Boston EMS to provide a channel-sharing agreement during this first phase. In the second phase, additional antenna and radio system technology will be implemented that will facilitate a full channel capacity for Boston Police, the BAPERN network and Boston EMS. In future system enhancements, the MBTA radio system may be linked via network connectivity to the statewide 800-MHz network, providing additional radio interoperability between and among systems.

4.2.1.9 Massachusetts Turnpike Authority

The Massachusetts Turnpike Authority (MTA) maintains the 138-mile long Massachusetts Turnpike, Interstate 90, from West Stockbridge on the New York border to Logan Airport/Route 1A in East Boston. In addition, the MTA maintains the portion of I-93 from South Bay to just north of the Leonard P. Zakim Bunker Hill Bridge, the extent of the Central Artery Tunnel (CA/T) Project and the Sumner & Callahan Tunnels/ Route 1A linking East Boston to North Boston. Communication is required between MTA vehicles, technical support (electricians and technicians), environmental, engineering, safety, supervision, and operations.

MTA VHF System. To meet its communication requirements, the MTA operates a conventional high band VHF (150 MHz) mobile repeater relay system. This system is comprised of nine mobile relay stations (repeater) sites to cover the length of the Massachusetts Turnpike (I-90) from the New York Border to East Boston, including the Prudential Tunnel. VHF repeater sites are interconnected by fiber optic and copper lines to form a radio relay system allowing two-way radio traffic anywhere on the roadway. Figure 4-13 shows VHF surface coverage areas. An additional four repeater sites provide coverage in the Ted Williams, Central Artery North Area (CANA), Sumner and Callahan Tunnels. The MTA is also a user of the MSP 800-MHz trunked system.

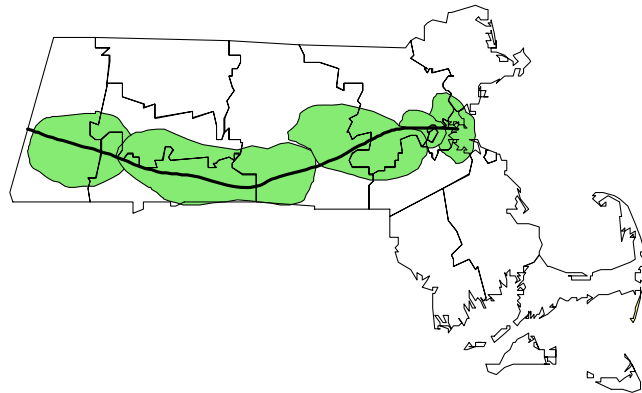


Figure 4-13: MTA VHF Coverage Area.

Emergency responding agencies have the ability to communicate to their field personnel within the tunnel systems of the Massachusetts Metro Highway System (MHS) through a shared distribution and antenna system. This system is maintained by the Massachusetts Turnpike. The MHS tunnels in this context consist of the I-93 O'Neill, Sumner, Callahan, TWT, and I-90 tunnels. Agencies with communications capabilities in these tunnels include:

- Massachusetts State Police (MSP)
- Boston Fire Department (BFD)
- Boston Emergency Medical Services (BEMS)
- Boston Police Department (BPD)

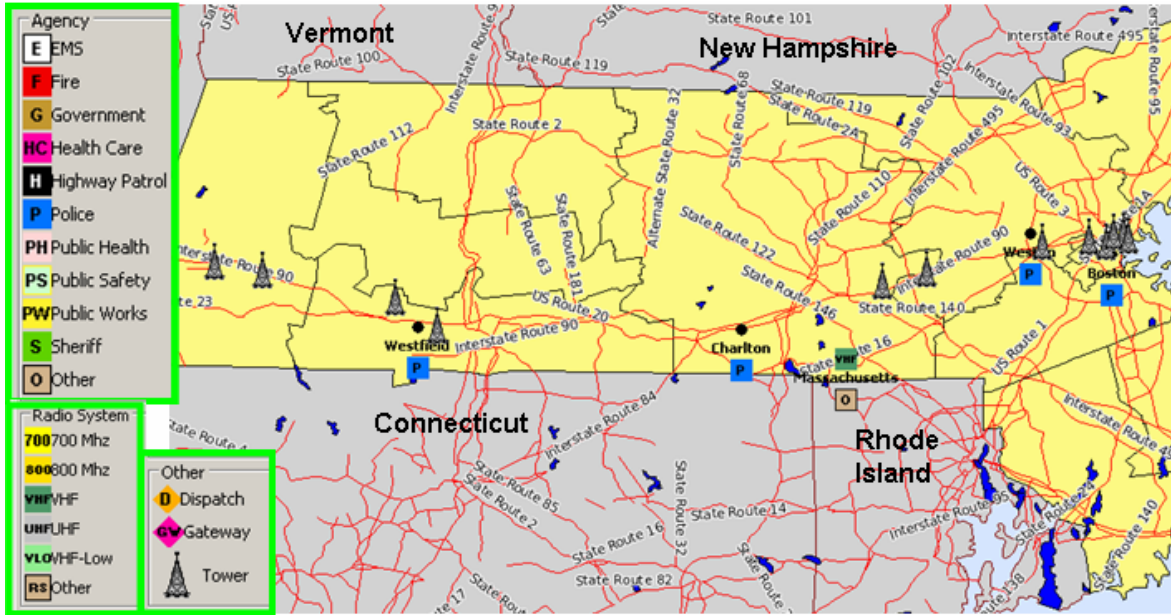


Figure 4-14: MTA VHF Network.

Additionally, other agencies have an operational need, such as:

- Mass Bay Transportation Authority (MBTA)
- Massport (using the MSP 800-MHz trunked network)

These agencies bring their communications systems into MHS facilities using leased lines from the local telephone company connected to their respective base stations. The MTA is responsible for taking the RF output from these base stations through combiners and distributing these signals to the various antenna systems via fiber optic and coaxial cable links. The tunnels are supported by an infrastructure of over 13 miles of radiating coax and 30 discrete antenna locations.

MTA operations are located in the Operation Control Center (OCC). The OCC has desktop control stations at each operator's work station that allows them direct communication to each of these agencies. This ensures that operations can support emergencies and traffic incidents by notifying the proper agency and passing information on from one to the other. The interoperability functionality that currently exists is using the MSP operated trunk radio system and the ITAC channels. Radio console equipment exists that if expanded and with inter agency agreements could provide true interoperable communications.

Other Communications. In addition to the two-way radio systems, the MHS tunnels are fitted with AM and FM radio rebroadcast systems which can be overridden by the OCC to broadcast emergency messages. The MTA has also licensed two Highway Advisory Radio (HAR) frequencies. The MHS surface and tunnels will use 530 kHz to broadcast travel and emergency information to the public. This system is currently in its final testing stage in preparation for operational use. An additional frequency, 1640 kHz, has been licensed but is not used at this time.

All key MTA personnel are outfitted with Verizon service cellular telephones which can be used as another means of communication in an emergency. The MHS tunnels are currently being outfitted by a joint project to provide cellular service for the major carriers. In addition, the MTA maintains its own private PBX system. There are 7 PBX's interconnected to allow four-digit dialing from Westfield (area code 413) to Boston (617) including Auburn (508).

4.2.2 Regional Systems

This subsection describes radio systems and communication centers whose usage is primarily intended to support multi-discipline-multi-jurisdictional interoperability within a single Homeland Security Region of Massachusetts. The subsection is *not* intended to provide mention or description of the many local PSAP/dispatch centers configured for (at most) adjacent city/town or regional system interconnect and limited, if any, cross-jurisdictional/cross-discipline information sharing. Support for consolidated multi-jurisdictional systems will be the future focus of interoperability resources in Massachusetts.

4.2.2.1 Western Region

Radio Interoperability Systems. The Western Region is composed of Berkshire, Franklin, Hampshire, and Hampden Counties with both county-wide and multi-county radio systems in operation to enable day-to-day public safety communications interoperability. Two UHF radio interoperability systems operate in the region, the Franklin County Emergency Communication System (FCECS) and the Western Mass Law Enforcement Council (WEMLEC) radio communications system. The following radio systems provide capability in the Western Region:

Franklin County Emergency Communication System. The FCECS grew out of a project by the Tri-State Fire Mutual Aid Association, an organization that has been in existence in the region for more than 50 years. Currently, the Tri-State Fire Mutual Aid Association is a Fire Mutual Aid group with members in Southern Vermont and New Hampshire, Franklin County (Massachusetts) and several Massachusetts communities outside Franklin County. In fact, the FCECS radio towers are also in the Tri-State network. Likewise, the FCECS fire SOP's are identical to the Tri-State SOPs. Thus, Southern Vermont and New Hampshire work on those same protocols when using the FCERN. Moreover, the Southwestern Fire Mutual Aid Dispatch Center in Keene, New Hampshire has radio capability on the FCECS UHF System. Tri-State members serve as our primary fire response to the Vernon Nuclear power plant located in Vernon, Vermont.

Western Massachusetts Law Enforcement Council UHF Network. The Western Massachusetts Law Enforcement Council (WEMLEC) is a duly constituted IRS Sec 501(C) 3 nonprofit corporation. The corporation's objectives are the enhanced operations and functions of municipal police departments as well as the collaboration and cooperation among participating departments for the purpose of improved public safety. WMLEC has implemented and managed a two-county law enforcement

(Hampden and Hampshire) radio network for nearly 30 years. Several federal, state, college/university, and abutting Connecticut agencies (inter-state communications) use this voice network for interagency emergency communications.

WEMLEC implemented a wireless data (cruiser laptop) system for 27 cities and towns in the same region. In 2003, WMLEC was awarded a DHS grant to expand the UHF system into Franklin and Berkshire counties and also to increase capacity so as to include the fire and EMS disciplines. Through the WEMLEC partnership with the Western Regional Homeland Security Advisory Council (WRHSAC), the affiliated membership now numbers 101 communities covering all of Western Massachusetts.

Berkshire County VHF Network. A single VHF network channel covers a significant portion of Berkshire County. A lack of spectrum in the VHF band and proximity of Albany, New York, limit the expandability and extendibility of the Berkshire System, which spectrum study have shown would find more available frequencies in the UHF band – as have the other Western Region regional dispatch centers.

Regional Consolidated Dispatch Centers and Control Points. Regional dispatch centers located at Shelburne Control (Figure 4-15) and Northampton Control that use these UHF radio systems are owned and operated by the Massachusetts State Police, with similar functionality. The principal functions of Shelburne Control are to:

- Dispatch appropriate services, including police, fire, ambulances and ancillary services
- Answer the NAWAS (National Alert Warning System) phone, and serve as the contact point for Franklin County
- Serve as the control point for the Fire & EMS mobilization plan for Franklin County
- Serve as the Tri-State Fire Mutual Aid System for Franklin County, Southern Vermont, New Hampshire, and several Massachusetts counties
- Serve as a warning point for dam failures, nuclear exercises, air medical coordination, weather emergencies, etc., in Franklin County
- Serve as the control center for Mass Casualty Incidents in the Franklin County area.

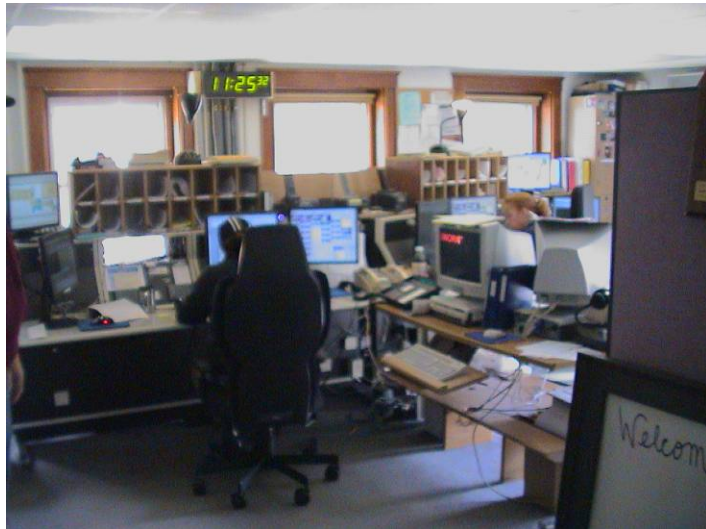


Figure 4-15. Shelburne Control.

- Participate and be continually monitored by the EMD QA (Quality Assurance) program

Northampton Control performs similar functions. These Western Region RF systems provide talk-around and relay-based multi-agency and multi-jurisdiction interoperability for day-to-day as well as planned events and small to major incidents. The interconnection between systems through dispatch patching, as well as the consolidated dispatch of multiple agencies, is handled through dispatch facilities in the region. The primary consolidated dispatch facilities in the Western Region with these capabilities include Berkshire County Sheriff’s Department, Shelburne Control, and Northampton Control.

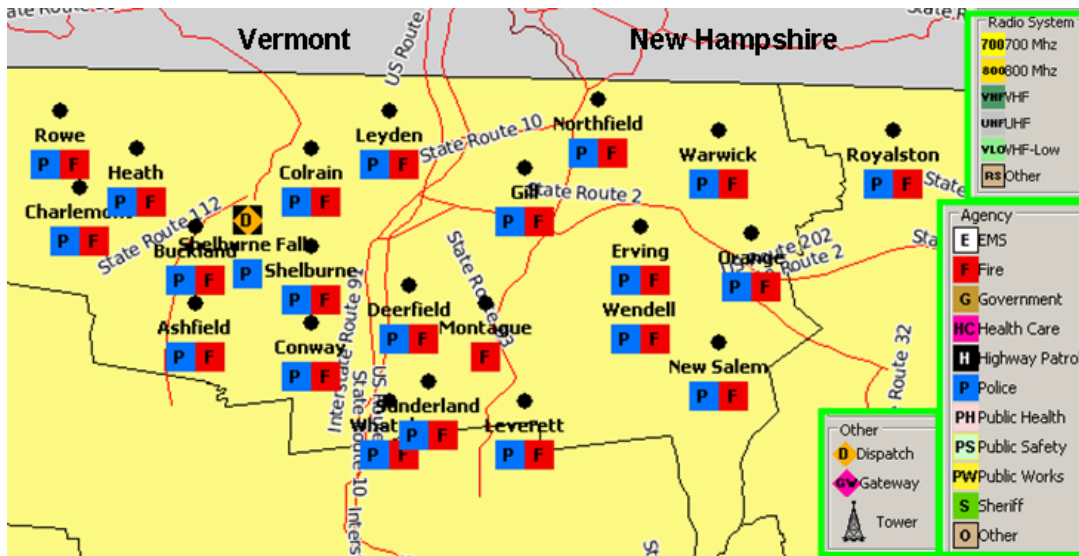


Figure 4-16: Agencies Dispatched by Shelburne Control.

These regional dispatch centers cannot fully “back each other up” and all employ single-threaded (single point-of-failure) telecommunications infrastructure. There is no information sharing capability or network other than voice and telephone lines among the Massachusetts Centers or among the Tri-State Command Centers.

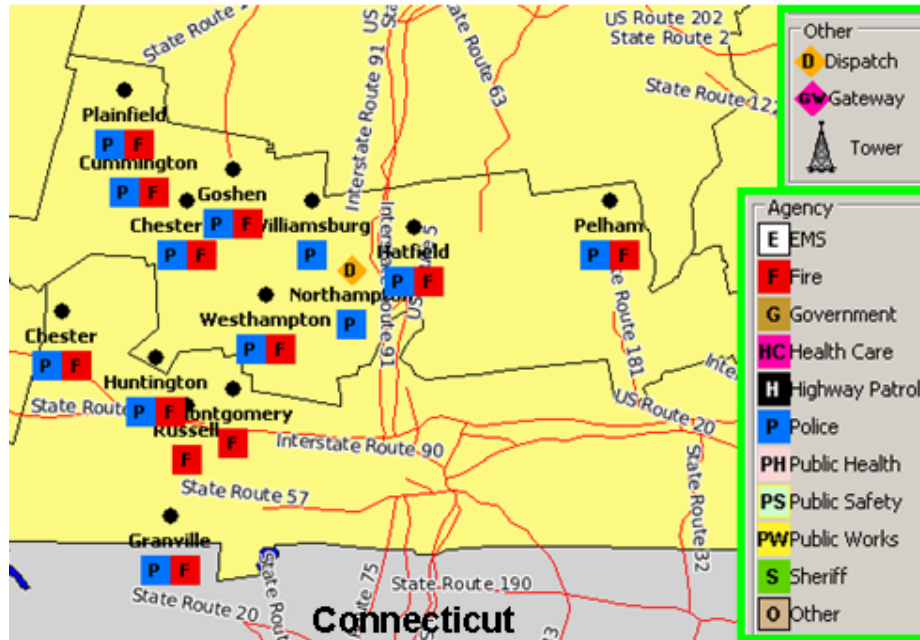


Figure 4-17: Agencies Dispatched by Northampton Control.

Interoperability Analysis. The overall status of interoperability in the Western Region accounting for radio systems and dispatches for day-to-day interoperability is shown in Figure 4-19. The radio systems that compose this interoperability view are as follows:

- FCECS: Fire Department (FD), Police Department (PD), and Sheriff in Franklin County
- Shelburne Control Dispatch: FD and PD in Franklin County
- Tri-State Mutual Aid: Franklin FD
- CMED Region 1: EMS, FD, Hospitals in Hampshire and Hampden Counties
- WMLEC UHF: FD and PD in Hampshire and Hampden Counties
- Northampton Control FD and PD in Hampshire and Hampden Counties
- Berkshire County Sheriff Dispatch: FD, PD, and Sheriff in Berkshire County
- Fire Districts 9-12 Mutual Aid (all counties)

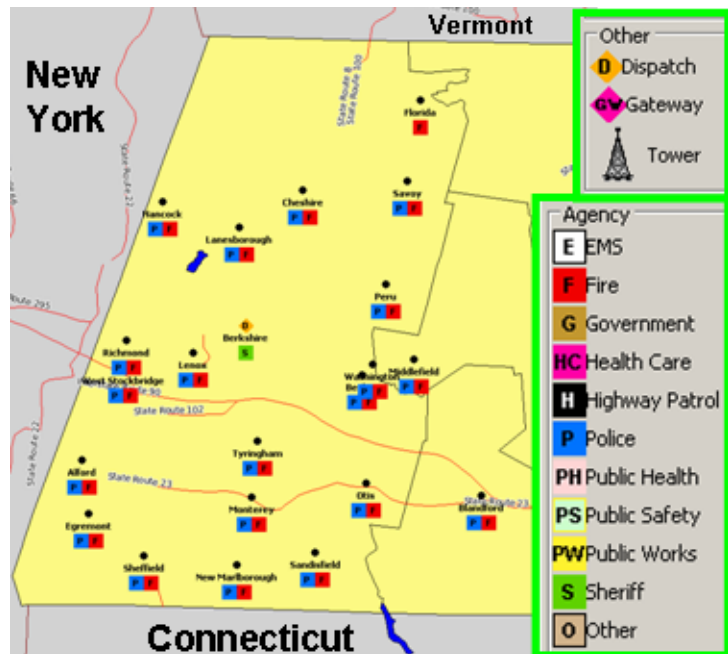


Figure 4-18: Agencies Dispatched by Berkshire County Sheriff's Office.

As the figure shows, the Police agencies in many Berkshire County towns show minimal or no radio interoperability with even one other agency, indicative that there is even less information sharing between these police agencies in 2007. Potential interoperability is shown with several agencies, but many hospitals in the Region show no interoperability. The same analysis with radio caches added is shown in Figure 4-19, corresponding to interoperability expected during major incidents and planned events. As the figure shows, the addition of portables from a radio cache (Figure 4-19) produced interoperability with four organizations otherwise not interoperable with at least one other agency. In this case, a few additional police agencies gain a minimum of event-based of information sharing over the air.

Both figures show agencies with no interoperability (in 'red') and potential interoperability, that is, the capability to be interoperable. As the ultimate objective is "full interoperability" between agencies and hospitals for day-to-day incidents as well as major incidents/events, it is evident that continued – and immediate - development of radio interoperability solutions is required in the Western Region.

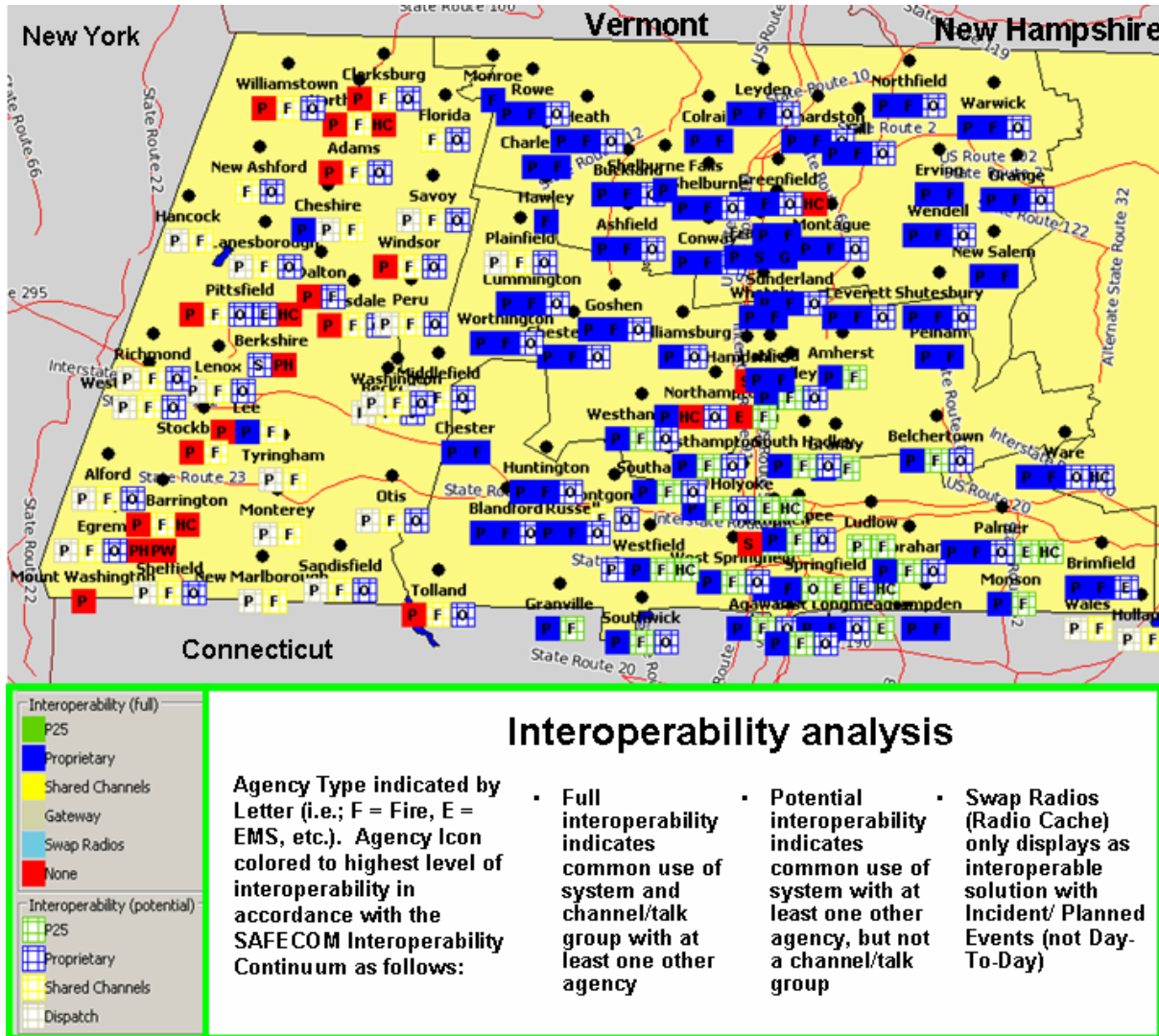


Figure 4-19: Western Region Interoperability Analysis for Day-to-Day Incidents

- Behind the apparent interoperability success in the mid-to-eastern portion of the Western Region are the many single points of failure. The consolidated regional dispatch centers of Shelburne and Northampton control, each others E-911 default backup center, are unable to use the communication facilities of the other, much less the Berkshire Sherriff's Center. The use of single microwave links, sometimes without dual redundancy, and no secondary (looped) paths, presents a significant risk to the public safety in the region. As the loss of even one link during a significant winter storm or other disaster may require days to access for repair, the resulting public safety radio outage at a time when it is most needed is unacceptable in 2007.
- Ironically, the significant benefit of regionalized consolidated dispatch means that the backbone communication paths supporting communications for the many cities and towns dispatched by these centers is at once put at collective risk because of

a lack of reliable backbone. For this reason, significant improvements to the microwave backbone among regional consolidated dispatch centers and their associated radio tower sites are a major priority for the Western Region.

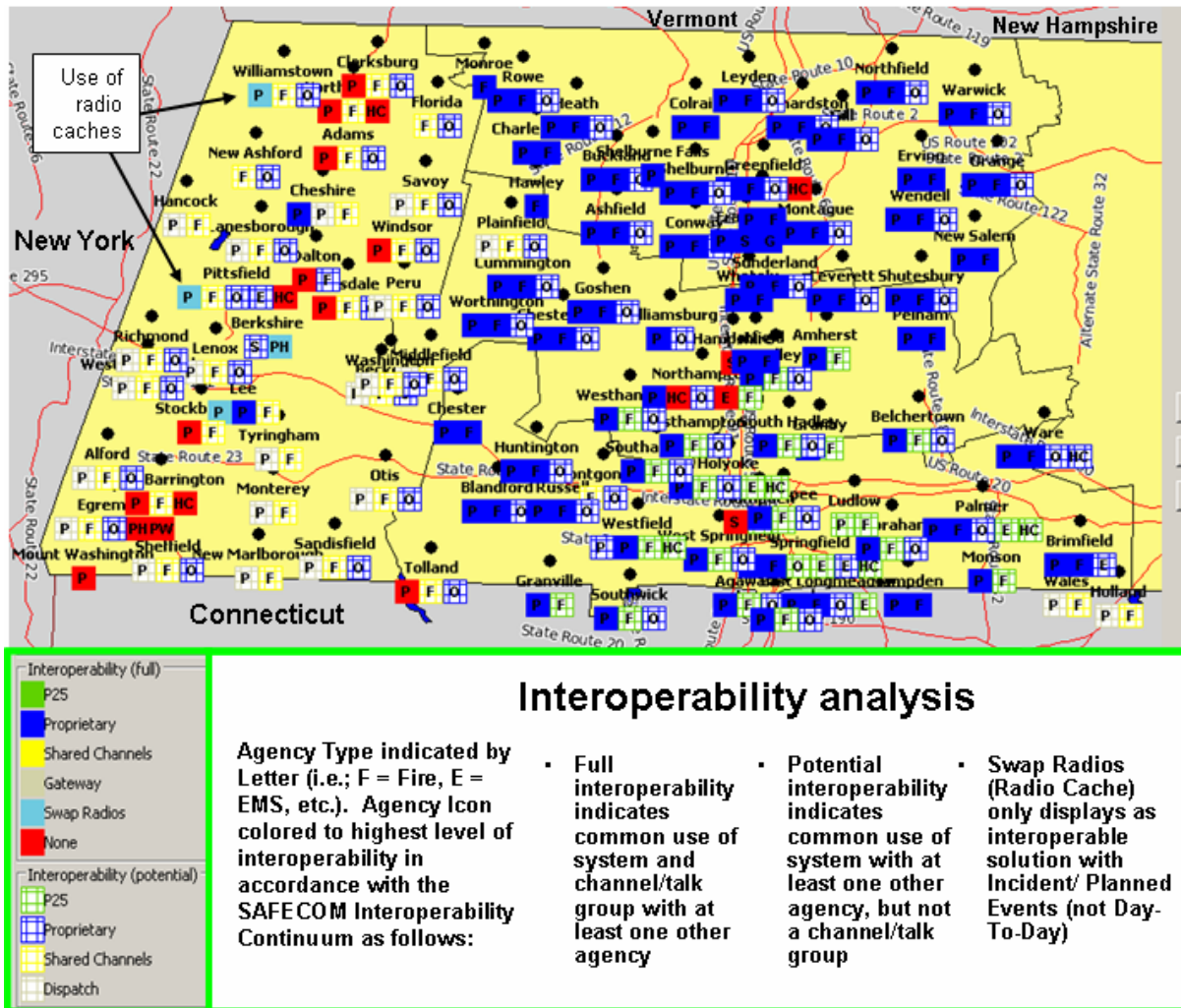


Figure 4-20: Western Region Interoperability Analysis for Major Incidents or Events.

4.2.2.2 Central Region

Radio Interoperability Systems. The primary interoperability systems used on a daily basis in the Central Region are the City of Worcester 800-MHz trunked system (see below) as well as the following radio systems:

City of Worcester 800-MHz System. The City of Worcester operates on a ten-frequency EDACS trunks trunking radio system. This two-site simulcast system allows hundreds of talkgroups and supports every department in the City, including the Worcester Regional Transit Authority. With a current subscriber base of just under 2400 units, it is one of the largest systems in the state. The EDACS technology also allows the passing of data in conjunction with voice. Coverage is mainly converged

within the City boundaries but also includes the watershed/reservoir area outside the City.

The Worcester agencies using the system as their primary communications are Police, Fire, UMass EMS, Worcester Regional Transit, Department Public Works, Health & Code, City Managers Office, and Emergency Management. For Mutual Aid purposes, several surrounding towns also have radios or patches into the system, including the jurisdictions of Shrewsbury, West Boylston, Auburn, Holden, Millbury, Oxford, Paxton, Leicester, and Sterling, In addition, the MSP and Worcester CMED also have system access.

MSP 800-MHz Smartzone system. The MSP 800-MHz system provides primary communications for several cities and towns in the Central Region, namely the towns of New Braintree, Hardwick, Brookfield, North Brookfield, West Brookfield, East Brookfield, and Brimfield. The MSP and Worcester 800-MHz trunked systems are each proprietary technology from different vendors and are not directly interoperable at a digital level, so audio patches are employed to link operational talk groups between these systems.

Regional Consolidated Dispatch Centers and Control Points.

New Braintree Regional Communications Center.

The New Braintree Regional Communications Center (Figure 4-21) is located on the grounds of the Massachusetts State Police Academy. Operations began in June of 1994. As shown in Figure 4-21, this center currently dispatches for ten communities: Brookfield, East Brookfield, North Brookfield, West Brookfield, New Braintree, Hardwick, Petersham, Brimfield, Holland and Wales. The New Braintree Center also serves as the towns' Public Safety Answering Point (PSAP), and so answers calls for 911, police, fire, EMS, highway, water, animal control and miscellaneous informational calls.

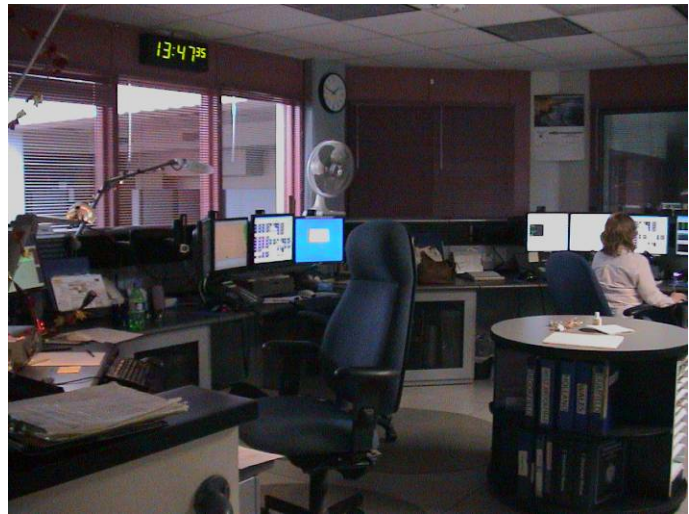


Figure 4-21: New Braintree Center.

The approximate population of the tens towns served by New Braintree Center serve is 35,000. The New Braintree Center averages 30,000 calls for service annually using a total of 13 dispatchers, with a minimum essential staffing of two per shift.

Seven of the town ten police departments are dispatched on the MSP 800-MHz trunked radio system on talkgroups specific talkgroups. These talkgroups are available for interoperability with the fire departments, which were issued a limited number of radios

to communicate with the police. The consolidation of these seven departments was Phase 1 of the New Braintree Dispatch Consolidation Project. The other three departments were given new low-band VHF radio equipment, and those towns are therefore dispatched on two conventional systems. These three towns were not moved to the 800-MHz system due to coverage issues and more towers are sought in Phase 3 of the project to bring them online with the others. East Brookfield, while moved to the 800-MHz system as part of Phase 1, still has coverage issues and vehicular repeaters are needed for them to supplement their coverage.

The dispatch center also has access to the:

- C-Patrol 1, 2, 3, LPS 7, 8 and State talkgroups on the 800-MHz system for working with MSP
- Three low-band VHF transmitters
- SP-RPT-1 800 conventional system for MSP
- 800-MHz ITAC systems for interoperability
- Regional Mid-State (District 8) and South County (District 7) fire mutual aid networks

In addition, New Braintree can operate on the Shelburne talkgroup and low-band fire system for interoperability with the MSP Shelburne Control Center. In total, the new Braintree Center is forced to operate on ten different conventional systems for fire, ambulance and highway/water dispatch. For this reason, Phase 2 of the project would ideally combine the ten towns' fire and ambulance services into one common system for consolidation and interoperability. Thus, any consolidation of local dispatch operations onto common channels will help to promote greater interoperability and efficiency in the delivery of dispatch services.

In summary, the New Braintree Communications Center needs:

- Consolidation of the fire and ambulance radio systems into one common (a Phase 2 objective).
- Improved 800-MHz frequency coverage for the towns of East Brookfield, Holland, Wales, and Petersham (Phase 3 objective)

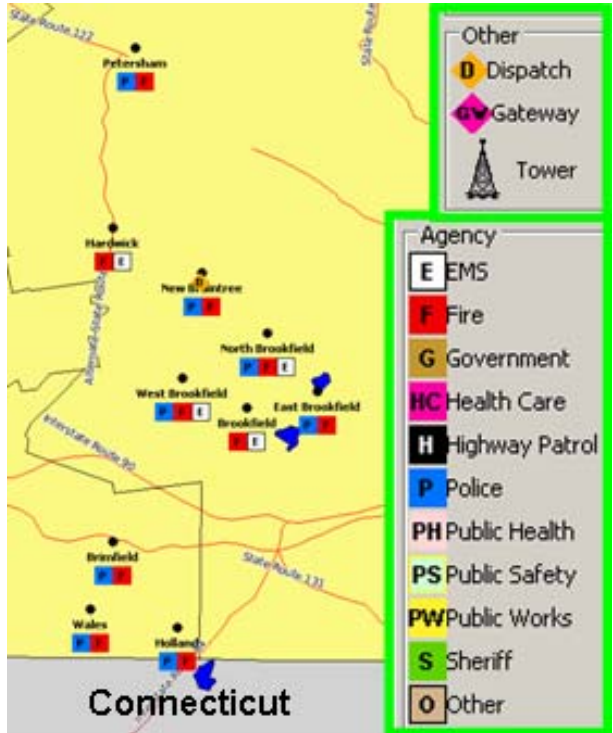


Figure 4-22: Agencies Dispatched by the New Braintree Communications Center.

- Vehicular repeaters for East Brookfield PD to supplement poor 800-MHz coverage until Phase 3 can be implemented.

The New Braintree Center does not have the ability to share information through the current Computer Aided Dispatch (CAD) system with the town departments for whom they are the PSAP and Dispatch Center. This Information Sharing would allow dispatch information to be relayed from the dispatch center to the officers in the towns to assist in their police duties – such as predicting the need and planning for officer back-up and other mutual aid situations. In addition, it will also allow the Center's CAD information to be extended to those on the road, both to provide them direct access to the same information dispatchers must otherwise relay by voice, as well as update their own information directly – improved situational awareness. Finally, improved interoperability with surrounding towns, not currently dispatched by the Center and MSP, is essential for maintaining proper regional situational awareness in 2007 – resulting in modern access to - and increasing use of - other mutual aid when needed.

Fitchburg Fire Control Point. The Fire services have the in-place Fire District Centers, such as the Fitchburg Fire Control Point (see Figure 4-23). According to the Massachusetts 2003 Statewide Fire Mobilization plan, a District Center like the Fitchburg Control Point would be activated if a local Incident Commander requests aid through a local dispatch center as an incident escalates. The local dispatch center, working through its district control center, will utilize normal in-district mutual aid from surrounding communities. If this source of mutual aid was depleted and the local incident commander requires additional aid, the local dispatch center will request such aid from its district control center. The district control center, utilizing the State Fire Mobilization Plan, then requests the indicated task force(s) or strike team(s) from the appropriate adjacent control center(s), notifying them of the situation and the location of the staging area their task force is to report.



Figure 4-23: Fitchburg Fire Control.

The adjacent district control center, utilizing this plan, will then activate the appropriate task force, and inform the activated units of an in-district assembly point. Once assembled, the task force will then respond in convoy to the incident staging area. The adjacent district control center will then notify the requesting district control center of the departure and estimated time of arrival. Both control centers shall remain ready to provide logistical information until the task force arrives at the staging area and is under the control of the local incident commander. Currently, all of the indicated traffic is executed with telephone and voice calls, and all the information needed about the

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adjacent centers and available or activated assets is done using paper files and notebooks.

City of Worcester Emergency Communications Department.

The City of Worcester Emergency Communications Department (Figure 4-24) is the largest Combined Public Safety Answering Point in the New England answering approximately 100,000 9-1-1 calls and over 300,000 other calls. Operating since 1993, the PSAP dispatches both the Police and Fire Departments in the City of Worcester equating to over 150,000 incidents. The dispatchers also monitor an E911 talk-group that all city departments and Worcester Regional Transit Authority utilize to report emergencies. The Worcester PSAP also dispatches several specialty response teams, including the Worcester Regional Incident Dispatch Team. It is a modern raised-floor facility in a modern Police Headquarters building with arguably significant space for expanded and extended PSAP and dispatch operations in the Central Region.



Figure 4-24: Worcester Consolidated Dispatch.

Interoperability Analysis. In the Central Region, multi-jurisdictional intra-disciplinary communications are provided by the New Braintree Communications Center, CMED Region II, FAMTRAC (currently, for the ATF alone), the MEMA VHF network for EMDs and others (e.g., FAMTRAC backup), the Fire District systems, and the HCN. The CASM interoperability analysis for day-to-day communications in the Central Region is shown in Figure 4-25 which includes the following systems:

- Worcester 800 EDACS: Worcester City
- CMED Region 2 UHF: Fire and EMS ambulance
- CMED Region 2 HCN: Hospitals
- New Braintree Dispatch: also dispatches into Hampden County (western Region)
- Fire Districts 7, 8, and 14: Mutual Aid

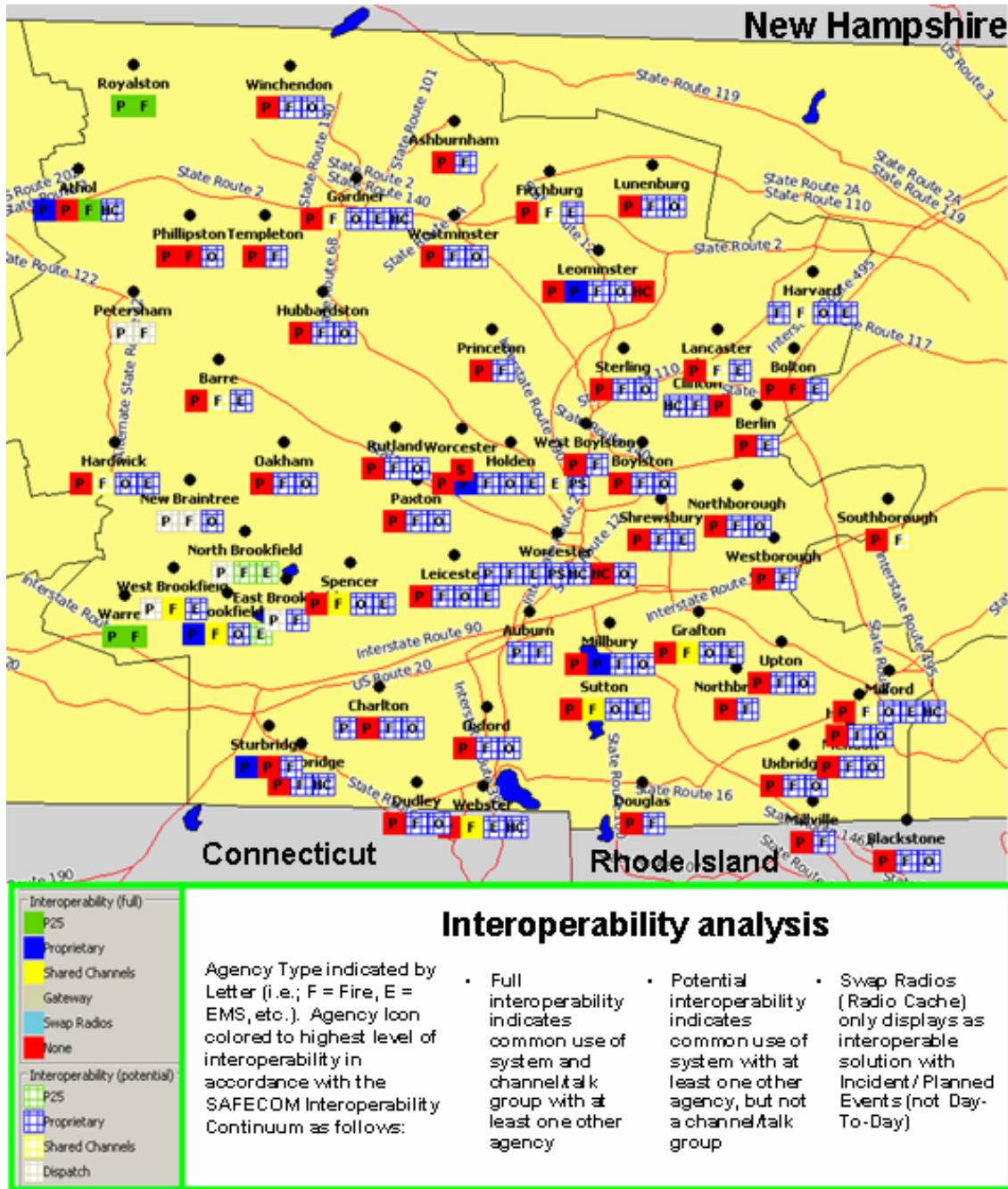


Figure 4-25: Central Region Interoperability Analysis for Day-to-Day Incidents.

As is immediately apparent in the figure, there are many Police agencies showing no interoperability. This “theoretical plot” is at once supported by information provided by police officers “in the street”, for example, who emphasize the importance of direct radio communication with cruisers from adjacent towns – but don’t have it in 2007.

The interoperability afforded by the New Braintree Center is apparent in that all agencies in the lower left of the Central Region show a level of interoperability. No

regional wide-area systems exist – such as exist in the Western Region (albeit there are three of them) and in the eastern portion of the state (e.g., BAPERN) or in the Southeast (Norfolk, Plymouth, and Barnstable). The Fire District, CMED, MEMA, and HCN systems provide much of the interoperability shown for emergency response in this Region. Thus, Police interoperability over the air is minimal in the Central Region.

As was pointed out by an analysis of the communications needs of the New Braintree Communications Center, which uses as many as ten different conventional radio systems to perform its vital public safety mission, a greater consolidation of interoperable communications is needed in Central Massachusetts. This need will only increase as more and more towns in the region both understand and are compelled by natural and manmade threats to choose the benefits of wide-area dispatch and regional radio communications systems for the improved public safety of their citizens. Consider the hypothetical example of adding more dispatched agencies to New Braintree as a South Central regional dispatch center, or transforming the Worcester Dispatch Center into a North/Central Regional Center, the *immediate need* for a reliable wide-area radio communications interoperability system (as well as significantly improved 2007-style information sharing capabilities) will move from a priority essential requirement to a critical need.

4.2.2.3 Northeast Region

Radio Interoperability Systems. Radio communications interoperability in the Northeast Region consists principally of the Multi-Regional system BAPERN, CMED, HCN, Fire Districts, MEMA VHF system, and MDPH FAMTRAC system (all described in detail above). There are no other wide-area day-to-day interoperability systems in the region.

Regional Consolidated Dispatch Centers and Control Points. There is one two-town consolidated dispatch center in Hamilton-Wenham.

Interoperability Analysis. The analysis for day-to-day interoperability is plotted in Figure 4-46 with contributing systems being:

- BAPERN – Police Departments and Sheriffs in Essex and Middlesex Counties
- Fire Districts 5, 6, 14, & 15 – Fire Department Mutual Aid
- Region III CMED - EMS and Hospitals in Essex and Middlesex Counties

The figure shows the expected results that there are many police organizations with full (proprietary) BAPERN-provided interoperability, fire agencies using the Fire District systems, CMED EMS support, and MEMA VHF EMD coverage. However, there are a number of police agencies, a few hospitals, and a small number of fire agencies not showing at least minimal interoperability, particularly on the western fringes of BAPERN coverage or agencies within coverage who have not yet joined BAPERN.

As in the Western and Central Region interoperability analysis, a closer examination of the results and implications of the interoperability analysis in Figure 4-26 offers a true picture of the status of interoperability in the Northeast Region. First, two of the three

moment-to-moment radio interoperability systems in the Region (BAPERN and Fire Districts) are single-discipline. CMED provides a link between EMS and Hospitals but is limited to those two disciplines by design, while FAMTRAC supports ambulance event-based convoys with coordination between MEMA, Fire District Centers, and the ATF themselves – benefiting from the long-standing integration of Fire and EMS disciplines. Again, the historical separation of Police from Fire and other disciplines is evident in the separation of these wide-area communication systems.

The use of independent wide-arena radio systems for different disciplines would lead to greater interoperability – and moment-to-moment information sharing – in a consolidation regional dispatch center. Despite the well-proven public safety and service performance advantages, personnel safety, and long-term opportunity costs of regional dispatch in 2007, only one two-town dispatch center exists in a Region with 85 cities and towns. This unacceptable situation is ironic because the Northeast Region is the most populous Region, where regional dispatch would arguably have the greatest advantages.

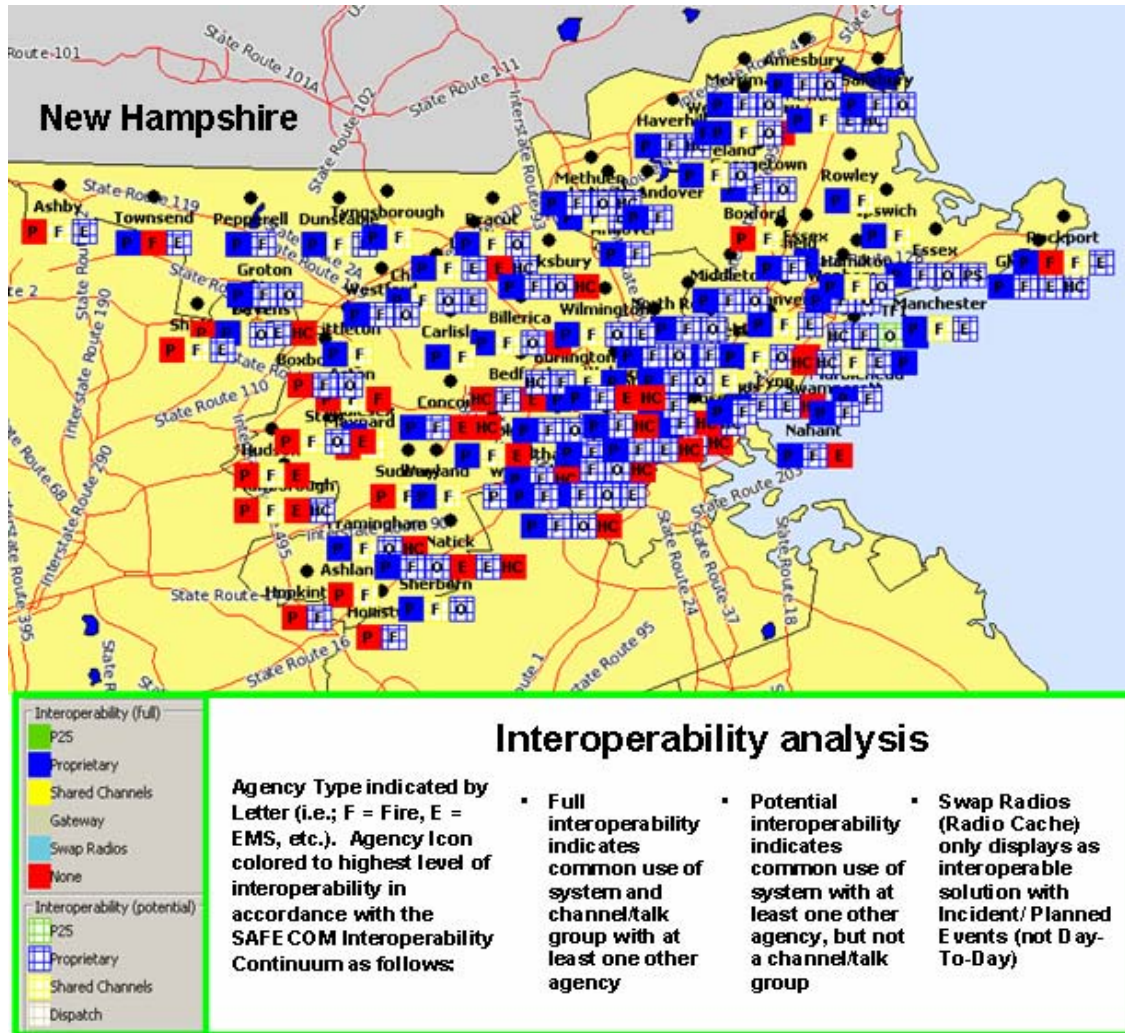


Figure 4-26: Northeast Region Interoperability Analysis for Day-to-Day Incidents

Thus, the greatest needs from a radio interoperability perspective in the Northeast region are for a wide-area cross-discipline radio network and one or more regional dispatch (consolidated) centers. In fact, the lack of regional centers is also an indication of a lack of basic information sharing between agencies, again the foundation of a lack of radio interoperability. Any steps taken to significantly improve moment-to-moment, much less day-to-day, situational awareness between the many public safety and service organizations in the Northeast Region will be at least provide virtual regionalization of situational awareness. This virtual awareness will meet the critical need for regional dispatch until such centers can be developed in the Region.

Interoperability Planning. Several interoperability studies were conducted by the Northeast Region Communications interoperability Subcommittee IS in 2005 through early 2006, including:

- Interoperability Assessment and Recommendations Plan - Recommended interoperability equipment needs with ROM costs to expand BAPERN coverage, including console and audio patch equipment needed to bring additional First (Police,

Fire, EMS) and Supplementary (Emergency Management, Hospitals, Public Works, etc.) into the system. If implemented, these recommendations would move toward providing the wide-area multi-discipline radio interoperability needs of the Region.

- Memorandum of Understanding and Standard Operating Procedures – Updated BAPERN SOPs and the corresponding inter-agency MOUs to accommodate the extension of the UHF simulcast system to disciplines other than police. Of course, such SOPs and MOUs should follow a statewide template with common provision and channel definitions so local and remote Responders can interoperate on demand anywhere in the State.
- Regionalized Emergency Dispatching and Regional Emergency Operations Center Study and Plan – A major feasibility study and implementation plan recommending regional consolidated dispatch, including dispatch enterprise architecture, governance, funding sources, implementation planning, and acceptance factors. In 2007, and after Katrina and 9-11, this recommendation must become a reality.
- Portable Emergency Operations Center Communications - Recommended communications equipment for a Portable Emergency Operations Center (PEOC) based on derived NIMS communication requirements.
 - **Northeast Homeland Security Region Advisory Council Open House.** In order to begin to meet the recommendations of the Interoperability Plan regarding BAPERN extension, the Northeast Homeland Security Region Advisory Council (NERAC) held an “Open House” at the Beverly Emergency Management facility in Beverly, Massachusetts (see Figure 4-27) in June 2007. The principal objective of the Open House was to provision portable radios to local Public Health and Public Works agencies as well as provide SOP training. The Open House also provided a critical event for networking, capability demonstrations, and among members of the Northeast Region’s regions public safety and service personnel as well as the state’s homeland security leadership.



Figure 4-27: NERAC Open House.

Consolidated Dispatch in Essex County. An \$80,000 homeland security grant was used for an implementation planning process for a regional dispatch center. Currently, 11 municipalities have “signed on” through a vote at the local level, and have each contributed a small sum of money (\$1000 to \$4000, depending upon the size of the community) toward the establishment of the Regional Operations Center (ROC). The Essex County Sheriff’s Office will pay for the first year of an Executive Director’s salary.

The ROC Steering Committee, comprised of member communities, the Sheriff and MAPC, meets monthly to move the project forward.

MAPC is acting as a fiduciary for the project at the moment, at least in terms of maintaining a bank account with the municipal contributions. NERAC is also paying for the development of the legal/institutional framework for the Center. In this regard, the Secretary of Public Safety has met with the group and expressed the state's support for, and interest in, the ROC project. Although ongoing operating costs (including labor) will come from the member municipalities, it is essential now that the project receive state-level contribution for the initial capital outlay needed to establish a state-of-the-art regional dispatch center. In addition, the State's 911 legislation is expiring, so that prospective new legislation should direct some portion of collected 911 fees toward the support of the regionalized dispatch/operations center. This opportunity to develop a regional center in the area of Essex County should be strongly supported by the State and approach evolving there should be expanded into Middlesex County, then assure that the resulting dispatch centers are designed for full mutual support (a requirement that should enter into the design of the Essex Center at the outset).

Fire Control Points Communications Project. The Fire Control Points in Northeastern Massachusetts had no direct communications link with each other, making it difficult to effectively track resource deployment across fire districts. To resolve this issue, the Northeast Homeland Security Planning Region, working with representatives from the fire districts (5, 6, 14, and 15), planned and implemented a Voice over Internet Protocol (VoIP) solution that provides converged voice and data links. The Fire Control Points project has now established an IP-based direct voice communications capability that effectively connects the fire departments of 67 communities in real time during an incident. A second phase to add additional equipment (radios) to the system is currently underway. A functional fire apparatus database was established to support this system and help manage resource deployment by the fire control points during an incident.

The key employment of VoIP establishes a multi-cast voice and data environment among the four District dispatch center radios working on different frequencies to interoperate with one another without changes in radio equipment. For example, UHF and VHF users at the dispatch center level communicate with each other without having to have each other radios. The system was set up so that any one of the four implemented sites can cover the other three in case of an emergency. IP also allows the system to be "virtual," so a Chief with a laptop and wireless can become a virtual center. This project begins to move the State's Fire Mobilization Plan into a modern IP-based networking environment in keeping with well-established technologies in 2007.

4.2.2.4 Southeast Region

Radio Interoperability Systems. There are several radio systems in the Southeast Region that support interoperable communications, notably the use of the MSP 800-MHz trunked system in Barnstable County (i.e., the "Cape") as the primary voice radio for all Responders. Used on a moment-to-moment basis, this system achieves the

“Optimal” level of interoperability in the DHS SAFECOM Continuum definition for Usage – but it nevertheless must reside on a proprietary system. Of course, the following radio systems are also available in the SE Region:

In the case of BAPER, all 27 local police departments in Norfolk County in the Southeast Region are members of the GBPC and therefore have access to the BAPER area-wide and district radio channels, used day-to-day for law enforcement notifications. The Area Wide 3 and Area Wide 4 channels provide radio interoperability between all Norfolk County law enforcement agencies and the 116 remaining member agencies located beyond the Southeast Region. For incidents that are of interest to multiple jurisdictions, but do not warrant wide-area notification to all member agencies, police departments in Norfolk County utilize the South, West, and Central District channels of BAPER. In addition, seven law enforcement agencies in Plymouth County are members of the GBPC and have access to the BAPER area wide channels. These seven agencies also have access to the South District channel, which enables communication with the remaining 14 South District members, located in Norfolk County.

Norfolk County UHF Simulcast System. The Norfolk County Control (NCC) Fire mutual aid system operates on a three-channel, four-site UHF simulcast system that covers most of the County.

All Norfolk County Communities (all disciplines) and neighboring Counties will have the ability to utilize these frequencies during an incident through the coordination of Norfolk County Control (NCC).

- **Bristol County UHF System.** The Bristol County system provides both Regional Law Enforcement and Fire Mutual-Aid, with the Bristol Sheriff coordinating Regional Law Enforcement using the Police Mutual-Aid channel (482.5125 MHz) for the Departments in greater Bristol County, which links to Plymouth County as well as the State Police.
- Bristol CMED is also coordinated out of Bristol Sheriffs Office using the local CMED Region V UHF radio system shown. This system went online in January 2007 at the new Communications Center at the Bristol County Sheriffs Office. Although it is new to this Region, it operates exactly the same as the other two CMED Centers in Region V (Plymouth & Barnstable). The Fire Mutual-Aid is currently coordinated out of Norton Fire Department, which serves all of Bristol County (Fire District 3), although it is expected to transition into the Sheriff’s Office sometime in the future. This transition would complete plans for three fully functioning CMED/Mutual-Aid Centers under the umbrella of three Sheriff’s Departments in Southeastern Massachusetts.

Dukes County VHF System. Dukes County (which consists of 11 islands off the southeast coast of Massachusetts) currently supports voice/radio communications for all Police, Fire and Emergency Services in the county on conventional VHF wide-band radio systems. Communications are accomplished via a single conventional wideband

VHF high-band duplex channel with the main transmitter located at the dispatch center on the Martha's Vineyard. The Ambulance service(s) serving the island use a single simplex channel for all dispatch and communications. Coverage is reported as marginal. The police departments of Chilmark, West Tisbury, and Oak Bluffs each have their own FCC-licensed frequencies for individual departmental use along with the right (FCC license) to use the Sheriff's Department main dispatch channel (call sign 860, 158.850 MHz). . This configuration permits only minimal interoperability between Police agencies on the island; however, it is not an optimum scenario as it would employ the Sheriff's main dispatch channel. The Fire departments operating on the island also use VHF high-band radio systems for voice and pager (tone) communications.

Plymouth County UHF System. Plymouth County employs a UHF area-wide network for Fire, Police, and EMS disciplines - much like the Bristol County system (Figure 4-28). Note that Barnstable and Bristol County Sheriff's departments also have access to the network – providing critical dispatch backup region wide as well as area interoperability with Hospitals through the Plymouth RCC Center. The Plymouth RCC is very similar to that of Barnstable County with the exception of being an E9-1-1 PSAP. This is an area of interest amongst some local Police & Fire Chiefs who have approached the Plymouth Center on a few occasions to offer this service to their jurisdictions.

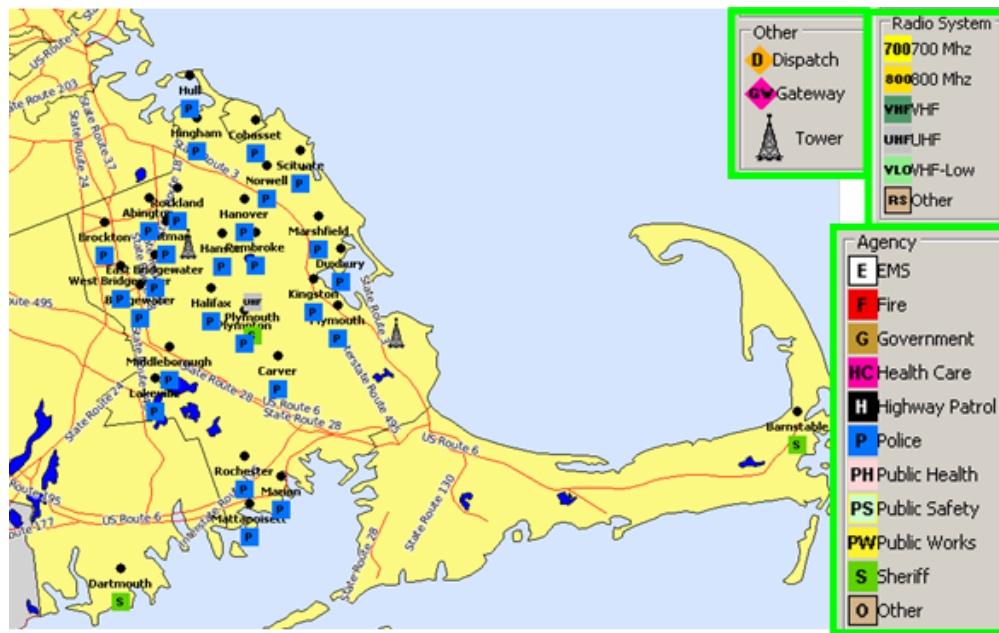


Figure 4-28: Plymouth County UHF System and its Police User Agencies.

Barnstable County 800-MHz System. Barnstable County Sheriff's Office employs the MSP 800-MHz system for talk-group-based interoperability between public safety and

service organizations throughout the county. Both police and fire user agencies of the 800-MHz trunked system are shown in Figure 4-29.

Nantucket County. Police on the island use 800-MHz, while fire and EMS operate in the VHF high band.

Statewide Systems. The CMED, MEMA VHF, MDPH FAMTRAC, MDPH HCN, and MSP Lo-band VHF provide some usability to those equipped and authorized in portions of the SE Region (see corresponding sections above), with the exception that CMED and FAMTRAC are not completely available as yet on the islands.

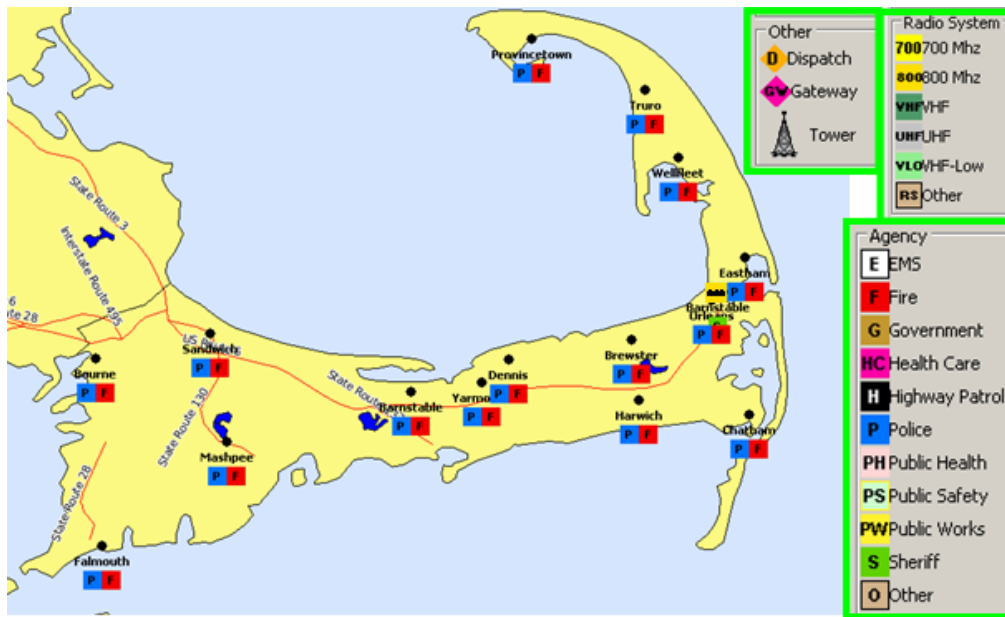


Figure 4-29: Barnstable County 800-MHz (MSP) Police and Fire User Agencies.

Regional Consolidated Dispatch Centers and Control Points.

Several centers in the SE Region provide primary dispatch services to First Responders in their counties using these radio systems.

- **Norfolk County Control.** Norfolk County Control (NCC) is the mutual-aid control point for Fire District 4, coordinating mutual-aid responses from one community to another; which includes 28 individual fire departments, as well as private ambulance companies (Figure 4-30.) The primary



Figure 4-30: Norfolk County Control.

mission for the mutual-aid center includes providing coordination for all fire and EMS incidents within the county, and requiring – as a matter of course – facilitation of interoperable radio communications with base station, mobile and portable radio communications. Figure 4-30 shows the user agencies dispatched by NCC.

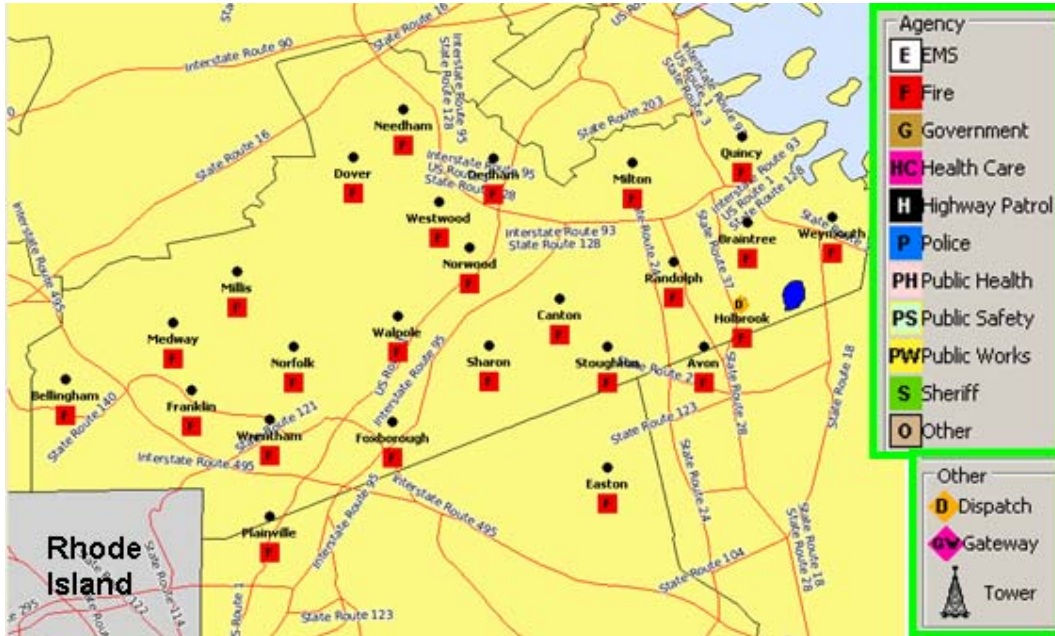


Figure 4-31: Agencies Dispatched by Norfolk County Control

Bristol County Sheriff’s Dispatch.

The Bristol Sheriff’s Office provides dispatch services for both the Sheriff’s Office and CMED Region V Bristol County segment (Figure 4-32).



Figure 4-32: Bristol Sheriff and CMED Dispatch

Plymouth County Sheriff’s Dispatch.

The Plymouth County Sheriff’s Dispatch (PCSD) center provides dispatch services and coordination for police, fire, and EMS across the county as shown in Figure 4-33.

The map in Figure 4-33 also shows that the Barnstable Sheriff’s Dispatch Center can backup the Plymouth Center. It has also recently installed a satellite phone capability for CMED backup communications using the HCN. The PCSD also operates a deployable Mobile Communications Center (MCC) as shown in Figure 4-35.

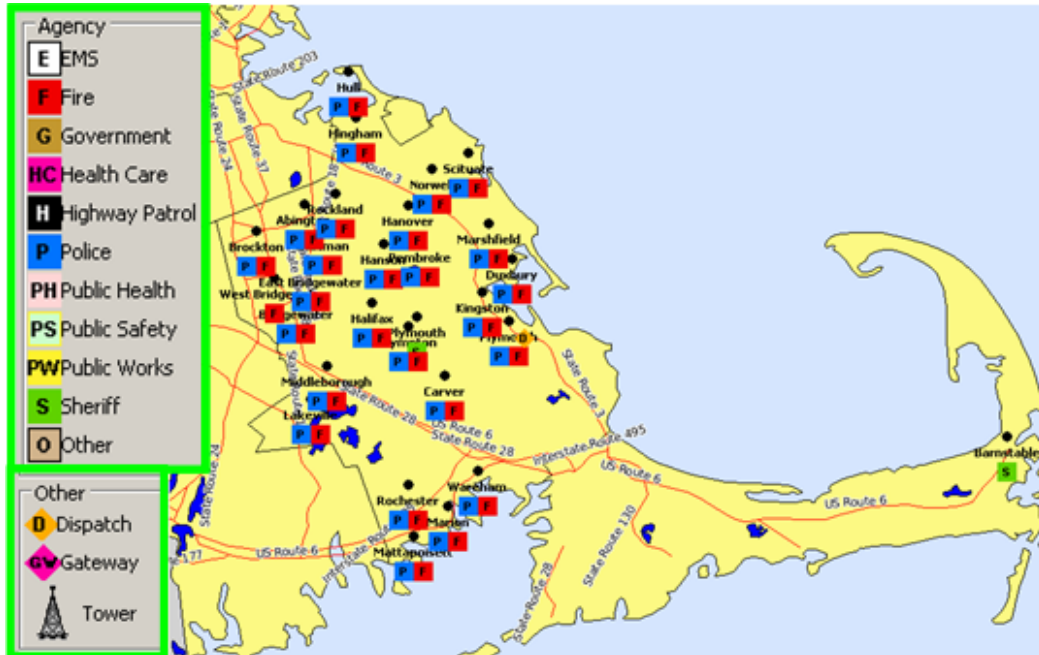


Figure 4-33: Agencies Dispatched by Plymouth County Control

Dukes County Communications Center. The Dukes County Communications Center dispatches for over 100 core and supporting public safety agencies, and houses the island data center – with new Vista Palace E911 system, Computer Aided Dispatch (CAD) and GIS mapping. No CMED yet, but CMED operations are operated from the backup PSAP in Barnstable County on the mainland.



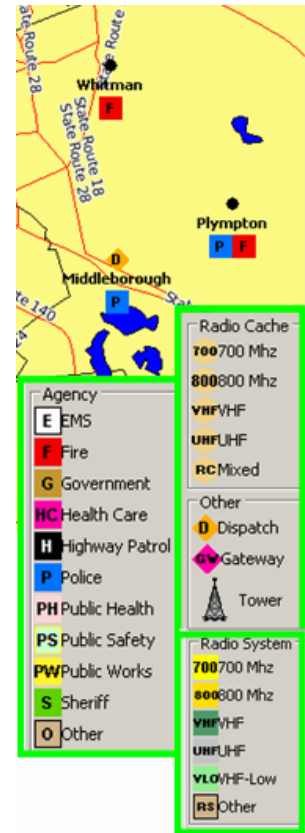
Figure 4-34: Plymouth County Dispatch



Figure 4-35: PCSD Mobile Command Center

Middleboro Troop ‘D’ Headquarters Dispatch Center. The Southeast Headquarters for the MSP in Middleboro, Massachusetts, which is the southeastern Massachusetts headquarters of the MSP, provides Fire and Police dispatch services for the Town of Plympton and Fire for the Town of Whitman as shown in Figure 4-36.

- **Barnstable County.** The Barnstable County Sheriff’s Office dispatch center is located on Otis Air Force Base (see Figure 4-37), housed in a new facility with large garage space public safety vehicles as well as the county’s Mobile Command Center (Figure 4-38). The agencies dispatched through the Barnstable center are shown in Figure 4-39 (including Plymouth dispatch backup).



**Figure 4-36
Middleborough
Dispatch**

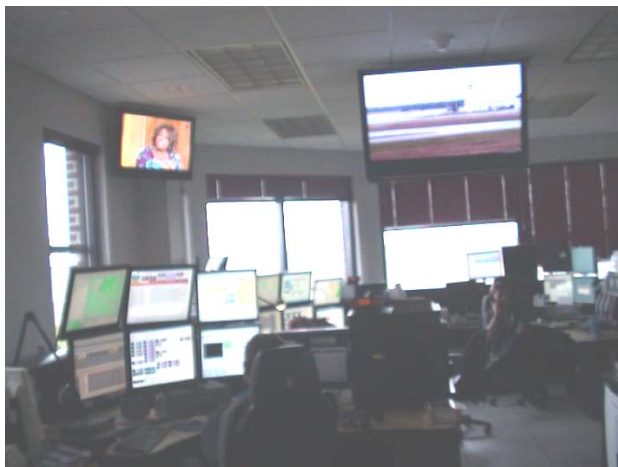


Figure 4-37: Barnstable County Dispatch

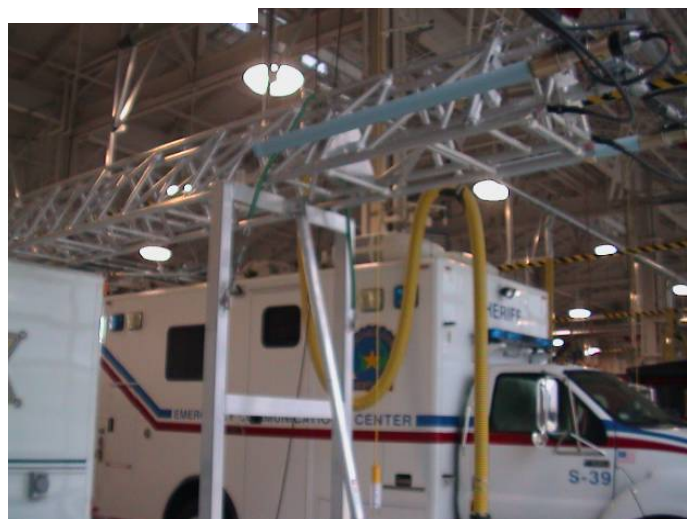


Figure 4-38: Barnstable County Mobile Command Center

Interoperability Analysis. A CASM analysis was performed on the Southeast region and the results are shown in Figure 4-40 for day-to-day interoperability using the following systems:

- Norfolk County Control - Norfolk County FD and backup for Sheriff and EMS in Plymouth County;
- Plymouth Fire Mutual Aid - FD, Sheriff, Hospital, and EMS in Plymouth and backup in Barnstable and Bristol counties;

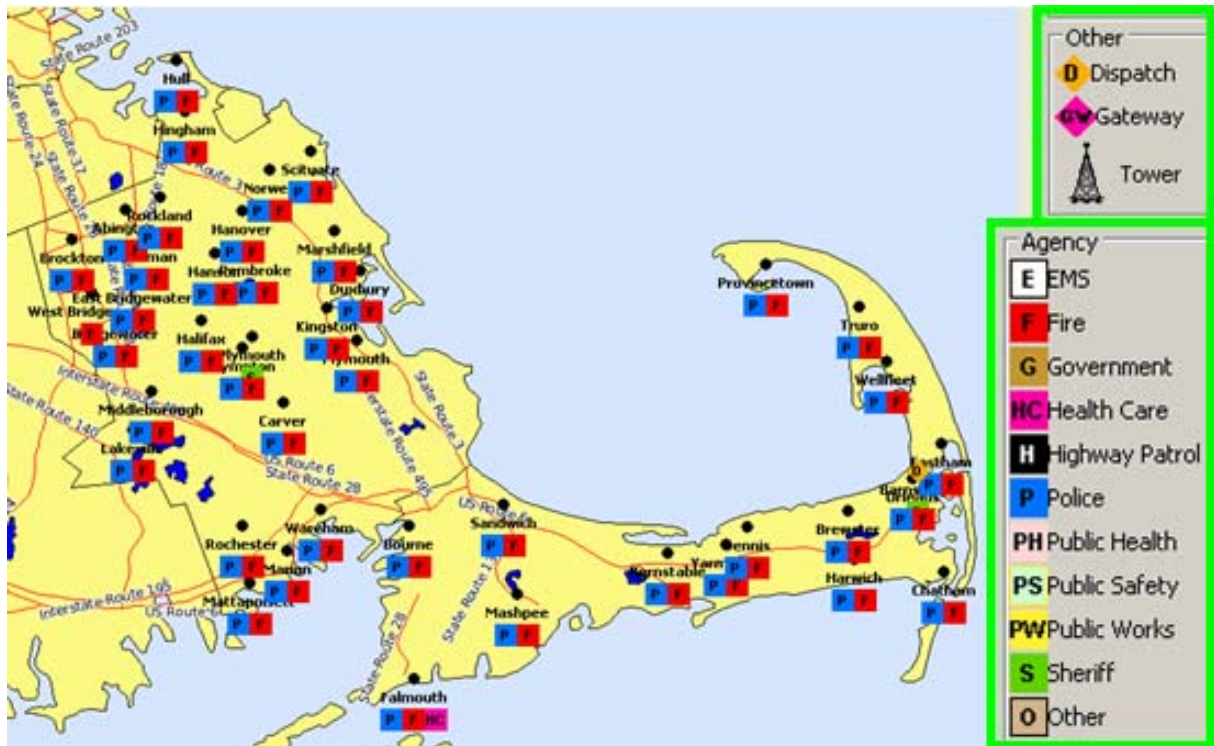


Figure 4-39: Agencies Dispatched by Barnstable County Center

- Plymouth CMED – FD and EMS in Plymouth and backup in Norfolk, and Barnstable Counties;
- Barnstable Fire and Police - FD, PD, and Sheriff in Barnstable County;
- Barnstable CMED - FD and Hospitals in Barnstable and Dukes Counties;
- Dispatch Centers in Barnstable, Plymouth, Bristol and Middleboro - FD, PD, and Sheriff in Plymouth and Barnstable Counties;
- Plymouth County Regional Police Network - Plymouth PD; Plymouth, Bristol, and Barnstable Sheriff;
- BAPERN – 35 law enforcement agencies in Norfolk County, Plymouth County and Bristol County that have day-to-day interoperability with 116 remaining BAPERN agencies located outside the Southeast Region;

Massachusetts Statewide Communications Interoperability Plan

- Mobile Emergency Communications Center - Barnstable PD and FD, Plymouth FD, MSP Troops;
- PCSD Mobile Command - Plymouth FD and PD; plus Norfolk, Suffolk, Middlesex, and Essex PDs; and
- Fire Districts 1-4 Mutual Aid (all counties)

Figure 4-39 shows that police, fire, and EMS agencies have full or Project 25 potential interoperability in Norfolk and Barnstable Counties, with full proprietary interoperability in Plymouth County. A significant number of police, fire, and hospital organizations without interoperability, particularly in Bristol, Dukes, and Nantucket Counties and (which may be a vestige of lack of systems or CASM input to date).

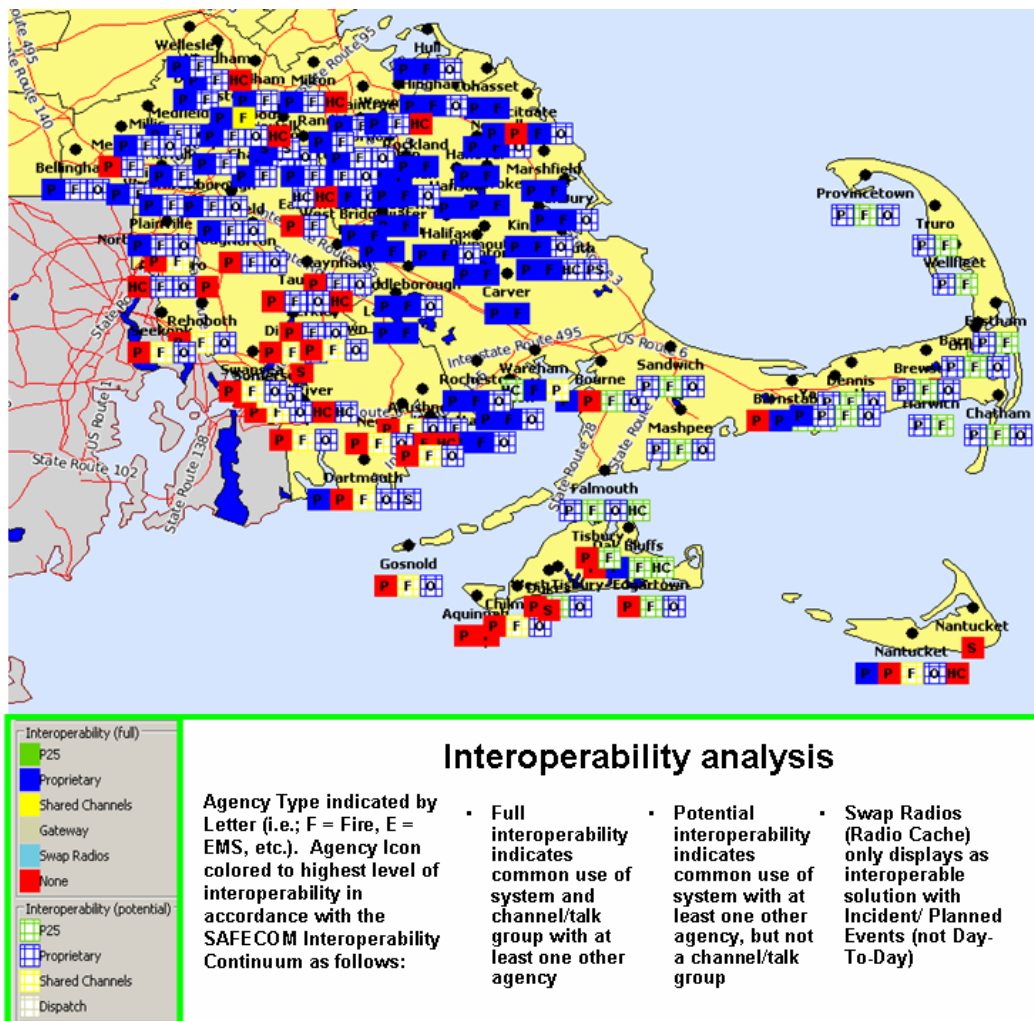


Figure 4-40: Southeast Region Interoperability Analysis for Day-to-Day Incidents

The interoperability analysis of the Southeast Region incorporates two fundamental attributes of the SAFECOM “Optimum” Interoperability according to the Continuum, namely:

- Moment-to-moment use of a trunked radio system (albeit proprietary) with talk-groups for spanning multiple disciplines, jurisdictions, and levels of government
- Regionalized consolidated dispatch with center-to-center backup capabilities.

However, the trunked system is employed only in Barnstable County in this regard, and there is a regional center in every county – and most of the interconnecting communications links and the centers are not equipped to handle a complete extended backup scenario. Steps need to be taken to improve both the inter-center communications and the capabilities of each center to take over for each other. Of course, independent transmission paths that don't pass through a center must be employed to provide this backup and full-up transfer of region dispatch responsibilities capabilities between these centers (and backup PSAPs) should be planned.

Given the near-term cost and arguable benefit of expanding a proprietary trunked system with the associated costs, an alternate approach to expanding the trunked capacity to the west from Barnstable County is to expand the lower-cost conventional UHF systems across Barnstable and employ a UHF-VHF-ITAC TACSTACK approach throughout the Region. This latter approach is valuable given the need for TACSTACK deployment statewide – tying in with the need for statewide channel definition. In this way, and until less expensive standards based trunking systems become available one day, this approach will provide the redundancy needed for radio systems operating in this exposed coastal region and improve day-to-day radio interoperability across the Region.

- As in other Regions, particularly the Western Region, a significant number of backbone links among dispatch centers and their associated radio tower sites are reliant on single point-of-failure microwave and telephone company lines. This backbone needs significant upgrade to provide dual equipment on each such link as well as dual physical path redundancy everywhere. Again, given the modern regionalization having taken place in the Southeast Region, the reliance of a large number of First Responders on these regional systems – particularly in a coastal area in 2007 – demands that this backbone be significantly expanded and extended.
- Finally, moment-to-moment sharing of dispatch information as well as significantly improved situational awareness on a moment-to-moment basis between all regional centers and the agencies they support must be extended far beyond the telephone and voice radio. The application of the many available means for doing so in 2007 strongly suggests that such steps be started immediately in conjunction, cooperation, and unity among the Region's County Sheriff's Offices, the Cities and Towns they support, and among all Massachusetts Homeland Security Regions and State/Federal agencies.
- Although important in all Regions, the eventuality of a major hurricane passing through this region necessitates all of these measures described above. In

addition, however, it is likely under one or more such scenarios that the terrestrial infrastructure will be damaged or destroyed. There are Mobile Communication Centers that can be deployed, but as in post-Katrina environment, they cannot handle the area coverage or huge load of day-to-day 9-11 calls to be expected. Alternatively, satellite, HF, and perhaps VHF low-band radio links should be established and regularly proven between dispatchers and their Responders to prepare for loss of all terrestrial infrastructures for a sustained post-event period.

Interoperability Planning¹². In addition to upgrading, expanding, and extending existing interoperability systems, the Cape and Islands have begun to develop plans for a wide-area broadband wireless system. The Barnstable County Commissioners and the Cape Cod Economic Development Council have placed their support behind an effort to implement a regional high-speed wireless data transport network by awarding a grant to a new broadband collaborative. The collaborative, spearheaded by Cape Cod Community College, Cape Cod Technology Council, UMass-Dartmouth, and the Wood’s Hole Oceanographic Institution, is called *OpenCape*. Its focus is to install a high-speed wireless broadband network from Bourne to Provincetown with links to Plymouth and Dartmouth. A conceptual (non-binding) network diagram is shown in Figure 4-41. In this regard, the *OpenCape* project will create a regional digital communications network to enhance education, research, government, and economic development. It will also provide an emergency communications network in times of natural or man made disaster, fulfilling a major emergency preparedness objective of the county’s Regional Emergency Planning Committee.

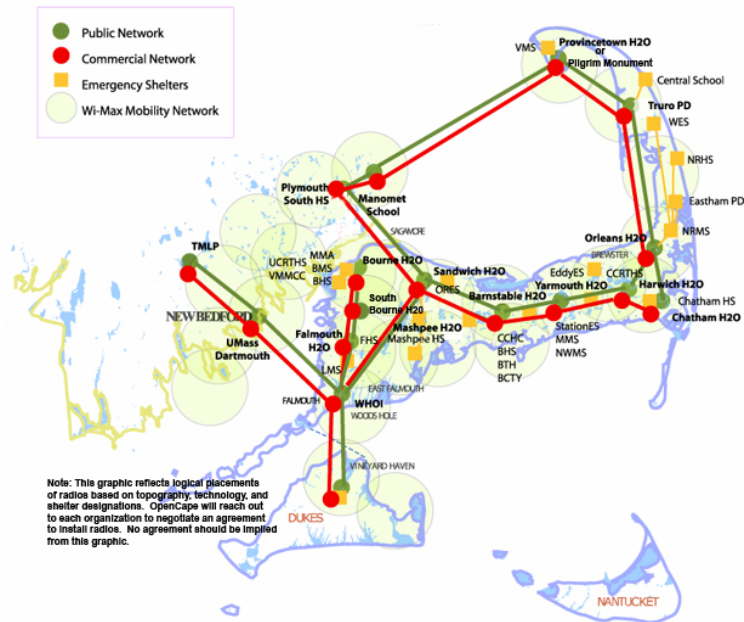


Figure 4-41: Conceptual OpenCape Architecture

The network would consist of two parallel paths. A public network would provide high-speed wireless service to the Community College and K-12 public school districts, major research institutions, municipalities, libraries, emergency facilities and key healthcare institutions. A commercial network would provide wireless services to homes and businesses. The two parallel but separate paths are necessary to avoid legal complications that could result from sharing the same infrastructure and wireless

¹² Illustration and background information on OpenCape provided by the OpenCape Corporation, PO Box 762, West Barnstable, MA 02668-1599, <http://www.opencape.com>.

frequencies. This configuration will enable *OpenCape* to offer a commercial provider installation and maintenance of the public portion of the network as a pre-condition for being awarded the right to provide a profit-making commercial service.

4.2.2.5 Metro-Boston Region

A Tactical Interoperable Communications Plan (TICP) was created for the Metro-Boston Homeland Security Region (MBHSR) under an Urban Area Security Initiative (UASI) grant program. The region consists of nine city jurisdictions: Boston, Brookline, Cambridge, Chelsea, Everett, Quincy, Revere, Somerville, and Winthrop, and they are shown in the map in Figure 4-42.

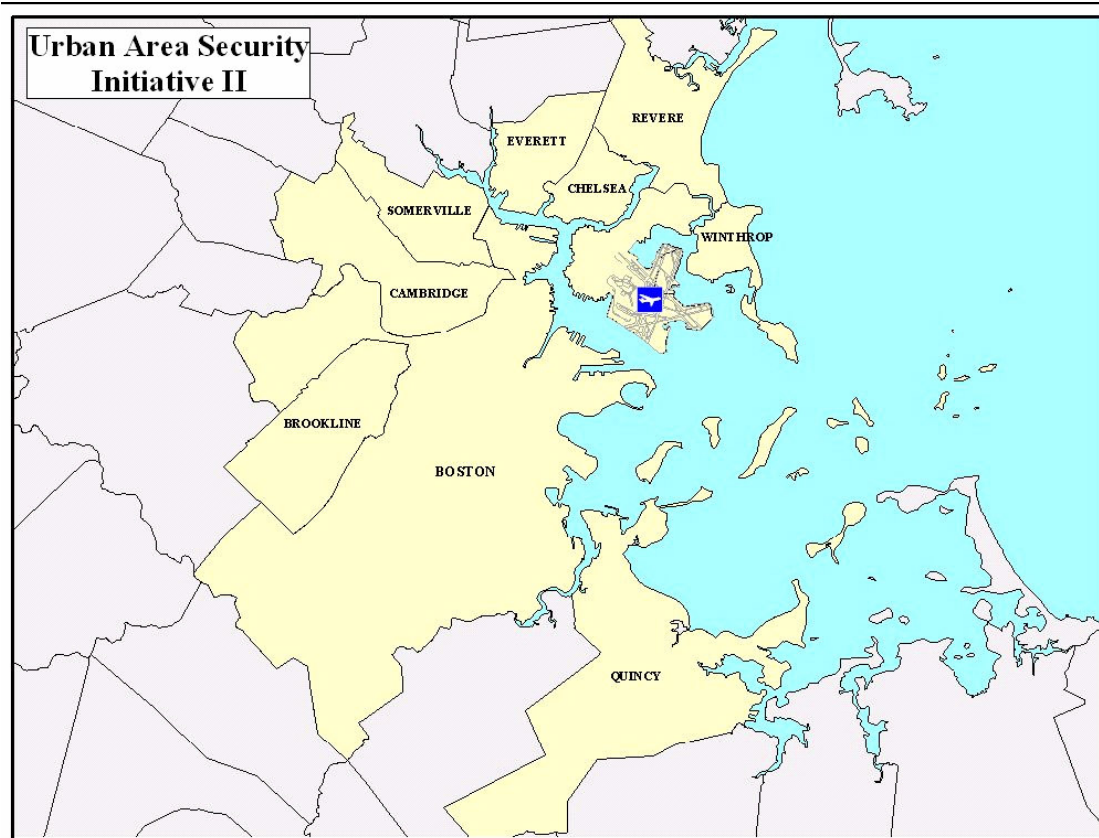


Figure 4-42: Metro-Boston Homeland Security Region

Interoperability Systems. The recent completion of the MBHSR Tactical Interoperability Communications Plan (TICP) offers significant opportunity to reuse collected data for the only Massachusetts UASI Region, but also review the Goals and Objectives of their Five-Year Strategic Plan to synergize and integrate with the Massachusetts SCIP. The TCIP addresses the developing scenario of multiple “dirty bomb” detonations as well as secondary explosions targeting Responders. It includes identification of all interoperability techniques following the SAFECOM designations of:

- Swapping radios, including existing radio caches and commonly programmed radios, available through the Boston Emergency Management Cache, Boston

Police Radio Cache, Cambridge Cache, Massachusetts State Police Cache, and the MetroFire Cache;

- Use of shared channels, including agency operational and tactical channels, UTAC channels, and the Boston Interoperability Channel;
- Patches and Gateways, including hard console patches and gateways, fixed-location operator-selectable patches and gateways, and deployable operator-selectable patches and gateways, available from many dispatch centers as well as additionally from the Boston EMS Mobile Gateway, the Boston Fire Department Mobile Command Post (TACCOM), the Boston Fire Department Mobile Command Post (FieldCom), the Boston Police Department Mobile Command Post, the Chelsea Mobile Gateway Device, the Everett Police Mobile Command Post, the MSP Mobile Command Post, the MBTA Mobile Gateway Device, the Metropolitan Law Enforcement Council (METROLEC) Mobile Command Post, the NEMLEC Mobile Command Post, the Massachusetts Department of Fire Services (DFS) Incident Support Unit (ISU) and Incident Support Trailer (IST);
- Shared Systems, including the regional BAPERN (law enforcement MetroFire and the Boston EMS Ambulance Mutual Aid Channel (BAMA); and
- Additional interoperable capabilities, such as the MEMA VHF Radio System for Emergency Management and Boston CMED (EMS to hospital coordination).

Details of frequencies and SOPs are provided in the MBHSR TICP. One of the major components of the TICP was the creation of a Regional Channel Plan. The Regional Channel Plan allows new, standardized radios, to be programmed with a common set of channels for interoperable communications among the nine jurisdictions and several state/regional agencies in the region. Since the channel spectrum was already in use somewhere in the region, only portable and mobile radios had to be purchased.

All these new radios have a common set of channels programmed into them in addition to current jurisdictional discipline channels. Thus, interoperability is established not only across the region, but also with older (legacy) radios in the region. The Figure 4-43 is a CASM plot showing agencies involved in the common Channel Plan. The Boston Police icon also contains State Police, both Troop H (metro – Boston) and Logan Airport.

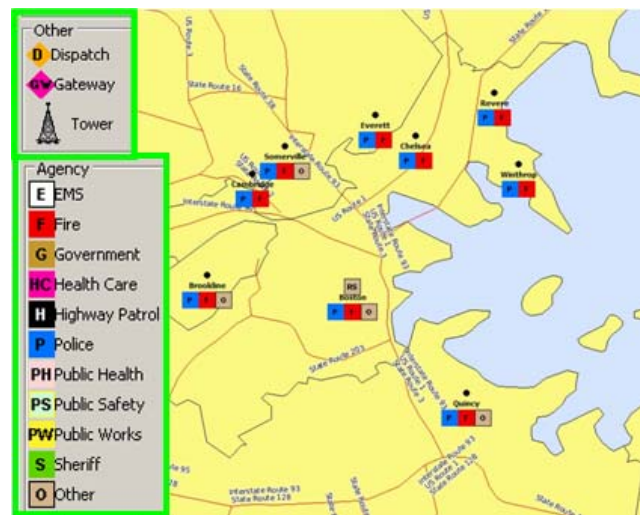


Figure 4-43: Interoperability Inherent in the MBHSR Channel Plan.

In addition, the MBHSR has deployed more than 75 portable Iridium phones for Police chiefs, fire chiefs, CEO's, public health directors, and EMDs, plus many other dept heads in Boston. In addition, fixed Iridium gear was installed in 24 public safety facilities, plus MSV MSAT G2 units in the same locations (with a satellite-based Metro Boston shared talkgroup). Fixed gear is mostly installed, and portable gear has been distributed and activated – providing terrestrial infrastructure-independent communications for a major disaster or communications outage.

City Dispatch and Control Points. All municipal dispatch centers in the MBHSR provide primary dispatch services to First Responders in their cities using local and regional radio systems. Two of the several MBHSR communication centers are described below.

City of Cambridge Emergency Communications Center. The City of Cambridge Emergency Communications Center (ECC) (see Figures 4-44) provides two-stage PSAP and Fire, EMS, and Police dispatch CJIS data, and many other services, with various commercial and local-developed computer-aided tools tailored to the Cambridge public safety environment. Mobile data and fire ALS AVL is supported as is Phase 2 E911 map-display tracking of all cell 911 calls. In addition, it includes alarm connectivity and alerting on one of the oldest copper-circuit-based Fire Call Box networks in the nation.

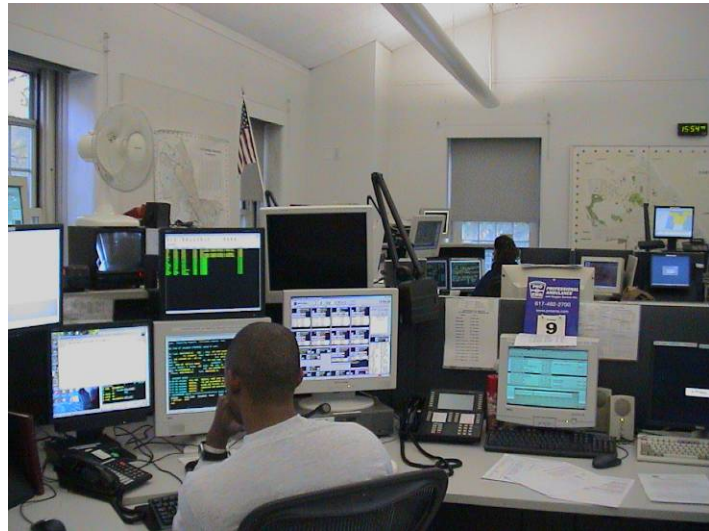


Figure 4-44: City of Cambridge Communications Center.

Massport Communications Center. The Massport Communications Center, (see Figure 4-45), serves as a command, control, and communications interoperability hub for the all Massport road, vessel, and air traffic. The Communications Center is linked to Boston law enforcement, public safety, and transportation agencies via a variety of voice radio systems.

The center has visual line of sight to the Boston area, the harbor area, and most airport facilities – with video cameras providing other surveillance. In addition, the Communications Center is equipped with two separate radar systems for tracking of aircraft to or from Logan (or other airports if desired). The Communications Center provides Fire Alarm Dispatch and coordination with outside Fire/Emergency services. The Center will also handle requests and coordination with Hanscom Field in Bedford, Massachusetts, Worcester Airport, Tobin Bridge and the Maritime Division of the Authority. The center is equipped with a 15 channel 800 MHz trunked radio system, two 800-MHz conventional repeaters a single VHF frequency and a single 450 MHz radio channel for interoperability with responding agencies.



Figure 4-45: MassPort Communications Center.

Interoperability Analysis. The CASM interoperability analysis for the MBHSR in Figure 4-46 shows the interoperability achieved from the following systems:

- BAPERNS – municipal PDs, Sheriffs, university police, MSP, and many others
- Brookline and Everett offices of Emergency Management (OEM) Division of Communications Dispatches (PDs and FDs)
- MetroFire Radio – all MBHSR communities
- Fire District 13 Mutual Aid (FDs)
- MBHSR Channel Plan – UASI (UASI Agencies)

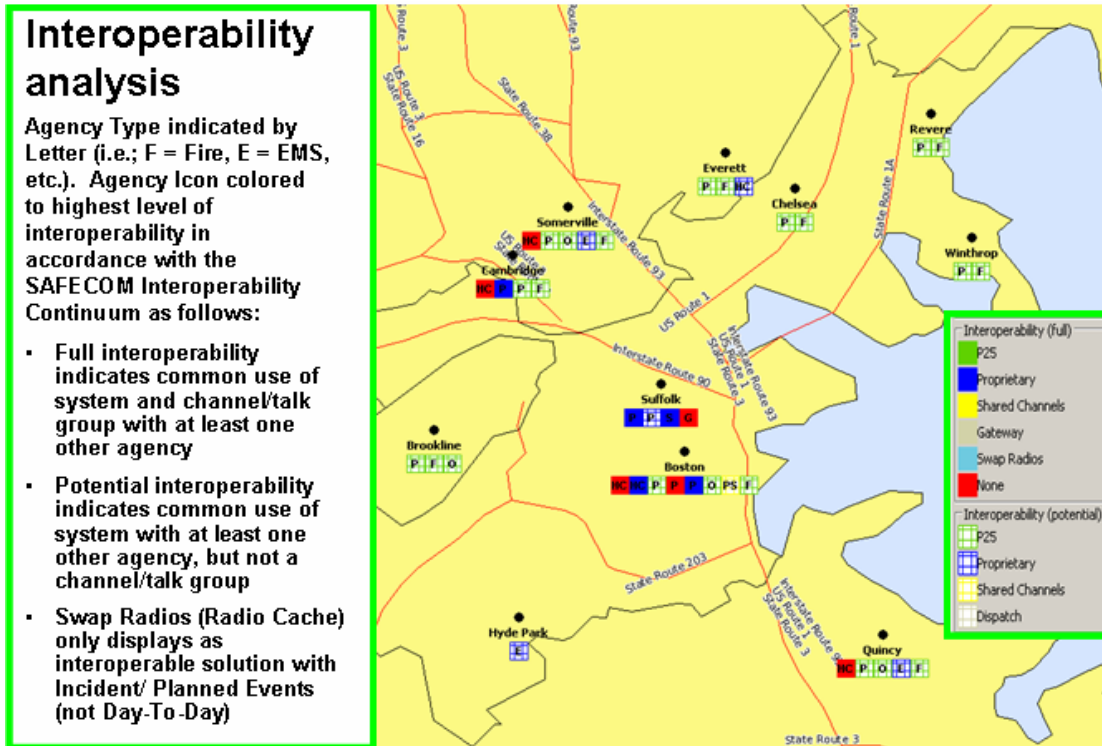


Figure 4-46: MBHSR Analysis for Day-to-Day Interoperability.

Several systems are missing from the interoperability analysis of the MBHSR, such as multi-disciplinary trunked radio systems, CMED (which would address the several Hospitals showing no interoperability), various dispatch centers (such as Cambridge), satellite phone—based backup communications and cache assignments by agency. Nevertheless, a dense interoperability mesh is apparent given the wide-area systems present in the region.

Interoperability Planning. The Metro-Boston Homeland Security Region (MBHSR) Communications Interoperability Five-Year Strategic Plan¹³ describes the governance, procedures, technology, and exercises that the MBHSR can use to enhance public safety interoperable communications capabilities during response to emergency incidents. The creation of this strategic plan was led by the Boston Mayor’s Office of Homeland Security (MOHS) as part of the Office for Domestic Preparedness’ (ODP) Urban Area Security Initiative (UASI) and the Homeland Security Grant Program (HSGP) managed by the Commonwealth of Massachusetts. This strategic plan complies with state and federal guidelines.

¹³ Metro-Boston Homeland Security Region Communications Interoperability Subcommittee, “Appendix G, MBHSR Communications Interoperability 5-Year Strategic Plan,” *Tactical Interoperable Communications Plan*, prepared for U.S. Department of Homeland Security Preparedness Directorate, Office of Grants & Training, 1 May 2006.

The vision, mission, goals, and associated initiatives of the plan addresses current shortcomings in regional communications interoperability in the MBHSR and details a course of action to close these gaps and realize the shared vision of regional interoperable communications.

The **vision** for MBHSR communications interoperability is to ensure that MBHSR First Responders have the ability to share data and communicate at optimal efficiency, in real time, across jurisdictions and disciplines, enabling more effective response during day-to-day emergency operations and major emergency situations, above and below ground, in the buildings, streets, tunnels, and subways throughout the region.

The **mission** of MBHSR communications interoperability project is to improve regional communications interoperability among First Responder agencies and improve the efficiency and effectiveness of the region's overall response capabilities.

The vision and mission are supported by the strategic goals and initiatives shown in Figure 4-47¹⁴. The implementation of this strategic plan will have the following expected results:

- Increased ability to use radio and data interoperability capabilities
- Necessary training and understanding of procedures to coordinate an effective response to both inter-agency/jurisdiction and multi-agency/jurisdiction incidents
- Necessary voice and data communications equipment for each jurisdiction to respond to a major critical multi-jurisdiction or multi-discipline event
- Improved prevention, protection, preparedness, response, and recovery

To create the strategic plan, the MOHS formed a subcommittee comprised of the following 21 organizations from the MBHSR public safety community:

1. Boston Police Department
2. Brookline Police Department
3. Cambridge Police Department
4. Cambridge Fire Department
5. Cambridge Emergency Communications
6. Chelsea Police Department
7. Chelsea Fire Department
8. Everett Police Department
9. Revere Fire Department
10. Revere Emergency Management
11. Quincy Emergency Management

¹⁴.Figure 11: MBHSR Communications Interoperability 5-Year Strategic Plan. *Ibid.*

12. Somerville Fire Department
13. Somerville Public Safety Communications
14. Winthrop Fire Department
15. Greater Boston Police Council
16. Boston Central Medical Emergency Direction
17. MetroFire
18. Massachusetts Executive Office of Public Safety
19. Massachusetts Port Authority
20. Massachusetts Bay Transportation Authority
21. Boston Mayor's Office of Homeland Security

MBHSR Communications Interoperability 5-Year Strategic Plan







VISION: MBHSR first responders have the ability to share data and communicate at optimal efficiency, in real time, across jurisdictions and disciplines, enabling more effective response during day-to-day emergency operations and major emergency situations, above and below ground, in the buildings, streets, tunnels and subways throughout the region.	
MISSION: Improve regional communications interoperability among first responder agencies and improve the efficiency and effectiveness of the region's overall response capabilities.	
GOALS	INITIATIVES
 Goal #1: Establish Standards	1A Set minimum system and subscriber standards for new equipment
	1B Develop standard regional channel plans
	1C Establish minimum communications capability standards for command and control centers
	1D Create a process for developing SOPs and MOUs and apply to current and future capabilities
	1E Develop procedures to maintain the MBHSR Communications Interoperability Data Warehouse
 Goal #2: Improve Performance, Capacity, and Redundancy in Existing Communications Systems	2A Bring all MBHSR R/F equipment to a minimum level of capability and supportability
	2B Promote infrastructure sharing and establish/improve system redundancy, survivability, and sustainability
	2C Obtain additional radio spectrum
	2D Build out existing mutual aid systems for enhanced in-street coverage and provide additional capacity
 Goal #3: Create New Communications Interoperability Capabilities Across MBHSR	3A Address lack of interoperability between VHF fire departments and other stakeholders
	3B Procure stand alone <i>quick-hit</i> equipment to improve interoperability in the near term
	3C Develop MBHSR/UASI multi-band channels
 Goal #4: Improve Wireless Data Capabilities	4A Provide MBHSR with 3G mobile wireless data capability and applications
	4B Establish regional notification mechanism through leveraging existing capabilities
 Goal #5: Implement a Communications Exercise Program	5A Incorporate communications interoperability into future MBHSR exercises
 Goal #6: Coordinate with Other Activities Having Implications on Communications Interoperability	No specific initiatives associated with this goal

Figure 4-47: Strategic Initiatives of the MBHSR Five-Year Strategic Plan.

The MOHS took a regional approach to address this highly-complex problem. In

addition to these key contributors, other stakeholders in the region were engaged in a process to help identify the current state of communications interoperability and the desired future state. Input was gathered from operational and technical assessments, working group meetings, interviews with jurisdiction executives and managers, and discipline Focus Groups that included Law Enforcement, Fire Service, EMS, and Dispatch.

4.2.2.6 Summary

All five Massachusetts Homeland Security Regions need continued interoperability planning and implementation initiatives to proceed in the near term. Of the five Massachusetts Homeland Security Regions, the interoperability needs are greatest with the Central Region, followed (arguably) by the Western, Southeastern, Northeastern, and MBHSR. Summarizing the primary apparent needs by region, we have as follows:

Western Region – Significantly improved enduring backbone, Berkshire coverage, multi-band repeater (TACSTACK) deployment, and information sharing tools;

Central Region – Wide-area radio system with reliable and enduring backbone and multi-band repeater (TACSTACK) deployment, expanded regional dispatch, and information sharing tools;

Northeast Region – Regionalized consolidated dispatch, expanded (coverage) and extended (disciplines and levels of government) wide-area radio system (e.g., BAPER) with multi-band repeater (TACSTACK) deployment, improved backbone, and information sharing tools;

Southeast Region – Significantly improved enduring backbone, expanded regional command and control radio systems with multi-band repeater (TACSTACK) deployment, secondary non-terrestrial command, dispatch, and tactical wireless communications, and information sharing tools; and

MBHSR - Significantly improved enduring backbone, extended regional command and control radio systems with multi-band repeater (TACSTACK) deployment, information sharing tools, and regional dispatch (too many large consolidated dispatch centers).

All Regions require the existence/improvement of information sharing capabilities among their community and regional CAD and RMS systems as well as moment-to-moment situational awareness of all types among all agencies, disciplines, and jurisdictions. Specific technologies, implementation paths, and associated SOPs from excellent examples nationwide should be brought to bear to provide this information sharing – which will in turn strongly drive the culture of interoperability into meeting all the requirements above. In Sections 6 of this SCIP, these needs will be combined with results of the SIEC Collaborative Sessions and 20 Focus Groups to define specific capability acquisitions for each Homeland Security Region and State Agency in the scope of SCIP Strategic Initiatives and their associated projects derived in Section 5.

4.2.3 Information Sharing for Operability and Interoperability

The value of IT/Networked systems and networks designed for information sharing (IS) are fundamentally important not only to cross-agency *moment-to-moment* situational awareness, but also because of the significant offloading of voice channels and the tactical impact of data sharing between organizations have major impact is critical to interoperability – true cross-organization *operability*. These critical information-sharing systems – and proposed or planned systems - are presented below for each steward agency and committee.

4.2.3.1 The Massachusetts Department of Public Health

Health and Homeland Alert Network (HHAN)¹⁵. The Massachusetts Department of Public Health (MDPH) has developed the Health and Homeland Alert Network (HHAN), a web-based computer application that semi-automatically disseminates information via a Web portal, email, and telephony. The HHAN began as the Health Alert Network (HAN) and still fills this role. Homeland was added to the program name in 2004 to more accurately describe its employment as an alerting system for emergency preparedness and emergency management. The mission of the HHAN is to ensure that each community (city and town) has rapid and timely access to emergent health information; a cadre of highly trained professional personnel; and evidence-based practices and procedures for effective public health preparedness, response, and service on a 24 × 7 basis. It provides continuous, secure, two-way communications and information sharing in support of bio-terrorism preparedness. HHAN is a web-based, broadcast communication system that, by selection, interfaces with a wide range of devices; e.g., pager, fax, phones including Nextel, email and wireless.

Hospital Capacity Website. The Massachusetts Hospital Capacity Reporting System was first unveiled in October 2000 as a website that Massachusetts' EMS Regional Directors and their C-Med (Central Medical Emergency Dispatch) Centers used to report and view emergency department diversion status; diversion being the decision to redirect incoming ambulance traffic when an emergency department has reached saturation, is anticipated to remain saturated, and there is capacity at surrounding hospitals.

Between 2000 and 2007, MDPH completed programming to enhance the Massachusetts Hospital Capacity Reporting System to include the collection of open staffed bed, surge bed, and emergency department bed availability. EMS Regional Directors, C-MEDs, hospitals, border state health department staff, Medflight and MDPH staff can view individual hospital, regional and/or statewide data depending on the type of emergency and need for beds.

¹⁵ Background information taken from Massachusetts Department of Public Health, Bureau of Communicable Disease Control, Health & Homeland Alert Network (HHAN), HHAN *Basic User Guide*, Version 0.1, 12/5/2007.

4.2.3.2 The Criminal History Services Board

Criminal Justice Information System Network. The Criminal History Systems Board (CHSB) is responsible for maintaining Massachusetts' statewide Criminal Justice Information System (CJIS) network. This network provides transport services to all Commonwealth law enforcement and criminal justice agencies and is also used for local, regional, local and national broadcast messaging and transporting Homeland Security-related information. The CHSB is Massachusetts' National Crime Information Center (NCIC) CJIS Systems Agency (CSA). The CHSB also participates in the National Law Enforcement Telecommunications System (NLETS), the FBI's Interstate Identification Index (III) program, and the Integrated Automated Fingerprint Identification Systems (IAFIS).

Current Configuration. The CJIS network is an Internet Protocol (IP)-based secure private Wide Area Network (WAN) that provides secure data communications connectivity to a wide variety of local, county, state, and federal law enforcement and criminal justice entities within the Commonwealth. The CJIS WAN supports over 700 in-state agencies, including local law enforcement, the Massachusetts State Police (MSP), the Department of Correction (DOC), the Sheriffs, the District Attorneys, the Department of Youth Services (DYS), Parole, Probation, the Trial Court, the Registry of Motor Vehicles (RMV), the Merit Rating Board (MRB), and more. There are approximately 30,000 Massachusetts-based users of the current CJIS network. In addition, over 18,000 law enforcement agencies across the country access the Massachusetts CJIS network via NLETS.

In addition to, and in combination with, their frame-relay connections, a large percentage of law enforcement agencies in the Commonwealth use cellular wireless mobile communications. Wireless mobile communication services are provided through approved commercial vendors: Verizon Wireless, Cingular Wireless (formerly AT&T), and Sprint Wireless (formerly NEXTEL).

Another growing service is the over 350 Virtual Private Network (VPN) connections being managed at the CHSB Data Center. This technology allows for secure remote access into identified systems within the CJIS network. This technology is being used by criminal justice agencies, vendors contracted to provide support, and CHSB administrative and technical personnel.

CHSB provides 24 × 7 support to local, state and national law enforcement and criminal justice agencies by operating a secure public safety data center and data communications network.

While some core and remote devices were recently purchased, most of the network's components, including one of the core BCN devices, have been in place for almost 15 years. This equipment is well beyond end of life.

- In addition to providing access to traditional enterprise applications, including CJIS, RMV, NCIC, III, and NLETS, the CJIS network is used as the transport mechanism by a number of other criminal justice systems, including the Parole Board's State Parole Integrated Records and Information Tracking System (SPIRIT) and the Sheriffs Information Records System (SIRS). The CJIS network also provides for agency-to-agency remote site data and image sharing, and efforts are currently underway to use the existing infrastructure to expand data sharing among the homeland security and regional law enforcement councils within the Commonwealth.

More recently, the CHSB has evolved into a managed network service provider, connecting state agencies such as the Massachusetts State Police, the Sex Offender Registry Board, the State Fire Marshal, the Parole Board, and the Sheriffs to the Commonwealth's network.

The CJIS network and data center infrastructure provides approved public access to certain systems, including the Criminal Offender Record Information (CORI) Automated Screen System (CASS), MIRCS, a Massachusetts Military web-based application, MEMA's E-CEMP database and the National Sex Offender Public Registry. The CASS allows for authorized non-criminal justice agency users to electronically submit requests for criminal history information. As part of the CASS system, a newly implemented electronic payment system component has been implemented.

The MIRCS system allows licensed Commonwealth gun dealers to submit firearms sale transaction information electronically to the Commonwealth data repository. The Massachusetts Military application provides access to funeral directors for inquiry into Massachusetts military records for death benefits. The National Public Sex Offender Registry (NPSOR) facilitates nationwide searches across available states' and territories' public sex offender registries from a central location. Future plans include public access to the Commonwealth Sex Offender Registry via the CJIS Network.

As the Commonwealth gradually moves towards an ICJIS governed by a Service-Oriented Architecture (SOA), the environment will need to support a more loosely coupled, self contained architecture that provides a range of flexible options for integration and application development. The CHSB has recently completed the implementation of the Massachusetts CJIS XML project based on the Global Justice XML Data Model, and has developed applications that take advantage of this framework. Recent initiatives include CJISWeb, MIRCS, and the Massachusetts State Police CJIS XML Mobile Application.

Future plans include deployment of additional services and applications to law enforcement and public safety agencies within the Commonwealth and the establishment of a portal-type interface. The implementation of these new services has resulted in a significant increase in the number of devices accessing the systems, the size of the information package and the volume of traffic.

The CJIS Evolution. While the current CJIS network provides critical criminal justice services to thousands of users, the ICJIS Strategic Implementation Plan and Commonwealth project management staff has identified the following deficiencies:

- Network bandwidth is an issue that is visible with the deployment of newer applications such as Parole's SPIRIT, the Sheriffs SIRS, CJISWeb Applications, CJIS XML, and the MIRCS system. Additional capital must be invested to increase network capacity.
- The CHSB has been turned into a managed service provider without any planning or investment in improving the network infrastructure.
- Existing vendor technology more often drives the business solutions as opposed to business issues dictating technology choices.
- Disaster recovery is non-existent for many agencies and/or applications, including mission critical applications. The Commonwealth is on the process of constructing a disaster recovery data center, but this backup facility will not likely be ready for at least another two years.
- Funding for information technology is unpredictable. This unpredictability leads to a "do something with funding" attitude, resulting in information silos and a lack of change management planning and cross-agency collaboration.
- Commonwealth-wide applications have been developed and deployed utilizing newer application platforms without upgrading the CJIS network resulting in expensive delays in application deployment and usage.
- The newer web-based systems, such as MIRCS and CJISWeb, have increased the transaction load by one million transactions per month. A direct result of this transaction volume increase is the degradation of response times during peak hours.
- Some current and many future data exchanges require a significantly larger throughput capacity than is currently available. As such, committed information rates (CIR) are being exceeded causing delays and failures for these types of transactions.
- The current CJIS Data Center lacks the tools and monitoring equipment to proactively monitor, report, and manage the WAN from end to end.
- The business requirements for the CJIS Network have changed dramatically. The once "closed private" network is now being accessed by a plethora of devices and technologies. The customer base and core business are rapidly changing, requiring access from public networks. As such, network security, data encryption, and user authentication are federally mandated and need to be addressed for compliance.

4.2.3.3 Statewide Information Sharing System Project (SWISS)

The Statewide Information Sharing System Project (SWISS) Project is a joint effort by the EOPSS and the Massachusetts Regional Homeland Security Councils. Phase 1 of the Project is intended to improve the timely exchange of critical incident report information amongst state and local law enforcement and homeland security agencies. SWISS will electronically exchange, store, and facilitate the analysis of incident report data maintained by public safety and law enforcement agencies throughout the Commonwealth.

Figure 4-48 provides an overview of the planned flow of incident report information from the various Commonwealth police departments through SWISS. This data will be available for use by the participating police departments, the Commonwealth Fusion Center, crime analysts, and the regional homeland security councils. The key elements of this planned flow of information are as follows:

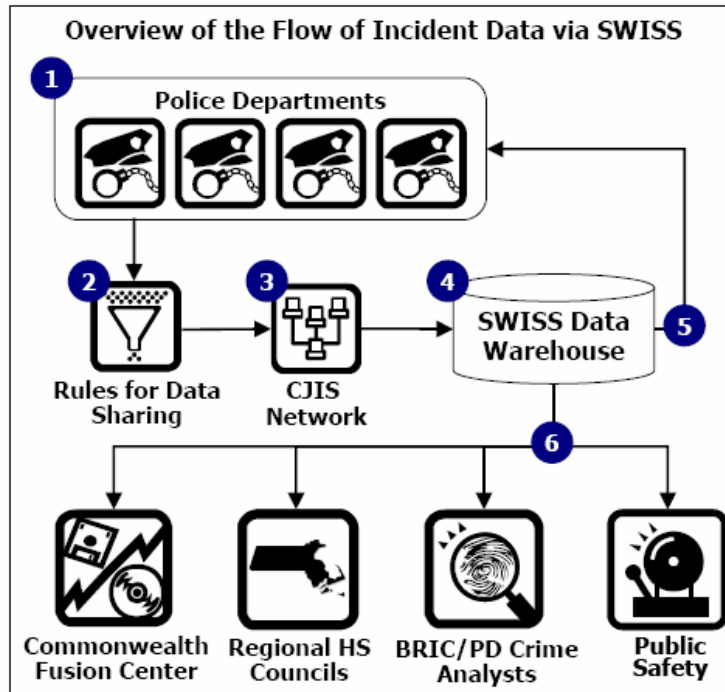


Figure 4-48: Overview of SWISS information Flows

1. Police officers or other law enforcement agency users enter incident report information using their current business processes and record management systems.
2. Each contributing department will be able to control which incidents reports are shared, when they are shared, and what parts of the incident reports are shared.
3. All incident report submissions to SWISS will be made over the secure CJIS network.
4. All submitted incident report data will be stored in a standardized format in the SWISS Data Warehouse.
5. Participating police departments will be able to query the SWISS Data Warehouse to solve crimes and aid investigations using their own tools.
6. Municipal, regional, and Commonwealth crime and intelligence analysts will be able to use CopLink and other tools to identify crime trends, to track precursor events, and to support policy creation and decision-making.

There were 123 SWISS Phase 1 specific business requirements for the implementation of incident report sharing in Massachusetts. These requirements were organized into 12 “use cases” as follows:

1. *Set up Law Enforcement agency rules for SWISS exchange* - each law enforcement agency that decides to participate in SWISS will specify and implement the rules governing the submission of incident report information to the SWISS data warehouse in accordance with the standards set by the Commonwealth for the SWISS Project.
2. *Submit incident data* - the law enforcement agency user will continue to enter incident report information into the local Records Management System (RMS) utilized by the agency.
3. *Receive incident data* - the SWISS data warehouse will receive submissions from each RMS
4. *Authenticate SWISS user* - All authorized law enforcement agency and public safety community users, as well as all system administrators, will require a valid user account to gain access to the SWISS data warehouse.
5. *Search incident information* - Authorized law enforcement agency and public safety community users will be able to utilize the SWISS web application to search for and view incident report information.
6. *Add/edit incident information* - In cases where it is not feasible for a law enforcement agency to electronically submit incident reports from their records management system, a manual web-based input application will be available.
7. *Manage user tracking and searches* - Law enforcement agency users will be able to flag individual incident reports for subsequent follow-up or tracking.
8. *Generate reports* - Both law enforcement agency and public safety community users will be able to utilize the SWISS web application to generate several standard reports in order to view incident report information in a summary or detailed format.
9. *Authenticate SWISS user* – All authorized law enforcement agency and public safety community users, as well as all system administrators, will require a valid user account to gain access to the SWISS data warehouse. Users will be required.
10. *Access bulk incident information* - The SWISS data warehouse will provide Open Database Connectivity (ODBC) and Java Database Connectivity (JDBC) environments to authorized RMS vendors, law enforcement agencies, and other public safety agencies for data analysis and integration with agency owned or utilized statistical tools.

11. *Administer SWISS users* - Authorized law enforcement and public safety agency administrators will have access to the Administer SWISS Users function.

12. *Administer SWISS application and agencies* - The SWISS administrator will have access to the Administer SWISS Application and Agencies function.

4.2.4 Massachusetts Emergency Management Agency

MEMA is the central command, control, and communications hub in Massachusetts, with all radio and IT systems converging on the “Bunker” in Framingham, Massachusetts. The radio systems described above, namely the MEMA VHF network, the DPH FAMTRAC network, the MSP network, amateur radio volunteers in RACES, and several others include the MEMA Bunker as a critical node. In addition, MEMA is developing statewide situational awareness systems based on WebEOC, which provides portal access to the HHAN, MIVIS, and other systems. MEMA is also planning a Resource Management System, to track all emergency-response capabilities and assets statewide.

4.2.4.1 WebEOC

Background. In June of 2004, MEMA procured and installed WebEOC, a Crisis Information Management Software (CIMS) system used to manage emergency events by facilitating and enabling information sharing through Web-based technology from any location. The primary purpose of this procurement by MEMA was to provide Massachusetts with a tool to share information with local, state, and Federal users to assist in collecting key information related to emergencies, incidents during scheduled events, and other situations.

MEMA has determined that WebEOC is an adequately user friendly and cost-effective way to securely share information between members of the emergency management community. In 2002, WebEOC participated in the U.S. Department of Justice National Institute of Justice CIMS Feature Comparison Report. WebEOC performed well in these evaluations, primarily due to ease of use, the ability to customize the tools by users, and the fact that the product is licensed per server with unlimited users. The overall cost of the software, hardware, installation and training of the MEMA WebEOC system was under \$100,000. This cost is significantly lower than similar products, which were reviewed and evaluated with costs in excess of \$1,000,000.

WebEOC functions through a series of status boards, much like a traditional EOC. Each board can be customized, and permissions can be set to restrict who can edit or view a board. Each entry is time and date stamped, and indicates who entered the information by position. Boards can also provide links to graphics or to external websites. WebEOC can also serve as a repository for documents, allowing users to share documents or to maintain a set of reference documents. In addition, position logs allow for position documentation that is shared only with others filling the same position, facilitating shift changes and continuity of operations.

The software can also accommodate the Incident Command System (ICS), the Emergency Support Function (ESF) and various Federal Emergency Management Agency (FEMA) formats. WebEOC includes a drill simulator that enables institutions to run drills and exercises with automatically injected scenario messages. Finally, WebEOC allows coordinating agencies to post to multiple instances of the software (called Dual Commit), enabling coordination between agencies and allowing for greater customization. WebEOC also includes a map markup/whiteboard environment. Maps created elsewhere (in a GIS, for example), can be marked up with icons showing the events on-scene by non-GIS specialists.

WebEOC was used during the DNC by MEMA, MSP and BEM. Over 400 local, state, federal, private and voluntary users were added to the system with the ability to view and share various security, event management and emergency information related to the DNC from over 30 different locations. The use of WebEOC received some of the best positive feedback from users and validated its effectiveness to link key organizations in real time.

MEMA has used WebEOC to coordinate numerous exercises, planned events and emergencies across the Commonwealth. WebEOC is now used on a day-to-day basis by MEMA to track all reportable incidents in the Commonwealth and is available 24/7 to any local emergency management program for reporting incidents and coordinating information.

Implementation. In the Autumn of 2007, MEMA is in the design and early implementation phase of the next generation of WebEOC use in Massachusetts. MEMA is completely re-designing and rebuilding WebEOC to meet the needs for all hazards emergency and incident purposes. The timeline and direction MEMA is headed with WebEOC is as follows:

- Design, implement and train on WebEOC use for MEMA Headquarters and Regional Staff and SEOC Agency Liaisons – this will include “boards” and business rules for Situation Reports, Task Assignments, Unit Logs, Significant Events, Status Boards (Transportation, Utilities, EOCs, Shelters, Emergency Orders, Damage Reports, Press Releases, etc.) and various links to GIS and other information (radar sites, web cameras, etc.).
- Implement and train local users in WebEOC System for Massachusetts. Local users consist of Emergency Management Directors, Chief Elected Officials and other Department Heads (Police, Fire, EMS, Public Works) as needed. Local officials will be able to submit Situation Reports and Significant Events; in addition to maintaining a Unit Log for their community. Communities will also have read only access to certain “Boards” listed above (i.e., Press Releases, Transportation, Utilities, EOCs, Emergency Orders, etc).

It is important to emphasize that the MEMA installation of WebEOC is not intended to replace local EOC or other local information management systems. WebEOC will be

used to receive and provide information between MEMA partners and others to manage events. Communities interested in the use of WebEOC for local management operations should research and pursue resources and funding to implement such systems. Relevant examples of this scenario include the MBHSR Communities and the NERAC Communities, who have their own installations of WebEOC. These systems are being “connected” to MEMA’s WebEOC to share data without users having to log into multiple WebEOC systems.

MEMA plans to continue to enhance and modify WebEOC and status boards to address other purposes (i.e., Interstate coordination for nuclear events, using the Common Alerting Protocol (CAP) to connect to other systems, medical status tracking, etc.).

Conclusion. WebEOC has proven its worth and assistance with real-time information sharing. It will continue to be employed to share one common operating picture (COP) with all jurisdictions and disciplines across the State.

4.2.4.2 Resource Management System

The Public Safety community within the Commonwealth of Massachusetts maintains millions of dollars in physical assets including personal protective equipment, vehicles and communications devices. The many organizations and agencies at the state, regional and local level have joined together around a unified mission to establish a NIMS compliant information technology tool which enhances information gathering and allows for the comprehensive, accurate, and timely reporting of emergency management resource data.

Spearheaded by participation from each of the five Regional Homeland Security Advisory Councils, the Commonwealth has formed a Resource Management System Steering Committee with representation from each Council as well as other key state agencies. The ultimate goal of the RMSSC is to implement and monitor a Resource Management System in a collaborative way to share costs, meet evolving federal and state requirements, and improve response and recovery capabilities for emergency events at the local, regional, or state levels.

Once completed, the Resource Management System will present numerous benefits for enhanced public safety, as well as for cost savings. These benefits include the following:

- Enable timely access to quality resource data in the event of a major emergency or disaster. The Commonwealth would benefit from the system through knowledge of inventory levels, location and status of resources.
- Reduction of duplicate data collection and administrative burden. The implementation of an electronic centralized Resource Management System that meets both state and local requirements will reduce the chance of duplicate data collection across disciplines, and will therefore reduce the administrative burden associated with a paper based system.
- Increased data sharing.

- The system will be NIMS compliant.

According to NIMS guidelines, resource management involves four primary tasks:

- Establishing systems for describing, inventorying, requesting and tracking resources (resources can include personnel, teams, facilities, equipment, vehicles, aircraft and supplies.)
- Activating these systems prior to, and during, an incident
- Dispatching resources prior to, and during, an incident
- Deactivating or recalling resources during, or after, incidents

The Resource Management System will be Web-based system and satisfies all NIMS requirements. The system will also meet other Massachusetts and local government agency requirements including, but not limited to, a flexible security model and significant data collection capability. The system will contain information to facilitate and enhance Resource Management within the Commonwealth.

4.2.4.3 Electronic Comprehensive Emergency Management Planning

The Electronic Comprehensive Emergency Management Planning (eCEMP) software is a Web-based application developed for MEMA that gives Massachusetts communities the ability to create and maintain their own Comprehensive Emergency Management Plans. Prior to eCEMP, Massachusetts communities used a labor-intensive process to update their CEM Plans, which consisted of receiving a Data Collection Packet from MEMA, entering the appropriate information, and then sending the packet back to MEMA for processing. The MEMA Planning Department would then convert the hand-written data into an electronic format using a combination of Microsoft Word, Access, and ESRI's ArcMap. This process was time consuming for both MEMA and our communities. Using eCEMP, users are now able to log on to a secure web site to create, update, and print their community's CEM Plan as often as they like and based on their own schedule.

In addition to recording a community's inventory data, such as, vehicles, personnel, equipment, etc., eCEMP users can now map points/areas of concern using simple mapping tools provided by the eCEMP application. eCEMP's mapping function uses SVG to display maps, allowing users to identify critical infrastructure, draw evacuation routes, and denote areas of special concern, such as, flood prone areas. Map data is supplied by MassGIS and map points placed by the eCEMP user are automatically geocoded and stored in an Oracle database.

4.2.5 The Executive Office of Transportation and Transportation Agencies

4.2.5.1 Background

The Boston metropolitan area ranks as the 9th most populated area of the country with over 3 million people. However, in terms of population density it is the third most

densely settled urban area in the country. It is also one of only three cities in the country where there are more jobs than residents. Correlated with high employment is recurring traffic congestion. Most congestion delay is attributable to incidents; the national average is approximately 57% of total delay. In Boston, however, incidents account for almost 70% of the total delay. The area hosts over 10 million visitors per year, including approximately 2 million tourists. The remainder of visitors consists of business travelers to high tech companies in and around the Route 128 beltway and the extensive medical and research facilities located downtown. In total, more than 3 billion trips are taken yearly within the Boston metropolitan area using all modes of transportation.

4.2.5.2 Agencies and Capabilities

Massachusetts Bay Transportation Authority. The Boston metropolitan area has one of the oldest and most extensive mass transit systems in the country. The Massachusetts Bay Transportation Authority (MBTA) has the fourth highest transit ridership in the country and transit usage is three times the national average as a percentage of total travel. The transit system comprises over 125 transit stations that provide over 650,000 trips each weekday, a bus/trackless trolley system consisting of over 170 routes that provide over 375,000 trips each weekday, and a commuter rail system consisting of 265 miles and 118 stations that serve over 36 million riders annually. The MBTA, as the public transit provider, operates an extensive bus, subway and commuter rail network in metropolitan Boston. To support its operations, the “T” has an extensive existing communications network.

Boston Transportation Department. The Boston Transportation Department (BTD) is responsible for traffic control on arterials in the Boston metropolitan area. It operates and maintains over 750 traffic signal controllers, and has approximately 40 CCTV video cameras for traffic and intersection surveillance in downtown Boston. With plans to significantly expand traffic control and video monitoring capabilities, BTD and MassHighway have recently invested over \$3.2 million for improvements to its Traffic Operations Center. The traffic control system operates 378 traffic signal controllers and monitor in real time 683 system loop detectors. In addition, BTD continues to expand its CCTV coverage area and fiber-optic communications system to more intersections.

In support of the MBTA’s Silverline (BRT) system, BTD has also been working with the MBTA to implement a signal priority system for dedicated bus lanes on the urban arterials. Also, as part of this work, a new fiber optic cable system has been installed that presents an opportunity to interconnect the MBTA’s bus operations center with BTD’s Traffic Operations Center, along with field equipment for both systems.

Massachusetts Turnpike Authority. The MTA operates the Massachusetts Turnpike (I-90) and the Sumner and Callahan Tunnels connecting the airport, including the new Ted Williams Tunnel. The Central Artery/ Third Harbor Tunnel (CA/T) project has an extensive traffic surveillance and control system for monitoring traffic and responding to incidents throughout its road and tunnel network. The system includes approximately 450 video surveillance cameras, traffic detection devices, electronic signage, and a fiber

optic communications system providing full redundancy and path diversity to connect field equipment to the OCC South Boston.

Logan Aiport. Logan Airport is operated by the MassPort and is located a two miles from downtown Boston. It is connected by three tunnels, including the new Ted Williams Tunnel and the MBTA Blue Line station at the airport. Approximately 19% of trips to the airport are made by transit.

Massachusetts Highway Department. *Intelleigant Transportation System Architecture.* The Massachusetts Highway Department (MassHighway) has adopted a “Regional ITS Architecture for the Boston Metropolitan Area” that provides a common framework for planning, defining, and integrating intelligent transportation systems between the various transportation and emergency response agencies.

The MassHighway Traffic Operations Center (TOC) serves as the statewide hub for many of the ITS Program activities and is Mass Highway’s recipient and central dispatch for emergency and routine calls 24 hours per day, 7 days per week. Traffic mitigation, incident response, the Cares Van Program, Project Clean and depot security, are just some of the activities coordinated from the TOC. The TOC logs approximately 40, 000 calls and posts over 20, 000 messages on the VMS per year.

The ITS equipment surveillance system operated from the TOC consists of 50 CCTV, 20 permanent overhead VMS, 100 portable VMS, 7 highway advisory radios and 150 traffic detector stations. ITS equipment currently deployed but not yet communicating with the TOC is expected to increase the ITS system operated by the TOC by at least 50% over the next year.

The Motorist Assistance “CaresVan” Program was implemented on August 1, 2000. This program consists of 22 roving service patrols or tow trucks that provide free roadside assistance to disabled motorists and cover the metropolitan areas of Boston, Worcester and Springfield. The “CaresVan” Program assisted over 18,000 motorists in 2003 and over 30,000 stops to address problems along the highway. The Traffic Incident Management Program is managed by the Incident Management Section of the ITS Programs Unit. Incident Management programs and training activities are coordinated by this Unit. The recently modified Unified Response Manual for Highway Incidents will soon be ready for distribution.

MassHighway participates in the U.S. DOT’s Intelligent Transportation Infrastructure Program (ITIP). The purpose of this national program is to enhance the surveillance and data management capabilities in major metropolitan areas. This involves integration of data from the existing MassHighway surveillance infrastructure and deployment of new supplemental surveillance infrastructure to support the provision of both real-time and archived roadway system performance data. A Partnership Agreement was signed 2003 between FHWA and MassHighway to use the services of their contractor, Mobility Technologies, Inc. Approximately 100 radar sensors are deployed in the Boston metropolitan area on I-90, Routes 128/95, I-93, Route 3, Route

24 and Route 1. This data is transmitted to MassHighway via the Internet for ITS and Traffic Counting purposes.

MassHighway currently owns a secure, high-bandwidth microwave communications network that connects five district offices with the Boston headquarters. In addition, MassHighway owns buried fiber-optic conduit along 110 miles of the state highway. This does not include 133 miles of Massachusetts Turnpike Authority fiber.

Massachusetts Interagency Video Information System (MIVIS). An ITS Congressional Earmark Partnership Agreement between FHWA and MassHighway combined with a Homeland Security Grant between EOT and EOPS to create the Massachusetts Interagency Video Information System (MIVIS) (See Figure 4-49). The establishment of MIVIS was based on local needs, the impending Democratic National Convention (DNC) and information about a similar ITS application used in London. The MIVIS project was designed to collect and combine the video resources from MassHighway, the Boston Transportation Department, MBTA, SmarTraveler, and the Massachusetts State Police aerial video. To accomplish this in time for the DNC, a large wireless network was built that connected these organizations to MassHighway's Traffic Operations Center (TOC) in South Boston.

From the TOC, all camera feeds were distributed back to the agencies over the Interagency Communications Network. During the DNC, all the video feeds were also made available through the Internet to security officials and participating agencies, such as Massachusetts Emergency Management Agency (MEMA), Massachusetts State Police, MassPort, FBI, Secret Service, Department of Homeland Security, Coast Guard, MassPike, and the Cambridge and Boston Police Departments. At its peak, the MIVIS website had over 530 logins per day and continually had over 300 logins per day over the week of the DNC. As a result of the success of this project, MIVIS was listed in "ITE's Transportation System Management and Operation Action Kit" in 2005.

A Homeland Security grant was recently used to expand the coverage area and to enhance the capability of the Massachusetts State Police to transmit live video from their helicopter(s) to new ground receiving stations in the metropolitan Boston area.

Video is transmitted from the helicopter to the ground stations located on MBTA cell

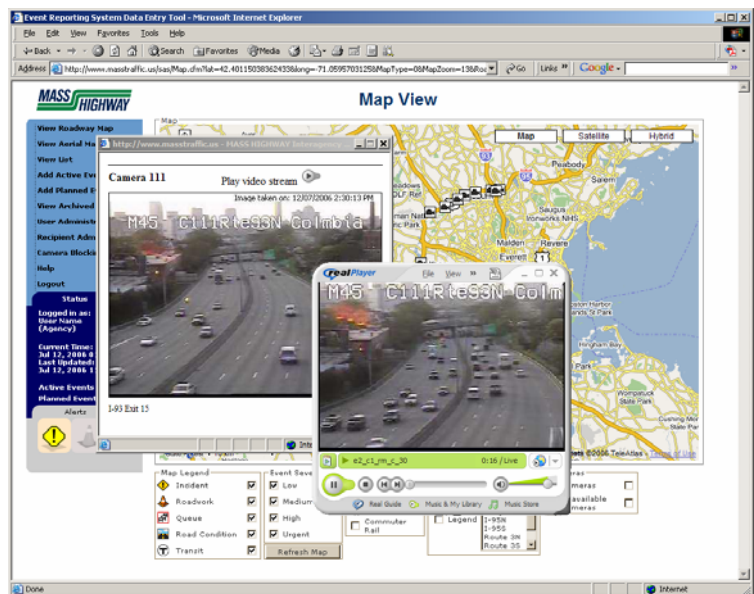


Figure 4-49: MIVIS Geo-referenced Camera Video.

towers and then connected to fiber-optic communications back to the MassHighway TOC. At the TOC, the video stream is integrated to MIVIS where it is re-transmitted to authorized users at public safety and transportation agencies involved in incident and special event management. In addition, the live video is spatially encoded and matched to GIS roadway maps. This capability provides TOC operators and other users to track and map ground objects (such as moving traffic queues) in real time.

In addition to the above, MassHighway continues to fund enhancements to MIVIS. For example, the Event Reporting System software has been integrated with MIVIS (see below) so that viewers are now able to examine real time traffic flow maps and data, including incident and construction status reports/alerts through MIVIS. Based on the availability of CCTV and/or the MSP helicopter, viewers can see images, graphics and data from the same web browser. Additional enhancements to the MassHighway owned Event Reporting System (see Figure 4-48) software are planned that will enable the ERS to function as the data collection, data fusion, and data dissemination platform for 511. The enhanced ERS will be provided to the BTD traffic control center at Boston City Hall.

As part of a \$3 million dollar FY 2004/2005 ITS Congressional Earmark, pending final approval, MassHighway proposes to use the ERS software to track construction permits in the Region and to geo-code this data on the arterial street network. In addition, the ERS and MIVIS are readily expandable to additional CCTV, including speed and flow information, designated evacuation routes, signage information, or other relevant data as desired. By integrating this information with MassHighway freeway, MTA and MBTA information, any users can have a seamless snapshot of the entire metropolitan transportation network using dedicated communications or the Internet.

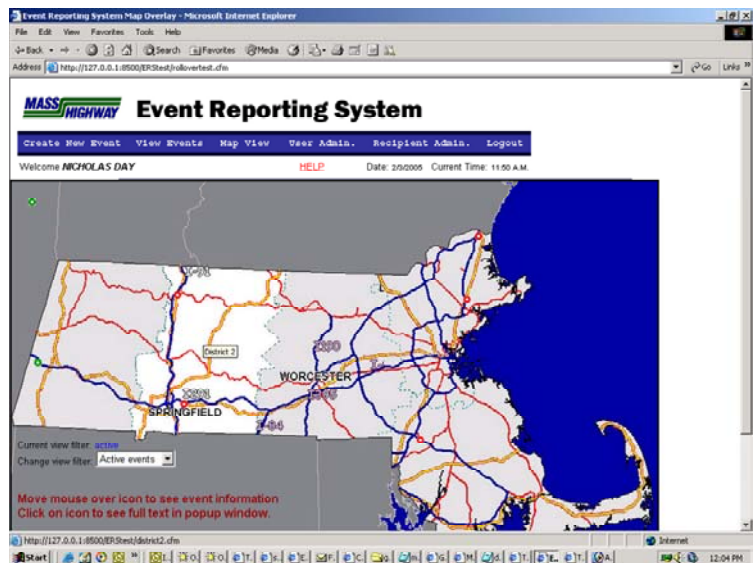


Figure 4-50: Event Reporting System.

Evacuation Plan for the Boston Metropolitan Area. The Regional Evacuation Study for Metropolitan Boston was recently completed. This work was funded through a Homeland Security grant and managed by MassHighway. The purpose of the study was to evaluate the evacuation plans of the Commonwealth's transportation and public safety agencies and those of the City of Boston and its surrounding communities with the goal of creating a unified evacuation plan for the greater Boston area. This work

lays the foundation for the Commonwealth to improve its capability to prevent, mitigate, respond, and recover from terrorist acts, natural disasters or other crisis that would negatively impact the economy and the public health.

Recent natural disasters such as Hurricane Katrina and the need for Homeland Security preparedness has mandated that evacuation plans be developed that are coordinated across jurisdictions and modes of travel. While many local and state exodus plans have already been developed for the City of Boston and surrounding municipalities, a regional exodus plan is needed to establish multi-jurisdictional coordination and to manage/leverage all state and local transportation resources during an emergency. In addition to identifying routes, methods of transportation and schedules for moving people from affected areas, the evacuation plan has made preliminary recommendations for ensuring multi-jurisdictional coordination, establishing operating policies and protocols that include a communications hierarchy for public agencies and first responders to follow, establishing the methods or means for communicating among agencies and with the public, and ensuring that redundant transportation and communication systems exist.

Statewide 511 Traveler Information System. MassHighway plans to deploy a Statewide 511 Traveler Information System that will replace the existing MassHighway funded “SmarTraveler” Program. This program will expand the existing telephone based system to include a companion 511 Internet site, expand the system outside of Boston to encompass the entire state, and expand the content of information to include Homeland Security type data. Lessons learned from 9/11 indicate that cellular telephone communications during a disaster will be especially important for Homeland Security. The proposed 511 systems will provide for emergency interrupts for Amber Alerts and other security related information such as recommended evacuation routes. In addition, the 511 operations will be conducted from the MassHighway TOC making the system capable of functioning 24/7 during an emergency. The current system receives approximately 550,000 calls a month.

2. Project Description

All EOT/MassHighway integration projects will follow the Regional ITS Architecture for Metropolitan Boston Metropolitan adopted in March of 2005 and will promote following goals and objectives:

- Decrease the detection and response time to incidents and security threats by providing public safety responders and transportation system managers with a common information collection, sharing and dissemination platform.
- Reduce congestion and improve safety and security by deploying ITS technology to improve the movement and distribution of goods and people between arterial street system and the freeway, tunnels and bridges.

These objectives will be realized through the following project deliverables:

- Continue to expand and improve use of a dedicated interagency fiber-optic communications network. Design and installation of additional equipment that will increase bandwidth and replace existing equipment with individual encoders/decoders to allow for dedicated camera feeds.
- Replace existing wireless and copper connections with buried fiber for increased bandwidth, security and reliability.
- Construct fiber interconnections to additional control centers such as MassPort, BEMA, and BPD Headquarters requiring minimal deployment of new fiber to create the broader interagency fiber network.
- Double the availability of cameras from the MTA and other participating cities and towns by providing enhanced camera and communications equipment.
- Expand and enhance MIVIS information content and the future 511 Traveler Information System currently under design by integrating the City of Boston's special event and construction information with the MassHighway Event Reporting System and with other relevant freeway and transit data. This information will be integrated, filtered, and archived (according to ITS standards) into one or more databases (MassHighway 511, BTD) and disseminated using any number of GIS based display media (wall monitor, web PDA, PC) for a variety of user classes (public, commercial, public safety). The proposed information system will assist control room staff at BTD, MassHighway, MTA, MBTA and MassPort by continuously monitoring the performance of Boston's road network along with the surrounding regional highway network to allow for the early detection of delays.
- Develop a consistent and easy to understand street and highway signage program that informs commuters, visitors and commercial vehicle operators the best route between freeway exits and major attractions in downtown Boston.
- Additional candidate enhancements to MIVIS:
 - Upgrading streaming video to PDA's – supporting different video players and various cell networks.
 - Developing and deploying voice interoperability between agency land-mobile-radio networks by interconnecting radio base stations on the interagency communications network (creating a managed IP voice network).
 - Developing or integrating the database of critical infrastructure (schools, hospitals, bridges, water, etc.)

4.2.6 Massachusetts Turnpike Authority

The MTA OCC is shown in Figure 4-51. The MHS Operations Control Center (OCC) is a sophisticated central coordination point for monitoring and control of traffic, facilities and security (projected) events. The OCC operates 24/7 and is currently staffed by 24 operators and 3 managers. The MTA also operates a fully redundant Backup

Operations Control Center (BOCC). The response area is from the New York border to Boston.

The mission of the OCC is detection, notification and documentation of traffic, system related events. Over 52,000 events were logged for 2007. To fulfill this mission the OCC operates an Integrated Project Control System (IPCS) from 10 workstations which facilitates the safe and efficient flow of over 300,000 vehicles daily within the MHS. The IPCS allows operators to maintain the internal



Figure 4-51: The MTA Operations Control Center.

environment of the facilities by providing monitoring and control of traffic, facilities, ventilation, power, drainage, lighting, security and fire systems.

The IPCS has over 45,000 data points being monitored at the OCC. There are over 500 traffic and 160 security cameras which are digitally recorded. OCC monitors air quality while maintaining DEP air quality standards via carbon monoxide detectors by operating over 235 fans throughout the MHS tunnel systems. All access roadways and ramps are monitored for overheight vehicle detection. Operators can pass along vital traffic information through variable message signs and the Highway Advisory Radio system.

Communications are vital between the OCC and Turnpike support personnel as well as emergency responding agencies such as the MSP, BEMS, BFD, BTD and BPD. The OCC communicates directly to MTA personnel, MSP and BFD on dedicated radio channels. The OCC also provides up to date traffic information via the Turnpike Web site. The OCC supports Amber Alerts and other emergency notifications.

4.2.7 Regional Information Sharing Projects

4.2.7.1 Northeast Homeland Security Region

Regional SharePoint Project. Modeled after an existing regional Microsoft SharePoint system currently used by NEMLEC (North Eastern Massachusetts Law Enforcement Council), the SharePoint Project planned for the Northeast Homeland Security Planning Region will provide a data compliment to the regional BAPERN radio network which has recently been expanded to include disciplines beyond law enforcement and to reach the entire Northeast Homeland Security Planning Region.

SharePoint will similarly provide a regional, multi-discipline communications interoperability platform for sharing large amounts of information and data, not suited to radio communications, which are typically of short duration and encompass limited content. Each of six disciplines (Law Enforcement, Fire, Emergency Medical Services, Emergency Management, Public Works, and Public Health) will have their own SharePoint site that will be configured to their discipline's needs and specifications. Each discipline's site will be restricted to users defined by the discipline. A NERAC site will link the individual sites and provide a virtual forum (much like the monthly regional council meetings and subcommittee meetings currently provide) for first responders from different disciplines and municipalities to work together on projects, collaborate around issues and become connected with each other in a way that does not currently exist.

NERAC WebEOC. The Northeast Homeland Security Planning Region has successfully implemented an Internet-based events tracking system, Web-EOC that is widely used across the country and by the State of Massachusetts through MEMA. The regional deployment of Web-EOC enables local first responders to use this tool on a day-to-day basis for local, sub-regional, and regional events both planned and unplanned. The regional Web-EOC system is in the process of being linked to State's Web-EOC system to provide seamless coordination for first responders who may need to view both systems.

Public Warning System. Although the Northeast Region has not moved forward with implementing a regional public warning system, the NERAC has done a lot of pre-planning work. Similar to the other regional systems that are either planned or implemented, this type of function lends itself to a regionally-based system as a cost-efficient but effective way to provide widespread public alerting. In a 2005 study, NERAC determined that about 20% of its member municipalities had such systems. However, municipally-based systems can be cost prohibitive for many chronically, cash-strapped municipalities. A regionally, based system could dramatically lower the cost of participation for individual municipalities.

4.2.7.2 Southeast Region Interoperability Planning – the Martha’s Vineyard Public Safety Information System

The Martha’s Vineyard Law Enforcement Computer Network Consortium have been developing a multi-jurisdictional, multi-discipline information management and sharing system using classic evolutionary Systems Engineering process. At each evolutionary step in the development of the Martha’s Vineyard Public Safety Information System (MVPSIS), specifications and requirements are created and vetted following state and national standards for each discipline. A NIMS-based framework has been established that define core building blocks upon which supplementary and supporting modules are added as further resources are made available.

The initial MVPSIS modules, developed during Phase 1, will improve the data management for analysis from (and for) multiple agencies. It will improve the flow of information from the call taker, dispatcher, responding agency personnel, and coordination with regional, state and federal authorities.

The core modules established the ICS architecture for Law Enforcement, Fire Services, EMS, and Emergency Management. This architecture allows them to communicate and share technologies through standardization, allowing for integration of person or location data into their daily workflow and establishing wide-area situational awareness in an escalating incident. In this way, all stakeholders are aware of the complete environment and even the smallest of events as they chose, then increasing this awareness if and when events escalate. This approach ensures they will be prepared if ask for Mutual Aid, or if the incident “comes their way.”

All responders would have access to all previous data as permitted on a person or location, with secured access to preplan data from Police, Fire, EMS and EM. The synergies from the single regional communications E911 center under the Dukes County Sheriffs Department, to the daily use of the technologies from the incident command system, will allow for greater response to any incident planned or unplanned.

The response and preparedness project is underway with the majority of initial goals achieved. System installation and configuration were completed and base software installation was finished at the end of May 2007. With CAD and Law Enforcement RMS live in June, the Mobile Law Enforcement pilot and Fire base rollouts are scheduled for February 2008, with a full rollout to core agencies before March 2008. The EMS module is anticipated to “go live” in the first quarter 2008. As MVPSIS develops over the remaining phases, and the supporting agencies are incorporated into the network, savings from these synergies will allow for budgets to shift, further supporting the MVPSIS enhancement.

4.2.7.3 Metropolitan Boston Homeland Security Region - Interoperability Backbone Project¹⁶

Several interoperability projects are ongoing in the MBHSR according to their five-year strategic plan. One of these projects is for the development of a wideband backbone for moment-to-moment situational awareness throughout the Region. The **Public Safety Network (PSnet)** offers public safety agencies the opportunity to connect to each other via secure, resilient, high-performance data networking infrastructure. Built by leveraging existing networking assets and other public safety investments, **PSnet** provides a platform for expanding collaboration amongst public safety organizations throughout the Boston metropolitan area while improving network resilience and lowering future costs.

PSnet is a communications network, but it is also the foundation—and enabler—of a different way for public safety agencies and officials to cooperate across various agency and jurisdictional boundaries. It is concerned not just with the technology of communication, but also with the effective sharing of networking assets, of information, of applications, and of know-how, so that the best things that are developed or discovered by any participant become resources for public safety throughout the region and beyond.

The model on which **PSnet** is based—private and public entities at local, state, and federal levels collaborating to create and operate network infrastructure— has been proven successful from a technical, operational, and business point of view in other domains among other communities such as research and higher education. The key features of **PSnet** are:

- *Better public safety collaboration* -The core benefit of PSnet is enabling public safety officials to share important information reliably and securely, with complete confidence that the information will not be exposed either to unauthorized PSnet participants or to outsiders. PSnet brings to data what radio interoperability is bringing to voice communications: the ability for public safety agencies in different jurisdictions to collaborate effectively in real time.
- *Alignment with existing well-established authority.* PSnet does not usurp or diminish the authority of municipal governing bodies to make local decisions about equipment and services that are right for their communities. Because PSnet is the sum of its parts, rather than a new structure imposed unilaterally from above, authority arises from (and stays with) the people and agencies that own and manage those parts, not from a new top-down bureaucracy.
- *Efficient incremental growth* - PSnet builds on the investments in equipment, applications, and other infrastructure that each participating municipality or agency

¹⁶ Excerpt from *PSnet Phase 1 Report*, produced by Galaxy Internet Services and Interisle Consulting Group under contract to the Metropolitan Boston Homeland Security Region. More information at <http://clearinghouse.ps-net.org>.

has already made—it doesn't depend on an unrealistic “and then a miracle occurs” leap across a deep funding chasm. PSnet is a “network of networks,” which benefits from everything that each participant brings to the table on day one. Funding for future growth can be local, regional, statewide, or federal.

- *Economies of scale.* Collectively, PSnet participants can negotiate better deals for equipment and services, and can more readily find the resources necessary to develop applications that would be broadly useful. Capabilities like diverse, redundant links or 24x7 monitoring and technical support—prohibitively expensive for a single municipality or agency—become feasible at a regional level.
- *Standards and interoperability* - Because PSnet is based on national and international standards, public safety applications, technology, and insights developed anywhere—at the local, state, regional, or Federal level—are available to the PSnet community.
- *Resiliency* - The broad geographical scope and standards-based Internet architecture of PSnet mean that cities and towns can strike simple and very low-risk agreements with each other to provide backup when one of them encounters a connectivity problem—either internally, or with respect to a service provider.

4.2.8 Summary

The many information sharing capabilities of Massachusetts State Agencies, combined with complementary projects by the Homeland Security Planning Regions, suggests that an overall Information Sharing Architecture be developed that addresses the following recommended NIMS-compliant information sharing architectural requirements. These recommendations were based on a survey of the communication needlines, or necessary communications links, between and among all 15 Emergency Support Functions (ESFs) and the “outside world” during the pre-, trans-, and post- phases of a hurricane event. The resulting hundreds of communication needlines were categorized into Alert, Tactical, Sensor, Common Operational Picture (COP), and Administrative communications, with each category defined as follows:

- Alerting – providing emergency notification to responders and the public
- Tactical communications – primarily immediate push-to-talk (PTT) voice communications to support safety-of-life and property needs spanning First Responder requirements, including Search and Rescue, Law Enforcement, Fire and Emergency medical services – highest priority traffic
- Sensor telemetry – the communication of both “raw” and processed measured data from all deployed and deployable sensors to provide environmental, biometric, system performance, and other telemetry to the appropriate command and control authorities, potentially high-priority traffic
- Common Operational Picture (COP) – a combination of media used to provide time-sensitive awareness of personnel, asset, and resource locations, transit

plans, status, etc. in a proactive “sense and respond” environment, potentially high-priority traffic

- Administrative support – voice and data communications to enable the necessary emergency preparedness and disaster recovery communications important for the long-term operation of preparation and relief efforts, respectively – arguably the lowest priority communications.

The complexities of such an architecture require that proper Enterprise Architecture analysis, based on the use of the Operational, System, and Technical Standard views inherent in the Department of Defense Architecture Framework (DoDAF) are most appropriate to developing the “as-is” architectural views of the many information stovepipes, developing a future vision “to-be” view, establishing all system and end-user requirements, and then establishing and executing a detailed implementation and sustainment plan.

4.3 Standard Operating Procedures

Several one of the radio and IT/telecommunication systems shown in Section 4.2 have defined SOPs or guidelines. Several of these SOPs are described in Table 4-1. A review of these SOPs shows there is no standard format across the state, and some wide-area systems lack formal SOPs. For this reason, a SCIP Strategic initiative in developing such standard protocols will be developed.

4.4 Training and Exercises Plan

EOPSS is conducting its Training and Exercise Planning Workshop in November, 2007. This Workshop will provide a forum for State, Regional Homeland Security Councils, Metropolitan Medical Response Systems, and other stakeholders to learn about exercise types, exercise development, and guidelines for exercise conduct and allowable costs – all leading towards better coordination of the Commonwealth’s activities in this area. From this Workshop, a Multi-Year Training and Exercise Plan will be developed. In addition, EOPSS’ Training and Exercise Guidelines will be revised. Current guidelines are found on the EOPSS website: http://mass.gov/Eeops/docs/programs/hs/FFY06_training_and_exercise_guidelines.doc.

Table 4-1: SOPs for Regional and Statewide Radio Systems

SOP Name	Agencies included	Disciplines	SOP location	Usage	NIMS
BAPERN Policy and Procedure	140 federal, state, local and private member public safety agencies – refer to Figure 4-11	<ul style="list-style-type: none"> • Police • Boards of Health 	GBPC	Day-to-day	Voice - Plain language
Commonwealth of Massachusetts Plan for Use of NPSPAC Common Radio Channels ICALL-ITAC	All 800-MHz equipped subscribers	All disciplines	State Police	Day-to-day	Voice – Inter-agency only
Health and Homeland Alert Network Version 2.0: Basic User’s Guide v0.2	All agencies	All disciplines	Department of Health	Day-to-day	Data exchange
MBHSR Policies and Procedures for Interoperable Equipment ¹⁷ (see Section 4 of MBHSR TICP)	MBHSR agencies	All disciplines	Varies with capability	Day-to-day	Voice, plain language, must be NIMS compliant
MEMA VHF High Band Radio System	All agencies with MEMA approval	All disciplines	MEMA	Day-to-day	Voice - Inter-agency only
Tri-State Fire Mutual Aid Association UHF Radio System Standard Operating Procedures	See Figure 4-9	<ul style="list-style-type: none"> • Police • Fire • EMS 	Franklin County	Day-to-day	Voice - Plain language

During this Workshop, communications training will be discussed and a work plan and timeline developed to identify appropriate training, offer this training to relevant state and municipal first responders, and then utilize this knowledge in exercises. Training courses are offered via MEMA to the multi-jurisdictional/disciplinary Regional Homeland Security Councils and Urban Area Security Initiative (UASI) communities in Massachusetts. All exercises utilizing federal homeland security funding are compliant with the NIMS and the U.S. DHS’ Homeland Security Exercise and Evaluation Program (HSEEP). HSEEP ensures that after action reports and improvements plans are developed following each exercise. All homeland security funded exercises are listed on MEMA’s website (under ‘Training Department’) at the url: www.state.ma.us/mema.

4.5 Usage

The LMR and IT/telecommunication systems described above are all intended for the day-to-day use of multiple organizations as needed to provide voice or data interoperability – or interagency operability. Several of these systems, like BAPERN, the FCERS, WEMLEC UHF, NCC UHF, Plymouth VHF, Berkshire VHF, and the MSP

¹⁷ These SOPs are defined for multiple interoperability approaches, including radio swap, shared channels, patches/gateways, and shared systems.

800-MHz system, are used moment-to-moment for intra- and inter-agency communications. These systems meet the “Optimal” level of interoperability in the SAFECOM Continuum. Further expansion of user disciplines is required in some cases, such as BAPER, and this process is underway.

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5 Strategy

5.1 Interoperability Vision

The vision for interoperability was developed in a collaborative session and later was approved by the SIEC and is as follows:

“Stakeholders optimally share critical information in a rapid, efficient, simple, reliable, and sustainable way utilizing a variety of video, voice and data technologies by following common protocols.”

Understanding the terminology in this vision statement lays the groundwork for defining the type of information needed to complete the analysis of existing systems and as well as the necessary strategic initiatives to meet this vision within five years. This single vision condenses a great deal of content into each term used in its statement as follows:

- The term “stakeholder” spans all levels of government, public safety disciplines, and overall, all First and Supplementary Responders.
- The term “optimally” is chosen in the context of the SAFECOM interoperability Continuum, namely, day-to-day information sharing as an inherent part of public safety “operability.”
- The phrase “share critical information” implies a proactive intention to interchange any and all information – certainly including all actionable information - necessary to not only provide essential tactical support and NIMS compliant emergency preparedness and disaster response, but also moment-to-moment situational awareness in a Common Operational Picture (COP) – it embodies the reality that a simple day-to-day Responder activity could rapidly (in the era of Weapons of Mass Destruction) become an event of National portent, and embodies the Governance Interoperability Continuum characteristic.
- The phrase “rapid...way” emphasizes the need for predetermined MOUs and SOPs that permit command support elements, such as dispatchers, to maintain continuous information sharing – or event-based information push/pull – based on threshold or trigger events – speeded by use of IP backbones, mobile data systems and other information systems that minimize or eliminate use of individual voice calls to share and spread information.
- The phrase “efficient...way” implies the best-practice implementation and use of the right technology (as defined in the SAFECOM Interoperability Continuum), such as IP backbones, mobile data systems, common wireless share groups (e.g., talk groups, data workgroups, etc.) and other information systems, that automatically route information between the authorized predetermined stakeholders without reliance on traditional telephone-driven methods.

- The phrase “simple...way” implies primarily that the Human-System Interface – particularly that of the Responder, control elements (e.g., dispatchers), and decision makers (e.g., Chiefs, managers, shift supervisors) – is minimally affected in the performance of their responsibilities in order to achieve the envisioned information sharing.
- The phrase “reliable...way” implies a set of best engineering practices to assure that the information is available wherever and whenever it is needed, and includes consideration of immediate back-up and failover capability – so the Responder can depend on both providing and receiving the necessary information independent of the environment and infrastructure threat or disaster.
- The critical phrase “sustainable...way” includes the critical SAFECOM Interoperability Continuum characteristics – such as Training and Exercises – but includes elements of the Massachusetts Enhanced Interoperability Continuum characteristics to include the resources needed for long-term funding for maintenance, long-term planning support and technology refresh as well as added spectrum/capacity, among other needs.
- The phrase “utilizing a variety of video, voice and data technologies” emphasizes the need to employ the best media for the intended information sharing, rather than continuing to rely largely on voice communications that fails to meet the “rapid, efficient, simple, and reliable” test for much (certainly not all) of the alerting, tactical, sensor, situational awareness, and administrative information to be shared when needed.
- The phrase “by following common protocols” defines an important statewide acceptance and moment-to-moment use of standardized language, terminology, pronunciation, processes (information sharing), and procedures (e.g., SOPS), that would be identical in every geographic area of the state – and not unique to an individual homeland security region or any other discipline-based regionalization.

5.2 Mission

Following development of the Vision statement, the condensed mission statement was developed by the SIEC as follows¹:

“Mission - Develop, implement and oversee common approaches, strategies, plans and procedures to achieve day- to-day communications interoperability between all stakeholders. This mission will be accomplished through best practices, common procedures, allocation of necessary resources, and training and exercising.”

The mission statement provides the specific direction to gradually remove the artificial interoperability gaps created between homeland security regions, revitalize the cross-jurisdictional interoperability traditions existing across these boundaries, but homogenize public safety communications and ensure moment-to-moment information

¹ State Interoperability Executive Committee, *Ibid*.

sharing across the Commonwealth. These attributes of the vision and mission statements are apparent in not differentiating or prioritizing in these statements by region, by type of First or Supplementary Responders involved, or by geographic, demographic, or other artificial boundary when it comes to protecting life and property.

5.3 Goals and Objectives

The Goals and Objectives of the SCIP, related to the Interoperability Continuum are described below as well as the overarching SIEC requirements on the Strategy and Implementation. These goals and objectives were developed by the SIEC during a collaborative session using the CDSS.

5.3.1 Governance

The following outline captures all Governance Goals and Recommendations from the First Collaborative Session:

1. Governance G1: SIEC has statewide authority to establish architecture (operational, system, and technical standards), procedures, and funding.
 - i. Objective G1-01: Obtain a Statute or Executive Order establishing the SIEC and Regional Sub-Committees with appropriate authorities.
 - ii. Objective G1-02: Establish a method for conflict resolution among stakeholders.
 - iii. Objective G1-03: The SIEC shall provide a representative proactive decision-making body with statewide architecture definition and resource allocation authority established in its charter.
2. Governance G2: SIEC establishes architecture (operational, system, and technical standards), procedures, funding
 - i. Objective G2-01: Develop inter-regional and statewide protocols for disciplines
 - ii. Objective G2-02: Develop statewide protocols for utilization of portable gateway devices
 - iii. Objective G2-03: Specifically involve parties (fire, police, NGO, etc) at the "cities and towns" level so they understand that their individual issues/concerns are being addressed.
 - iv. Objective G2-04: Establish a forum to include public participation in the process.
3. Governance G3: Have a collaborative approach to interoperability among all stakeholders by implementing agreed upon standards, protocols and procedures.
 - i. Objective G3-01: Hold quarterly stakeholder meetings to discuss issues and identify new ideas
 - ii. Objective G3-02: Strengthen written MOUs with regional disciplines

- iii. Objective G3-03: Develop common requirements for MOU's for adoption by all participating entities
 - iv. Objective G3-04: Foster a close working relationship with stakeholder committees.
4. Governance G4: Have consolidated FCC licensing of interoperable frequencies and establish Memoranda of Agreement (MOA) to authorize their usage by stakeholders
- i. Objective G4-01: Establish MOA's to authorize the usage of interoperability frequencies by stakeholders

5.3.2 Standard Operating Procedures

This subsection provides all SOP Goals and Objectives from the SIEC and its support team:

- 1. SOPs G1: A statewide approach with standard operating procedures to be utilized for joint, multidiscipline or multi-jurisdiction operations. These procedures will be consistent with National Incident Management System protocols.
 - ii. Objective G1-01: Adopt standards and curriculum for COM unit leader (COML), COM tech and COM Coordinator
 - iii. Objective G1-02: Develop Regional-Statewide protocols and procedures (incident and discipline driven), including Statewide Emergency Radio Protocols for trapped Responders or Responders in trouble
 - iv. Objective G1-03: Employ common information formats and content, including mandatory descriptive English terminology and pronunciation for tactical voice communications as well as data formats for situational awareness/common operational picture, warnings and alerts, sensor telemetry, and administrative support.
- 2. SOPs G2: Multidisciplinary statewide protocols that enable responders to act in a coordinated fashion at the scene of a significant incident.
 - i. Objective G2-01: Adopt standards and curriculum for COM unit leader, COM tech and COM Coordinator.
 - ii. Objective G2-02: Develop Regional-Statewide protocols and procedures, including Statewide Emergency Radio Protocols for trapped or responders in trouble.

5.3.3 Technology

The following outline captures the Technology Goals and Objectives of the SIEC and its support team:

- 1. Technology G1: Have minimum statewide technology standards to implement statewide architecture

- i. Objective G1-01: Develop minimum criteria for equipment purchase
 - ii. Objective G1-02: Develop channel naming and templates for standardization
 - iii. Objective G1-03: Select (through evaluation) available radio technology that can support interoperability
 - iv. Objective G1-04: Select (through evaluation and if appropriate) underutilized technologies, including embedded data features
 - v. Objective G1-05: Select (through evaluation and assessment) available methods of radio interoperability concepts that work best in Massachusetts
 - vi. Objective G1-06: Employ the SAFECOM network hierarchy, that is, Personal Area Network (PAN), Incident Area Network (IAN), Jurisdiction Area Network (JAN), Extended Area Network (EAN) to achieve Optimal interoperability in the near-term.
 - vii. Objective G1-07: Define mandatory statewide architectural requirements, including system, operational, and technical standard views.
2. Technology G2: A reliable statewide communication backbone
 - i. Objective G2-01: Insure that technologies adopted have sufficient technological flexibility to meet interoperability standards, but remain financially attainable for large and small communities alike as interoperability frequency assignments or talkgroups on a statewide 800-MHz system.
 - ii. Objective G2-02: Employ properly specified voice, video and data all have specific bandwidth requirements for the statewide backbone to determine what is really needed (including growth) and realizing that over-specifying can be just as dangerous as under-specifying.
 - iii. Objective G2-03: The Optimal interoperability solution must have built-in redundancy and be fault tolerant with no single points of failure, so it must be designed and supported to ensure reliable, continuous coverage in a way that is (i) transparent to users or (ii) covered by SOPs.
 3. Technology G3: Have tactical interoperability “on the scene”.
 - i. Objective G3-01: Develop a series of interoperable communications channels (VTAC/UTAC/ITAC/700 MHz) that leverages imbedded infrastructure and plans to incorporate future technology
 4. Technology G4: Utilize existing regional and sub-regional networks with gateways to the statewide backbone
 - i. Objective G4-01: Provide gateways to the statewide backbone.
 5. Technology G 5: Have interactive web site for end users that provides situational awareness.

5.3.4 Training and Exercises

This subsection summarizes the SIEC developed training and exercise Goals and Objectives. There were no Goals and Objectives for Training and Exercises (T&Ex) put forward by the SIEC support team during the Collaborative Session.

1. T&Ex G1: All regions conduct regular interoperable communications exercises that test the capabilities of all stakeholders within their regions
 - i. Objective G1-01: Provide resources to conduct regular interoperable communications exercises.
 - ii. Objective G1-02: Conduct after-action reviews of exercises to determine/measure if we are in keeping with our vision.
 - iii. Objective G1-03: Design training to encourage day-to-day usage
2. T&Ex G2: Have all stakeholders trained in accordance with standardized training programs.
 - i. Objective G2-01: Utilize guidance from the DHS and SAFECOM on standards and curriculum.
 - ii. Objective G2-02: Provide online training for protocols
 - iii. Objective G3-03: Incorporate communications training needs into all training starting with the recruit
 - iv. Objective G4-04: Provide training and exercise for key government administrative staff and decision makers
3. T&Ex G3: Stakeholders understand how to access, implement and utilize statewide systems, protocols and procedures to support incident communications interoperability.

5.3.5 Usage

1. Usage G1: All interoperable communications systems are developed and implemented in a manner so that they can be used on a daily basis.
2. Usage G2: Utilize statewide and regional communications systems to support incident communications needs for emergencies, disasters, planned events, training and exercises.
 - i. Usage G2-01: Use interoperability systems at planned events to allow systems and users to be tested.
 - ii. Usage G2-02: Ensure that multiple agencies involved during planned events are interoperable.
 - iii. Usage G2-03: Use of tactical teams to support mobile solutions.
3. Usage G3: Employ protocols that accommodate communications need increasing as an incident escalates.

4. Usage G4: Employ best practices to provide efficient use of systems for responders.
5. Usage G5: Develop models for sustainability of regional and state systems.

5.3.6 Strategy

From the SIEC Collaborative session with its support team, the Strategy Goals and Objectives are outlined as follows:

1. Strategy G1: Have a statewide interoperability strategy, encompassing issues and needs of all stakeholders (where stakeholders are defined in Section 5.1.1).
 - i. Objective G1-01: Develop a state interoperability plan for use both day-to-day and during mutual aid / large scale response operations
 - ii. Objective G1-02: A supportable roadmap of specific and supportable actions needed to achieve day-to-day information sharing between all stakeholders meeting NIMS requirements.
 - iii. Objective G1-03: Identify technologies in use and coverage areas to determine gaps.
 - iv. Objective G1-04: Develop “use cases” surrounding various types of incidents to determine technology/procedural adequacy of current systems and to determine how to augment/replace existing systems.
 - v. Objective G1-05: Include design and implementation of innovative public private partnerships to offset cost for system deployments (e.g., placement of commercial radio tower or other “high sites” on state land, or variable highway display signage could be sponsored by a corporation and utilized for a variety of emergency/information/direction etc, versus being used by advertisers).
2. Strategy G2: Have an inclusive process with outreach to local and regional jurisdictions.
 - i. Objective G2-01: Develop and implement a comprehensive plan to keep stakeholders and all other interested parties up to date on project progress and SEIC activities.
 - ii. Objective G2-02: The SIEC shall provide a representative proactive decision-making body with statewide architecture definition and resource allocation authority established in its charter.
 - iii. Objective G2-03: Specifically involve parties (fire, police, NGO, etc) at the “cities and towns” level so they understand that their individual issues/concerns are being addressed.
 - iv. Objective G2-04: Establish a forum to include public participation in the process.

- v. Objective G2-05: Utilize education and training to increase participation in the process.

5.3.7 Implementation

This subsection summarizes the combined SIEC and SIEC support team results from the first Collaborative Session in the following outline form.

1. Implementation G1: Adoption of interoperability standards by all stakeholders.
 - i. Objective G1-01: Achieve radio interoperability between all stakeholders in the Northeast Region within six months.
 - ii. Objective G1-02: Revision of standards as experience and exercises indicate.
 - iii. Objective G1-03: Establish the mechanisms to encourage and foster adoption of statewide protocols and procedures through continuous bi-directional stakeholder outreach, engagement, education and training.
 - iv. Objective G1-04: Ensure that implementation of interoperability solutions have coordination between regions and state resources
 - v. Objective G1-05: "Purchasing guidelines" are employed for phasing new equipment into the overall system concept.
 - vi. Objective G1-06: Reconcile differences in data formats in different CAD systems.
2. Implementation G2: Develop and foster an interactive website
 - i. Objective G2-01: Users should be able to update their own data in real time
 - ii. Objective G2-02: Website should have aspects that are read only
 - iii. Objective G2-03: Templates and protocols are listed on the web site
3. Implementation G3: Increase focus on communications at exercises.
 - i. Objective G3-01: Exercises that focus on different aspects of communications.
4. Implementation G4: Develop a plan to implement the system either by phase or other method that brings about the states interoperability vision.
 - i. Objective G4-01: Phased implementation which leverages off of existing investments.
 - ii. Objective G4-02: Provide long-term "technical support" so cities and towns receive professional support and service for "compatible" equipment acquisitions (otherwise they may be reluctant to change current practice).

5.4 Strategic Initiatives

This subsection presents the derivation of SCIP Strategic Initiatives from the Focus Group and SIEC Collaborative Session results.

5.4.1 Identification of Focus Group Themes

During the research for the strategic plan, 20 Focus Groups were held representing various organizations, agencies and disciplines within the Commonwealth of Massachusetts listed in Section 3. The groups were comprised of individuals as diverse as first responders, emergency managers, volunteers, Native Americans, private enterprise and regional planners. In each case, the participants were:

1. Introduced to the SCIP development project and the SIEC Vision and Mission
2. Presented a brief description of the scope of interoperability being addressed, i.e. including information sharing of all types, not simply radio alone
3. Asked to individually respond to three questions within the domains of the elements of the SAFECOM Interoperability Continuum, namely Governance, SOPs, Technology, Training and Exercises, and Usage, as follows:
 - i. What aspects of existing systems “work well” in addressing interoperability issues?
 - ii. What interoperability “gaps” still needed to be filled?
 - iii. What approach should be used to fill these gaps?

The Goals and Objectives developed by the SIEC were not shared with the Focus Groups to prevent them being “tainted” in thought by their results, which largely represented interoperability gaps to be corrected (Goals) themselves and corresponding recommendations as to what actions were required to fill those gaps.

The comments from each Focus Group were summarized in theme statements by the participants. These themes were collected into a matrix so that the relative frequency of occurrence of these themes could be identified. It is this frequency of occurrence that determines the most important recommendations the Focus Groups have made surrounding the creation of an interoperability plan. There were many recommendations made during the focus groups, but commonalities were picked based on the SCIP in the areas of governance, usage, technology, training & exercise and standard operating procedures. It was within these areas that the most popular recommendations were made and compiled for the strategic plan. The histogram of these themes is shown in Figure 5-1. In what follows, we have divided the analysis of these results into elements of the SAFECOM Continuum and the enhancements to it needed for tailoring to the realities of Massachusetts.

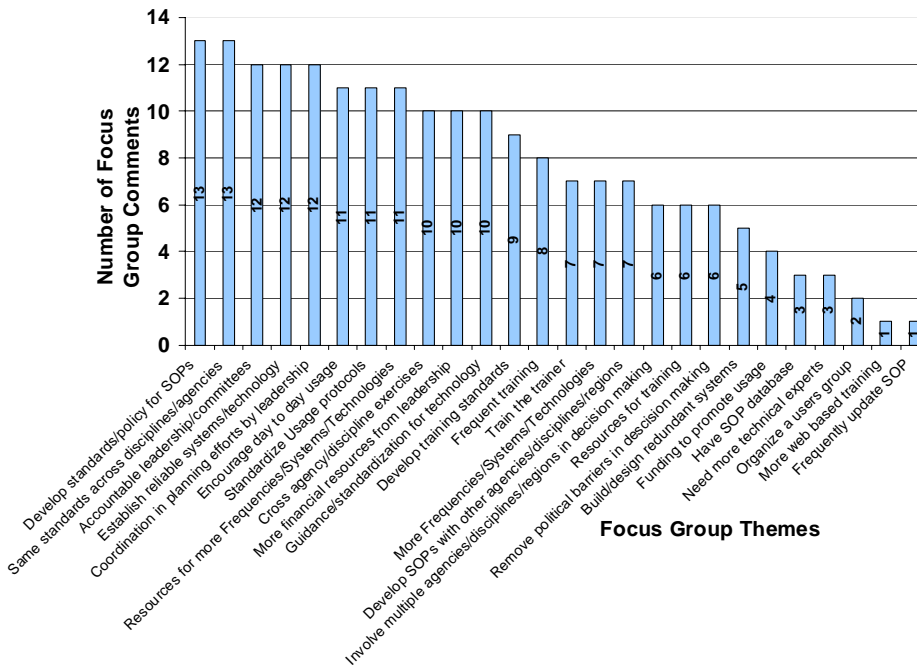


Figure 5-1. Histogram of Focus Group Results

The most suggested recommendations (13 out of 18) as shown in Figure 5-1 were to **Develop Standards/policies for SOPs** (standard operating procedures.) Most of the groups stated they did have SOPs in place and most said they were being used, but the difference was that each discipline or region had their own set of procedures. The different procedures were often not compatible or complementary of each other and caused confusion in times of emergency or large scale events. The suggestion was that a certain body should be in charge for developing standards and policies. It would be in charge of the funding and man power needed to create a set of procedures that could be passed out to the regions/agencies/disciplines.

Along with having a body to develop these standards, it was also recommended that there should be the **Same Standards Across Disciplines/Agencies** throughout the emergency/public sector community. It was discussed during the focus groups that a large problem is that standards are not uniform throughout the Commonwealth. Differences occur even in the same disciplines or even in the same region. It was clear that the lack of standards were compromising the existing ones in the Commonwealth.

The next highest recommendations (12 out of 18) were addressing the technology and governance issues surround the current state of interoperability. The focus groups recommended that **Accountable Leadership/committees** needed to be in place to supplement and supervise any interoperability efforts. It can be stated that the focus

groups felt that current leadership is ineffective regarding communications policy. The suggestion was to choose or elect leaders (sole or collectively) who will properly develop communication policy that is comprehensive and can be measured. The focus was that this new leadership needed to be held responsible for promising and delivering resources.

Interestingly, it was found that although that many groups felt they needed more technology to become more interoperable the recommendation was to make the systems and technology reliable. It seemed that people were willing to use shared systems or few devices, but the most important things were that they could be relied upon in emergency situations. Similar to the way the lack of standards of SOPs undermine their usefulness in crisis moments, the same can be said about existing technology; it is not reliable enough. The current systems and tools are not dependable and therefore become ineffective.

Coordination in planning efforts is something related to having accountable leadership. According to the Focus Groups, current leaders may be effective, but they are not being inclusive of the region or all disciplines and not coordinating with subject matter experts. It was found that policy and decisions have been made without speaking directly to agencies or regions and have been carried out in an effective manner. It was stated that subject matter experts were not being consulted and not enough discussions were had before policy had been developed. The focus groups remained optimistic that effective decisions could be made, but only after policy efforts had been coordinated to include all stakeholders.

Continuing, a recommendation that was common through most of the groups (11 out of 18) was to **Encourage Day-to-day Use** of the technologies/systems. It was discussed that in order to get tools and technologies ready to use in emergency situations were to have current responders and workers using them everyday. Ways to encourage usage were using tools that were compatible with existing networks, ease of the tool itself, proper training, and even begin to offer incentives. Another suggestion that seemed to follow this idea directly was to standardize the usage of various equipment or systems.

By creating standards (preferably by a body) for usage, agencies/disciplines can scale up or down equipment, begin the correct training, and engage in joint exercises. Standardizing the usage process of technology, SOPs, or exercises creates a unified backbone that the entire commonwealth can operate. It was suggested that by having standard protocols it would determine when specific equipment networks or tools would be used and how to move forward in future training or planning. It would also keep existing equipment on stand by and ready to be used in an emergency.

Funding for more technology (11 out of 18) was recommended by the focus groups. It is interesting to note that most felt that existing technologies would not be the entire answer, but rather a coordination of how - and how often - these technologies being used. Regardless funding was discussed quite often; however it was in the context of improving or upgrading existing technologies. Some disciplines said that they had radio

units but that they were not longer compatible with digital networks. Other groups said there systems were so unreliable that they were forced to use personal cell phones to carry out basic responder duties. It was agreed that funding was desperately needed, but it should be done by a standards body, so that everyone is getting the same compatible technologies.

When discussing training and exercises (10 out of 18) of the following focus groups suggested that it should reach across agencies and disciplines. It was discussed that often exercises are performed on a routine basis by one discipline but often do not include others, especially municipalities and regions. It was also discussed that the design (9 out of 18) of the training exercises should be done with other disciplines or agencies in order to be inclusive. This lack of inclusion on training exercises was deemed a gap by most focus groups during the discussions.

Most Focus groups (10 out of 18) suggested the need for overall financial help from leadership, including man power, equipment and hours. This specific discussion focused on governance and how often budgeting constraints compromised the ability to obtain the necessary technology or manpower. In fact many had suggested a re-organization of the governance funding structures entirely. Coincidentally, many focus groups were suggesting guidance or standardizing what technology should be required. The idea was that if the regions/disciplines were to receive the proper funding, there would not be uniformity in the technology that would be purchased (10 out of 18). It was thought if everyone did not purchase the same technology it would further mire the interoperability problem.

Other ideas that were prominent throughout the data were to develop standards for training and to create a guide for agencies to use. Along with standardizing the training, a “train the trainer” concept was discussed so that people could have in house subject matter experts. More frequencies and systems were suggested by some groups and to develop standard operating procedures with other disciplines to create uniformity when responding to disaster or emergency situations.

The current governance structure was discussed and it was recommended that representations from multiple regions and agencies should be an active part of the decision and policy making process. Focus groups recommended resources for training in the form of financial and technological support. Political barriers were identified as being problems in the governance process and it was recommended that these be removed for effective, non- biased decision making by the state. This would take place on an organizational level within current government.

Other interesting recommendations were to have or build redundant systems and to provide funds to support their usage on a daily basis. It was recommended to build a standard operating procedure database that can be accessed by authorized agencies, regions and disciplines. Of course, building such a database would entail obtaining more technical experts for interoperability purposes and to self organize to form a users group to discuss new ideas about interoperability. It was suggested to incorporate more

web based training and if standard operating procedures are created, to frequently update the information and material when it is shared to everyone.

5.4.2 Synthesis of SIEC Session and Focus Group Results into Strategic Initiatives

The analysis of themes from the Focus Groups, as well as their specific comments and the SIEC Goals and Objectives were used to define a structured set of high-level Strategic Initiatives to meet Massachusetts interoperability requirements. Public Safety communications interoperability – and the successes that were already experienced (e.g., BAPER, the Western Region shared systems, the UASI TICP and existing Five-Year Plan, and the State Police network in the Southeast) – were founded upon:

- I. Established and effective decision-making authority for statewide control and coordination (including standardization) from planning to implementation, while retaining strong local and regional representation
- II. Adequate and timely resources for planning, procurement, and (most importantly) sustainment (i.e., continued training, operations, and maintenance).

The vast majority of comments of Type I occurred – as would be expected – with respect to the Governance element of the Continuum and was correlated with the Goals and Objectives developed by the first SIEC Collaborative Session. It was felt there was not adequate representation of all disciplines required no formal processes regionally, and the simple lack of organizational structure for informed and authoritative decision-making at all levels, particularly at the state level. This belief in general was true in all but the MBHSR, whose governance structure was matured through some years of significant funding and support provided to it as a UASI region. It was apparent between the regional Focus Groups – and the existence both of the MBHSR with CIS Charter (not found elsewhere) – that Governance in the MBHSR was largely intact from the perspective of the participants. Implication – don't change what's working. A similar maturity of representation and cooperation was found in the Northeast Region, although a Charter and other elements of governance were recommended. This same belief and confidence were not shared in the remaining three regions and, as was learned, for different reasons in each region.

Thus, it was evident that a major initiative was required to improve governance in three of the five regions with some enhancements possible in the Northeast and MBHSR regions as well. All regions felt that more representative coordination, standardization, and proactive planning with execution from the state level (i.e., the SIEC) were required. For these reasons, it was evident that the overall Continuum element of Governance was a focal point for a critical Strategic Initiative. Furthermore, strong governance was seen as critical before other initiatives could be properly executed. The Governance Goals and Objectives of the SIEC, combined with collective recommendations from the Focus Groups, have therefore mandated the creation of the *Governance Initiative*. Its purpose is to establish the SIEC authority, increase its representation of disciplines and

regions, and similarly bolster representation and process to strengthen – and in some cases establish – a strong CIS in certain regions.

In addition, there were several recommendations on the planning aspects for interoperability, that is, proper processes and to be standardized and followed to execute the decisions of Governance, namely, to go from intent to action. In particular, it was evident that some Regional Committees that a variety of means were used to support implementation planning – including the use of the regional planning Authorities and other non-profit organizations such as the Greater Boston Police Council (GBPC) who oversee the BAPER system. For this reason, it is apparent that “Planning” is a fundamental need to consistently implement the decisions made by the Governance initiative across the Regions through proper (and discipline-independent) planning support to each region. Since authoritative planning based on best practices is essential to implementing the decisions of this new interoperability governance, this planning will be included *within* the Governance Initiative. It will include provisioning the Regional CIS and SIEC with the necessary authority, representation, and planning capabilities to properly realize the SIEC Vision, Mission, Goals, and Objectives and the consensus recommendations of the Focus Groups.

The Type II comments heard throughout the Focus Groups are apparent in many public safety communications forums, the need for funding. Inadequate funds to perform the proper planning and procure the necessary infrastructure and equipment to move Massachusetts to the right. Although the UASI region did not emphasize the same need for procurement funds as found consistently and strongly in other regions, they expressed a strong concern about continued funding for operations, maintenance, and training. This sustainment concern did not outweigh the procurement concern in all other regions, but it (logically) followed as a close second in consideration to procurement. Given the number and complexities of acquiring funds for system procurements combined with the impact on the public of supporting these essential public safety systems properly over the long term, it is evident that our second Strategic Initiative must be *Funding*. All remaining strategic interoperability initiatives are founded on proper Governance and adequate Funding, and neither is available and assured for public safety communications interoperability in Massachusetts.

Apart from Governance and Funding, the strongest and greatest (by volume) identified gaps and recommendations fell into several basic areas of the Technology element of the Continuum. They focused around several key needs expressed in all regional and most discipline Focus Groups as follows:

1. Standardized architecture (i.e., generic design) and equipment, in general
2. Reliable, survivable, and less expensive statewide communications backbone (e.g., both optical fiber and microwave)
3. Common definition and NIMS-compliant use of available radio channels

4. Extension and expansion of existing command and tactical radio systems that are already proven, (e.g., BAPER, WEMLEC UHF system, Franklin County Systems, etc.)
5. Better dissemination of information, including situational awareness, recorded information/data, and even implementation planning information to avoid RF conflicts in particular
6. Consolidation of dispatch centers and other command facilities, albeit not expressed by all but strongly by a few, and correlated with improved information sharing
7. Improved and better coordinated capabilities to communicate despite the partial or complete loss of terrestrial infrastructure (e.g., Katrina impact on LMR and cellular systems)
8. Consideration and planning for the new 700-MHz spectrum as well as expansion (coverage) and extension (disciplines) of legacy 800-MHz trunked systems – arguably headed for the ultimate non-proprietary shared-system end-state for the Technical element of the Interoperability Continuum
9. Well-planned and consolidated use of mobile data systems to both reduce reliance on voice channels (freeing it for true tactical and safety-of-life versus administrative “look-up” applications) and vastly improving the work efficiency of Responders and receivers while on the move.

Basically, these focused recommendations can be grouped into the subsequent two types:

- III. Vetted, standardized, ubiquitous, reliable, and survivable information sharing systems, principally data systems, but certainly including all media – in which it was tacitly understood that sharing information is the foundation of interoperability, and that achieving the need to share this information will result in improved plans to do so “over the air” as well as a wired network
- IV. Continuing and enhancing the existing and emerging communication techniques needed to provide fundamental command and tactical information sharing support to First and Supplementary Responders in their respective mobile environments.

The Type III gaps and recommendations included (1), (2), (5), and (6) – and matched similar Technology Goals and Objectives by the SIEC. Although mobile data systems could be envisioned as a part of type III, it is fundamental concerned about defining real “hard” communication requirements, establishing a standardized architecture for information sharing, assuring fixed shared broadband communications, and seeking economies of scale in command and control. This broad set of information sharing needs expressed by the SIEC Collaborative Session as well as the Focus Groups, suggests that an umbrella initiative be defined to accommodate them – as they are technically related. For this reason, we define the *Information Sharing Strategic*

Initiative to focus on these strongly correlated objectives (technically) albeit pervasive across the public safety communications infrastructure.

The remaining gaps and recommendations (3), (4), (7), (8), and (9) fall into type IV above, and which naturally fall into what we'll define as the *Mobility Strategic Initiative*. The Mobility Initiative includes, but is not limited to, the immediate expansion (increased coverage) and extension (added disciplines) of existing LMR systems across the Commonwealth, such as BAPER, WEMLEC, the Franklin County Emergency Communication System, the State Police 800-MHz System, etc., it also includes support for enhancing continuity of government (COG) post-disaster communications as well as supporting the increased use of mobile data systems.

The two interrelated elements of the Interoperability Continuum that produced nearly predictable responses were:

- V. Standard operation procedures, particularly for new or evolving systems, including their definition and use, as well as the related practice of using these procedures in realistic situations to help assure proper use in crisis situations while following NIMS doctrine.

In the case of SOPs, reviewing those that exist and are well documented (see Section 4.3) shows that although the same system subscriber may access different systems, the SOPs guiding and controlling their use:

- Do not follow a standardized form, format, or content;
- Do not address all the ways in which a subscriber may seek to use the system or "find themselves" using the system;
- Are vague about the consequences of one or more ways of using the system, particularly the impact on others; and
- Are not readily available for potential subscribers to review.

Similar comments were made in the context of Training and Exercises, and most importantly, that Training and Exercises were too few in number and unrealistic in their representation of communication and interoperability problems. Overall, there was a strong belief that again, the state needed to take a greater role in ensuring standardized SOPs and Training and Exercise regime across Massachusetts. To this end, we have defined the corresponding *Protocol Strategic Initiative* to correct these critical needs. Of course, the Information Sharing and Mobility initiatives must have associated SOPs as part of their solutions, but the protocol initiative will assure they follow standardized best practice in their development.

Finally, there were a variety of comments that addressed:

- VI. Interest in understanding the feasibility, value, and use of advanced communication (and related) technologies applied to public safety, such as

broadband and ultra-broadband wireless, mesh networking, RFID, RF-based position-location, etc.

Throughout the US, and as well in Massachusetts, there are individual organizations and consortiums formed to investigate many of these advanced technologies (as compared to LMR) and some have deployed and are using them, or evolving their proper use, into best practice. In addition, these endeavors help to distinguish “best practice” from the “hype” associated with new technology. Since DHS SAFECOM seeks to promote the use of appropriate advanced technologies – when they offer the advantages proven in many scenarios – Massachusetts needs a formal means to collect and disseminate the results of these endeavors. For this reason, we will define the *Innovation Strategic Initiative*, where the identification of ongoing endeavors, the initiation of new endeavors, and the proper understanding of results from both is made available statewide.

5.4.3 Integration with MBHSR TICP

The SCIP Strategic initiatives must support and integrate with the MBHSR TICP, and more specifically, with the MBHSR Five-Year Strategic Plan. This integration was performed in five ways:

1. MBHSR (UASI Region and source of the TICP) representatives to the SIEC were an integral part of the SIEC Collaborative Sessions that produces the SCIP Goals and Objectives, from which Strategic Initiatives and the subordinate statewide Work Project Guidelines (i.e., types of allowed Work Projects sanctioned by the SIEC to provide needed interoperability solutions) were derived and vetted with the SIEC
2. A Focus Group was held with the UASI regional representatives who developed the MBHSR TICP to determine the existing strengths, gaps, and recommendations for improvement in the current UASI interoperability capabilities
3. Existing system and capabilities information from the UASI Region (source of the TICP) were uploaded into the Massachusetts CASM database for subsequent interoperability analysis that supported development of the Work Project Guidelines within each Strategic Initiative developed above in subsection 5.3.
4. The TICP was reviewed in detail to capture potential Work Project Guidelines from the specific strategic initiatives described in the TICP
5. The MBHSR who developed the TICP received the Investment Justification package for the NTIA PSIC grant and asked to directly identify and provide cost estimates for the specific Work Projects (or Action Plans) they recommended for this major federal grant program and beyond, within the context of the SIEC-vetted Work Project Guidelines.

These five steps ensured that the TICP was well integrated with the 2007 Massachusetts SCIP.

Although the specific Work Project details will be apparent in Section 6 where the MBHSR UASI Region Work Projects are described, the relationship between MBHSR and SCIP Strategic Initiatives is shown on the next page in Table 5-1 Note that it is

tacitly assumed that the Governance and Funding initiatives are underpinning all other initiatives, and that there are clearly interrelationships and overlap between initiatives – which is necessary for their proper operation.

Table 5-1: MBHSR Five-Year Strategic Plan vs. SCIP Initiatives

MBHSR Five-Year Strategic Plan		2007 SCIP Strategic Initiatives
#	Initiative	
1A	Set minimum system and subscriber standards for new equipment.	I. Governance
1B	Develop standard regional channel plans.	IV. Mobility
1C	Establish minimum communications capability standards for command and control centers	III. Information Sharing
1D	Create a process for developing SOPs and MOUs and apply to current and future capabilities	V. Protocol
1E	Develop procedures to maintain the MBHSR Communications Interoperability Data Warehouse	III. Information Sharing V. Protocol
2A	Bring all MBHSR R/F equipment to a minimum level of capability and supportability	III. Mobility
2B	Promote infrastructure sharing and establish and improve system redundancy, survivability, and sustainability.	III. Information Sharing IV. Mobility
2C	Obtain additional radio spectrum.	I. Governance IV. Mobility
2D	Build out existing mutual aid systems for enhanced in-street coverage and provide additional capacity.	IV. Mobility V. Protocol
3A	Address lack of interoperability between VHF fire departments and other stakeholders	IV. Mobility
3B	Procure stand alone quick-hit equipment to improve interoperability in the near term	IV. Mobility
3C	Develop MBHSR/UASI multi-band channels	IV. Mobility
4A	Provide MBHSR with 3G mobile wireless data capability and applications	III. Information Sharing IV. Mobility V. Protocol VI. Innovation
4B	Establish regional notification mechanism through leveraging existing capabilities	III. Information Sharing IV. Mobility
5A	Incorporate communications interoperability into future MBHSR exercises	V. Protocol
6	Coordinate with other activities having implications on communications interoperability	SCIP integration

The table shows that a strong correlation exists between the TICP Five-Year Plan and the synthesized SCIP Strategic Initiatives.

5.5 Action Plans

This subsection presents the specification of Action Plans under the Strategic Initiatives developed in Subsection 5.1. These projects are postulated in Subsection 5.5.1 below based on subject matter expert (SME) review of all Focus Group results, the MBHSR (a UASI Region) TICP and Five-Year Strategic Plan, and CASM system interoperability analyses (see Section 4.2 Technology).

5.5.1 Synthesis of Work Project Guidelines from SIEC Goals and Objectives

All SIEC and Stakeholder Focus Group comments, MBHSR UASI Region plans, and CASM analyses were analyzed relative to the Strategic Initiatives defined in Subsection 5.3. The results of this subsection are the specific Guidelines of Action Plans (or Work Projects) to be executed by the state and Homeland Security Regions that encompass the statewide needs extracted from the SIEC and Focus group sessions. Going forward, the specification and publication of these guidelines is important for local, tribal, regional, and state organizations to understand the potential acceptance of a project for SIEC-allocated interoperability resources before submission to the SIEC.

In subsection 5.5.3 below, the specific Work Projects for the three-year duration of the NTIA Public Safety Interoperable Communications (PSIC) grant - developed by the local Homeland Security Region representatives – are presented. The only constraint imposed was that these PSIC Grant Work Projects (and all future Work Projects) had to fall under one or more of the Work Project Guidelines vetted and prioritized by the SIEC. The three-year SCIP Work Projects will occur fully within the current five-year SCIP period covered by this inaugural Massachusetts 2007 SCIP. The SIEC will determine through vote whether or not a specific Work Project is contained within one or more of the accepted Work Project Guidelines and its relative priority for available resources.

Note that some of the Strategic Initiatives foster individual projects, not just Work Project Categories, as these projects will develop SIEC-vetted conventions or resources needed for all future Work Projects within the scope of SIEC and Focus Group defined Strategic Initiatives.

5.5.1.1 I. Governance Initiative

The Governance Initiative Work Project Guidelines to be further detailed in the SCIP are as follows:

I.1 Establish Governance Project: This project will strengthen the Commonwealths hierarchical structure and authority needed to implement the Strategic Communications Interoperability Plan (SCIP), without which local and artificial regional stovepipes would continue to exist and changes in administration combined with Federal “spend-now” grants would cause chaotic interoperability planning.

I.2 Interoperability Planning Project: Employ, equip, support, and monitor integrated project teams (IPTs) that to the SIEC, its designated stewards or subcommittees, in the execution of all interoperability projects fostered from the SCIP. .

5.5.1.2 II. Funding Initiative

The Collaborative Session resulted in the addition of a 14th project called “Sustainment,” that is, an effort to secure funding for the operation of interoperability capabilities to be developed from the SCIP. Since the coordination of grant programs to fund the SCIP projects as well as their sustainment are critical elements to the SCIP (see SCIP Section 7), we propose this sixth Initiative called “Funding” made up of the following two projects:

II.1 Acquisition Funding Project: This project is to seek and align all available resources for interoperability improvements and acquire those resources for communications interoperability acquisition projects supported by the SIEC.

II.2 Sustainment Funding Project: This project is to develop and acquire sustainment funding for all SCIP interoperability projects.

5.5.1.3 III. Information Sharing Initiative

The Information Sharing Initiative Action Plan Project Guidelines to be detailed in the SCIP are as follows:

III.1 Information Enterprise Implementation Projects: An Information Sharing (IS) Enterprise (Architecture) for all public safety and emergency response needs statewide – spanning moment-to-moment, day-to-day, and all-incident requirements for all stakeholders - will be developed and implemented to provide the requirements and IS foundation for all implementation projects to follow.

III.2 Command Consolidation Projects: Support for planning and implementation of regional consolidated command and control (e.g., dispatch and Operations Center) projects to be executed by the collaborating organizations.

III.3 Statewide Interoperability Backbone Projects: Enhancement of existing statewide and regional backbones, possibly through use of redundant fiber and microwave links, to implement Information Enterprise Implementation (III.1 above) needs which are essential to public safety interoperability.

5.5.1.4 IV. Mobility Initiative

The Mobility Initiative Action Plan Project Guidelines to be further detailed in the SCIP – which focus on RF interoperability – are described as follows:

IV.1 Channel Definition Projects: Common RF channels for operational, tactical, and command interoperability will be defined and implemented

statewide, along with provisioning and deployment of subscriber devices, the requisite Standard Operating Procedures (SOPs), and associated NIMS-compliant Training & Exercises.

IV.2 Command Channel Projects: This project sponsors the immediate enhancement, design and extension of existing regional and statewide radio systems across Massachusetts providing Command, Dispatch, and Tactical communications, such as the wide-area multi-discipline radio networks in Berkshire, Franklin, Hampton, Hamden, Norfolk, and Plymouth Counties or the statewide MSP, DPH, MEMA, BAPER, and other networks.

IV.3 Statewide 700-800-MHz Network Project: This project sponsors the initial and follow-up planning 700-800-MHz spectrum use and implementation of coordinated systems statewide for all public safety, public service, and emergency responders. Design and implementation the system will be executed in the years subsequent to this planning effort, captured by this 2007 and future SCIPs.

IV.4 Continuity of Government Communications Projects: This project sponsors the coordinated planning and implementation of enduring communication systems for command and control before, during, and after major disasters as well as support to remote locations lacking terrestrial infrastructure, including – but not limited to – satellite radio, high-frequency/lo-band radio, and deployable terrestrial technologies.

Within scope of this project a determination will also be made to provision a Strategic Technology Reserve. We will procure deployable reserve capabilities to fill gaps identified in a study that will be conducted. Familiarity with this equipment will maximize the benefits of day-to-day Usage in the DHS SAFECOM “Optimal” sense will reserving its use for major disasters.

5.5.1.5 V. Protocols Initiative

The Protocol Initiative Action Plan Project Guidelines to be further detailed in the SCIP are described as follows:

V.1 Statewide SOPs and MOUs Projects: Responders, dispatchers, and others sharing information in a mobile environment require standardized SOPs to maximize the flow of needed command and control and situational awareness reports. This project will develop templates for these SOPs, provide them on the state’s Web Site, and assure their common development and adoption across all other relevant SCIP projects.

V.2 Statewide Training and Exercises Projects: This project will develop/adopt NIMS-complaint communication exercise practice/guidelines, performance measurement, and evaluation for all relevant disciplines and a vetted set of scenarios. These exercises will necessarily include dispatchers,

first responders, first receivers, service personnel, and other stakeholders as appropriate.

5.5.1.6 VI. Innovation Initiative

The Protocol Initiative Action Plan Project Guidelines to be further detailed in the SCIP are described as follows:

VI.1 Innovation Template: This project will develop a standard framework for the Planning, Justification, and Reporting of all Innovation Initiative projects, including:

- Development of project plans according to established guidelines
- Provision of specific templates used by the SIEC to evaluate potential projects.
- Documentation of expected, ongoing, and final results from these projects

This evaluation will be based on set criteria to determine when processes, protocols and/or technologies are needed, what they are being used to achieve, and to determine costs and benefits of the specific implementation. In the implementation context, this framework is called “fast prototyping” and would be used to assess the value of advanced communication technologies in which there are significant uncertainties in performance and user requirements. Finally, this project will establish the mechanism to capture lessons learned and best practices from processes, protocols and/or technology implementations and make them available to organizations/jurisdictions to reduce implementation cost and facilitate standardization of technologies utilized

VI.2 Innovate: These projects will provide resource, technical, or other support to new or ongoing projects that employ advanced technology or significantly upgraded capabilities from existing technology for interoperability.

5.5.2 Ranking of Strategic Initiative Projects

5.5.2.1 Focus Group Ranking

All Stakeholder Focus Group comments (not the summarized themes) were collected into three matrices, one for Massachusetts interoperability Strengths (Figure 5-2), one for Interoperability Gaps (Figure 5-3), and recommended actions to produce interoperability Improvements (Figure 5-4).

Figure 5-2 shows the number of Focus Group comments supporting existing interoperability capabilities in Massachusetts. The “N/A” or “not applicable” category represents comments that either did not represent Strengths or in which a “strength” statement was not possible. These results emphasized the importance of building on existing interoperability strengths. As the figure shows, there was significant belief that existing use of Regional or statewide information sharing (IS) tools, such as:

- WebEOC – a Web-based incident management (IM) information –sharing tool;

- Health & Homeland Alert Network (HHAN);
- Massachusetts Interagency Video Information System (MIVIS); and
- MS SharePoint for police situational awareness.

These tools and their continued use for IS were assigned to the “Information Enterprise Implementation” Project within the Information Sharing SCIP Initiative. Clearly, establishing information sharing between organizations – independent of whether over the radio or wireline network – was well understood to be critical to Massachusetts interoperability.

“Training and Exercises” were shown to being a critical strength in Massachusetts and many Focus Group participants emphasized the significant benefit of evolving from these programs. The sentiment was largely felt that the state and many local officials had begun to benefit their communities by establishing NIMS-based training and conducting exercises (albeit many required gaps and improvements were identified, see below). Thus, although Information Sharing proves to be fundamental to interoperability, it was also considered valuable that users of this information were knowledgeable and practiced about what to do with that information in performing their missions and achieving their objectives.

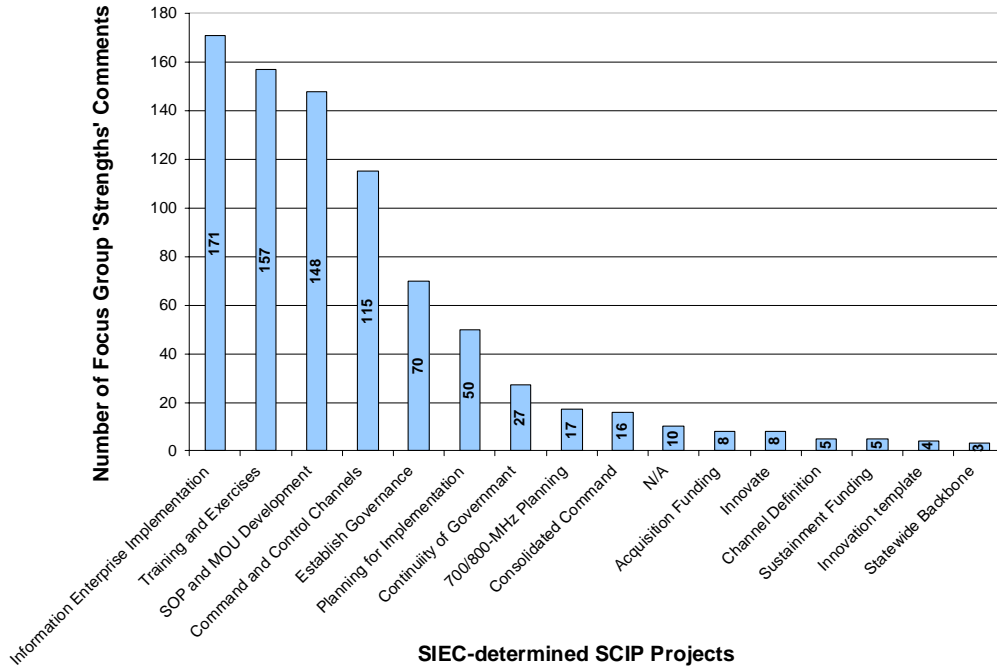


Figure 5-2: Histogram of identified Focus Group Massachusetts Interoperability Strengths

Logically, once Information Sharing tools are in place and individuals know how to use these tools, the next step is to make sure that disparate organizations of users employ this information in a predictable – and what is important – coordinated in their use during times of need. In other words, MOUs and SOPs exist and are critical to success of Information Sharing (although improvements are required). This result is strongly correlated with the fact that “SOPs and MOUs” is the third most identified Strength of existing Massachusetts Interoperability.

The fourth most important interoperability Strength shown in Figure 5-2 is related to the “Command and Control” Channel project. In particular, these comments referred to wide-area radio systems such as:

- Boston Area Police Emergency Network (BAPERN) – UHF simulcast network spanning some or all of three Massachusetts Homeland Security Regions
- Western Massachusetts Law Enforcement Council (WEMLEC) – UHF simulcast radio network
- Franklin County Emergency Communication System – UHF simulcast system in Franklin County
- Coordinated Medical Emergency Direction (CMED) – Multi-region UHF repeater network for ambulance-hospital coordination
- Massachusetts Emergency Management Agency (MEMA) VHF network – a statewide network of high-band VHF repeaters
- Fire and Ambulance Tracking network (FAMTRACK) – a VHF relay network spanning the state for ambulance following and direction.

These networks, and several others in the state, provide current RF voice communications by multiple disciplines and spanning Homeland Security regions. Many participants considered these and other wide-area radio systems to be fundamentally important to existing Massachusetts interoperability. As will be shown below, many related expansions and extensions to these systems are required, but are considered a key technical part of interoperability in Massachusetts. The fact that these basic radio interoperability systems were considered critical, but only receiving fourth priority among participants, is strong corroboration for the fact that “Information Sharing,” “Training and Exercises,” and “SOPs and MOUs” are more important – and arguably a prerequisite- than technology (Radio “Command and Control Channels” for Mobility) in achieving interoperability.

Next, many participants saw the increasing Strength of Interoperability “Establish Governance” and the evolving hierarchical structures in the state as well as the associated careful Implementation Planning” as most important to continuing and building on the aforementioned interoperability Strengths in the state. In addition, the means to continue regional and state command and control after a disaster that destroys terrestrial communications infrastructure, or the means to communicate even for day-to-day activities from locations in the state with no terrestrial coverage, is

apparent in the prominence of the “Continuity of Governance” results. Although Gaps and Improvements were identified, the use of satellite phones – and to a lesser extent the use of HAM operators and their equipment as well as HF radio – were considered valuable Strengths.

Figure 5-3 shows the number of comments principally related to the postulated SCIP-Initiative Projects. The figure shows that although both “Training and Exercises” and “Information Enterprise Implementation” are the two greatest Strengths criteria, but they are also the largest Gaps – implying that assuring personnel preparedness and assuring all have the necessary information represent major gaps to be corrected by the Massachusetts SCIP. With respect to “Information Enterprise Implementation,” the Focus Groups indicated that expanded (more sites) and extended (more disciplines) Information Sharing between organizations with proper (Training) coordinated their use (SOPs), was of high importance to Massachusetts Interoperability.

Third, “Establish Governance” has moved ahead of “SOPs and MOUs” in Massachusetts Interoperability Gaps as most important. In other words, more must be done to make sure that inputs from all Stakeholders are collected and their needs met in future interoperability system development. Participants understood that Governance must first be established to make sure that “MOUs and SOPs” can be properly established and maintained statewide.

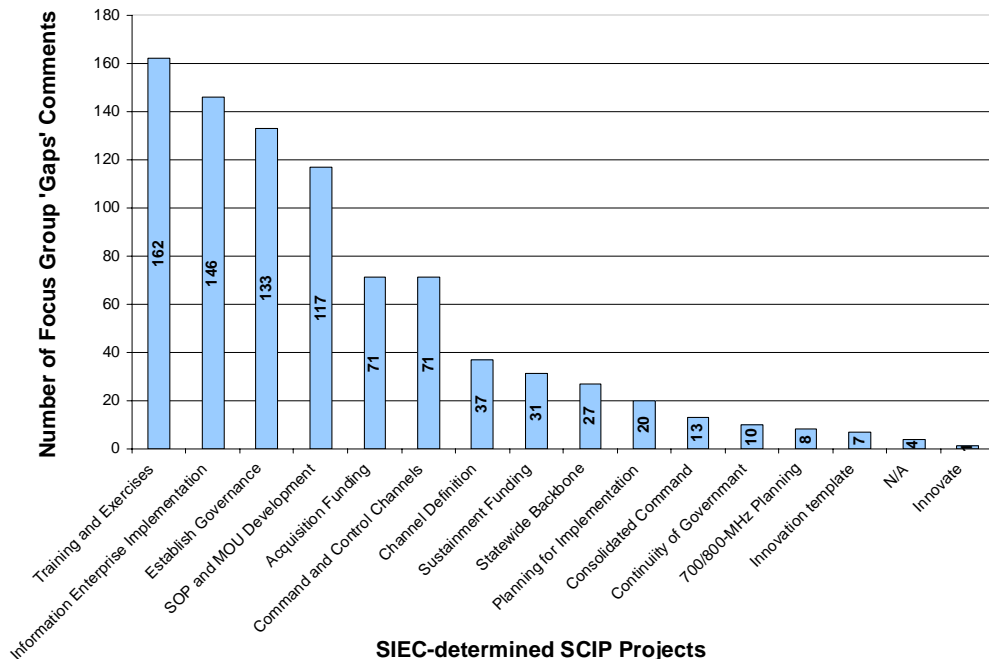


Figure 5-3: Histogram of identified Focus Group Massachusetts Interoperability Gaps

The figure shows that Acquisition Funding has moved to the fourth position along with “Command and Control Channels”, primarily emphasizing that procurement funds are lacking from supporting interoperability systems. Although “Command and Control Channels” were shown as Massachusetts interoperability Strength, participants strongly indicated that the coverage of these systems should be expanded and the disciplines able to use these wide-area systems should be more inclusive of all Stakeholders addressed in the SIEC Interoperability Vision. Again, “Training and Exercises” and “MOUs and SOPs” retained a higher priority than the technical solution – as having a capability and not knowing “how to use it” is tantamount to a waste of money and, in fact, may be deleterious to properly trained and coordinated users of a technology.

Except for a small reversal in the position of “Training and Exercises” and “Information Enterprise Implementation” from the Gap results, Figure 5-4 shows the logical result that gaps identified in Figure 5-3 are the focus of recommended Improvements in Figure 5-4. The remaining differences in Project positions in the chart are less significant as the number of “votes” for each changes little. Nevertheless, it demonstrates that most users are interested in achieving day-to-day interoperability, as the COG project was not highly rated – despite the current dependence on terrestrial infrastructure for communications. Similarly, the use of 700-800-MHz and planning for Innovation were not highly rated, arguably because the Focus Group participants felt that many more

practical uses for interoperability improvements were necessary through evolution of existing (and working) capabilities.

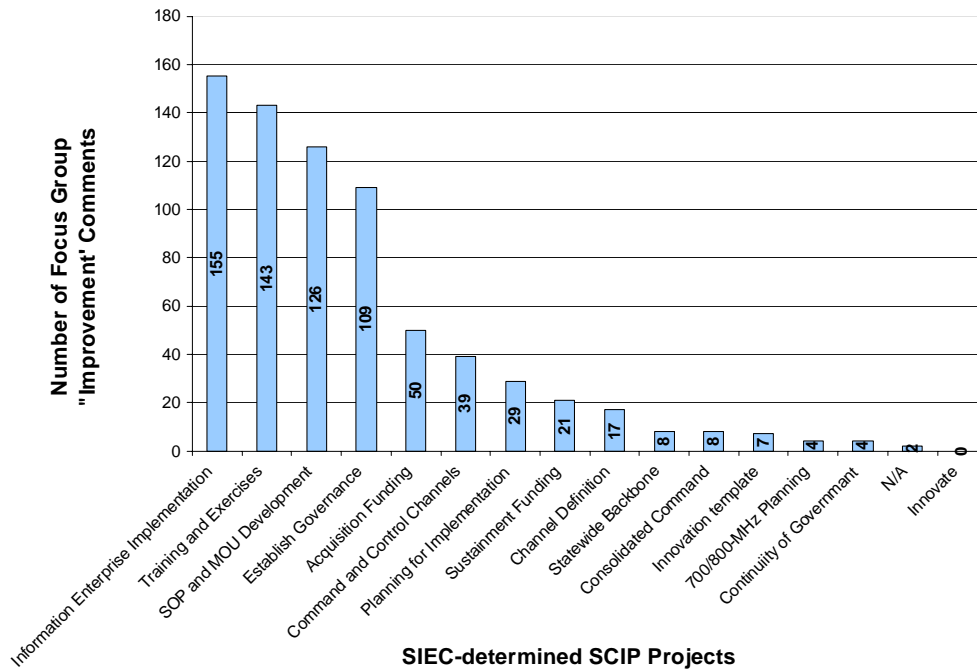


Figure 5-4: Histogram of identified Focus Group Massachusetts Interoperability Gaps

5.5.2.2 SIEC Ranking of Project Guidelines

Projects spanning initiatives I through V were rank ordered in importance by the SIEC yielding the following results (without the Finance initiative, which has just been added):

1. I.1 Establish Governance Project
2. I.2 Interoperability Planning Project
3. III.1 Information Enterprise Implementation Projects
4. III.2 Command Consolidation Projects
5. III.3 Statewide Interoperability Backbone Projects
6. IV.1 Channel Definition Projects
7. IV.2 Command Channel Projects
8. IV.3 Statewide 700-800-MHz Network Project
9. IV.4 Continuity of Government Communications Projects
10. V.1 Statewide SOPs Project

11. V.2 Statewide Training & Exercises Project
12. VI.1 Innovation Template
13. VI.2 Innovate

We expect, however, that the two projects of the Funding Initiative would likely rank as 3rd and 4th in importance, pushing down the other projects in order, given their fundamental importance to all other projects. Relatively little funding would be needed to support the Funding Initiative as compared to the design and implementation-related projects in Strategic Initiatives III, IV, and V.

The difference in rank ordering of projects by the SIEC and Focus Group results is due to a difference in perspectives between state and regional leaders in public safety communications. The SIEC members determined that Governance Projects are highest in priority as they must finalize their own (SIEC) charter and corresponding authority as well as project planning before moving forward as overseer of all interoperability projects in the state. After Governance was handled, the SIEC also noted the prominence of the "Information Enterprise Implementation" Project in which information requirements are to be collected and implemented through all other system implementation projects. The SIEC also realized the significant economies of scale and command/control benefit of consolidating command elements and the Statewide Backbone to support Multi-agency Information Sharing. The Statewide Backbone project would not only support several other interoperability projects simultaneously, but also greatly reduce their dependence upon expensive monthly telecommunication service charges. Given these Project priorities, the Channel Definition Project is a high priority for Massachusetts Regions where little or no such capability exists, such as in the Central and Southeast Regions.

Next, consider the six SCIP Strategic Initiatives from the perspective of the 2003 Massachusetts interoperability assessment study. Table 5-2 shows the study recommendations in the leftmost column and the corresponding SCIP Strategic initiatives in the rightmost column.

Table 5-2: 2003 Study Recommendations vs. SCIP Strategic Initiatives

2003 Study		2007 SCIP Strategic Initiatives
#	Recommendation	
1	Establish a formal Interoperability Working Group for administration of interoperability communications, engineering, coordination and oversight	I. Governance
2	Expand the ICALL-ITAC system	IV. Mobility
3	Provide access to accurate information on operational readiness and availability of communications assets	III. Information Sharing
4	Develop a maintenance, distribution, and training plan for radio caches	III. Information Sharing IV. Mobility V. Protocol
5	Expand the State Police Radio System	IV. Mobility V. Protocol
6	Enhance the existing EMS communications system	III. Information Sharing IV. Mobility
7	Enhance use of existing radio infrastructure and other resources	III. Information Sharing IV. Mobility
8	Implement regional portable/mobile interoperability communications solutions	III. Information Sharing IV. Mobility
9	Implement fixed regional interoperability solutions	III. Information Sharing IV. Mobility V. Protocol
10	Develop and implement an interoperability training and certification program	V. Protocol
11	Develop and implement a narrow band frequency management plan	IV. Mobility
12	Combine Northeast Regional dispatch operations	III. Information Sharing
13	Develop and implement a data interoperability plan	III. Information Sharing
14	Establish backup/redundant communications infrastructure	III. Information Sharing

Thus, the 2003 recommendations are contained in the 2007 SCIP Strategic Initiatives.

5.5.3 Specific Action Projects

This subsection describes and justifies the specific Action Plans to be performed with the NTIA PCIC Grant as near-term funding to meet 2007 SCIP Goals and Objectives. The specific projects presented in this section were determined:

- Directly by the individual Massachusetts Homeland Security Region and state agency representatives made up of the corresponding local public safety and

service personnel from the regional Communications interoperability Subcommittees (all of whom were listed in Section 2).

- Under the constraint that each identified project had to fit within the Project Guidelines developed for each 2007 SCIP Strategic Initiative
- Through review and acceptance by the SIEC subsequent to the Governor's Executive Order empowering the SIEC in this regard

These interoperability projects will be presented below first for each Homeland Security Regions of Massachusetts (see Sections 2.1 and 4.2 above) and then for critical State Agencies interoperability projects.

5.5.3.1 Western Region Action Plans

Background. Subsection 4.2.2.1 above describes the interoperability capabilities of the Western Homeland Security Planning Region. Although there are some coverage issues in Berkshire County to be addressed, the greatest need in the region is to upgrade the evolving statewide broadband backbone needed to provide reliable (redundant) wireless (microwave) communications between dispatch centers and their tower and high—site base/repeater equipment. This redundancy is most important given the poor accessibility of many of these radio sites in the winter months or after a major storm – as compared to all other regions in the state. Because of the mountainous terrain and sparse population (see subsection 2.1 above), it is difficult to impossible to travel to one or more of these sites under these conditions – and these are the very conditions that are likely to:

- Cause a wireline or tower/single-point-of-failure outage
- Occur at exactly the time emergency communications are in demand.

Moreover, this backbone project will provide the necessary reliable information sharing network that will support other local, regional, and statewide interoperability projects. Although other initiatives may be added by statewide projects, this statewide backbone project is a priority project for the region.

To this end, the Western Region CIS has determined the specific microwave links required to complete a microwave (MW) links and loop through the Western region that will benefit all three regional radio systems (FCERCS, WEMLEC, and Berkshire), which is directly in the scope of the Information Sharing Initiative, Statewide Backbone Project Guidelines.

The specific Action Plans are listed in Table 5-3 as indexed by the Initiative and Project Guideline numbers and project task number for future reference. Additional projects may be integrated with these projects statewide to assure continuity across Homeland Security Regions, but these are the priority projects for this region.

Massachusetts Statewide Communications Interoperability Plan

ID	Initiative	Guideline or project	Description
W-III.3.1	Information Sharing	Statewide Backbone	System design, engineering, and microwave path analysis.
W-III.3.2	"	"	Phase I: Bandwidth and redundancy improvements to the six (5) existing microwave paths located between the following locations:
W-III.3.2.1	"	"	<ul style="list-style-type: none"> • Great Hill (aka Shelburne), Shelburne MA to Mt. Grace
W-III.3.2.2	"	"	<ul style="list-style-type: none"> • Mt. Grace, Warwick, MA to Blueberry Hill
W-III.3.2.3	"	"	<ul style="list-style-type: none"> • Blueberry Hill, New Salem, MA to Mt. Lincoln, Pelham, MA
W-III.3.2.4	"	"	<ul style="list-style-type: none"> • Great Hill (aka Shelburne) to Borden Mt.
W-III.3.2.5	"	"	<ul style="list-style-type: none"> • Borden Mt., Savoy, MA to Lenox Mt., Lenox MA
W-III.3.3	"	"	Phase II: Robust and redundant dispatch capability for three dispatch centers by creating and/or expanding microwave systems at the following locations:
W-III.3.3.1	"	"	<ul style="list-style-type: none"> • New microwave system to connect Mt. Lincoln to Northampton Control Dispatch Center
W-III.3.3.2	"	"	<ul style="list-style-type: none"> • Upgraded microwave system to connect Great Hill to Shelburne Control Dispatch Center
W-III.3.3.3	"	"	<ul style="list-style-type: none"> • New microwave from Shelburne Control to Bray Road, Buckland, MA.
W-III.3.3.4	"	"	<ul style="list-style-type: none"> • New microwave from Bray Road to Great Hill, Shelburne, MA
W-III.3.3.5	"	"	<ul style="list-style-type: none"> • Upgrade exiting microwave system from Lenox Mt., Lenox, MA to Oak Hill, and Pittsfield, MA to the Berkshire County Sherriff's Regional Dispatch Center.
W-III.3.4	"	"	Phase III: Complete the redundant microwave ring by expanding or creating infrastructure at the following locations:
W-III.3.4.1	"	"	New microwave from Lenox Mt. to Mt. Wilcox, Stockbridge, MA.
W-III.3.4.2	"	"	New microwave system from Mt. Wilcox to Cobble Mt., Branford, MA. With new tower structure for Cobble Mt.
W-III.3.4.3	"	"	New microwave system from Cobble Mt. to Skinner State Park, Hadley, MA.
W-III.3.4.4	"	"	New Microwave system from Skinner State Park to Mt. Lincoln, Pelham MA

Table 5-3 Western Region Action Plans

5.5.3.2 Central Region Action Plans

Background. Subsection 4.2.2.2 above describes the interoperability capabilities of the Central Homeland Security Planning Region. This region has no formal regional communications interoperability governance structure, no ongoing information sharing initiatives (e.g., SharePoint), no wide-area command channel for multiple disciplines (e.g., FCERCS), and minimal general communications support for small towns.

Regarding a wide-area RF command and control network, the Central Region has identified that Statewide Interoperability must have a Mission Critical Public Safety Grade Command Channel network to support the current interoperability projects that are currently operational and those being designed. Moreover, the Central Region has been very successful working with Emergency Medical Services and the Fire Services. The Disciplines have built networks that support what the users have dictated by evolving trends. The consensus in the state is a migration towards UHF for local/regional command and control networks. Furthermore, the Central Region is bordered by two separate by similar regional UHF networks, and realizes the need to bridge those two regions to facilitate a seamless UHF overlay network for Command and Control in the Commonwealth.

With respect to Continuity of Government, the Central Region has identified that Continuity of Government is critical to the delivery of service to the communities they are sworn to protect. The sustainability of communications infrastructure through different levels allows for continuity of services. The region has identified the need for critical communications components to maintain integrity and sustainability. The sustainability has certain preparedness components that communities can take to be proactive and prepared for disruptions in service.

The detailed description of Central Region Action Plans is provided in Table 5-4. Additional projects may be integrated with these projects statewide to assure continuity across Homeland Security Regions, but these are the priority projects for this region.

ID	Initiative	Guideline or project	Description
C-I.1.1	Governance	Establish Governance	The Central Region will develop a full Regional Communication Interoperability Committee. The Committee will be representative of the disciplines on the Homeland Security Council. The Council will have representatives from state and federal agencies that work with our responders. The Central Regional Communications Interoperability Committee will develop a charter that is consistent with the State Charter. The Regional CIC will report to the State Executive Interoperability Committee.
C-III.1.1	Information Sharing	Information Enterprise	Implement SharePoint to improve Discipline Productivity through the use of collaborative tools. Connect control points with the information and resources they need. Public Safety Responders can create team workspaces, coordinate calendars, organize documents, and receive important notifications and updates through communication features including announcements and alerts, as well as the new templates for creating blogs and wikis. While mobile, users can take advantage of convenient offline synchronization capabilities.
C-III.2.1	Information Sharing	Command Consolidation	The Central Region would assist communities with feasibility studies to examine consolidating dispatching; Public Safety Answering Points. The grants would be based around guidance from the State Emergency Telecommunications Board.

Table 5-4 Central Region Action Plans

ID	Initiative	Guideline or project	Description
C-III.3	Information Sharing	Statewide Backbone	The Central Region has an agreement in place with resources currently being used in central and southern parts of the Central Region. The Region is in the design phase of a command and control network built on a UHF platform to serve multiple disciplines. The network would be a simulcast network and would require Public Safety Grade connectivity at the sites for channel backs to move audios between the sites.
C-III.3.1	"	"	Phase I: Architecture Design - The Central Region would retain a consultant that evaluate existing options and explore build out capabilities to expand the connectivity in the Region for several other disciplines. The connectivity would allow other agencies also using existing sites to convert from utility leased lines to Public Safety Grade backbone. The backbone will support Public Safety Communications Systems.
C-III.3.2	"	"	Phase 2: Technology Assessment - The Central Region would have the consultant evaluate existing technologies for a Public Safety – Wireless Wide Area Network. The municipalities would connect into a node with a wireless link. The network would provide a private network to support any Software Based Resources.
C-III.3.3	"	"	Phase 3: Build-out: The project will include the build out the Tier I microwave in the Central Region. The project will look at existing sites and infrastructure to evaluate to best options based feasibility and functionality of Tier II.

Table 5-4 Central Region Action Plans (continued)

ID	Initiative	Guideline or project	Description
C.IV.1	Mobility	Channel Definition	Identify and define channels for the Central Region Wide Area UHF as the design requirements and available infrastructure are evaluated
C.IV.2.1	Mobility	Command Channel	The Central Region will retain a consultant that evaluate existing options and explore build out capabilities to expand the connectivity in the Region for several other disciplines. There is a standalone UHF network covering Central Massachusetts for EMS – Medical Direction and a 3 site standalone UHF network for Fire District 8 in Northern Worcester County. The Command and Control Network will be built around a multi-discipline approach network. The disciplines included in the operational deployment of the network will be Emergency Management, Emergency Medical Services, Fire Service, Law Enforcement, including Sheriff and tie to State Police, Public Health, including Metropolitan Medical Response, and Public Works. The system will be designed around minimum P25 requirements. The systems will allow for flash upgrade or reprogramming for future FCC requirements placed on licensees.
C.IV.2.2	”	”	Phase 1: Mobile Coverage – Command Channel build-out will provide mobile radio coverage, and will incorporate previous interoperability equipment purchases to be incorporated into the new system with programming of a new channel plan into the radios. The system will also allow for other UHF users to use newer UHF equipment on the Command and Control Net based on protocol.
C.IV.2.3	”	”	Phase 2: Portable Coverage – Phase 2 Build out is intended to increase portable coverage in pre-designated areas based on density population or threat assessments

Table 5-4 Central Region Action Plans (continued)

ID	Initiative	Guideline or project	Description
C-IV.4.1	Mobility	COG (PSIC STR)	<p>Tier 1: The region would develop a Standard Operating Guideline of Communications Preparedness and Proactive Practices. The guide would include direction on how to identify critical circuits that support their infrastructure and how to sign up for Priority Restoration Service. The guide would then describe the Government Emergency Telecommunications Service (GETS) service and how it benefits a community. The guide would identify who should have access to the GETS service and protocols that would require its service. The final component of the guide would be an overview of Wireless Priority Service (WPS) and which carriers offer the service currently. The Region would have the carriers demonstrate the service to the Region. The guide would be rolled out as Community Outreach. There would be 10 offerings covering spanning all disciplines. The community would send representative to the meeting and be given a presentation and guide to take back to the community and develop their own internal plans.</p>

Table 5-4 Central Region Action Plans (continued)

Massachusetts Statewide Communications Interoperability Plan

ID	Initiative	Guideline or project	Description
C-IV.4.2	Mobility	COG (PSIC STR)	Tier 2: The region would develop a technical support capability for communities. The technical support capability would be to serve on several different levels including voice RF, voice telephony and data. The project defines a multi-phased approach. These services would be cost prohibitive for most, if not all, communities to obtain and maintain – and the likelihood of more than one community needing .capability simultaneously is low.
C-IV.4.2.1	"	"	<ul style="list-style-type: none"> Level 1: The Region would develop a Satellite Phone Deployment plan based on connecting critical discipline points. The Satellite Phones will be interoperable with other existing Sat-phone equipment deployed by the Department of Public Health and UASI Region. The Region would develop a deployment plan for Public Safety Answering Points and Emergency Operations Centers.
C-IV.4.2.2	"	"	<ul style="list-style-type: none"> Level 2: The Region would develop two - tower trailer with communications support equipment. The concept will be referenced to as a CAST Communications Assistance Support Trailer. The CAST would have a 70 foot tower for local operations. The Equipment inside would include the following Low band Base Stations, VHF repeaters, UHF repeaters and 800 MHz. The tower will have some pre mounted antennas. The CAST will have field adjustable antennas and different mounting assemblies for restoration of service. The CAST will also have coaxial of different lengths to meet the needs to support operations remote from the trailer, such as in an Urban Environment.
C-IV.4.2.3	"	"	<ul style="list-style-type: none"> Level 3: The Region would develop a vehicle with communications support equipment. The vehicle would be a pick-up truck with capabilities of Satellite Down-Link. The profile of this vehicle would be that can be deployed into a parking garage for urban operations. The vehicle would be a Truck with a POD in the rear. The POD would include a 1.2 meter Down-link with a MESH like technology to support data and VOIP phones. The vehicle would have a 100 foot armored fiber optic cable to bring the VOIP and data into a building. The vehicle could drop the POD and be used for another Communications support vehicle.

Table 5-4 Central Region Action Plans (continued)

ID	Initiative	Guideline or project	Description
C-V.1.1	Protocol	SOPs and MOUs	The Central Region will develop or adopt a Training Program for Dispatchers, Responders and Tactical technicians. The curriculum would be based on NIMS standards set forth by DHS and the NIC.
C-V.2.1	Protocol	SOPs and MOUs	The Central region would develop scenario-based exercises for training personnel how to use SOG and Equipment during an incident. The training would be class room based virtual training or online web-based proficiency training. The training would be based on NIMS standards and State SOGs.

Table 5-4 Central Region Action Plans (continued)

5.5.3.3 Northeast Region Action Plans

Background. Subsection 4.2.2.3 above describes the interoperability capabilities of the Northeast Homeland Security Planning Region. All of the statewide backbone projects intersect with each other and provide cohesion and connection among first responder entities both in the region and beyond the Northeast Region. Also these systems help support redundancy of communications links. Finally, these projects serve multiple first responder disciplines and leverage scarce resources. BAPERN and other entities have already developed and promulgated policies, procedures, and memoranda of understanding that allow true interoperability/intertalkability across disciplines and agencies.

Overall, its radio interoperability is governed by three well-established but largely discipline-independent systems, BAPERN, CMED, and Fire Districts. Thus, one of these initiatives is to expand the use of BAPERN to other than Police disciplines, noted in the NERAC Open House Event. However, additional funding is needed to support the continued expansion of BAPERN (in a multidisciplinary capacity) further west for integration with the Central Regions proposed system (see subsection 5.5.3.5 above). This coverage expansion and discipline extension is one of the objectives of the Northwest Region Command Channel Project.

The Northeast Region has successfully developed the Microsoft SharePoint project as described in subsection 4.2.7.1 above for Police agencies in the region, and will continue its development for other disciplines. The results of this regional capability will be accessed for use in all other regions to provide day-to-day information sharing among Police throughout the Region – and eventually the state – as well as appropriate and planned Fire, EMS, and other stakeholder intra- and inter-discipline sharing. This project and expansion and extension of their WebEOC project (see subsection 4.2.7.2) are also priority projects for the Region.

Regarding Command Consolidation, the objective of the MA SCIP is to consolidate dispatch and EOC centers to provide leverage and enhance resources and to provide a more cohesive operating environment in a state with nearly 300 independent PSAPs. The Northeast Region's 11-municipality, three-agency regional operations center in Essex County provides a good testing ground for the state as it looks to move toward greater regionalization of dispatch and EOC services.

As in the Western and Central Regions, the Northeast Region seeks to improve reliability and reduce telecommunication service charges by expanding use of available microwave and optical fiber plant for its communications systems. This statewide backbone project – which the Northeast Region has in common with other regions – will be performed in a statewide integrated fashion to best meet the needs of all Regions. The corresponding Northeast Region PSIC Grant projects are described in Table 5-5 below.

ID	Initiative	Guideline or project	Description
N-III.1.1	Information Sharing	Information Enterprise Implementation	<p>A SharePoint Project: Modeled after an existing regional SharePoint system currently used by NEMLEC (North Eastern Massachusetts Law Enforcement Council), the SharePoint Project planned for the Northeast Homeland Security Planning Region would provide a data compliment to the regional BAPERN radio network which has recently been expanded to include disciplines beyond law enforcement and to reach the entire Northeast Homeland Security Planning Region. SharePoint will similarly provide a regional, multi-discipline communications interoperability platform for sharing large amounts of information, data, wave files etc not suited to radio communications, which are typically of short duration and encompass limited content. Each of six disciplines (Law Enforcement, Fire, Emergency Medical Services, Emergency Management, Public Works, and Public Health) will have their own SharePoint site that will be configured to their discipline's needs and specifications. Each discipline's site will be restricted to users defined by the discipline. An umbrella, Northeast Homeland Security Regional Advisory Council (NERAC) site will link the individual sites and provide a virtual forum (much like the monthly regional council meetings and subcommittee meetings currently provide) for first responders from different disciplines and municipalities to work together on projects, collaborate around issues and become connected with each other in a way that does not currently exist.</p>
N-III.1.2	Information Sharing	Information Enterprise Implementation	<p>WebEOC Project: The Northeast Homeland Security Planning Region has successfully implemented an Internet-based events tracking system, Web-EOC, which is widely used across the country and by Massachusetts through MEMA. The regional deployment of WebEOC enables local first responders to use this tool on a day-to-day basis for local, sub-regional, and regional events both planned and un-planned. The regional Web-EOC system is in the process of being linked to State's Web-EOC system to provide seamless coordination for first responders who currently need to view both systems.</p>

Table 5-5 Northeast Region Action Plans

ID	Initiative	Guideline or project	Description
N-III.2.1	Information Sharing	Command Consolidation	The regional operations center in the Northeast Region would be newly outfitted as opposed to retro-fitted, thereby providing an opportunity to incorporate not just the newest, most advanced technologies but also to serve as a means to incorporate regional communications resources that have been under development such as a regionally available web-EOC tool, regionally-based SharePoint, a link to the Fire Control Points communications connection and other resources.
N-III.3.1	Information Sharing	Statewide Backbone	The Northeast Region backbone projects will support spectrum efficiency by proposing to share communications channels and other infrastructural resources. They also employ some of the most cutting edge technology solutions such as the ARINC VOIP solution that are compatible with the SCIP

Table 5-5 Northeast Region Action Plans (continued)

5.5.3.4 Southeast Region Action Plans

Background. Subsection 4.2.2.4 above describes the interoperability capabilities of the Southeast Homeland Security Planning Region. The success of the SharePoint system in the Northeast Region suggests its application in other regions, and given the coastal hazards faced by this region combined with the significant population increase in summer, the gains from moment-to-moment information sharing between communication centers and local town/city public safety and service command centers is critical. SharePoint will ultimately equip all such locations with centralized data sharing capabilities at each base agency location and one mobile unit (laptop). This would allow for complete integration across regional Fire Services, and allow relevant data to be shared across all disciplines. It will also allow all agencies to share a common application; standardize procedures for pre-planning; allow mutual aid coverage recommendations and resource allocations toward an incident; and standardize reporting capabilities to satisfy the state and federal requirements. This approach would also help bring Fire Services into the NIMS framework by establishing NIMS-compliant data structures in SharePoint. The Southeast Region will deploy SharePoint based on lessons learned from the Northeast region deployment.

The wide-area radio systems in the region are largely divided along County lines with minimal or unreliable links among the Communications Center in each County – similar to the Western region. For this reason, part of the requirement is to improve the reliability of these center-to-center communications as well as between each center and its terrestrial radio tower/high sites. Given the vulnerability of the coastal areas characteristic of the Southeast region, this improved reliability is a high priority. For this reason, microwave (and other) backbone links are required in the region. In addition, as the expansion (coverage) and extension (disciplines/users) of these systems are increased to support moment-to-moment as well as incident interoperability, the demands on these systems as well as the need for increased reliability increases. For this reason, and given the wide-area covered by these systems in this geographically wide (and relatively flat, as compared to the Central and Western regions) area, a greater amount of terrestrial radio infrastructure is required and just be maintained. The Southeast region will therefore need to make significant investments in this RF interoperability infrastructure.

Finally, the position of the Southeast Region often places it in the path of hurricanes and Nor-Easters that present a “real and present” risk to all terrestrial radio infrastructures. For this reason, significant – and regularly used – backup and deployable communication systems are required in this region.

The Southeast Region PSIC Grant projects are described in Table 5-6 below.

ID	Initiative	Guideline or project	Description
S-III.3.1.1	Information Sharing	Information Enterprise Implementation	SharePoint Project: Initial phase-in of SharePoint for local Law Enforcement and Fire/EMS services across the entire Region, including Dukes and Nantucket as well as Barnstable, Plymouth, Norfolk, and Bristol Counties – beginning at the communications centers and building from there. This capability will initiate collaboration and messaging, could provide for portal services for the Emergency Management Director for WebEOC. It will provide the environment for all agencies to share information and search existing information. The in initial deployment will be used to develop the procedures and policy on its use in all stations throughout the region.
S-III.3.1.2.1	Information Sharing	Information Enterprise Implementation	Install hardware and software required for integrating with the Martha's Vineyard communications center, allowing for NCIC lookups, field reporting, names lookups etc.
S-III.3.1.2.2	"	"	Install equipment to encode/decode MDC1200 signaling on console, providing a capability to receive IDs and emergency notifications from users, as currently the Norfolk County Simulcast system does not have the ability to receive IDs or Emergency notifications.
S-III.3.1.2.1	Information Sharing	Statewide Backbone	Microwave equipment to connect sites, saving resources by removing expensive and unreliable T1 and FDDA circuits.
S-III.3.1.2.2	"	"	Microwave connection from Hanson tower site to Caleb Drive Plymouth Site Equipment at Hanson site, Plymouth site, and Control Point

Table 5-6 Southeast Region Action Plans

ID	Initiative	Guideline or project	Description
S-IV.1.1	Mobility	Channel Definition	Frequency research and coordination - additional 480 MHz frequency for Norfolk County system
S-IV.1.2	"	"	(6) Multi-Freq portable radio Motorola portables for each band (UHF,VHF & 800 MHz) and duty pelican cases w/chargers
S-IV.1.3	"	"	(12) Portable radios - additional portable radios to be utilized on the Norfolk County UHF system by different disciplines - during a major incident or storm these radios could be issued to disciplines or mutual aid that do not have access to the Norfolk County simulcast system Stack.
S-IV.1.4	"	"	(10) Ambulance radios with handsets

Table 5-6 Southeast Region Action Plans

Massachusetts Statewide Communications Interoperability Plan

ID	Initiative	Guideline or project	Description
S-IV.2.1	Mobility	Command Channel	Fire Department interoperability between Plymouth, Bristol Barnstable and Norfolk RCC's - The need exists to allow regional and on scene communications between public safety agencies responding across county lines into areas with non-compatible radio systems. The proposed solution would involve the use of stand alone, fixed repeaters deployed in strategic locations, on frequencies common to the responding agencies. These repeaters coupled through a Gateway to radios on the local area channels/talkgroup, would provide the pathway to allow seamless communications between units with non-compatible radios.
S-IV.2.2	"	"	Bristol CMED/RCC Final Radio Interoperability Build Out - Final completion of the Bristol County CMED/RCC radio system. Bristol CMED still needs to install radio communications systems to talk on the VHF CMED network, Regional 800 Trunking Channels and other regional police and fire channels in the area.
S-IV.2.3	"	"	(2) Transmitter "full" sites to add to the Norfolk County UHF simulcast system, three channel Enhance and fill in coverage holes in existing County UHF Simulcast system The Norfolk County UHF simulcast system operates as a regional interagency channel, which can include Fire, Law Enforcement, Health and Utilities. We are looking to add transmitters (full sites) in the Foxboro, Ma. And Holbrook, Ma. areas. Currently, the UHF simulcast system does not work well in these areas of the County. It is our plan to expand our regional system to other regions and offer disciplines the use of it.
S-IV.2.4	"	"	(2) Receive "only" sites to add to the Norfolk County UHF simulcast system, Three channel Enhance and fill in coverage holes in existing County UHF Simulcast system The Norfolk County UHF simulcast system operates as a regional interagency channel, which can include Fire, Law Enforcement, Health and Utilities. We are looking to add receiver sites in the Easton, Ma. And Boston, Ma. areas. It is our plan to expand our regional system to other regions and offer disciplines the use of it.
S-IV.2.5	"	"	Install 800 MHz consolette into Central Electronics Bank (CEB) for interoperability with Barnstable County Law Enforcement and Fire Service

Table 5-6 Southeast Region Action Plans

Massachusetts Statewide Communications Interoperability Plan

ID	Initiative	Guideline or project	Description
S-IV.2.6	Mobility	Command Channel	(29) CDM1250 mobile radios - Base radios for all Norfolk County communities to use on the existing UHF simulcast system. This will allow for instant notification and interoperability between all Norfolk County dispatch centers and communities. Plus (29) 5db gain UHF base antennas – serving as base antennas for all Norfolk County communities to use on the existing UHF simulcast system.
S-IV.2.7	"	"	Purchase & installation/programming for new radio in CEB, core patch feature with digital modem & ACEM board.
S-IV.2.8	"	"	TACSTACK - Add 2 TAC stacks (UTAC, VTAC, ITAC) throughout Norfolk County. To be utilized by different disciplines during emergencies. "Tac-Stack" at two sites: Pine Hills Plymouth and Hanson Industrial Park Equipment needed is MTR2000 or Quantar Base, Radios for VHF, UHF & 8, 800 MHz. *MIP5000 *ACU1000 *Motobridge *Antennas/cabling/rigger & installation costs
S-IV.2.9	"	"	Upgrade Plymouth County Law Enforcement Radio network Equipment needed is: Replace outdated Astro-Tac comparator with JPS Comparator & modules, use existing satellite receivers where Possible and install Ch. 1 & Ch.2 repeaters at both Hanson And Plymouth sites
S-IV.2.10	"	"	This project will provide for service coverage across the island, increasing our coverage area and bringing the C-Med service to the island. It will alleviate the dead spots and signal fading issues generated by the topographical makeup of the island. Our current infrastructure consists of a single tower in West Tisbury, this module will provide for an additional 24 repeaters, allowing island wide coverage. This will be provided over the 155.280 and 155.340 frequencies, with PL Encoded Tones. We will replace the current radios in the ambulances with compatible radios under this project. • Additional transmitters, repeaters, and antennas required.

Table 5-6 Southeast Region Action Plans (continued)

Massachusetts Statewide Communications Interoperability Plan

ID	Initiative	Guideline or project	Description
S-IV.4.1	Mobility	COG (PSIC STR)	HF Communications at Mobile Command Centers and RCC's. It has been identified that there needs to be a communications medium for long range communications between RCC's and Mobile Communications/Command Centers. This not only established communications amongst the Public Safety Sector, but provides a contact point for Military Comms (MARS) and other related services. The proposed solution would provide for HF radios and antenna systems at the four RCC's in the Regional, as well as equipment in the eight (8) Mobile Command Centers.
S-IV.4.2	"	"	This module will provide our command vehicle with interoperable voice and network communications allowing coordination with on and off-island agencies. Currently there is radio but no voice or data communications in the command vehicle, this module provides both.
S-IV.4.3	"	"	Equipment to display voting, errors, etc on consoles Ability to have immediate notification of site failure or other problem. Currently the Norfolk County simulcast system does not have any means to notify of a site or line problem.

5.5.3.5 Metropolitan Boston Action Plans

Background. Subsection 4.2.2.5 above describes the interoperability capabilities of the Metro-Boston Homeland Security Planning Region (MBHSR).

Due to the great volume of public safety and service activity in the MBHSR, there is a significant need to improve the speed and accuracy of trusted information sharing between the many regional command centers, radio interoperability systems, and surrounding homeland security regions. This need is evidenced in the downtown Boston Command Center during the 4th of July concert on the Esplanade. This center is staffed with many agencies, their information systems, radio communications, and – due to MEMA – a common operational picture (COP) provided by WebEOC. Given increasing natural and manmade threats, this level of “sensitivity” to the surrounding environment and integrated (unified) response possible from the information sharing should be in operation on a 7 × 24 basis – not only during major events. The bandwidth of this continuously varying moment-to-moment information sharing requires reliable, and enduring, broadband connectivity among all command centers. The Public Safety Network (PSnet) project has the objective of providing this bandwidth and, in collaboration with State Agencies with managing wideband telecommunications resources, make PSnet available throughout Massachusetts. This integration includes appropriate center-to-center information content as well as the conduit for this sharing.

The Metrofire (Fire District 13) communications center, responsible for 34 agencies in its domain as well as integration with other Fire Districts in the State, requires enhancements to this aging system. These enhancements would include, but not be limited to, improved interoperability through PSnet with other disciplines and regional command centers.

The many 800-MHz systems in the MBHSR and density of surrounding public safety and service agencies operating in VHF and UHF bands, requires that better interoperability between these trunked systems and the conventional VHF/UHF systems be achieved. The better integration of these systems as well as provisioning of Fire and EMS with wide-area command channels – much like BAPERNE employs for the Police agencies in the Region (see Figure 4-64). This wide-area system is needed to provide both intra- and inter-disciplinary command and local repeated tactical communications for MBHSR fire and EMS units – as well as interoperability with BAPERNE and the local community trunked and conventional systems.

This dependence on terrestrial radio sites is problematic in major disasters that threaten the relatively “soft target” tower/high-site infrastructure upon which these networks are based. For this reason, significant additional COG capabilities are required, primarily in the form of reserve deployable communications centers.

The MBHSR PSIC Grant projects are described in Table 5-7 below.

Massachusetts Statewide Communications Interoperability Plan

ID	Initiative	Guideline or project	Description
B-III.1.1	Information Sharing	Information Enterprise Implementation	Metro Boston originated the PSnet regional information sharing and high-speed public safety IP network project. Funds are needed to continue the planning work of the project into its Phase 3 effort where the information content/sharing assets of the individual municipalities are smoothly integrated with the various statewide (ITD, MassHighway) and regional (e.g., MBTA) networks.
B -III.2.2	Information Sharing	Consolidated Command	The Metro Boston area is seeking support for a Fire Mutual Aid coordination project that would upgrade the technical and operational resources available to the MetroFire Control Center to assist in coordinating and managing any and all regional events in which fire; rescue or hazmat mutual aid is given or received.
B -III.3.1	Information Sharing	Statewide Backbone	The Metro Boston area is seeking implementation funds to complete the build out of its fiber and microwave based PSnet infrastructure such that all communities in the region have dual, redundant, secure links to connect all public safety facilities and major radio sites. The facilities would include all PSAPs and dispatch centers, all fire alarm centers, all police and fire stations, all EOCs, and all major central electronics and radio repeater sites in the region. The core connections have been started in four municipalities, but many more connections in these municipalities - plus connections in other municipalities and in partner state, regional, and federal public safety locations - need to be provided. The requested funds would pay for fiber connections, microwave connections, routers, network management equipment and software, security equipment and software, network management technical support, and other equipment and supplies sufficient to install and make network connections available. In addition, some funds will support the programming interfaces to integrate existing and planned data sources and applications so that they are visible to and shared on the Psnet backbone.
B -III.3.2	"	"	Provide the capability to link disparate communications systems that reside outside day to day capability. This capability to be interfaced with existing control stations and to be controlled ei locally or remotely via the IP network.

Table 5-7 Metro-Boston Region Action Plans

ID	Initiative	Guideline or project	Description
B-IV.2.1	Mobility	Command Channel	The region has plans to develop two MBHSR interdisciplinary cross band regional repeaters for use in supporting all local, state, and federal entities. These regional repeaters will contain channel support for VHF, UHF, and 700-800 MHz bands and permit cross-band communications for federal VHF users, local and statewide UHF users, and 700 and 800 MHz users (whether local, state, or federal). Only two sites will be developed, but they will be placed in existing radio equipment sites so as to minimize construction and startup costs and share shelter, tower, rack and generator support.

Table 5-7 Metro-Boston Region Action Plans (continued)

ID	Initiative	Guideline or project	Description
B-IV.2.2	Mobility	Command Channel	<p>The Metro Boston area is served by three major UHF regional radio systems: BAPER, MetroFire, and Regional EMS. Each is planned for expansion to better serve the interoperability needs of regional users. In the case of MetroFire, a simulcast multi-site wide area Command Channel is proposed to be created and made available to all user responders and dispatch centers in the region. Currently, MetroFire has no exclusive command channel rather it employs a single tactical (fireground) channel and a single dispatch center-to-dispatch center communications channel within the entire region (that covers most communities inside RT 128 in addition to the UASI communities).. A command channel has long been needed. The recent acquisition of additional UHF channels by the UASI region will allow for several district fireground operational channels to be created and these are currently part of planning UASI funding for implementation in 2008. The availability of additional SCIP funds will allow a true command channel to be created reutilizing the current MetroFire red region-wide fireground channel (which we will re-license for this command purpose). This command channel will also be placed in the subways and will be extended in coverage to the North, West and South so as to allow interregional interoperability with resources and dispatch centers in adjoining regions.</p>
B-IV.2.3	"	"	<p>In the case of Regional EMS, the region proposes to expand from the recently create single operational BAMA channel by creating several true regional interoperability channels (which we have licenses and frequencies for already). The purpose is to have channel capacity for EMS resource management and command control among all public and private EMS providers in the region. Presently this EMS command and control capability is lacking in the region and it is very important that SCIP funds be made available to build out this interoperability capacity in a way that will benefit both the region and adjoining regions that may need to interoperability when responding into the Boston Metro area to assist in a mass casualty event. The system will be a multi-site system using existing repeater locations made available through the region. Command authority and protocols for channel usage by commanders will be coordinated by the regional EMS governance entities.</p>

Table 5-7 Metro-Boston Region Action Plans (continued)

ID	Initiative	Guideline or project	Description
B-IV.2.4	Mobility	Command Channel	Provide command and control console capability for the Boston Police and the Boston Police Unified Command Center on designated interoperability channels. Project to expand existing console channel capacity to accommodate current, new and planned interoperability channels that will be used by Metro-Boston Homeland Security (UASI), the Greater Boston Police Council BAPER N radio system and the VTAC, UTAC and ITAC National Interoperability Channels. The interoperability channels will support multi discipline, multi jurisdictional operations and incidents.
B-IV.3.1	Mobility	700-00-MHz Network	Four large 800 MHz systems exist in the Boston Metro region: the Commonwealth 800 MHz system, the Cambridge 800-MHz system, the Boston Municipal 800-MHz system, and the MassPort Logan 800-Mhz system. We propose to integrate the three local systems in the region and then coordinate them with the Commonwealth 800-MHz system for bi-directional backup. Funds are required to develop a strategic plan and procurement documents to integrate the three regional systems (Boston, Cambridge and MassPort) such that wide-area coverage is afforded to users of all systems wherever they may be in the region. This plan will support full interoperability among and across these systems. Further, the plan will develop redundant talkgroups among the joint regional systems and the Commonwealth 800_MHz system such that a major failure of one system will not impede emergency priority traffic from being handled on the surviving system serving as backup.

Table 5-7 Metro-Boston Region Action Plans (continued)

Massachusetts Statewide Communications Interoperability Plan

ID	Initiative	Guideline or project	Description
B-IV.4.1	Mobility	COG (PSIC STR)	The region requests funding for two communications trailers to be housed in the region a available within and without the region for deployment in cases where permanent infrastr damaged, unavailable, or overwhelmed. This will provide rapidly deployable communication to establish or restore communications capability for first responders. Assets to includ sustaining communications trailer with equipment shelter and tower that can be rapidly transp either a prime mover or air transport. Unit to be specially designed to be air lifted to a hillto building. Unit to have self contained electrical power generation, tower for antennas, and a s house base stations and an IP based gateway. Also to be equipped with satellite communic connect communications equipment to command centers collocated or great distances incident. Some cache subscriber units shall include portable radios to operate on local or interoperability channels. Also included in the assets are spare subscriber batteries and battery charges. The assets are to be multi disciplinary and multi jurisdictional. In additi trailers, a small portion of funds will be used for some selective power backup to selec repeater sites.
B-IV.4.2	"	"	Provide rapidly deployable communications assets to establish or restore communications cap for first responders. Assets to include a self sustaining communications trailer with equipm and tower that can be rapidly transported by either a prime mover or air transport. Unit to be s designed to be air lifted to a hilltop or high building. Unit to have self contained electrical powe generation, tower for antennas, and a shelter to house base stations and an IP based gatewa to be equipped with satellite communications to connect communications equipment to comm centers collocated or great distances from the incident. Subscriber units shall include portabl to operate on local or national interoperability channels. Also included in the assets are spare subscriber batteries and on site battery charges. Asset to be multi disciplinary and multi jurisc
B-IV.4.3	"	"	Provide emergency power for existing alternate radio control equipment for the BAPER system Boston Police including the City of Boston Interoperability channel.

Table 5-7 Metro-Boston Region Action Plans (continued)

5.5.3.6 State Agency Interoperability Action Plans

Background. Subsection 4.2.2.1 Specific projects are listed in Table 5-8 as indexed by the Initiative and Project Guideline numbers and project task number for future reference.

Massachusetts Turnpike Authority (MTA) – With proper resources, the MTA can overcome the lack of statewide transport for voice (communications), video and data through technologies that can take advantage of their current installed fiber network to provide secure virtual networks for other agencies. It is postulated that a technology path exists to enable the MTA to be a “carrier” to support interoperability services for the Commonwealth. Some technologies evaluated include WDM (dense and course wave division multiplexing), MPLS (multiple protocol label switching), and SONET.

These technologies would allow the MTA to expand functionality to existing state-owned fiber by providing virtual networks, offer quality of service, and expanded services to other agencies. Within these technologies, management tools can control and monitor the network on a daily basis, enabling moment-to-moment transfer of services as required. These technologies can be merged with emerging Quality of Service (QoS) policy implementation to offer NIMS-compliant service provisioning.

The MTA has a model for carrying out this shared use. In the MHS tunnel systems, two-way radio communications are provided through a shared antenna system including MTA owned facilities, RF combiners, and fiber optic cable. Each agency is responsible for bringing and receiving their RF to and from the shared facilities.

As shown in section 4.2, several existing regional voice radio systems operate throughout Massachusetts. In addition, Massachusetts owns and maintains a nearly statewide 800-MHz trunked voice radio network (see subsection 4.2.1.3). This system provides primary communications for more than 50 agencies, and additionally provides interoperable communications for more than 100 other local, state and federal agencies. Massachusetts is preparing to install the final segment of the 800-MHz network in Western Massachusetts, employing a P-25 digital platform and utilizing 700 and 800-MHz frequencies. This radio network is not the only wide-area network in the Commonwealth, but most local public safety agencies use department - specific, in-house radio systems, primarily in the VHF (above 150 MHz) and UHF (453 - 483 MHz) bands.

In addition, the state has installed 40 800 MHz ITAC base stations, and has also established a series of common talkgroups on the trunked system to provide interagency interoperable communications. Currently, there are no network connections between any of these public safety radio networks, (on any band) in the Commonwealth. Establishing these interconnections under proper SIEC-vetted SOPs is a critical need given the expected long-term presence of both networks in many regions.

ID	Initiative	Guideline or project	Description
X-III.3.1	Information Sharing	Statewide Backbone	The proposal to upgrade the current MTA infrastructure would assist the Commonwealth with the interoperability plan. It would allow additional pathways and redundancies to other agencies for their voice, video and data needs while maintaining user separation and security. It would also benefit the MTA in providing expanded services such as increased video surveillance (and sharing) and disaster recovery. In order to offer these increased services and pathways to other Agencies, the MTA would require financial assistance.
X-III.3.2	Mobility	Command Channel	As such, this initiative will seek to establish additional channels in the VHF, UNH and 800 MHz spectrum, principally utilizing V-TAC, U-TAC and I-TAC channels that can be merged together as needed to create common statewide tactical channels.
X-III.3.2.2	Mobility	700-800-MHz Network	This investment will include the planning and design of an 700/800 P-25 digital system to retrofit the statewide analog system, and to design an interconnection strategy between the various local and state 800 MHz systems, to create a future seamless and ubiquitous public safety radio network.

Table 5-8 State Agency Action Plans

Figure 5-5 shows the timelines of the five-year SCIP, including the periods before, during, and after the anticipated PSIC grant. This graphic clearly shows the timing and sequence of the tasks described previously in this section. The durations are estimates based on the complexity of each task. The sequencing is defined by the need to complete certain task prior to being able to start a depended task. The dependencies are depicted by the arrows leading from the end of one task to the beginning of a dependent task. In reality this dependency means that if the completion of an initial task slips, the beginning of each depended tasks will be delayed accordingly. The timelines below are an estimate. The SIEC has a process in place to further develop a more detailed work breakdown structure.

Massachusetts Statewide Communications Interoperability Plan

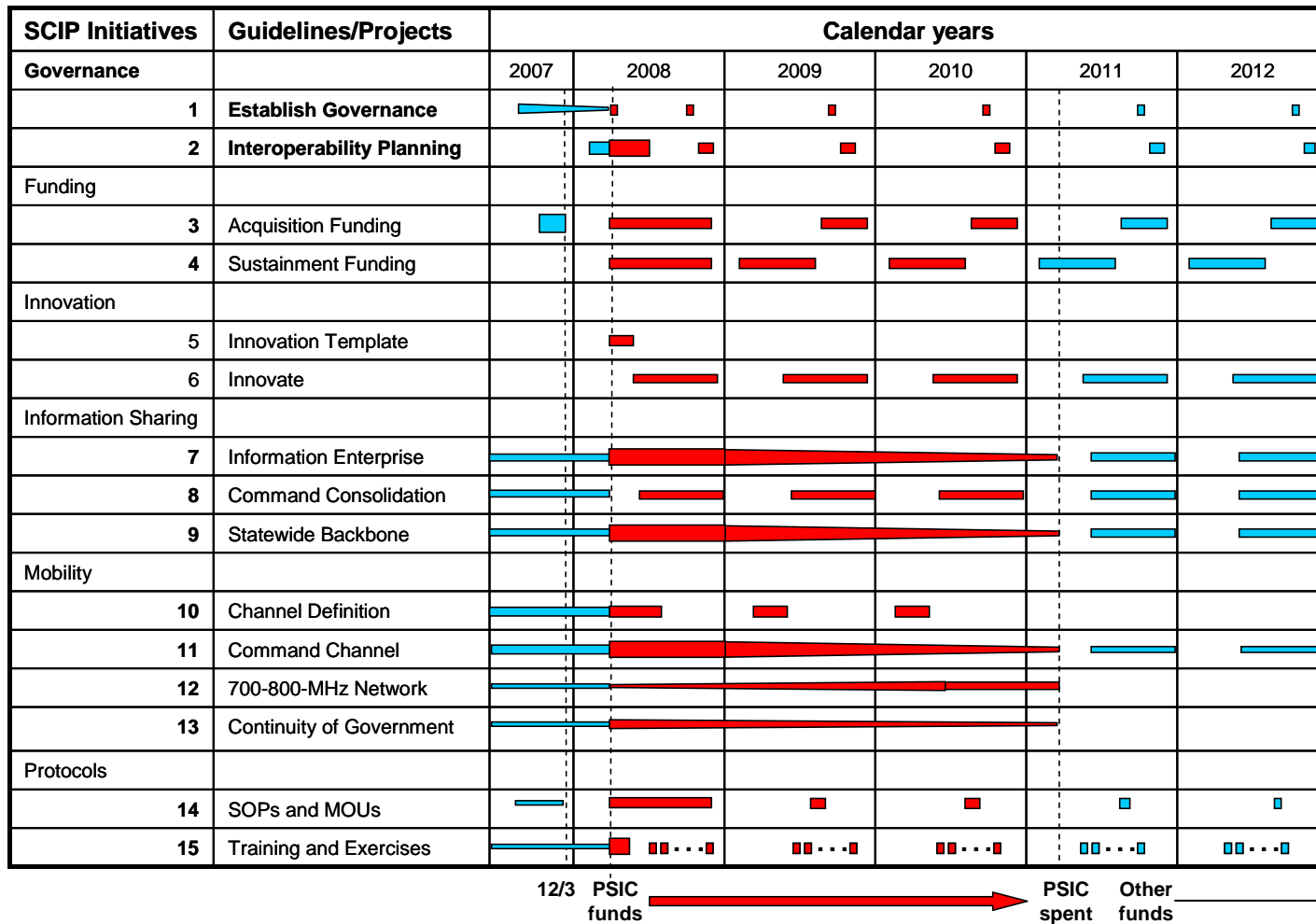


Figure 5-5: Anticipated Timeline for Projects Defined by the SCIP Strategic Initiatives.

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5.6 National Incident Management System (NIMS) Compliance

Statewide training and exercises have moved toward bridging communication gaps. Some, but not all, of the training and exercises being conducted within the state include:

1. Training related specifically to communications interoperability and the Incident Command System (ICS)
2. Conducted an operational and technical assessment of communications to address interoperability standards for use in future training and exercises.
3. Improving wireless data capabilities training and use during exercises.
4. Established NIMSCAST and started entering information at the local, region and state level.
5. Developed a Tactical Interoperable Communications Plan (TIC Plan) and conducted a full scale exercise to validate the TIC Plan. The TIC Plan Validation Exercise has become a standard for Grant approved exercises using the Homeland Security Exercise and Evaluation Program as guidance and focusing on interoperable communication gap analysis and the Incident Command System.
6. Developed and implemented interoperability standards consistent with the State Interoperability Plan. Training will be conducted statewide to orient first responders to the State Interoperability Plan prior to use during exercises.
7. Conducted a meeting at MEMA to address standardizing communication interoperability statewide. The standard will be used as guidance for training and exercises.
8. Each region has a communications interoperability subcommittee.

Massachusetts requires certification in NIMS and compliance standards in line with DHS requirements for any entity to be eligible for Homeland Security Grants. ICS 300 and ICS 400 classes are conducted with multiple agencies and disciplines to enhance classroom instruction. The multi-agency/disciplines approach is used during exercises to mirror an actual emergency response profile. This will be a continuing policy for all future exercises. Exercise Planning Workshops (EPW) are – and will continue to be – conducted annually bringing multi-agencies/disciplines together to combine mandatory training exercises. The EPW allows consolidation of mandatory exercises to move toward cross disciplinary training and exercises.

One approach to a demonstrable performance measures that will “prove-out” the effectiveness of the Interoperability plans is through the use of the LAN-based Automated Exercise Assessment System (AEAS)². This tool, available free on line, permits multiple communications channels to be used in “what-if” exercises to demonstrate the value of the proposed interoperability channels on information sharing.

² <https://collaboration.saic.com/sites/MA-INTEROP/pages/Planning%20Tools.aspx>.

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The results of this “before-and-after” analysis can be demonstrated quantitatively based on public safety response time, fatalities in the 11 WMD scenarios, and other quantities. From a background description of AEAS³:

During the assessment phase of the actual exercise, a player’s actions are captured and analyzed against vetted, expected actions and an assessment is made for each expected action. These actions can be sorted by function; an overall assessment is not assigned. A player’s actions must take place within established time and resource constraints. Expected actions are derived from the body of tasks, conditions, and standards, and identified by command(s) (e.g., “establish perimeter,” “maintain zone control”). The actions are expected within established time constraints, and can only be conducted with existing resources (e.g., constrained by the resource baseline established in the initial static resource survey). A resource must be capable of executing the command(s), and, finally, the required resources must be deliberately requested to the scene.

These performance measures can be collected as well during field exercises as well.

5.7 Review and Update Process

Part of the Governance Initiative, described in detail in section 6, will be the establishment of a process for reviewing and updating the SCIP on a regular basis. The review participants, and formal approval process will be decided by the SIEC. At a minimum, a new version of a Five-Year Statewide Communications Interoperability Plan will be developed each year from this point forward. Thus, each year will “slide” the SCIP another year forward – so it always represents a five-year plan.

³ Science Applications International Corporation, *Background of AEAS*, April 2005.

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6 Implementation

6.1 Introduction

This section describes approach for implementing the statewide plan’s strategic initiatives, short- and long-term goals for implementation, key roles and responsibilities, performance measures, critical success factors, plans for educating policy makers and practitioners and a plan for overseeing operational requirements, SOPs, training, and technical solutions. There are six major 2007 SCIP Strategic Initiatives and two or more subordinate projects (or project guidelines) within each initiative as shown in Figure 6-1.

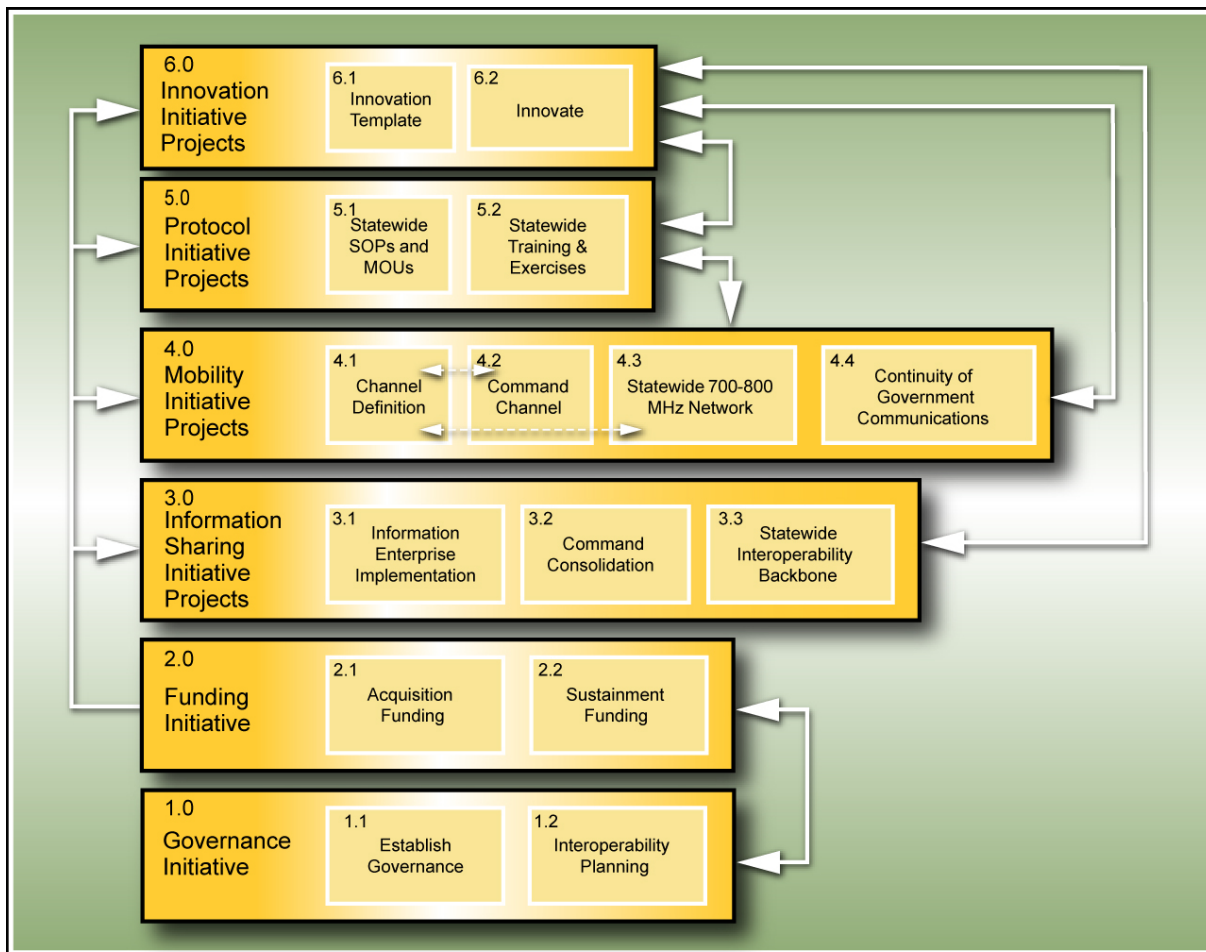


Figure 6-1: The SCIP Includes Six Major Strategic Initiatives and Fifteen Projects

6.2 Overview of Initiatives/Projects

This section describes each of the initiatives and their projects, or project guidelines (see Figure 6-1) and outlines the objectives of each project. Each of these projects maps to the short- and long-term SIEC Goals and Objectives set forth in Section 5 of this plan.

I. Governance Initiative

I.1 SIEC-Regional Governance Project - This project will strengthen the Commonwealths hierarchical structure and authority needed to implement the SCIP, without which local and artificial regional stovepipes would continue to exist and changes in administration combined with Federal “spend-now” grants would cause chaotic interoperability planning.

I.2 Interoperability Planning Project - Employ agencies/organizations that are reporting to the Executive Office of Public Safety and Security (EOPSS). EOPSS will utilize these reporting agencies as well as other State entities, and both regional and local assets to develop the SCIP. The selection of the most appropriate organizations will be determined as part of this project.

II. Funding Initiative

II.1 Acquisition Funding: This project is to develop acquisition funding strategies for all of the initiatives/projects contained within the SCIP. Although the primary funding will be coming from the PSIC grants for these initiatives, there are other funding sources which have been identified and can be used to support these projects. This project will document more details about each project and put estimated costs on the acquisition or startup of each project.

II.2 Sustainment Funding: This project is to develop a plan for sustained funding for:

- Projects initially identified in the SCIP plan;
- New projects that are defined and approved by the SIEC; and
- Ongoing sustained funding for capital equipment purchased through the project initiatives.

III. Information Sharing Initiative

The Focus Groups identified the following three types of statewide information sharing requirements:

A. *Moment-to-moment all-discipline Situational Awareness* – an information network providing real-time moment-to-moment GIS-based situational awareness and alerting across all disciplines, cities/towns, state agencies, border state agencies, tribal agencies, and Federal agencies. This network includes data sharing between all Computer Aided Dispatch positions and sites, Emergency Operation Centers, Hospitals, Transportation Control Centers, etc. All relevant national data standards will be used whenever possible to maximize

interoperability with Border States, tribal, federal civil and military (National Guard) agencies.

B. *Data repository* – rapid access for all authorized stakeholders to available and authorized stored information, such as being addressed in the ongoing Massachusetts Integrated Criminal Justice Information System (ICJIS) Project.

C. *Planning information* – Web-based access to the content and status of all public safety information sharing and communication projects. (It is expected that this planning information will ultimately be made available on a protected EOPSS Web Site using existing resources and is not further addressed here.)

The major projects for this Information Sharing initiative are:

III.1 Information Enterprise Implementation Project - Before information sharing software and systems can be put into place architecture will be established for the specific information sharing requirements.

III.2 Command Consolidation Project - Study virtual, regional consolidated dispatch to be executed by the collaborating organizations. The study shall include a cost/benefit analysis and implementation plan.

III.3 Statewide Interoperability Backbone Project – Enhancement of existing statewide and regional backbones, possibly through use of redundant fiber and microwave links, to implement information sharing needs which are essential to public safety interoperability.

IV. Mobile Interoperability Initiative

This initiative addresses primarily RF interoperability in the Regions and statewide.

IV.1 Channel Planning Project – Common RF channels for operational, tactical, and command interoperability will be defined and implemented statewide, along with the requisite Standard Operating Procedures (SOPs) and Training & Exercises.

IV.2 Command Channel Project – This project sponsors the immediate enhancement, design and extension of existing regional and statewide radio systems across Massachusetts.

IV.3 Statewide 700-800 MHz Network Project– This project sponsors an immediate feasibility study of an integrated 700-800-MHz Project 25 capable trunked system statewide for all public safety responders. Potential design and implementation of such a system will be executed in years subsequent to this planning effort. This feasibility study would include the essential reliability and survivability features required for such a critical public safety communications capability.

IV.4 Continuity of Government Communications Project - This project sponsors the coordinated planning and implementation of to provide public safety command/control before, during, and after major disasters. This project sponsors the coordination planning and implementation of survivable and portable communication methodologies to provide public safety command/control before, during, and after major disasters.

V. Protocols Initiative

This initiative addresses primarily public safety communication protocols to be standardized for intra- and inter-agency communications. It is desirable to have Responders employing the same protocols for all communications, whether within their own agencies or among agencies—that is, to achieve day-to-day usage of these protocols.

V.1 Statewide SOPs Project: Responders, dispatchers, and others sharing information in a mobile environment require Standard Operating Procedures to maximize the flow of needed command and control and situational awareness reports. This project will develop templates for these SOPs, provide them on the state's Web Site, and assure their common development and adoption across all other relevant SCIP projects.

V.2 Statewide Training and Exercises Project: This project will develop/adopt NIMS-complaint communication exercise practice/guidelines, performance measurement, and evaluation for all relevant disciplines and a vetted set of scenarios. These exercises will necessarily include dispatchers, responders, receivers, and other in both fixed and mobile environments as appropriate.

VI. Innovation Initiative

DHS SAFECOM suggests consideration of advanced technology (as compared to current LMR capability) to address interoperability problems, such as the use of broadband communications, ultra-broadband communications, push-to-talk satellite phones, in-vehicle “hands-free” mobile data gateways, etc. This project will consider funding such initiatives to support statewide interoperability based on employing best-practice strategies, industry-based proven capabilities, and emerging technologies.

VI.1 Innovation Template: This project is to develop a standard framework to:

- Identify and refine user/system requirements
- Evaluate potential processes, protocols and/or technologies as to their capability in meeting these requirements.
- Document and distribute the results to Massachusetts interoperability stakeholders

This evaluation will be based on set criteria to determine when processes, protocols and/or technologies are needed, what they are being used to achieve, and to determine costs and benefits of the specific implementation. In the context of systems engineering, this framework is called “fast prototyping” and would be used to assess the value of advanced communication technologies in which there are significant uncertainties in performance and user requirements.

VI.2 Innovate: This project is to design and perform technology evaluations of value to all stakeholders outside of the Operational environment, but nevertheless representing that environment as much as possible. This “fast prototyping” capability will speed the adoption of advanced technology as appropriate.

6.3 Approach for Implementing Strategic Initiatives

The approach taken to implement the Strategic Initiatives and their associated Action Plans described below is to follow standard project management practice and develop a Work Breakdown Structure (WBS) for each project. Since Strategic Initiatives are high-level as compared to the Action Plans (see subsection 5.5.3), and since there are many different projects that can be performed appropriately within a single initiative, we have developed a WBS template for each initiative and project or project guidelines developed in Section 5. The actual WBS for each of the specific Action Plans (see subsection 5.5.3 above), can be developed from the WBS template provided below for each project within each Initiative.

The specific Project Management procedures to be used in the execution of each Action Plan project will be determined for all such projects in the Governance Initiative, Interoperability Planning project (I.2) below. As the project explains, best Program Management and Systems Engineering practices will be vetted by the SIEC and required of all Project Managers.

I. Governance Initiative

I.1 Establish Governance Project

Problem: Massachusetts is a Home Rule state. As such, stovepipes of authority in public safety information sharing and communications capability continue to reside in many Cities and Towns in the Commonwealth. In a world of weaponized diseases, dirty bombs, and suicidal terrorists wielding Weapons of Mass Destruction (WMD), these stovepipes can hinder the safety and security of their population and the population of the Commonwealth in general. In this regard, the SIEC and Regional Interoperability Committees do not have the established charters, authority over finances and spectrum, or arbitration powers to be successful in improving statewide public safety interoperability. In addition, the change in State administrations combined with the “spend-now” nature of Federal funding have worked against the success of a long-term interoperability strategy, while it is exactly such a long-term strategy DHS Project SAFECOM seeks to support.

WBS Template: This project will strengthen the Commonwealths hierarchical structure and authority needed to implement the SCIP, without which local and artificial regional stovepipes would continue to exist and changes in administration combined with Federal “spend-now” grants would cause chaotic interoperability planning. This project will require, at a minimum, execution of the following tasks:

Task I.1-1 Establish Governance. Define the discipline-independent full-time position description of the Interoperability Coordinator and develop the SIEC and Regional Communications Interoperability Subcommittee (RCIS) Charters. These charters will define the responsibilities and, through executive, statutory or regulatory changes (as necessary and appropriate), endow these bodies of public safety communications representatives from organizations statewide with the essential powers of authority to implement the SCIP. These powers include funding allocation, grant authorization, spectrum-use authorization, public land use authorization (for all public safety information sharing and communications

applications), and arbitration (of Regional, Town, and City information sharing and communications issues). The following specific steps will be carried out to facilitate SIEC governance.

Massachusetts SIEC Governance Recommendations¹:

1. Define a standard agenda
 - a. Introductions and opening comments
 - b. Approval of minutes from previous meeting
 - c. Review and status of action items from previous meetings
 - d. Chair report
 - e. Working Group / Subcommittee reports
 - f. Program report (if applicable)
 - g. New business
 - h. Action items for following meetings
2. Create a charter or by-laws²
 - a. Promote accountability and transparency through a charter or by-laws to include authority, purpose and mission, rules of engagement, organizational structure, and processes for voting and decision making
3. Have regularly scheduled meetings
 - a. Quarterly or monthly is most common
 - b. Document and post minutes from meetings
4. Establish working groups / subcommittees, as appropriate. Possibilities include:
 - a. Governance
 - b. Funding
 - c. Education and Outreach
 - d. Technology and Standards
 - e. Preparedness (including training and exercises)
 - f. Regional
5. Establish a governance structure to allow a single point of contact for all interoperability activities
6. Define roles and responsibilities of the SIEC including subcommittees
 - a. Should include voting rights (number of seats, substitutes, proxies, etc.)
7. Create an Interoperability Planning Lifecycle³ (see Figure 6-2)
 - a. Includes a regular schedule for reviewing and updating the strategic plan

¹ Based on researching and benchmarking against other state plans: Virginia, Missouri, Nevada, Idaho, Texas, Iowa, California, Colorado, Utah, Oregon, Montana, Wisconsin

² Reference SAFECOM's 'Creating a Charter for a Multi-Agency Communications Interoperability Committee: Template and Questions to Consider'

³ Reference Virginia's SCIP Strategic Plan, page 8.

8. Provide education and outreach to raise awareness of the program and standards
 - a. Public education plan
 - b. Branding and consistent messaging
 - c. Communications material
9. Create statewide secure web site

Figure 6-2 depicts the Massachusetts Interoperability Planning Lifecycle. This graphical depiction is based on the graphic from the Commonwealth of Virginia's process for planning.

Task I.1-2 Recommend Executive Orders/Statutory/Regulatory Action. Support development of Executive Orders (EO) and Statutory or Regulatory Actions to empower the SIEC and RCIS Charters. The EO should define the composition of the SIEC and outline its roles and responsibilities. The EO will indicate that no Executive Agency or Secretariat can pass or spend money on a project that has not been approved by the SIEC. The resulting SIEC and RCIS powers of authority include release of public safety information sharing and communications-related funds from all Federal and state sources, control of all radiated spectrum within Massachusetts borders, and arbitration of all Town, City, or HLS Regional information sharing or communications disputes.

I.2 Interoperability Planning Project

Problem: The SIEC and RCIS are volunteer organizations, largely composed of command elements in their respective disciplines, including City, Town, and State Agencies as well as non-profit organizations such as Coordinated Medical Emergency Direction (CMED). They themselves do not have the time required or the staff to implement the projects drawn from the SCIP strategic initiatives described in this document and based upon statewide Focus group participation. In addition, best practices for project implementation and technical/operational standards for all interoperability project results do not yet exist.

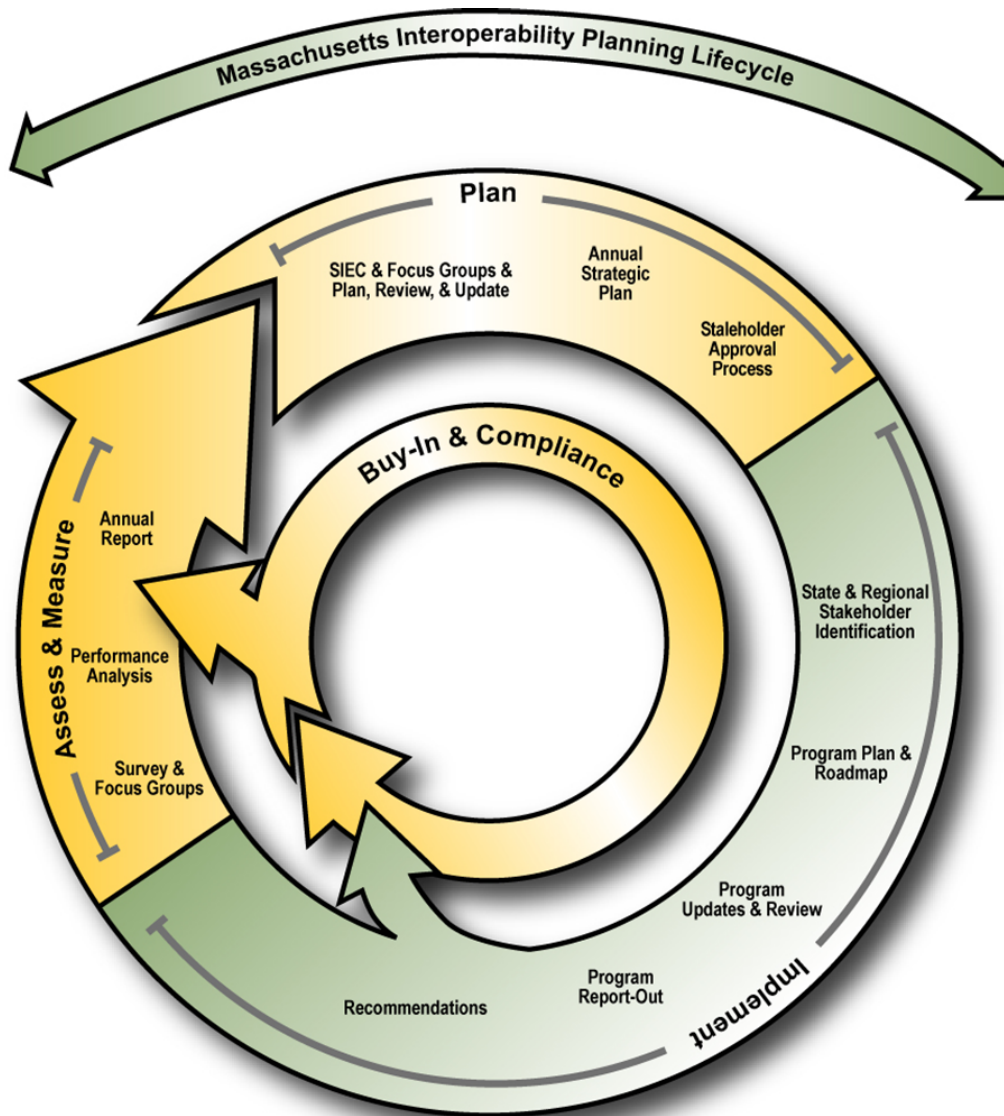


Figure 6-2: Massachusetts Interoperability Planning Lifecycle.

WBS Template: Identify and employ SIEC/RCIS-supporting organizations that would report to the EOPSS, in combination with other support organizations such as the Massachusetts State Police (including the Commonwealth Fusion Center), Criminal History Systems Board (CHSB), and the Massachusetts Geographic Information System (MassGIS), and other organizations to be determined, to implement the SCIP. This implementation would be performed through regional projects defined below, where these projects are coordinated through EOPSS, the Interoperability Coordinator, the SIEC, and directly by the associated RCIS. To achieve this objective, Project Managers will have to be identified (or hired), best practices (Enterprise Architecture and Systems Engineering) established, and quality process improvement techniques

employed. Methods of achieving the required sustainment funding will be developed and instituted for statewide use. Thus, the following tasks will have to be executed:

Task 1.2-1 Establish Interoperability Planning Consortium. Direct and adequately staff the SIEC/RCIS-supporting organizations to implement the SCIP strategic initiatives (SCIP projects) defined in this White Paper.

Task 1.2-2 Train Interoperability Planning Consortium. Provide Project Management, Enterprise Architecture, and Systems Engineering training to the designated Project Managers among the SIEC/RCIS-supporting organizations to implement the SCIP-defined Projects or Action Plans.

Task 1.2-3 Equip Interoperability Planning Consortium. Provide Project Management, Enterprise Architecture, Systems Engineering, Systems Engineering Management Plan (SEMP) templates, and Collaborative Project Management software tools with associated training to designated Project Managers and their staff among the SIEC/RCIS-supporting organizations to implement the SCIP-defined Projects or Action Plans. Establish an EOPSS Interoperability Collaborative Site so that all Interoperability Planning Consortium Members and all other Responders statewide can have access to planning and implementation documents and results.

Task 1.2-4 Adopt Standard Architecture. Identify, review and adopt Operational best practices (for SOPs and Training & Exercises) and Technical standards/specifications to be required statewide in all procurements and implementations. Also, specify open Technical interfaces between systems – including SOPs – providing the greatest standards-based flexibility and assured competition for any procurement requirements.

Task 1.2-5 Provide Quality Process Assurance. Establish a plan for Capability Maturity Model® Integration (CMMI) training and certification of the Interoperability Planning Consortium, so that its capabilities and processes can be improved over the years required to achieve Optimal interoperability throughout the Commonwealth. Adopt existing state CMMI training or establish a training and certification program for the Planning Consortium.

Task 1.2-6 Develop Detailed Project Plans. For each project within the initiatives; develop detailed project plans that contain the following project management artifacts:

- Scope of work with specific project objectives mapped to the overall program short-term and long-term goals and critical success factors for each project based on the collective experience of state interoperability professionals,
- Customized performance measures for each project that can be used as key performance indicators that the projects' implementation is making progress along the strategic objectives set. A key performance indicator dashboard or some other method of reporting performance measures should be developed for reporting status to SIEC members and the SCIP participants.
- Organizational Communications Strategy and Plan that shows the strategy for educating policy makers and practitioners on interoperability goals and initiatives and communicating success during the lifecycle of the program.

II. Funding Initiative

II.1 Acquisition Funding: This project is to develop acquisition funding strategies for all of the initiatives/projects contained within the SCIP. Although the primary funding is coming from the PSIC grant for these initiatives, there are other funding sources which have been identified and can be used to support these projects. The Acquisition Funding project will document more details about each project and put estimated costs on the acquisition or startup of each project.

Task II.1-1 Develop Detailed Project Cost Estimates. Each project will need to have a project scope of work developed in order to estimate detailed project costs. These scopes of work should contain the breadth and depth of each initiative. This statement of work or project documents should utilize any standards that have been established by the state's project management office. Each project should have a formal cost benefit analysis performed on them to communicate the return on the investment than can be realized from execution of the project. Once completed each project should be presented to the SIEC for review, feedback, and approval.

Task II.1-2 Allocate PSIC Grant Funding. This task encompasses the following items: Complete the SCIP plan and submit, allocate the PSIC funds to identified initiative projects, present recommendation for allocation and request comment/approval of the SIEC.

Task II.1-3 Allocate Funds from Existing Grant Programs. Perform detailed research on existing grant programs; determine allocations that can be used to support projects/initiatives; make recommendation and request comment/approval from the SIEC, and finally, perform allocations

Task II.1-4 Research and Apply for New Grant/Other Sources of Funds. This task is the most substantive and includes the following items: Perform detailed research and identify new grants that can support SCIP projects; make recommendation for new funding sources and request comment/approval from SIEC. Upon approval to pursue a new funding source, develop and write grant applications; provide status on grants:

II.2 Sustainment Funding: This project is to develop a plan for sustained funding for:

- Projects initially identified in the SCIP plan;
- New projects that are defined and approved by the SIEC; and
- Ongoing sustained funding for capital equipment purchased through the project initiatives.

Task II.2-1 Develop Strategy for Sustained Funding for Each Project. The strategy for sustained funding for each project is dependent on the funding strategy for the initial startup and/or acquisition. The sources of funds to sustain projects can be identified somewhat based on how they were funded initially. The total cost of ownership for each project should be determined while the project is being estimated so that ROI and the cost benefit analysis can take into consideration the long-term

financial needs of a project: The detailed project cost model should extrapolate the sustained costs needed

Task II.2-2 Maintain Project Budgets. This project encompasses the activities necessary to maintain project budgets. It includes the running of financial reports from the state's accounting system for each project, development of monthly/quarterly project financial status reports that show the inflows and outflows for each project.

III. Information Sharing Initiative

Information sharing, independent of the media, is at the heart of public safety communications interoperability. It establishes the necessary information sharing requirements to be implemented over wired and wireless networks, depending on the need. It also defines the IERs needed to justify expenditures on any fixed or mobile communication system.

There have been several recent and ongoing information sharing initiatives, including the Statewide Information Sharing System (SWISS) Project, the Health & Homeland Alert Network (HHAN), the Commonwealth Fusion Center, and others. The work performed in these projects should provide the foundation for the establishment of detailed information sharing requirements. The Massachusetts Focus Groups identified three basic types of information sharing required to achieve interoperability in Massachusetts as follows:

- A. **Moment-to-moment all-discipline Situational Awareness** – an information network providing moment-to-moment GIS-based situational awareness and alerting across all disciplines, cities/towns, state agencies, border state agencies, tribal agencies, and Federal agencies. This network includes data sharing between all Computer Aided Dispatch positions and sites, Emergency Operation Centers, Hospitals, Transportation Control Centers, etc.
- B. **Data repository** – rapid access for all authorized stakeholders to available and authorized stored information – such as being addressed in the Massachusetts Integrated Criminal Justice Information System (ICJIS) Project.
- C. **Planning information** – Web-based access to the content and status of all public safety information sharing and communication projects. (It is expected that this planning information will ultimately be made available on a protected EOPSS Web Site using existing resources and is not further addressed in what follows.)

The lack of adequate consistent funding from a variety of causes combined with the changes in administration has resulted in delays in moving these programs forward. In addition, the statewide Focus Groups conducted in development of the Massachusetts SCIP have necessitated the expansion of these earlier initiatives.

The Information Sharing Initiative will be implemented through the execution of the following three projects:

1. Information Sharing Architecture Project
2. Command Consolidation Project
3. Statewide Backbone Project

III.1 Information Enterprise Implementation Projects

Problem: Information sharing requirements must be collected from all stakeholders to meet the SIEC SCIP Vision for interoperability in Massachusetts, which has not yet occurred. The requirements must be collected within an architecture framework relevant for public safety operations, and using effective Requirements Collection and Analysis tools. Without considering all stakeholders, and relying on antiquated paper forms and verbal notes versus modern requirements analysis practice, a proper information sharing architecture will be difficult to develop. Implementing a statewide information sharing architecture without developing the fully vetted set of vetted requirements from participating agencies would minimize the benefit of interoperability funding and further delay achieving statewide information sharing and communications interoperability.

Specific and detailed Communication Requirements, that is, the characteristics of communication of this information among stakeholders, will be defined for scenario-based communications among all relevant organizations. For example, an information exchange requirement (IER) identifies the transmission of the individual message to be communicated among stakeholders. The complete description of each IER would include, but not be limited to:

- Information source(s)
- Information destination(s)
- Media (voice, data, video)
- Message length/duration
- Performance (e.g., transmission delay, reliability and availability)
- Priority
- Need for message acknowledgement
- Security (e.g., encryption level required)
- Transmission environment (fixed/mobile, range, terrain, indoor/outdoor, interference, noise, etc.)
- Interfaces (physical, electrical, human-system)
- Environment (indoor/outdoor, temperature, humidity, dist, etc.)
- Maintenance and logistics support required
- Training requirements
- Legacy equipment
- References (justification for IER)

The complete specification of these Communication Requirements is then used to create the specifications needed to drive evaluation of the commercial off-the-shelf (COTS) equipment needed to realize these requirements. Most of these requirements are quantitative in nature and provide a means of evaluating interoperability performance when these messages are shared among disciplines, jurisdictions, and levels of government.

WBS Template: Establish a trained Project Team from the SIEC, RCIS, SIEC/RCIS-supporting organizations, and other staff, and instantiate the computer-based tools needed to build architecture and both collect and analyze requirements. Before information sharing software and systems can be put into place, we will establish the specific information sharing requirements. The following tasks will be funded to develop a statewide information sharing architecture: This initiative will present real-time moment-to-moment information to Responders and Command Authorities as situational awareness, but is intended to feed into - rather than replicate – any functionality in the ongoing Massachusetts ICJIS Project.

Task III.1-1 Develop Massachusetts Public Safety Enterprise Architecture.

Using the tools and training provided to the SIEC/RCIS-supporting project team, build the statewide public safety enterprise architecture views appropriate to represent local/regional/statewide/national information sharing for categories A, B, and C defined above. This work would be aided by the use of CASM to enter all public safety agencies from all jurisdictions and purposes into the architecture.

Task III.1-2 Capture Information-sharing Requirements. Using the SIEC, RCIS, and associated SIEC/RCIS-supporting organizations, solicit, collect, validate, and prioritize statewide public safety information sharing requirements. Employ a three-step process involving every public safety Responder organization in Massachusetts as follows:

- a. Meet each city/town organization and solicit high-level information sharing requirements for several high-level scenarios spanning day-to-day and rare activities, including facilities and mobile assets requiring information access.
- b. Send an investigation (or survey) instrument to each organization verifying what was learned in the survey and quantifying the specific data to be shared, with whom, when, etc., covering both fixed and mobile voice, data, and video requirements
- c. Document all collected data as IERs in the statewide public safety Enterprise Architecture developed in Task II.I-1.

Task III.1-3 Develop an Implementation Plan. Develop a statewide information architecture plan accounting and consolidating all IERs collected from the statewide survey. Provide an implementation schedule and ROM cost estimate for the equipment required to build the information-sharing network from existing capabilities.

III.2 Command Consolidation Projects

This project develops a plan and offers support for regional and/or statewide PSAPS, dispatch, and EOCs.

Problem: There are currently over 260 PSAPs and associated dispatch centers in the state, mostly operated by police departments, with many dispatchers having minimum training and often presenting only a single call taker to the public for their town. This

situation maintains local (Home Rule) control of the PSAP, but it also minimizes situational awareness moment-to-moment among towns and state agencies, increases the risk to the public as well as Responders, and costs more money to maintain a consolidated regionalized dispatch capability. Similarly, there are many EOCs across the state, all with varying degrees of information sharing capability. Again, a regional capability has proven to not only improve response accuracy and time, but it also provides this improvement for lower costs in the long run than maintaining many independent, less capable facilities.

WBS Template: Several Focus Group comments addressed the need for Regional Dispatch, whether achieved physically or virtually (e.g., Psnet, a UASI project). The Home Rule nature of Massachusetts requires town/city *acceptance* of consolidated dispatch centers and EOCs as well as *governance* (who runs the consolidated site), *architecture* (technical and operational design), *performance* (performance requirements from best practices based on the Association of Public Safety Communications Officials), *funding* (build and sustainment), *approach* (best practices design processes, step-by-step, regional to statewide, etc.) must all be part of a systems engineering based Implementation Plan. A similar plan will be developed for fixed and mobile EOCs. The corresponding Task descriptions for this project are as follows:

Task III.2-1 Consolidated Dispatch Implementation Plan. Develop/support development of Implementation Plans for Consolidated/Combined Dispatch. These plans should include the technical and operational architecture, required performance, ownership/governance, acquisition and sustainment funding plans, leader/user acceptance, MOUs and SOPs, training and exercises and planning/implementation approach factors.

Task III.2-2 Support for Ongoing Command Consolidation Implementation. Develop an Implementation Plan for Consolidated/Combined EOC. This plan should include the technical and operational architecture, required performance, ownership/governance, acquisition and sustainment funding plans, leader/user acceptance, MOUs and SOPs, training and exercises and planning/implementation approach factors.

Task III.2-3 Support for Ongoing Command Consolidation Implementation. Provide resource and technical or operational support to valid Command and Control consolidation efforts in the Commonwealth.

III.3 Statewide Interoperability Backbone Projects

The SIEC Collaborative Session, Regional and Discipline Focus Groups all noted the need for a statewide public safety communications backbone. Currently, many public safety radio systems critical to moment to moment tactical communications for safety-of-life, such as the CMED system, are either not connected reliably between regions, or are dependent on single-thread exposed wireline infrastructure. Of course, this situation is fundamentally unacceptable but is not in itself an interoperability problem. However, the need for a consolidated survivable statewide backbone which concentrates as well as assures and protects important public safety information

sharing and communications, strongly benefits interoperability. More importantly, the physical consolidation of information along these trunks will minimize the technical difficulty (including bulk encryption of CORI and HIPA information) and implementation cost of information sharing – so a consolidated backbone effort both benefits the individual agencies involved but removes many technical impediments to information sharing – a dual benefit.

Problem: Many of the hundreds of public safety agencies in the state rely on telephone lines and aging microwave systems to bring tactical voice to their base-repeater sites. The Massachusetts State Police, Massachusetts Lottery, Massachusetts Highways, and many other agencies own (their own) microwave circuits as well as several commercial entities. In addition, many other organizations in the state have access to fiber optic communications (including to the premises, e.g., *Fios*) and employ broadband satellite systems, but do so unilaterally despite the needs of physically collocated and adjacent agencies. Moreover, statewide public safety communications requires a high-level of reliability and redundancy for survivability. This interoperability is obviously critical in major disasters as well as moment-to-moment and day-to-day situational awareness, this interoperability is at risk because there is limited statewide backbone capability to achieve of the required moment-to-moment situational awareness (see Section II, sharing type ‘A’) in our information sharing initiative (‘B’ will be handled largely by iCJIS and ‘C’ is handled through secure connections over the Internet). In other words, improving statewide interoperability necessitates the shared use of a reliable high-speed and redundant (survivable) backbone for information sharing.

WBS Template: Development of a statewide backbone for all three information sharing initiatives is essential to public safety interoperability and our SCIP Information Sharing Initiative. The third type of information sharing, that is, ‘C’ for planning, is easily implemented over a protected Web Site and is therefore not further considered in this backbone. The backbone would support both voice and data communications, either from control sites to LMR base-repeater sites or as a moment-to-moment information sharing capability (voice and data) between fixed and transportable/mobile command centers statewide. If warranted, a state agency “steward” would be selected to oversee and manage this effort. The tasks planned for the statewide backbone are as follows:

Task III.3-1 Develop Backbone Requirements. Use the results of the Information Sharing Architecture task; the ongoing system identification from the CASM data collection effort, and the solicited backbone needs of statewide agencies, to estimate the backbone capacity needed for the cumulative information sharing requirements. In addition, develop detailed specifications for all installations and sustainment requirements for an acceptable performance margin, reliability, and sustainability. Include all state-procured/owned assets, including audio interconnect devices, microwave sites, etc., and high-site real estate as well as service-based satellite bandwidth. Prioritize link paths along the backbone necessary to provide connectivity for critical Responder backbone communications, and secondarily to ashore survivability through redundant paths.

Task III.3-2 Plan/integrate the Statewide Backbone. Design the microwave, microwave upgrades, broadband satellite backup links, protected fiber activation, and interconnect/patch control equipment to implement critical paths of the statewide

communications backbone. Develop and issue RFPs to implement this backbone. The RFP will require the design of the statewide backbone capability meeting SCIP backbone requirements determined above, using microwave radio, 'dark' fiber, satellite communications (for major trunk backup), and intersystem interconnect systems (e.g., Motobridge, Network First, etc.). RFPs will be evaluated such as to favor open non-proprietary interfaces and architecture, albeit the specific implementation, hardware, and software are assumed to be proprietary

IV. Mobile Interoperability Initiative

Responder mobility requires LMR built to high reliability, survivability, and usability standards – bolstered by NIMS-based training and exercises – occasionally augmented by commercial services. The Mobility Initiative is therefore constituted from several projects designed to significantly improve interoperability both in the near-term and over the five years targeted by the SCIP. The key regarding these programs is that their implementation will be statewide, that is, consistent standards will be required statewide. Each HLS Region will implement the mobility initiative as its own project, but all regional projects will seek synergistic results, particularly between cities and towns in different HLS Regions.

IV.1 Tactical (Voice) Channel Definition Projects

As was demonstrated during the Focus Groups, there is a need for statewide planning of tactical channels – employing common channel names, SOPs, etc., for both talk-around (on-scene) and repeated communications. This project will capture the existing spectrum usage in the state in the HF, VHF, UHF (including 800 MHz), and above and, using a variety of specialty spectrum management tools and analysis, will develop a single statewide channel plan. This plan will include all existing and – after completion of the Command Channel and 788-800-MHz initiatives – all public safety spectrum in the state. It will also provide a means of procuring properly programmed subscriber devices to utilize the defined channels.

Problem: There is little or no statewide coordination or naming conventions for tactical radio channels used by the state's Responders, with channel plans often unique to the locale, region, or agency. This problem is most damaging to Mutual Aid situations when organizations that rarely work together must communicate via LMR, but it also impacts day-to-day situations when one jurisdiction or organization unilaterally changes designated channels without informing all affected by this change. This problem also impacts regional and statewide planning, SOPs, and public safety exercises, and ultimately, NIMS compliance.

WBS Template: Drawing on existing convention, NIMS training, and standardized channel naming conventions, we will establish a statewide standard for channel planning that will span all disciplines, towns, cities, regions, and statewide organizations. In addition, using the CASM tool, we will identify key areas where inadequate tactical interoperability exists and develop appropriate channel plans for these areas. The results will be available by secure Web Site to all Responders and will be included in the necessary SOPs and Training & Exercise projects. If and when identified by CASM, interoperability gaps will be identified for "coverage" using both on-

scene (talk-around) and wide-area command channel systems (see Command Channel Project). We will execute the following tasks for this Action Plan:

Task IV.1-1 Define and Standardize Channel Plan Template. Develop a common template or standardized format for the Massachusetts Tactical Channel Plan to be adopted by all public safety organizations. Best practices will be followed in the specification of this channel plan format, and it will be established as the standard format for Massachusetts by the SIEC.

Task IV.1-2 Collect and Verify Existing Channel Plans. Using the Regional CIS bodies and Interoperability Planning organizations, request and collect all tactical channel plans for all systems statewide. Enter all of these channel plans into the common standard template format and verify that the standardized plans accurately represent the operating and licensed channel plans in the relevant geographic area. Channel plans should be input into the ICTAP CASM tool as a common repository and analysis capability.

Task IV.1-3 Determine Channel Planning Gaps. Using the CASM tool, determine if there are any apparent interoperability gaps. Prioritize these gaps for interoperability improvements using the Fusion Center overlay with critical or other infrastructure, demographics, etc. Correction of these gaps may require extension of the Command Channel (see Mobility project 2 below) or the provisioning of portables to Command Elements in order to employ the available wide-area Command Channels.

Task IV.1-4 Create and Distribute the Tactical Channel Plan. Build and document a single statewide Tactical Channel Plan from the results of *Tasks IV.1-1* through *Tasks IV.1-3* and support SIEC and RCIS review of these results. Post the Tactical Channel Plan on the EOPSS Interoperability Collaborative Site for all users to review and download.

Task IV.1-5 Provide Mobile or Portable Radios to Fill Interoperability Gaps. Through an RFQ process, procure the necessary portable and mobile radios to assure that all discipline command elements have Command Channel access in the prioritized gap areas.

IV.2 Command Channel Project

This project sponsors the immediate enhancement, design and extension of both existing simulcast UHF systems (BAPER, NEMLEC, WEMLEC) and band-bridge (VHF-UHF-800 TACSTACK) (interconnect interoperability at the tower site) across the center of Massachusetts. Both planning and implementation of this project will be performed to the extent possible within the resources available.

Problem: Currently, there are UHF simulcast systems for Command Channel usage in the Northeastern, Boston Metro, Southeastern, and Western Regions. The BAPER and NEMLEC systems are UHF simulcast – and their expansion in the Northeast Region was the recommendation of an earlier report⁴. BAPER has long been

⁴ Science Applications International Corporation, *NHSPR Interoperability: Recommendations Report: Final Report*,

effective for tactical police operations in the Boston Metro area, and it has coverage into the Southeastern Region. However, it does not cover large areas of the SE region, does not have the console interconnect needed to link it to the VHF, local UHF, and 800-MHz systems operating in the region. Finally, there is a UHF simulcast system operated by WEMLEC in the Western Region, but it does not cover the entire region, is not interconnected with other regional systems, and other regional systems operate in both VHF and 800 MHz. These systems have little to no coverage or interconnect t interoperability across the Central Region of the state. Thus, there is incomplete RF Command Channel coverage regionally as well as statewide, and no backup other than “spotty” commercial wireless services to fill these gaps. There is no cross-discipline mobile data capability spanning all disciplines Command Elements and providing ubiquitous situational awareness statewide.

WBS Template: Homogenous voice and data situational awareness capability will be provided regionally and statewide by the extension of a simulcast/TACSTACK –based Command Channel capability across Massachusetts. It will be based on the SIEC prioritized enhancement and extension of existing regional UHF simulcast systems, including the development of additional UHF infrastructure, addition of VHF and 800-MHz infrastructure, the addition of suitable consoles and patching equipment (in conjunction with the statewide backbone initiative) and the distribution of mobile and portable radios for Command Element access. Of course, the proper SOPS and training along with appropriate exercises will also be developed in conjunction with the statewide Protocol Initiative. The Command Channels, when employed with talk-around portion of the required Channel Plan, will provide a near-term interoperability solution. This Action Plan will be performed in conjunction with the Tactical Channel Planning Project and Statewide Backbone Project and implemented using the following tasks:

Task IV.2-1 Develop Detailed Infrastructure Requirements. Using the prioritized interoperability gaps from the Channel Planning Project (many of which will be found in the Central Region and portions the Western and Southeastern Regions), identify potential radio high sites for implementation of the Channel Plan recommendations to provide VHF-UHF-800 simulcast/TACSTACK coverage in the identified areas. Where necessary, include deployment of consoles and audio interconnect devices as part of the Backbone Project to achieve some level of interoperability where necessary. Develop a detailed requirements document and vet/update through the established Consortium processes and tools. Use tabletop exercise tools, such as the Automated Exercise Assessment System (AEAS), to evaluate “what if” in realistic WMD-response scenarios.

Task IV.2-2 Procure, Integrate, Deploy, and Verify Equipment. Tailor the Interoperability Planning Consortium SEMP in managing the full implementation of the Command Channel Project, building from the requirements document above through deployment and verification. Following the proper procurement, systems engineering and integration processes, procure, monitor deployment, test, and verify requirements-based testing of the new infrastructure.

IV.3 Statewide 700-800 MHz Planning Projects

This project sponsors the immediate design of an integrated 700-800-MHz Project 25 trunked system statewide for all public safety Responders, with implementation to be executed in years subsequent to this planning effort. Near-term implementation projects would support local use of 800-MHz statewide systems, interconnection of these systems and the Command Channel network, and provisioning of 800-MHz subscriber devices to other users.

Problem: There are several 800-MHz trunked systems operating in Massachusetts, including statewide and municipal systems. These systems provide proprietary analog trunked interoperability in some cases, and single-agency coverage in others, and are not interconnected with other wide-area interoperability networks in the state. There are not adequate 800-MHz channels to support all public safety subscribers in the state, in part because of the sporadic deployment of municipal systems and statewide systems as well as the ongoing Nextel rebanding efforts.

WBS Template: The recently revised the 700-MHz band plan and service rules to promote the creation of a nationwide interoperable broadband network for public safety, in conjunction with the ongoing 800-MHz rebanding effort, will be used to plan a unified statewide 700/800-MHz network. The IERs from the Information Sharing Initiative will be used to develop the Channel Plan (see Tactical Channel Planning Project), which will be necessary when the 700-MHz band is implemented by commercial providers in the state. A unified 700-800-MHz network will be designed and, as resources become available, and deployed once the firm deadline of February 17, 2009 passes for the completion of the DTV transition. At this stage, we can only develop a detailed statewide 700-800-MHz plan in preparation for this transition, as well as provide 800-MHz tactical channels for the statewide Command Channel network (see Command Channel Project). Depending on available funding, completion of the network would be planned for 1014. The work plan tasks for this project include:

Task IV.3-1 Develop Detailed Network Requirements. A detailed requirements specification (including both “objective” and “essential” requirements) for a statewide 700-800-MHz network will be developed, supporting all public safety organizations in every city and town statewide, and specifying a standards-based inter-system interconnect capability permitting interoperable talk groups across the network. Standard talkgroup naming and prioritization conventions meeting day-to-day usage requirements as well as NIMS requirements will be defined. These requirements will also include near-term 800-MHz interconnect with existing 800-MHz networks using the evolving Project 25 Inter-RF Subsystem Interface standards in close association with the Backbone and SOP Projects. Also, perform technology reviews; attend Project 25 Phase 2 standards sessions, track 700-MHz auctions and commercial implementation progress, all to align the requirements document with offered capabilities and needs.

Task IV.3-2 Perform 700-800-Mhz Infrastructure Preparation. Perform preliminary design work for the 700-800-MHz system in terms of high-site selection (e.g., coverage optimization), backbone sizing (in cooperation with the Statewide

Backbone Project), control site accommodations, etc. This work will provide a means to estimate costs of the proposed statewide network.

Task IV.3-3 Develop 700-800-MHz RFPs. Develop the “template” RFP necessary to implement portions of the 700-800-MHz system statewide, using the requirements specification and SEMP as key attachments, and requiring the vendor to employ visibility into their systems engineering process. Also, develop an RFP for third-party performance verification, or employ in-house capabilities for the necessary measurement-prediction-requirements comparison.

IV.4 Continuity of Government Communications Projects

This project sponsors the coordinated planning and implementation of satellite subscriber devices, High Frequency (HF) Automatic Link Establishment and VHF radio (currently MEMA and Amateur capabilities), and transportable EOC networks to provide continuity of Government and public safety command and control before, during, and after major disasters.

Problem: There is no proper statewide use of satellite phone technology and the associated standardized SOPs for political leadership and Command Element communications in the event of a major disaster in which the landline telephone, cellular and LMR infrastructure is temporarily disabled (generators run out of fuel) or destroyed (e.g., towers or interconnecting hard lines knocked down or switching centers flooded). In addition, the Government Emergency Telecommunications Service (GETS)⁵ and Wireless Priority Service (WPS)⁶ are not employed consistently and effectively for all local and state officials statewide. Also, the employment of HF radio statewide in conjunction with the amateur radio community and with appropriate Federal authorities such as FEMA – primarily for use as a last-ditch orderwire – is inconsistent statewide. Portable EOCs exist, but communications between individual Cities and Towns, MEMA, and the Federal Government has not been developed in terms of organized hierarchical managed networks. These capabilities are therefore not included in, or assumed out of, most disaster response exercises performed in the Commonwealth.

WBS Template: An integrated approach to disaster communications will be taken statewide, including the requirements-based selection/procurement of satellite telephones, HF radios, LMR portable caches, priority commercial services, deployable Mobile Communication and Command/Control Centers, temporary communication facilities of any kind, and coordination and sustainment of these capabilities/services. This approach will include close cooperation with Federal authorities, as well as communications planning and execution (see the Protocol Initiative) based directly on NIMS requirements. These interrelated actions are defined in the following tasks:

Task IV.4-1 Develop NIMS-based Communication Requirements. Using the NIMS guides and ICS hierarchy/roles, develop specific communication requirements for large-scale incidents in which the disruption or loss of fixed terrestrial infrastructure (see Statewide Backbone Project) will be assumed. Using a

⁵ See <http://gets.ncs.gov/>.

⁶ See <http://wps.ncs.gov/>.

representation of a fully NIMS-compliant response, including both incident scene, regional, and area IC headquarters, and both fixed and mobile command elements, specify the IERs necessary to execute the NIMS-compliant response. Document these IERs in a requirements document for RSIC and SIEC vetting and acceptance. All command elements that would be dispatched in a major incident must be employed, and survivable consolidated dispatch centers (see Command Center Project) should also be considered for dispatch via satellite capability.

Task IV.4-2 Technology Assessment. Perform a technology survey and systems integration assessment of all emergency communication systems, develop SOPs in concert with the Protocol Initiative (see below, and establish frequent (periodic) use of the satellite phones, HF gear, and other equipment as part of a continuously operating statewide emergency communications backbone (see the Protocol Initiative Training and Exercise project). Develop specific installation and test plans for this emergency (voice and data) network and the associated interoperability information-sharing applications (in concert with the Statewide Backbone Project and Innovation Initiative).

Task IV.4-3 Procurement, Integration, and Test. Procure the necessary equipment to implement the statewide emergency communications network, verify operation, and begin regular operation according to the developed plans.

An integrated approach to disaster communications will be taken statewide, including the requirements-based selection/procurement of satellite telephones, HF radios, LMR portable caches, priority commercial services, in order to create a Strategic Technology Reserve (STR). This task will include close cooperation with Federal authorities, as well as communications planning and execution (see the Protocol Initiative) based directly on NIMS requirements. In this task we will procure deployable reserve capabilities to fill gaps identified in the study conducted in Task IV.4-2 described above. The equipment procured in the STR will be comprised of capabilities used in COG communications on a regular basis as much as possible. In this way, familiarity with this equipment will maximize the benefits of day-to-day Usage in the DHS SAFECOM “Optimal” sense while reserving its use for major disasters.

V. Protocols Initiative

In this context, we define a “protocol” as the rules that govern the syntax, semantics, and synchronization of communication, and accept that personnel “training” is inherently part of assuring the proper protocols are employed. This initiative is inherently part of all other statewide strategy initiatives, but it “brings in” the expertise needed to establish proper SOPs and training and establish such programs statewide. All of these SOPs, training, and exercises will be inherently based on multi-discipline and multi-jurisdictional interoperability.

V.1 Statewide SOP and MOU Projects

Responders and automatic systems sharing information in a mobile environment and employing voice band radios, particularly conventional radios, require SOPs for communications to maximize the flow of needed command and control as well as

situational awareness reports. The increasing (and beneficial) use of mobile data systems require SOPs as well, but many (not all) of these SOPs are “built in” to the applications and middleware that enable modern mobile data applications. This project will develop templates for these SOPs and assure their common development and adoption across all other relevant SCIP projects. In this regard, it will overlap in scope with these other projects.

Problem: The lack of consistent SOPs statewide – particularly for addressing cross-discipline and cross-agency interoperability (a vestige of a lack of interoperability systems) – is caused by a lack of information sharing and the media to support it. From the shared use of talk-around radios to use of a common shared channel or trunked talkgroups in a 700/800-MHz network, to the common voice radio procedures, unit/event/personnel terminology (see the Information Sharing Initiative), lack of SOPs has often threatened the lives of Responders and the public, as well as greatly reducing the effectiveness of information sharing.

WBS Template: Although SOPs are employed for existing regional shared systems such as BAPERN, NEMLEC, WEMLEC, CMED, and the State Police 800-MHz network, the expansion of these systems statewide and corresponding addition of new multidiscipline subscribers, requires extensive development of discipline-independent SOPs. This Project will employ Public Safety Enterprise Architecture to model cross-discipline and cross-jurisdiction technical and operational architecture, and then use this model in different scenarios to develop optimal SOPs to maximize the required information sharing (see the Information Sharing Initiative), minimizing error and delay. It is composed of the following tasks:

Task V.1-1 Develop SOP Protocol Template. By referencing best practices and NIMS guidance, we will develop a multi-disciplinary multi-jurisdictional SOP template. This template will be used to review existing SOPs for wide-area systems, and then recommend to the SIEC a unified SOP for each wide-area system.

Task V.1-2 Create SOPs for all Interoperability Channels in the Tactical Channel Plan. Using the template, develop common SOPs for each of the regional or interoperability statewide networks planned in all strategic initiatives. These SOPs will cover all interoperability scenarios and seek to provide the simplest activation and use possible, to minimize the usage complexity and the need for training.

V.2 Statewide Training & Exercises Projects

Training and exercises are critical to maintain readiness to use capabilities provided for emergency situations. In this strategic plan, we seek to establish interoperability capabilities that would be used day-to-day for intra- and inter-agency communications as a matter of course. In this way, public safety Responders are always using the same equipment (ideally) for daily operations that they would also use in any larger NIMS-based disaster response – up to the point where the day-to-day infrastructure is disabled or destroyed.

Problem: Although there have been great strides statewide in NIMS training, the same cannot be said for the role of communications interoperability training and exercises.

Exercises are too few and not sufficiently frequent. Often, communications and the potential issues and interoperability problems are assumed away or left unaddressed, but information flow occurs anyway for the sake of the exercise. In addition, many disciplines affected by these scenarios in real life are either not involved in the exercise, restricted to Command Elements alone, or their actions are assumed to minimize uncertainty. Perhaps most importantly, the equipment used or the way in which it is used differs from day-to-day use to such an extent that it does not meet the optimum interoperability Usage objective of the SAFECOM Continuum.

WBS Template: Based on the extension and expansion of regional and associated statewide interoperability systems, Training and Exercise regimens will be designed to provide a common approach for all Responders across all disciplines, jurisdictions, and levels of government. These regimens will be provided to all trainers and made available to all responders over a state-sponsored Interoperability Web Site. The objective of the Training regimen will be to maximize the benefit to the trainee while spending the least resource and, more importantly, the need for their time or travel. In this regard, we seek a “train-in-place” approach, where the need for such training is minimized by proper interoperability system design.

One approach to a demonstrable exercise program that will “prove-out” the effectiveness of the Interoperability plans is through the use of the LAN-based AEAS⁷. This tool, originally developed for the National Guard Bureau (NGB), permits multiple communications channels to be used in “what-if” exercises to demonstrate the value of the proposed interoperability channels on information sharing. The results of this “before-and-after” analysis can be demonstrated quantitatively based on public safety response time, fatalities, and other quantities from in the 11 simulated WMD scenarios. AEAS was evaluated as part of a review⁸ of models, simulations and games performed by Thoughtlink, Inc., for the the former Office of Domestic preparedness (ODP) exercise and training grant program from 2003-2004. The study reviewed and compared nearly 100 Emergency Management technologies that are available to jurisdictions. Costs vary from ‘free’ to expensive customized systems. AEAS is listed throughout the study in various graphs and charts in relation to other programs and there is a full-page review on page 61. As can be seen in this study, AEAS performed very well compared with other programs and version 1.0 is available at no cost.

In a similar way, the development of advanced exercises will be guided by the objective to “exercise in place” to the maximum extent. Major exercises will still be conducted, but will be able to increasingly rely on improved voice and data communications to minimize the impact on Command Elements and Responders, perhaps leading to a significant increase in the number of exercises to be performed. These common approaches to Training and Exercises are directly dependent upon the results of the Information Sharing and Mobility Initiative Projects. Development of these Training and

⁷ <https://collaboration.saic.com/sites/MA-INTEROP/pages/Planning%20Tools.aspx>.

⁸ Thoughtlink, Inc., *Review of Models, Simulations, and Games for Domestic Preparedness Training and Exercising, Volume II*, for Innovative Technology Application, Inc. (ITA), in support of ITA’s prime contract with the Office for Domestic Preparedness, Department of Homeland Security, Contract no. GS-35F-0132K/OJP-2002-BF-016, for Vienna, Virginia, October 2003.

Exercise Regimens will also employ one or more projects in the Innovation Initiative. The projects planned for Interoperability Training and for Exercises including the appropriate interoperability evaluation are as follows:

Task V.2-1 Develop Interoperability Training Template. For each of the strategic initiatives, develop a common statewide training program template. This template will be followed by each interoperability initiative to assure a common standard format and content to each training regimen is applied. The template will be designed to minimize the differences between training done for the specified equipment in routine intra-agency operation and inter-agency requirements. Each interoperability project will be responsible for its own user training, but will follow the template developed in this task.

Task V.2-2 Develop Interoperability Exercise Requirements. We will develop and document interoperability Exercise requirements needed to meet NIMS requirements and enable exercise and performance assessment of interoperability SOPs as a routine event, rather than only for special planned exercises. We will specify the interoperable communication requirements for all Responder and political leadership events, and define these requirements for all Exercises.

IV. Innovation Initiative

This fifth strategic initiative realizes the SAFECOM objective of promoting use of advanced technologies to support information sharing and interoperability. This initiative is intended to extract “lessons learned” from ongoing projects, such as the 4.9 GHz network in Brookline and the soon-to-be-deployed IP-phone link between CMED facilities. We also will need to experiment with mobile gateways using terrestrial and satellite mobile data services for ubiquitous situational awareness statewide (effectively putting the gateway in the vehicle), and interconnect between differing digital gateway devices. This initiative is intended to standardize the requirements for performing – and reporting – the results of these projects statewide (via the Web Site), as well as funding and performing selected technology projects.

VI.1 Innovation Template

Problem: The speed of communication technology development and the number of alternative technical approaches, combined with the lack of experience in the application of these technologies, prevents public safety agencies from properly evaluating their relevance in their own unique environments. Given the lack of communications systems engineering process available to public safety agencies, they are forced to buy and deploy communications capabilities without having developed proper requirements or SOPs for these technologies. As a result, the application may be inaccurately represent the true value of the technology to public safety users.

Many different advanced technology initiatives that support information sharing and interoperability are conducted throughout the Commonwealth, but with no statewide awareness or sharing of results. As a result, resources are spent to repeat mistakes and learn the same lessons – or no lessons – because of a lack of resources for this experimentation. There is often no awareness between two adjacent towns or

regional/state organizations, much less statewide, about capabilities and their promise to support information sharing and interoperability.

WBS Template: This project is to develop a standard framework to:

- Identify and refine user/system requirements
- Evaluate potential processes, protocols and/or technologies as to their capability in meeting these requirements.
- Publish available results.

This evaluation will be based on set criteria to determine when processes, protocols and/or technologies are needed, what they are being used to achieve, and to determine costs and benefits of the specific implementation. In the context of systems engineering, this framework is called “fast prototyping” and would be used to assess the value of advanced communication technologies in which there are significant uncertainties in performance and user requirements.

Task VI.1-1 Develop Technology Requirements Tracking Template. Develop a survey instrument or template for collection of detailed requirements and “lessons learned” about the innovative communications technology through its trial or initial deployment period. This template would include categories of information related to the elements of the Interoperability Continuum, such as the Technology itself, necessary SOPs, required Training, role in Exercises, and Usage. For existing projects, this survey instrument would collect standard information that would then be compared with the same response from other projects for a “side-by-side” comparison. Captured in proper Requirements Analysis tools (see Task I.2-3), these results would be made available to all public safety organizations statewide.

Task VI.1-2 Perform Technology Cost/Benefit Analysis. Develop a survey instrument or template for information defining a technical innovation project, including its implementation and anticipated sustainment costs. For existing projects, this survey instrument would collect standard information that can be then compared with the same response from other projects for a “side-by-side” comparison.

Task VI.1-3 Develop Innovation White Paper. Develop a common template to document and publish communications technology applications, providing non-technical descriptive information useful for management, system planners as well as Responders. Extract information from requirements collection using the template (Task V.1-1) to create this White Paper.

Task VI.1-4 Develop Proposal Template. Develop an Innovation proposal template including all elements of the project plan, including a technical narrative, level-3+ WBS, resource loaded network (RLN), milestones and delivery/demonstration dates, risks and mitigation plans, schedule, status reports, etc. The template will serve as the convention for all proposed innovation projects.

Task VI.1-5 Create Innovations Web Page. Develop a Web Page within the username/password-protected Web Site (see Type 'C' information sharing backbone, Section II), with search engine and new-content notification emails, that contains descriptions of innovative technology projects in the state. This "Innovation Page" would contain descriptions of the technology, its applications, and key points of contact to learn more – and perhaps directly support – the "fast prototyping" of the specified capability and its success.

VI.2 Innovate

Problem: The SIEC will need the capability to implement trials to determine performance of .technologies in realistic operational conditions.

WBS Template: This project is to develop a standard structure to record lessons learned and best practices from processes, protocols and/or technology implementations and make them available to organizations/jurisdictions to reduce implementation cost and facilitate standardization of technologies utilized.

Task VI.2-1 Develop Innovation Proposal. If the SIEC accepts the White Paper developed in Task VI.1-3, this indicates SIEC willingness to review the corresponding proposal. Following the template developed in Task VI.1, write a proposal for SIEC review and evaluation. Prepare and present an oral brief to the committee summarizing the proposal.

Task VI.1-2 Execute Innovation Project. Perform the innovation project according to the proposed plan, maintaining a comparison of expected results versus resources, key milestones achieved, and variances from expected results or project performance.

6.4 Short- and Long-term Goals for Implementation

6.4.1 Short-term Goals

The short-term goals for implementation are defined by success in achieving the capabilities sought by the five Massachusetts Homeland Security Planning Regions and a few Commonwealth agencies - in their submission of specific Action Plan proposals for funding from the NTIA PSIC Grant to the Commonwealth. These capabilities necessarily meet the interoperability Goals and Objectives established by the SIEC for Massachusetts interoperability in the context of Information Sharing (whether over the air or over "the net") in all conceivable hazards or environments. In summary, these short-term goals – of up to three years - can be have been selected by each Region and the results are shown in Table 6-1. The PSIC "Investments" are the same as the SCIP projects or project guidelines, but "rolled up" fro the 17 SCIP projects or project

guidelines into the maximum ten PSIC Grant Investments. Explanations for these choices can be found in subsection 5.5.3.

The explanation for the differences in investment selections by the Regions are based on the available legacy system capabilities in that Region, their performance (including reliability), and the perceived – and NIMS-enforced – need for communications. These regional choices also represent a prioritization of their regional needs. For example, a notable immediate Goal for the Central Region is to develop and finalize their Governance structure – clearly this objective is of high priority as it affects their Region’s decisions in all matters, including interoperability planning. For the Western Region, it’s realizing major improvements in the communications backbone that ties the communication centers and their radio resources in this remote and sparsely populated mountainous area– creating a reliable backbone from a set of disparate links. In this way, the short-term goals – and priorities - of the Regions are determined by the Action Plans they submitted, which “line up” with their prioritized Investments shown in the table. In reality, Success in achieving these short-term goals will achieve the SIEC vision within each Region.

**Table 6.1 Summary of PSIC Investment Requirements from
Massachusetts Homeland Security Planning Regions and State Agencies**

Investment		Homeland Security Planning Region					State
#	Title	Western	Central	North East	South East	MBHSR	
1	Governance and Funding		●				
2	Information Sharing Architecture		●		●	●	
3	Command Consolidation		●	●	●	●	●
4	Statewide Interoperability Backbone	●	●	●	●	●	●
5	Channel Planning and Command Channel Project		●		●	●	●
6	Statewide 700-800 MHz Planning Project					●	●
7	Continuity of Government		●		●	●	
8	Protocol Initiative		●				
9	Innovation Initiative			●			
10	Strategic Technology Reserve					●	

6.4.2 Long-term Goals

In the long run, the Regions would individually approach the SIEC vision for on-demand information sharing between stakeholders. Perhaps this sharing would even be “orchestrated” by “smart software agents” in their applications and communications firmware – now at the “edge” of communications and incident management technologies. As these regional systems approach the SIEC vision, another long-term

goal will be the target State's Executive Branch. This goal, stated as the second priority in their 2007 Strategic Homeland Security Plan, is to ensure that the artificial boundaries defining these five regions has not produced very real interoperability gaps. Thus, it is imperative that coordinated centralization of interoperability projects provide operational as well as technical coordination between the regions to avoid these gaps as the short-term goals are being met.

From the Federal perspective – and the perspective of firefighters in the tri-State system along the heavily wooded border of Vermont, New Hampshire, and Massachusetts – the state border has long not meant an interoperability gap. Driven by the shared hazard of a major forest fire, these organizations out of necessity evolved cross-state operational and technological interoperability. The lessons learned from these firefighters – which are repeated between state borders around Massachusetts – need to become formalized at the state's Executive levels, standardized, and evolved into a truly regional (multi-state) strategic plan. Development of this plan, and implementing its Initiatives, is another important long-term goal of the SIEC in Massachusetts and, likely, in other New England states.

6.5 Key Roles and Responsibilities

The ideal approach to Strategy Implementation – discovered many years ago in the integration of any Enterprise – is to provide strong centralized coordination and leadership from the Executive Branch for the empowerment and coordination of the “people on the ground” – trusting that the best among them know what must be done, while making sure no “stovepipes” are fostered or maintained. This is the model being employed by Massachusetts in bringing together the best public safety and service people in the state from its own ranks of stakeholders, and giving them the authority, as well as responsibility, to get the job done. The authority has come by way of an Executive Order to the SIEC, and it clearly demonstrates application of this ideal approach. In this regard, the roles and responsibilities of each body of stakeholders are described below.

6.5.1 Commonwealth of Massachusetts

The Governor through Executive Order has empowered the Massachusetts SIEC to implement the SCIP, but the state's role does not end there. The state has determined that it must have the responsibility of administering the PSIC matching grant to best benefit the regions – but do so with regard to the empowerment of the SIEC it has sought and achieved. More importantly, it will ensure that both the short- and long-term goals of the SCIP will be met in practice.

Next, it must establish the project teams needed to implement the plan's Initiatives – but this mundane task of building these teams is arguably one of its most daunting challenges. Given the natural tendency for organizational “stovepipes” to form if a project team is too monolithic (e.g., belonging to one state organization), and the expectation of this formation on the part of local stakeholders who will see the State administration as a means of supporting its own dominant stovepipes, an Integrated Product Team (IPT) approach will be adopted by Massachusetts in staffing these teams. In the IPT approach, the “product” is the system, SOP, Exercise, or in general,

capability, to be developed. The IPT staff is made up of all necessary domains of expertise, particularly unbiased user representatives, as well as project management and engineering/planning staff.

The IPT members are made up of personnel from stakeholder groups with the available time and resources to support the level of effort required. Most importantly, key project members below the IPT Lead must come from the region or the locality affected by this capability. The role of the Executive branch – and the empowered SIEC – is to make sure this appropriate representation is provided to each IPT. Furthermore, these IPT members will be shared across more than one IPT – therefore the term “Integrated” – as it ensures no solution “stovepipes” are created. The State must identify, develop and assign authority and responsibility to these IPTs to most efficiently implement the SCIP Initiatives and their underlying Action Plans.

6.5.2 The State Interoperability Executive Committee

Abiding by its Charter, the SIEC will:

- Approve of the IPT-based Management Plan to be developed
- Oversee and support the formation of the IPTs - and perhaps provide committee members as staff or identify appropriate regional personnel
- Perform regular status reviews form each IPT
- Verify that cross-IPT information sharing and awareness is occurring on a day-to-day basis
- Mitigate risks and arbitrate conflicts
- Report project status to the Executive Branch.

These roles and responsibilities are unique to the SIEC, and they provide a means for local public safety and service representatives, who have earned the respect and support from their colleagues, to directly influence future of all public safety and service communications and information sharing in the state.

6.5.3 Regional Communications Interoperability Subcommittees

The role of the Regional Committees will be to:

- Informing all stakeholders (e.g., local, tribal, regional, NGO staff) in their region about the regional projects being executed, their evolving status, and how they may help to their own benefit
- Identify appropriate (skilled and available) personnel to participate in the IPTs
- Verify that their user requirements are being properly collected and vetted for each project in their Region
- Provide IPT member unfettered access to end users and sites or facilities as needed throughout their region
- Distribute available system-level information to the IPTs early in the project lifecycle
- Provide the core regional project review subcommittee for the SIEC – which will not be able to perform this role for every project in every region (summing to at least 25 projects alone from the PSIC grant – see Table 6-1.

These roles and responsibilities will help ensure that local representation feeds the IPT requirements development and systems engineering and integration processes.

6.5.4 Local, Tribal, Regional, and State Organizations and Other Stakeholders

The organizations and individuals may be called upon to serve on an IPT, provide end-user information or requirements, review progress and suggest process or product improvements, through the course of project implementations in their jurisdiction, region, or discipline.

6.5.5 Integrated Project Teams

In the IPT approach, each major subsystem or component is developed as a distinct product by an interdisciplinary team. The team leader typically acts in the capacity of a “mini-program manager” and has cost, schedule and performance responsibility for that product. The team composition includes all members needed to make timely decisions, including customers and suppliers. This approach helps facilitate empowerment of the team for decision making at the lowest possible level.

Team composition contains members from all disciplines – including those from other IPTs - needed to support a concurrent systems engineering and implementation approach. The value of this approach is that it enables content integration between related projects while assuring the right multi-disciplinary expertise is available to all projects. This facilitates development of a system solution that is optimized for the entire life cycle including production and support. For example, a team may be composed of members representing the end user, design engineering, systems engineering, software engineering, manufacturing, test and evaluation, quality assurance, reliability and maintainability, and logistics support. IPT members do not necessarily spend 100 percent of their time as part of one team, and may belong to several teams.

The overall SCIP program will contain several product teams. For each product (SCIP Initiative Action Plan project objective) that is comprised of hardware and software components, the responsible team contains both hardware and software engineers. Hardware team membership includes engineers with each of the skills that are required by the product development. The largest benefit to this approach is that it enables decision making to occur in a timely manner, accomplished through the presence of all disciplines needed for resolution of issues and problems and the empowerment of decision making at the lowest possible level. In this way, the IPT will take advantage of team member expertise to produce the “right” product the “first” time. Concurrency in addressing production, test, and sustainment shifts most engineering design changes to earlier in the program and reduces the overall number of changes incurred – thus providing a better quality product in less time and at lower risk.

The IPT approach uses event-driven scheduling. This approach needs to be factored into the Systems Engineering Management Plan (SEMP) and other plans when defining procedures. Event-driven scheduling relates program events to their accomplishments and corresponding accomplishment criteria. An event – such as completion of a new microwave path - is considered complete only when all accomplishments are complete as defined by the corresponding criteria (e.g., successful live radio calls and Sharepoint

information sharing over the link). This approach reduces risk by ensuring that product maturity is incrementally demonstrated prior to the start of subsequent activities.

6.6 Success Factors and Performance Measures

6.6.1 Success Factors

The SIEC had developed a list of success factors that are milestones/accomplishments that must be achieved for the state to be successful in implementing the SCIP. A listing of the critical success factors as identified by members of the SIEC is as follows:

- Governance
 - Full-time POC
 - Fully representative SIEC appointed – requires authority to represent their respective agency/discipline
 - Maintained structured meeting schedule/agenda
 - Cascade to regional/discipline specific organizations as appropriate
 - Legislated authority enabling SIEC
 - Coordinated SOPs/MOUs - MOUs between regions, disciplines, stakeholders (ex. DCR)
 - Collective agreement on some definitions and acceptance of standards and protocols for interoperability - definition of criteria (e.g., what is “high value”?)
- Active participation, collaboration and buy-in among local/tribal, state, federal entities, NGOs, elected officials - includes working groups chaired by voting members of SIEC
- Funding: ability to secure funding and prioritize projects based on monies, and ability to sustain programs - coordinate among funding sources
- Plan based on prioritizing agreed-upon high-value projects - map benefits to projects
- Communication and education of progress, benefits, and achievements (branding) - showcase successes and quick-win examples to produce tangible results
- Have access to technical expertise - communities of practice, working groups
- Build on successes of existing plans
- Develop and periodically review a strategy for achieving public safety interoperability
- Recommend strategies to improve wireless interoperability between public safety agencies communications systems – including: MOUs, SOPs, training and exercises, awareness
- Process for capturing, maintaining, and sharing “lessons learned”
- Determine standards to ensure consistent development of existing and future information sharing and communications infrastructure

6.6.2 Performance Measures

The SIEC Collaborative Session specified some high level Performance Measures applicable to the derived Strategic Initiatives.

They are as follows:

Governance Performance Measures

- Full representation and regular participation/attendance of all disciplines and regions through voted Charter
- Active committees and subcommittees overseeing the execution of SCIP projects
- Achieve quality certification for application of best practices to project implementation (ex. CMMI, ISO, etc.)
- lead time for distribution of materials (pre- and post-)

Funding Performance Measures

- Variance between 'what is needed' and 'what is received'
- Successful coordination of grants and other acquisition funds to meet project timelines
- Successful sustainment funding and support for long-term operation of project-developed systems
- Number of new funding sources (state, federal, NGOs) identified to support the program

Information Sharing Performance Measures

- All information sharing needs and expectations collected, standardized, and met by architecture - operational needs captured
- All critical Responder communications using a reliable, integrated statewide backbone
- A moment-to-moment situational awareness in adjacent towns and statewide is available at priority, then all, command centers statewide

Mobility Performance Measures

- At least two command and control channels available first for priority areas and, eventually, all state area
- 700-800-MHz channel plans meeting all mobile voice, data, and video requirements (for all disciplines) from the Information Sharing Initiative
- Top-down and bottom-up NIMS command and control communication requirements without use of a terrestrial infrastructure

Protocol Performance Measures

- Standard SOPs for all systems developed or recreated using a standard format, e.g., % accomplished
- Standard COML-based NIMS training and exercises used by all disciplines and regions

Innovation Performance Measures

- Establish accepted practices for documenting, initiating, and publishing emerging technologies
- Ongoing information sharing and broadband wireless projects captured and shared statewide
 - Number captured/shared
 - % projects implemented

Performance Measurement Reporting and Dashboard

The SIEC has discussed that performance measures will be further defined in the detailed statement of work for the Governance Initiative and this work has already begun. The SCIP Performance Measures will be reported to the SIEC on a quarterly basis and will utilize the report template shown in Figure 6-3 below.

Commonwealth of Massachusetts - Statewide Communications Interoperability Plan **SCIP Program Quarterly Report**

SCIP Mission: " Stakeholders optimally share critical information in a rapid, efficient, simple, reliable and and sustainable way utilizing a variety of video, voice and data technologies by following common protocols.

Functional Area Goals / Obj#	Goals/Objectives	Performance Measure	Annual Performance Goal	Vital Sign	Status	Recommended Actions/Comments
Governance G1	SIEC has statewide authority to establish architecture (operational, system, and technical standards), procedures, and funding.					
Objective G1-01:	Obtain a Statute or Executive Order establishing the SIEC and Regional Sub-Committees with appropriate authorities.			Governance		
		Executive Order Completed	Executive Order Completed			In process - lawyer assigned
Objective G1-02:	Establish a method for conflict resolution among stakeholders.			Governance		Roberts rules already exercised at SIEC meeting of November 2007
		# of motions proposed				N/A
		# of motions passed				N/A
		# of motions failed				N/A
		% SIEC Members rate SIEC participation as "Satisfactory"			75%	
Objective G1-03:	The SIEC shall provide a representative proactive decision-making body with statewide architecture definition and resource allocation authority established in its charter.			Governance		In process - Charter is under development and in second
		# of representatives			TBD	
		# of decisions made			N/A	
		Total \$ allocated			TBD	

Figure 6-3: The SCIP Program Detailed Quarterly Performance Report

The detailed SCIP performance measures will be rolled up into a dashboard report that will communicate out from a broader perspective the status of the program. This allows for a unified perception of where the program stands and where resources may need to be allocated to a specific area. The dashboard reporting will look similar to the representation in Figure 6-4, in which the Interoperability Continuum elements of interoperability quantified by the Performance Measures described above will be displayed to the SIEC, Regional CIS, Policy Makers, and perhaps, practitioners alike.



Figure 6-4: The SCIP Program Performance Dashboard

6.7 Plans for Educating Policy Makers and Practitioners

6.7.1 Educating Policy Makers

The plans for educating policy makers will be developed as part of the Interoperability Project Planning effort – a project in itself. It will include the development and distribution of very brief status/completion reports for the overall SCIP Implementation process. These reports will focus on the progress, needs, and enhanced capabilities now available to the Commonwealths public safety and service organizations and stakeholders because of the project.

In addition, the Massachusetts Interoperability Website will generate stakeholder (including the public) interest in the process and, most notably, the demonstrated benefit versus incurred costs. This interest will produce feedback to these policy makers – who will then need more information as they prepare to make their next decisions (such as issuance of the SIEC Executive Order).

6.7.2 Educating Practitioners

All stakeholders, including practitioners, will have direct access to the Interoperability Website as well as the various technology and SOP training programs they will experience as new capabilities emerge from these projects. In fact, the development of these materials and programs represent a SCIP Initiative in itself (the protocol initiative), which will draw on expertise in Organizational Development to develop outreach plans to educate these practitioners.

6.8 Plan for Overseeing Operational Requirements, SOPs, Training, and Technical Solutions

6.8.1 Oversight Plan

The SIEC has been given oversight authority through the issuance of the Governor's executive order. The regularly scheduled meetings of the SIEC will be used to discuss project progress and ensure that operational, technical, training, and SOP standards are being utilized.

6.8.2. Operational Requirements

Operational requirements will be collected and vetted by practitioners in each Region and relevant Stage agency or stakeholder group using a secure off-the-shelf Web-based Operational Requirements Collection and Analysis Tool, which will employ a similar dashboard approach for 7 × 24 executive status review. More detailed graphical, tabular, and textual requirements specification summaries and reports will also be automatically generated by these tools to provide the "material" of oversight.

In addition to the captured, indexed, and vetted Operational Requirements, this tool will also enable the definition of one or more specific quantifiable tests to verify the capability of the ultimate IPT output product to meet each and every Operational Requirement. The tool will document each quantifiable test along with each requirement and show the current test result status, if any, for each requirement. The source of these quantities will be independent verification and validation (IV&V) of these Operational Requirements performed by the very practitioners and other stakeholders who will use the new capability on a day-to-day basis, not members of the IPT who developed the capability under test. It is these quantities, including those high-level Performance Measures defined above, that will drive the dial settings on each projects performance dashboard as well as feed the summary briefs for Policy Makers described above.

6.8.3 Standard Operating Procedures

The oversight of Standard Operating Procedures (SOPs) – as applied to the improved interoperability capabilities to be developed and their value for end users – is in their immediate reaction to their disclosure, much less their use in practice. To minimize the risk that these SOPs will not meet their needs or fully utilize the new capabilities being provided in the SCIP Initiatives, representative end users will be on the individual project IPTs developing these SOPs. This risk-minimizing benefit of the IPT approach will help ensure that not the SOPs are developed with direct input and participation of the very end users intended to employ them in practice.

6.8.4 Automated Exercise Assessment System. One means of testing these SOPs will be considered that permits repeated testing under the same conditions without risking confusion "in the field" is use of the AEAS. AEAS exercises emergency responders and decision makers in response to terrorist attacks involving weapons of mass destruction (WMD). AEAS is easily deployed on personal computers (PCs) to support exercises throughout the nation. Communities use AEAS to test their readiness

for WMD incidents, receive immediate feedback on command decisions, observe the consequences of those decisions, and receive response assessments at multiple echelons.

Intended use. AEAS is intended for use by emergency response and management communities at jurisdictional levels from municipality up through the state. Exercises are conducted in a single room, with all participants present and able to interact face-to-face. Each participant operates a PC workstation that provides scenario information and situational message traffic. All actions are recorded and participants are provided continuous feedback throughout the exercise. The table in Figure 6-5 lists functional areas that can be trained using AEAS.

Through the use of validated scenarios, the relevant IPTs, Regional CIS, and SIEC will be able to assess readiness of the SOPs to support emergency incident responders and support agencies, including

transportation, public works, and trade unions. The stakeholders involved will also receive immediate feedback on command decisions, see real-world consequences of the decisions, and receive standardized response assessments and readiness measurements at every level (e.g. decision maker, coordinator, respondent, etc). At a minimum, this approach will include determining current readiness, validating needs, analyzing responses, and identifying gaps and shortfalls due to the SOPs. These assessments will provide a roadmap for the relevant IPT to make SOP improvements and then retest them in a realistic simulated environment.

Scenarios. The core of the automated assessment and readiness system is library of eleven domestic WMD terror scenarios based on the best scientific knowledge currently available. Collectively, these scenarios shall cover the full range of likely domestic WMD terrorism incidents—such as anything from an anthrax hoax letter to a multi-location, integrated, coordinated, chemical, and biological terrorist attack.

Standards, Tasks, and Conditions by Community. The exercises must be based on a standardized set of Standards, Tasks, and Conditions, both common and specialty-specific, as well as the SOPs under test.

Mission-essential task list. The Standards, Tasks, and Conditions include a mission-essential task list, developed specifically for each scenario and validated.

Administration	Law Enforcement
Animal Control	Logistics
Chaplaincy	Military Support
Communications	CISM/Mental Health
Debris Management	Medical Facilities
Donations Management	Mass Care
Environmental Health	Operations
Elected Official	Public Health
Emergency Management	Public Information
EMS	Public Works
Energy	Resource Management
EOD	Search and Rescue
Fire	Scene Safety
Fatality Management	Scene Security
Food and Water	Trade Unions
HAZMAT	Transportation
Incident Command	Veterinary Medicine
Information and Planning	Voluntary Organizations

Figure 6-5: The AEAS Exercise Audiences

Collective tasks. The Standards, Tasks, and Conditions also include collective tasks for each scenario.

Response and management communities. Standards, Tasks, and Conditions have been developed specifically for the various response and management personnel, including transportation, public works and trade unions.

Critical-path timeline model. Scenarios are based on a critical path timeline model, in which the course of an event unfolds in time, and the responses and decisions of those taking part in an exercise affect the progress and outcome of the exercise. It is essential that the actions and decisions of those participating in an exercise have the same effects and consequences within the exercise as would occur in the real world. The scenarios unfold in near-real time during the early stages of an incident, and time will be more compressed as the incident evolves into the consequence-management stage.

Response Assessment. The system collects data on the course of an exercise as it takes place. During an exercise, the system provides general feedback on the status of the incident and the adequacy of the response. After the exercise, the system provides a detailed, printable final Response Assessment. This Assessment includes a step-by-step diary of the exercise, showing the responses of all participants as well as the integrated and interactive consequences of the responses. The Response Assessment also provides a detailed overview of the response, measured against standards established by the Stakeholders.

Conduct of exercises. Exercises can be conducted at a single facility in a single room, with all participants present and able to interact face-to-face. It is expected that exercises will have an average of twenty participants. Each participant would have his / her own PC workstation connected to a local area network. All information and messages will be presented to the participants on the workstation (see Figure 6-6) and the participants will enter actions and responses and receive continuous feedback through the workstation. It is critical, however, that the participants also interact face-to-face during the conduct of an exercise. At the end of

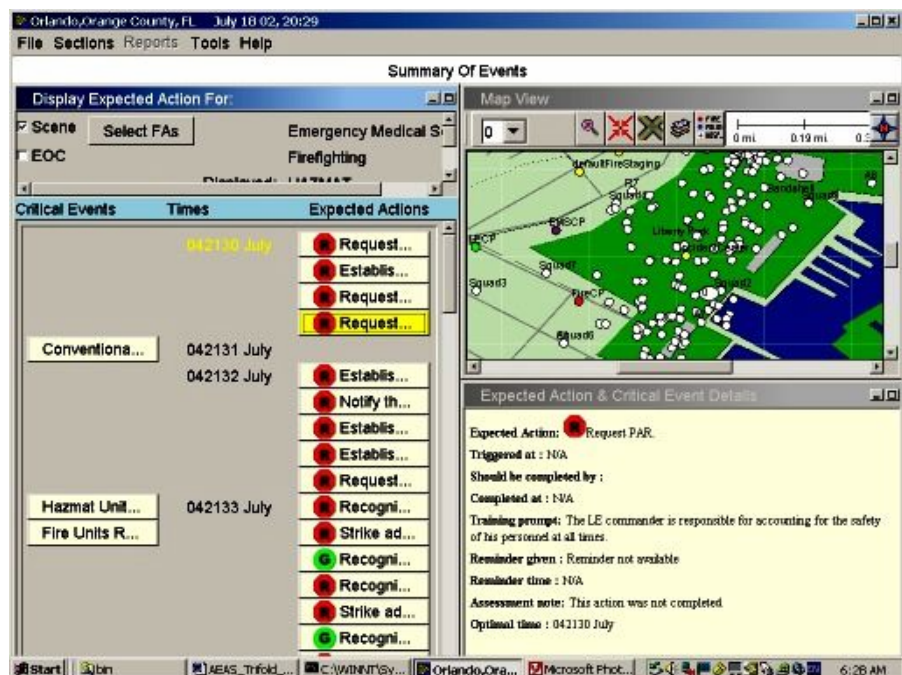


Figure 6-6: AEAS User Screen on PC.

the workstation (see Figure 6-6) and the participants will enter actions and responses and receive continuous feedback through the workstation. It is critical, however, that the participants also interact face-to-face during the conduct of an exercise. At the end of

the exercise, participants will receive an action-by-action diary of the exercise, as well as an overall readiness and response assessment, detailed and specific enough to serve as a guide to improving community readiness.

The AEAS software is free to all US governments and has been developed and provided through the National Guard Bureau.

6.8.5 Training

Tabletop. As with SOP evaluation, AEAS is a powerful tool for training and evaluation of such training in a controlled and repeatable environment. The repeatability assures that difficult or complex situations can be retried to investigate and possible element of SOPs (or other human action plans) is not well understood.

Field. Once “tabletop” exercises such as AEAS have proven the training for end-users to master the new capability, operational field tests of this training can be scheduled as a non-intrusive part of day-to-day activities as well as in monitored exercises.

6.8.6 Technical Solutions

The technique used to capture and verify Operational Requirements is equally well employed in best practice implementation efforts using the same off-the-shelf Web-based requirements collection, vetting, and test tool described above. Each requirement is documented with a corresponding quantifiable test and test history – along with dashboard presentation – so the status of an evolving or completed capability in meeting all requirements is easily tracked by the relevant IPTs, the Regional CIS, the SIEC, and ultimately, the Policy Maker (if required).

7 Funding

7.1 Introduction

There are multiple critical success factors (CSF) in making strategic progress in the Massachusetts Statewide Communications Interoperability Program (SCIP). One of these factors is to allocate funds to the strategic initiatives/projects in order of priority that they have been given by the governance body; the SIEC.

By using this approach the SCIP program will stay on track of the initial goals that are set and continue to demonstrate continued progress. Progress towards strategic goals is what keeps stakeholders involved and supportive. Many times in state government federal grant programs dictate what is accomplished. While the states appreciate the money, this approach can lead to investments being made that are outside of the state's strategic priorities. Funding sources should be pursued that support the priorities of the program instead of the opposite.

The SIEC has viewed the Statewide Communications Interoperability Program comprehensively and views this program as a group of projects that are necessary to ensure interoperability statewide. Given this approach the state will be using many sources of funds to support these initiatives and they will be coordinated and funding targeted to mutually agreed-to priority initiatives.

The PSIC grant is one of those sources of funds but there are many which can be utilized. This section contains the overall program needs and then shows how the SIEC decided specific grant funds provided by the PSIC grant will be allocated.

We have also included funding as an initiative within the SCIP plan given the importance of funding to the program and its viability. It will be planned and resourced like any of the other projects to ensure that it gets the necessary resources and visibility that are necessary.

7.2 Project/Initiative Funding

The SCIP contains six major initiatives and fifteen projects (See Figure 7-1) that have been identified by the various focus groups and prioritized by the SIEC. Through numerous hours of strategic planning the projects depicted in Figure 7-1 have been determined to be critically important to achieving the goals of statewide interoperability. Each of these projects will require funding support starting with project initiation through project close out.

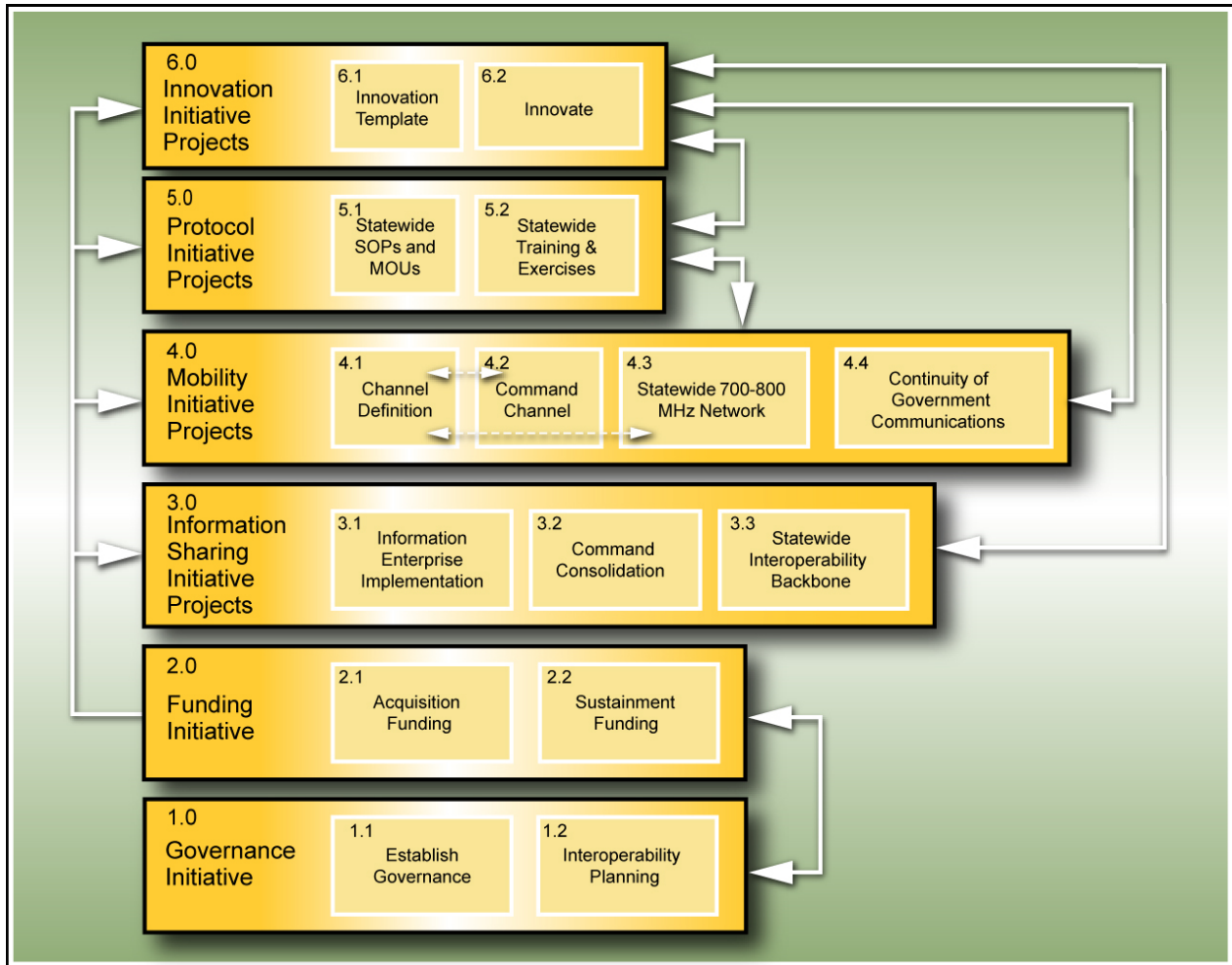


Figure 7-1: The SCIP Includes Six Major Strategic Initiatives and Thirteen Projects

The rough order of magnitude (ROM) estimates for each of the projects are shown in Table 7-1. As the scope and approach of each of the individual projects are more defined the estimates for each project will be revised.

Massachusetts Statewide Communications Interoperability Plan

Initiative/Project	Project ROM	% of Total	Initiative ROM	% of Total
I. Governance				
I.1 SIEC--Regional Governance Projects	\$ 350,000	1.29%		
I.2 Interoperability Planning Project	\$ 3,600,000	13.24%	\$ 3,950,000	14.52%
II. Funding				
II.1 Acquisition Funding	\$ 300,000	1.10%		
II.2 Sustainment Funding	\$ 300,000	1.10%	\$ 600,000	2.21%
III. Information Sharing				
III.1 Architecture and Implementation Project	\$ 1,500,000	5.52%		
III.2 Command Consolidation Project	\$ 675,000	2.48%		
III.3 Statewide Interoperability Backbone Project	\$ 5,150,000	18.94%	\$ 7,325,000	26.94%
IV. Mobility				
IV.1 Channel Planning Project	\$ 2,175,000	8.00%		
IV.2 Command Channel Project	\$ 8,075,000	29.69%		
IV.3 Statewide 700-800 MHz Network Project	\$ 2,000,000	7.35%		
IV.4 Continuity of Government Communications Project	\$ 2,000,000	7.35%	\$ 14,250,000	52.40%
V. Protocol				
V.1 Statewide SOPs Project	\$ 600,000	2.21%		
V.2 Statewide Training and Exercises Project	\$ 390,000	1.43%	\$ 990,000	3.64%
VI. Innovation				
VI.1 Innovation Project Planning and Justification	\$ 35,000	0.13%		
VI.2 Project Result Tracking and Integration	\$ 45,000	0.17%	\$ 80,000	0.29%
Total ROM: \$ 27,195,000 100.00% \$ 27,195,000 100.00%				

**Table 7-1: Rough Order Magnitude Estimates
for Each Project / Initiative Were Developed and Approved by the SIEC**

These project estimates encompass the first three years of the SCIP program to coincide with the corresponding 3 year funding cycle of the PSIC grants.

The ROM costs of these initiatives and the associated projects are estimated to be \$27.195M. This estimate is subject to revision as each project is further defined and they all proceed through the various phases of a project lifecycle.

The priority initiatives, action plans, and their tasks will be performed and completed first, with less critical tasks begun – but perhaps not completed – until funding allows.

7.3 Potential Sources of Funds

The following section identifies existing sources of funds that could be used to support the 15 projects identified by the SIEC. As in any program this list is subject to revision as new sources are identified and the program continues to evolve. The table below will become the basis of a report that is submitted to the SIEC as a deliverable of the Acquisition Funding Project.

Table 7-2 shows a listing of the sources of funds that could be used to fund the before-mentioned initiatives/projects identified in the SCIP.

Table 7-2: Potential Sources of Funds Will Be Researched and Presented to the SIEC on a Regular Basis

Source of Funds	Level of Government	Sponsoring Agency	Fiscal Year	Amount
Public Safety Interoperable Communications (PSIC) Grant	Federal	Department of Commerce – National Telecommunications and Information Administration (NTIA)	FFY07	\$21,000,000
Urban Area Security Initiative (UASI) (Metro Boston only)	Federal	Department of Homeland Security	FFY07	\$14,210,000
State Homeland Security Grant Program	Federal	Department of Homeland Security	FFY07	\$11,800,000
Law Enforcement Terrorism Prevention Program	Federal	Department of Homeland Security	FFY07	\$8,430,000
Metropolitan Medical Response System	Federal	Department of Homeland Security	FFY07	\$774,435
Transit Security Grant Program	Federal	Department of Homeland Security	FFY07	\$24,724,394
Emergency Management Performance Grant	Federal	Department of Homeland Security	FFY07	\$5,035,048
Buffer Zone Protection Program	Federal	Department of Homeland Security	FFY07	\$577,500

Massachusetts Statewide Communications Interoperability Plan

Table 7-2: Potential Sources of Funds Will Be Researched and Presented to the SIEC on a Regular Basis (Cont'd)

Source of Funds	Level of Government	Sponsoring Agency	Fiscal Year	Amount
Ferry Security Grant Supplemental Program	Federal	Department of Homeland Security	FFY07	\$675,080
Port Security Grant Supplemental Program	Federal	Department of Homeland Security	FFY07	\$1,004,523
DPH - Assistant Secretary for Preparedness and Response (ASPR) – Hospital Preparedness Program	Federal	Department of Health and Human Services	FFY07	\$8,660,567
HHS – DPH - Grant B	Federal	TBD	FFY07	TBD
DOJ – Byrne Justice Assistance Grant (JAG)	Federal	Department of Justice	FFY07	\$6,382,251
COPS Technology Program	Federal	Department of Justice; Office of Community Oriented Policing Services	FFY07	\$5,948,925
USDOT – Federal Highway	Federal	Department of Transportation	FFY07	TBD
IT Bond Funding	State	MA-ITD – Information Technology Division	SFY	TBD
State Appropriation	State	Various State Agencies	SFY	TBD
Municipal/Local Appropriations	Local	Various Municipal/Localities	Municipal	TBD
Non Profit (American Red Cross)	Non Profit	American Red Cross	SFY	TBD
Private Foundation	Private	TBD	SFY	TBD

7.4 Mapping the SCIP Initiatives/Projects to Funding Sources

The charts represented below in Figures 7-2, 7-3, and 7-4 show the initiatives/projects matched against potential funding sources. A full foldout of this table is contained in Appendix D of this plan. The circles that are displayed in the intersections represent whether the funding source is considered to be a “best”, “possible”, or “no match” possibility.

For display purposes the charts are split between DHS sources of funds and Health and Human Services (HHS), United States Department of Transportation (USDOT) and state/private/non profit source of funds.

**Massachusetts Executive Office of Public Safety and Security
Statewide Communications Interoperability Plan (SCIP)
Strategic Project Initiatives by Potential Funding Sources**

Initiative/Project Names	ROM Project Estimates	Potential Funding Sources				
		State Funding	Local Interoperability	Municipal/Local Funding	Non Profits	Private Foundation
I. Governance - SIEC Regional Governance	\$ 350,000	●	●	●	●	●
I. Governance - Interoperability Planning	\$ 3,600,000	●	●	●	●	●
II. Funding - Acquisition Funding	\$ 300,000	●	●	●	●	●
II. Funding - Sustainment Funding	\$ 300,000	●	●	●	●	●
III. Information Sharing - Architecture and Implementation	\$ 1,500,000	●	●	●	●	●
III. Information Sharing - Command Consolidation	\$ 675,000	●	●	●	●	●
III. Information Sharing - Statewide Interoperability Backbone	\$ 5,150,000	●	●	●	●	●
IV. Mobile Interoperability - Tactical (Voice) Channel Planning	\$ 2,175,000	●	●	●	●	●
IV. Mobile Interoperability - Command Channel	\$ 8,075,000	●	●	●	●	●
IV. Mobile Interoperability - Statewide 700-800 Mhz Planning	\$ 2,000,000	●	●	●	●	●
IV. Mobile Interoperability - Continuity of Government Communications	\$ 2,000,000	●	●	●	●	●
V. Protocols - Statewide Standard Operating Procedures (SOP)	\$ 600,000	●	●	●	●	●
V. Protocols - Statewide Training and Exercises	\$ 390,000	●	●	●	●	●
VI. Innovation - Project Planning and Justifications	\$ 35,000	●	●	●	●	●
VI. Innovation - Project Results Tracking and Integration	\$ 45,000	●	●	●	●	●
Totals:	\$27,195,000					

		Best	Possible	None
Quality of Match	●	◐	○	

Figure 7-4: HHS/USDOT and Others

This chart will be used to define a more detailed financial funding strategy that matches each project/initiatives with the best potential source of funds.

The SIEC plans to consider creating a public/private foundation that can receive funds or donations from other foundations, corporate partners, private citizens etc. An example of this type of foundation is the New York Unified Court system called the Center for Court Innovation. <http://www.courtinnovation.org/>

Founded as a public/private partnership between the New York State Unified Court System and the Fund for the City of New York, the Center for Court Innovation is a non-profit think tank that helps courts and criminal justice agencies aid victims, reduce crime and improve public trust in justice. The Center combines action and reflection to spark problem-solving innovation both locally and nationally.

In New York, the Center functions as the court system's independent research and development arm, creating demonstration projects that test new ideas. The Center's projects include community courts, drug courts, reentry courts, domestic violence courts, mental health courts.

For example, a foundation similar to the NY Center for Court Innovation could be used to support the SCIP innovation initiative and provide the forum for innovation in public safety in Massachusetts.

The following section provides the overview of the initiatives/projects that pertain to funding. The details for these projects and tasks associated with them are found in Section 6.0.

7.5 Plan to Obtain Initial Funding

Our plan to obtain initial funding is embodied in the SCIP project called "II.1 Acquisition Funding." This project is included in the plan and will be managed, planned and resourced like the other projects within the SCIP program. This project is also described in Section 6.0 and includes the following detailed task plan.

II.1 Acquisition Funding: This project is to develop acquisition funding strategies for all of the initiatives/projects contained within the SCIP. Although the primary funding will be coming from the PSIC grants for these initiatives, there are other funding sources which have been identified and can be used to support these projects. This project will document more details about each project and put estimated costs on the acquisition or startup of each project.

Task II.1-1 Develop Detailed Project Cost Estimates. Each project will need to have a project scope of work developed in order to estimate detailed project costs. These scopes of work should contain the breadth and depth of each initiative. The statement of work or project documents will utilize the state's standards for project management (i.e. PMI, CMMI) that have been established by the state's project management office.

Task II.1-2 Develop a Project Cost Benefit Analysis. Each project will include a formal cost benefit analysis in order to communicate the potential benefits and return on the investment than can be realized from execution of the project. Once the project plan is completed each project will be presented to the SIEC for review, feedback, and approval.

Task II.1-3 Create Project Accounts. Each specific project will have separate accounts within the state accounting system so that the flow of funds in and out of each initiative can be tracked and reported to the SIEC. Financial visibility into the status of each initiative will ensure that continued support by the SIEC members of the goals for each project/ initiative in the statewide plan.

Task II.1-4 Create Project Uniform Financial Status Report. We will develop and use a uniform financial status report for each initiative that will be reported on at each SIEC Executive Meeting. Using a standardized and consistent project finance status report will allow SIEC members to quickly assess the inflows and outflows of funds from an initiative/project. If this uniform financial status report is already being used in Massachusetts state government we will adopt an existing one otherwise we will create one.

Task II.1-5 Allocate Funds from Existing Grant Programs. Perform detailed research on existing grant programs; meet with stakeholders of each grant program and determine allocations that can be used to support projects/initiatives; make recommendation and request comment/approval from the SIEC, and finally, perform allocations to projects.

Task II.1-6 Research and Apply for New Grants/Other Sources of Funds. This task is the most substantive task in this project and includes the following items:

- Perform detailed research and identify new grants or other sources of funds that can support SCIP projects;
- Make recommendation to pursue new funding sources and request comments and approval from SIEC;
- Upon approval to pursue a new funding source, develop and write grant applications; provide ongoing status on grants.

The SCIP program will be kicked off using the PSIC Grant with the required state and local match requirements. In parallel other sources of funds will be identified where applicable and allocated to the projects. The SIEC has begun this process by allocating the initial receipt of the PSIC grant funds to the projects. *SCIP Projects*

Other sources of funds that can support initial startup of the SCIP program will be analyzed and then allocated to the targeted projects.

7.6 Plan to Sustain Funding

Our plan to sustain funding will be developed within scope of the **II. Funding Initiative**. In our project planning and estimating we will include the total costs of each project which includes implementation costs and then six months of operations subsequent to project end.

II.2 Sustainment Funding: This project is to develop a plan for sustained funding for:

- Projects initially identified in the SCIP plan;
- New projects that are defined and approved by the SIEC; and
- Ongoing sustained funding for capital equipment purchased through the project initiatives.

Task II.2-1 Develop Strategy for Sustained Funding for Each Project. The strategy for sustained funding for each project is dependent on the funding strategy for the initial startup and how they were funded initially (See Figure 7-1)

The total cost of ownership acquisition. The sources of funds to sustain a particular project can be identified for each project will be determined while the project is being estimated so that ROI and the cost benefit analysis can be take into consideration in the long-term financial needs of a project: The detailed project cost model will extrapolate the sustained costs needed and then the appropriate funds from the targeted source of funds will be requested.

This process will include meetings with individual regional stake holders and their political entities to explore the local and regional match requirements as well as development of local/regional/state appropriations requests. The correct tactics will be determined by the nature of the individual project that is requesting funding.

Task II.2-2 Maintain Project Budgets. This project encompasses the activities necessary to maintain project budgets. It includes the running of financial reports from the state's accounting system for each project, and reporting of ongoing financial status to the various stakeholders at the region or the state level. The project financial status report will be uniform across each of the projects.

8 Close

The Massachusetts SCIP derives and defines six critical Strategic Initiatives (See Figure 8-1) or Programs, each of which has two or more specific projects to be executed. Near-term actions are required to refine these initiatives (develop detailed Work breakdown Structures, assign resources, create the resource Loaded network, etc. – the right PM functions), launch these initiatives (assign personnel, spaces, materials, accounts, etc.), followed by a process to maintain progress (project tracking) on each initiative over time. In this regard, the **Governance Initiative** for the development of charters, assigning authority, and establishing statewide project planning and implementation capability, is fundamentally important and should begin immediately as it lays the structure necessary to achieve all other initiatives. The Governor's order formally establishing and empowering the SIEC as an advisory body to the Secretary of Public Safety and Security on interoperability priorities, planning and purchases is a significant milestone on the path to a coherent and consistent governance structure.

Although the Public Safety Interoperable Communications (PSIC) Grant will provide needed near-term investment to begin the initiatives projects, many other funding sources for procurement and sustainment are required. The **Funding Initiative** begins laying out the PSIC grant (and other) funding and will identify, vet, and complete the necessary paperwork in a timely fashion. All funding sources are important to these initiatives, particularly in their fledgling stages.

The **Information Sharing Initiative** provides strong foundations for all other initiatives and should be refined, programmed, and initiated as soon as start-up funds are available. The two priority projects would be the Information Enterprise Implementation project and the Statewide Interoperability Backbone Project. Both projects are immediately critical to the State's Homeland Security posture. Similarly, and arguably as importantly, the Command Channel project in the **Mobility Initiative** has significant immediate value, particularly to the Central Region. In both cases, detailed project plans need to be developed and the work begun, which can be done for minimal resources.

The **Protocol Initiative** – after refinement and project planning – should begin to establish standards for all MOUs and SOPs as well as Training and Exercise plans in the state. The resulting standard frameworks will not only meet best practices, but fulfill the needs of the SIEC and Focus Group participants.

Finally, the **Innovation Initiative** can be programmed and, at a low level of activity, begin by establishing a reporting framework and content for ongoing technology initiatives.

The SIEC is excited about continuing the SCIP program developed during the creation of this strategic plan. To that end we will begin immediately with execution of the program.

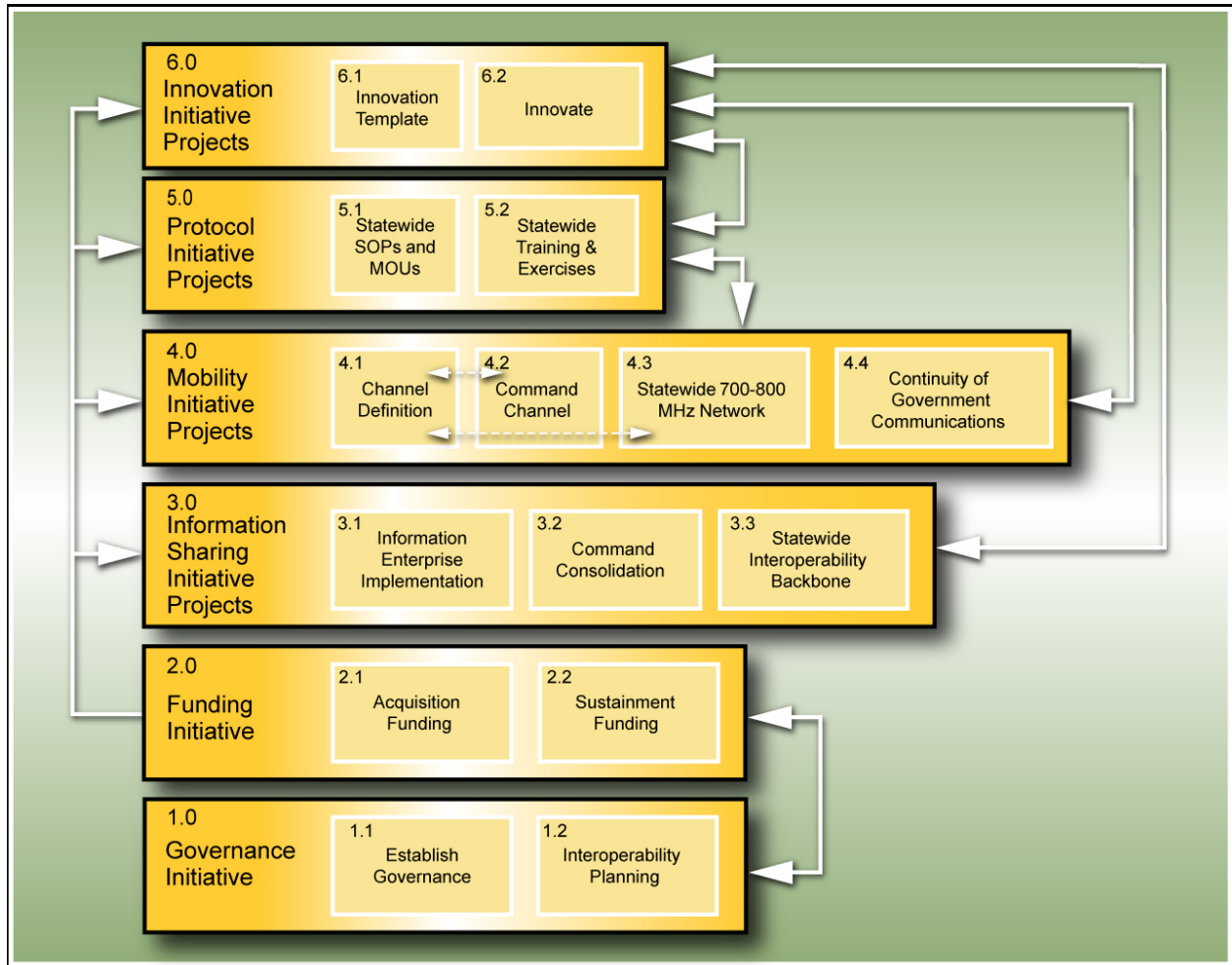


Figure 8-1: The SIEC Will Begin to Execute the Initiatives Discussed at Length in the SCIP

The immediate next steps are:

- Develop detailed project plans for All Governance and Funding Initiative projects, gain approval of SIEC and kick off projects;
- Develop detailed project plans for initiative 3.0 Information Sharing Projects.
- Continue development of charter, gain approval, promulgate by SIEC Charter sub committee
- Create working subcommittee to continue development of performance measures; and
- Begin planning for regional governance assistance.

APPENDIX A: MBHSR TIC PLAN



Metro-Boston Homeland Security Region
Communications Interoperability
Tactical Interoperable Communications Plan
Prepared for
U.S. Department of Homeland Security
Preparedness Directorate
Office of Grants & Training
1 May 2006

EXECUTIVE OVERVIEW

This document establishes a Tactical Interoperable Communications Plan (TICP) for the Metro-Boston Homeland Security Region (MBHSR). The TICP is intended to document what interoperable communications resources are available within the urban area; who controls each resource; and what rules of use or operational procedures exist for the activation and deactivation of each resource.

Creation of a TICP is a requirement of the U. S. Department of Homeland Security's (DHS) Preparedness Directorate's Office of Grants and Training (OG&T) 2005 Urban Area Security Initiative (UASI) grant program. The TICP planning and validation activities support long-term communications interoperability across the region by reinforcing NIMS principles in emergency response practices, standardizing the policies and procedures for the use of regional interoperability capabilities, and training Communications Unit Leaders across the region. This TICP meets the Target Capability performance measures and objectives for Interoperable Communications.

The MBHSR is working closely with the planning committee for the upcoming Operation Poseidon Functional Exercise to ensure that the scenario meets the TICP validation requirements. Operation Poseidon will incorporate the Interoperable Communications Target Capability elements required to perform the designated Critical Tasks (planning, organization and leadership, training, equipment and systems, and exercises,

evaluation, and corrective actions) into the exercise activity to test the TICP. This exercise will provide local first responders an opportunity to exercise the following elements: command, control and communications, information flow protocols, intelligence sharing (pre-incident and during incident), and communications interoperability. The TICP validation objective is to evaluate cross-jurisdictional and inter-disciplinary public safety tactical communications interoperability over the course of the exercise.

The Operation Poseidon scenario is currently under development. The functional disciplines involved will include law enforcement, fire services, emergency management and infrastructure, EMS, public health, and hospitals. Some or all of the following exercise elements requiring communications interoperability will be incorporated in the final exercise scenario:

- Catastrophic event(s) within the one of the UASI cities in the Metro-Boston region that requires emergency notification to Everett, Chelsea, Medford, Revere, Somerville, Cambridge, Quincy, Winthrop and Boston, and any other cities and law enforcement agencies as is necessary, i.e. Massachusetts, State Police, US Coast Guard, Massachusetts National Guard
- IED detonation, with potential for secondary device detonation in close proximity
- Initial law enforcement investigation and subsequent development of evidence that requires engaging other agencies to assist in processing crime scene and investigative follow up and info/intelligence sharing to enable cohesive regional response approach to detecting and preventing a catastrophic event from occurring
- Catastrophic failure of municipal water supply during firefighting efforts at a major event (explosion, fire, Mass Decon operation, etc.), which will force utilizing alternate means of obtaining water for suppression efforts
- Explosion(s) to include potential for radiological disbursement to permit a radiological evaluation, monitoring and perimeter establishment
- Major potential catastrophe with possible secondary site(s) requiring amassing and coordination of resources, manpower and equipment from multiple jurisdictions within the Metro-Boston region
- Severity of event which causes activation of State and local EOCs
- Event(s) overwhelming requiring requests for resources from other jurisdictions
- Recovery part of exercise scenario to address specific long-term issues
- Multiple responding public and private ambulance services to several scenes
- Multiple casualties from one or more scenes
- Numerous fatalities from one or more scenes
- Decontamination requirements

- At-scene triage of injured
- Transport of numerous patients to multiple hospitals
- Volunteer responders report to scene
- Internal and external communications between agencies as well as Unified Command/Incident Command
- Internal and external notifications subsequent to the initial notification of event
- Numerous transports from various scenes, as well as multiple self-reporting patient

PLEASE NOTE:

The complete MBHSR Tactical Interoperable Communications Plan has been furnished to you on the CD found at the end of this document.

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APPENDIX B: Homeland Security Regional Responsibilities



**EXECUTIVE OFFICE OF PUBLIC SAFETY
HOMELAND SECURITY**

Date	July 2007	Number	EOPS-HS-07-01
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Subject	Homeland Security Regional Responsibilities
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Policy	In order to carry out the strategic vision of the State Homeland Security Strategy, specific roles have been created to ensure a working partnership with the federal, state, and regional sectors to enhance statewide capabilities to detect, prevent, respond to and manage the consequence of acts of terrorism and other critical incidents.
Definitions	<ul style="list-style-type: none"> • Regions: <i>The Commonwealth's Homeland Security Regions known as Northeast, Southeast, Central, Western and Metro Boston.</i> • Homeland Security Regional Advisory Council: <i>The region's governing body known as "the Council."</i> • Massachusetts Emergency Management Agency (MEMA): <i>Planning resource to guide regions on emergency management/homeland security priorities.</i> • Fiduciary Agent: <i>The regions agent to act on behalf of the Council for receipt and administering of grant awards.</i> • Executive Office of Public Safety (EOPS): <i>The State Administering Agency for Homeland Security initiatives, policy and fiscal oversight.</i> • EOPS Homeland Security Division Program Coordinator: <i>Liaison from the Executive Office of Public Safety Homeland Security Division to the regions.</i>

Massachusetts Statewide Communications Interoperability Plan

Position	Duties
Homeland Security Regional Advisory Council	<p>The Homeland Security Regional Advisory Council shall:</p> <ul style="list-style-type: none"> • Be designated as the governing body for the designated region; • Exercise due diligence in adhering to the grant guidelines; • Exercise due diligence in adhering to the State Homeland Security Strategy; • Update threat and vulnerability assessments as needed; • Update evaluation reports as needed • Develop and review spending and strategic plans; • Request through channels proposed grant purpose area changes; • Develop a regional implementation plan; • Determine the allocation of funds as appropriate; • Approve and oversee the fiscal/procurement process; • Conduct briefings to the regional and state constituency; • Implement project plans and report to EOPS on progress made on projects; • Council members shall act as a link to EOPS/Homeland Security Division Program Coordinators on programmatic issues; • Council Chair is responsible for monitoring Council members' attendance, participation, and contributions, and adjusting membership, as necessary, for the benefit of the Council; and • Council members shall act as a link to fiduciary agents on fiscal issues.
Mass. Emergency Management Agency (MEMA)	<p>The Massachusetts Emergency Management Agency (MEMA) shall:</p> <ul style="list-style-type: none"> • Perform statewide emergency management planning; • Advise councils on status of ongoing MEMA operational plans/projects relative to homeland security; • Report on specific emergency management projects and provide resources, as necessary, to support homeland security efforts; and • Link Council homeland security goals and activities with MEMA efforts.

POSITION	DUTIES
Fiduciary Agent	<p>The Fiduciary Agent shall:</p> <ul style="list-style-type: none"> • Act as the fiscal pass through to the council; • Provide fiscal reports as required to the council; • Provide fiscal reports to the council and EOPS when requested; • Adhere to the council's direction for the coordination of the procurement process; • Adhere to Massachusetts General Laws Chapter 30B <i>Uniform Procurement Act</i>. • Prepare and coordinate meetings/agendas for the council; • At council direction call meetings; • Carry out the notification process for scheduled meetings; • Take the minutes of all meetings attended; • Be aware of programmatic and investment areas of the grant awards; • Act as the link to EOPS Homeland Security Division Program Coordinator regarding fiduciary issues; • Act as the link to the council regarding all fiduciary issues; • Provide Homeland Security Division Program Coordinator on a quarterly basis updates on equipment acquisitions and final installation locations, programmatic progress and fiscal spending to date; • Provide regional acquisition reports as requested by EOPS; • Develop and update the regional Homeland Security Strategy/plans, in coordination with MEMA and EOPS; • Submit Biannual Strategy Implementation Reports; • Utilize no more than 3% of total regional Homeland Security Grant Program (HSGP) award for Management and Administration purposes and no more than 7% of regional HSGP award for planning purposes; and • Track National Incident Management System (NIMS) compliance.

Massachusetts Statewide Communications Interoperability Plan

<p>Executive Office of Public Safety (EOPS)</p>	<p>The Executive Office of Public Safety (EOPS) shall:</p> <ul style="list-style-type: none"> • Meet with Council Chairs monthly to assess progress; • Set policy regarding Homeland Security initiatives throughout the Commonwealth; • Review and approve regional plans submitted on an annual basis; • Establish regional councils' authority and responsibilities; • Develop by-laws and legal oversight for regional councils; • Submit grant applications, funding/program modification requests, extension requests, and required programmatic/fiscal reports to DHS on behalf of the Commonwealth; • Represent the regional councils for legal guidelines and questions; and • Evaluate homeland security activities.
<p>POSITION</p>	<p>DUTIES</p>
<p>EOPS Homeland Security Division</p>	<p>The EOPS Homeland Security Division Program Coordinator shall:</p> <ul style="list-style-type: none"> • Manage all Homeland Security Grants; • Review plans and proposals submitted by the council; • Manage council contracts; • Track progress on all regional projects;
<p>Program Coordinator</p>	<ul style="list-style-type: none"> • Report to Department of Homeland Security fiscal/program reporting data; • File petitions and appeals to ODP when applicable; • Review and approve grant purpose area changes when submitted by a council; • Provide technical assistance on related programs; • Act as a link between DHS, EOPS, the council and fiduciary agent; and • Ensure implementation of program/strategic and policy issues
<p>Voting Rights</p>	<p>Each regional council shall be made up from the following disciplines:</p> <ul style="list-style-type: none"> • Law Enforcement (3 representatives) • Fire Services (3 representatives) • Emergency Management (1 representative) • Public Health (1 representative) • Hospital (1 representative) • Emergency Medical Services (1 representative) • Public Safety Communications (1 representative)

Massachusetts Statewide Communications Interoperability Plan

	<ul style="list-style-type: none"> • Local Government Administration (1 representative) • Public Works (1 representative) • Regional Transportation Authority (1 representative) • Correctional Services (1 representative) <p>Each of the representatives mentioned above shall <u>have</u> voting rights concerning matters before the council. No fiduciary, advisor or coordinator shall have voting rights on any regional council matters.</p> <p>Note: Council representation should be expanded to include non-voting members from vulnerable populations, such as an individual with a disability, or an individual working within the disability community; a person within, or who works with, the elderly community; and an individual within, or who works with, the refugee/immigrant and multicultural community.</p>
<p>State Agency Liaison</p>	<p>In order to enhance statewide capabilities each regional council shall ensure that representatives from state agencies, with statewide response responsibilities, are included during the regional council meetings to provide technical/tactical assistance. The following agencies shall designate a representative to attend all regional council meetings:</p> <ul style="list-style-type: none"> • Massachusetts State Police • Massachusetts Emergency Management Agency • Massachusetts National Guard • Massachusetts Department of Fire Services • Massachusetts Department of Correction • Massachusetts Department of Public Health • Massachusetts Executive Office of Transportation and Construction <p>The representative(s) mentioned above shall <u>not have</u> voting rights on the councils.</p>
<p>References</p>	<p>By-Laws of the Homeland Security Council Article I-VII M.G.L Chapter 30B <i>Uniform Procurement Act</i></p>

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Appendix C

FFY 2006 National Incident Management System (NIMS) Training Grant Program Guidance for Regional Homeland Security Planning Councils

I. Purpose:

The purpose of this document is to provide additional guidance as to how each Homeland Security Planning Region will provide National Incident Management System (NIMS) funding to the municipalities of their respective regions.

National Incident Management System (NIMS) Compliance

This year, each region will receive \$10,000 per community, in lieu of direct Local Preparedness Grants, for the ten first responder disciplines within each municipality to achieve compliance with the necessary NIMS training. The federal deadline for NIMS compliance is September 30, 2007. It will be the responsibility of each Homeland Security Regional Planning Council (Council) to manage this funding and reimburse each community up to \$10,000 for NIMS-related training expenses. Funding may be utilized for backfill and overtime to support the following ten first responder disciplines, as defined by DHS:

1. Emergency Management
2. Emergency Medical Services
3. Fire Service
4. Hazardous Materials
5. Governmental Administrative
6. Health Care
7. Law Enforcement
8. Public Health
9. Public Safety Communications
10. Public Works

Funding may be utilized for backfill and overtime for first responders to attend the following NIMS training courses:

1. IS-700 Introduction to the National Incident Management System*
2. IS-800 Introduction to the National Response Plan*
3. ICS-100 Introduction to the Incident Command System (ICS)*
4. ICS-200 Basic ICS*
5. ICS-300 Intermediate ICS*
6. ICS-400 Advanced ICS*
7. ICS-402 ICS for Executives**
8. NIMS Multi-agency Coordination Systems**
9. NIMS Public Information Systems**
10. NIMS Resource Management**
11. NIMS Resource Typing**
12. NIMS Mutual Aid**
13. NIMS Preparedness**

14. NIMS Communication and Information Management**
15. ICS-100 for Schools**
16. ICS-100 for Hospitals**
17. ICS-200 for Hospitals**
18. NIMS ICS All Hazards Position Specific Training**
19. Incident Management Team Training
20. Any future NIMS training deemed necessary by DHS

*Required Training

**Recommended training only

The above mentioned courses may be found at either the State training academies or online at the Emergency Management Institute of the Federal Emergency Management Agency (FEMA). The various training academies of the Commonwealth [MEMA, DFS, and the Municipal Police Training Committee (MPTC)] have the resources to provide training free of cost to municipalities when requested. If a municipality is interested in obtaining such training, please contact the Training Department in the respective agencies as follows:

MEMA: 508-820-2000

DFS: 978-567-3220

MPTC: 508-821-2644 x2115

Additionally:

1. The Homeland Security Regional Planning Council's Fiduciary is responsible to oversee the reimbursement process.
2. Each municipality shall be reimbursed up to \$10,000 for NIMS Compliance AND will be eligible to receive this reimbursement to cover backfill and overtime expenses incurred for attendance at NIMS trainings that occur during the period that begins with the start date of the Council's Fiduciary's FFY06 Homeland Security Grant Program contract with EOPS and ends on **June 30, 2007**. (This timeframe is to ensure that funds may be redirected to larger communities and others that may require additional funding for NIMS training.)
3. Once a municipality achieves full compliance with the NIMS training requirements, the municipality's Chief Executive Officer (CEO) must certify to the Region that all ten disciplines within the community are NIMS compliant. Moreover, each Council shall forward a copy of such documentation to EOPS on a monthly basis.
4. Municipalities must request reimbursement for their full eligibility amount of \$10,000 AND provide the Council's Fiduciary with the proper documentation by July 10, 2007.
5. After July 10, 2007, remaining funds may be used, per the Council's discretion, to reimburse larger municipalities and others in need of additional funds to attain NIMS compliance. Full NIMS compliance must be achieved by September 30, 2007. Reimbursement may be made to cover backfill and overtime expenses incurred for

attendance at NIMS trainings that occur during the period that begins with the start date of the Council's Fiduciary's FFY06 Homeland Security Grant Program contract with EOPS and ends on September 30, 2007. Final reimbursement requests must be submitted by October 10, 2007.

6. Each Region must track the status of NIMS compliance for each community within the region and will provide EOPS with a monthly progress report of each municipality's compliance and reimbursement status.
7. The Homeland Security Planning Region's Fiduciary may use the reimbursement request attached to this document.
8. A municipality will not be eligible for reimbursement under this investment until its NIMS adoption certification and formal backup documentation are submitted to EOPS. EOPS will provide each Regional Council a weekly update as to the status of each municipality's certification.
9. Municipalities intending to conduct their own in-house training must seek prior approval from EOPS.
10. All ten disciplines listed above are eligible for reimbursement. NIMS compliance is and should be achieved as a community-wide effort.
For any questions concerning who should receive what training, please contact Mike Russas at 617-725-3366, Michael.Russas@state.ma.us
11. Funding may not be used to purchase equipment.
12. Each Council shall follow the Reimbursement Guidance protocols as previously stated by EOPS.

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Appendix D: Potential Funding Sources by Initiative Listing

Please note:

Appendix D is a large fold-out of the chart the reader will find in Section 7.0. This page is acting as a placeholder since the fold-out cannot be sent electronically. Final document production will include the full-size chart.

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Appendix E: Data Survey Instruments

This Appendix presents the necessary content for a data capture instrument in succinct format to be distributed to state and regional organizations in Massachusetts. This data capture is needed to create a description of existing information sharing and related communication systems in Massachusetts as required by the Department of Homeland Security (DHS)-recommended methodology for developing SCIP as followed and described in Section 2. It does not seek detailed information, but only high-level information, points of contact, and key documentation. If requests for any or all of this documentation are necessary, they will be made by a separate and specific request to the POC listed with the system.

The faxable forms begin on the next page. They are divided into six pages, where there is one page for each of the following systems or capabilities:

1. Land Mobile Radio
2. Microwave
3. Other Wireless, e.g., mobile data, broadband systems, satellite phones, HF radios, etc.
4. Fiber optic networks

In addition to these communication techniques, one-page tables are also entered for the following:

5. Command Center: Dispatch center(s), Emergency Operations Centers (EOCs), or Transportation Operations Centers (TOCs), Hospitals, and Mobile command, control, (and/or) communications centers
6. Any/all information sharing applications/systems, e.g., alerting Systems (e.g., HHAN – partially collected), Computer Aided Dispatch systems and Incident Management Systems (e.g., WebEOC), Records Management Systems (RMS), Traffic Management Systems (TMS)
7. NIMS and Communications Unit Positions Training
8. Procurement and Sustainment Funding

If a table entry is not relevant for the system, enter N/A in the space. If such a document is relevant, but does not exist or was lost, enter “none”.

Please fax completed forms to:

Mr. Chris Beurpere Fax: (617) 725-0260
Address: Homeland Security Division, Office of Grants & Research
 Executive Office of Public Safety
 Ten Park Plaza, Suite 3720, Boston, MA 02116
Phone: (617) 725-3327, Email: chris.beurpere@state.ma.us

For CASM access to input LMR system data and user agencies, please contact:

Mr. Robert Desourdis: email address desourdisr@saic.com

1. LAND MOBILE RADIO SYSTEM SUMMARY			
High-Level System Description			
Name:		Owner:	
Point of Contact	Name:	Title:	
Phone:	Fax:	Email:	
Frequency bands:			
System make/type:			
Emission Designator:		Encryption:	
Number of sites	Base/repeater:	Repeater:	Satellite Rx:
Coverage design:			
Using organizations / Number of MO/PO's		(Add separate page if necessary for more)	
Fixed costs to date: (2007 dollars)		Recurring costs to date: (2007 dollars)	
Yearly recurring costs: (2007 dollars)		Yearly landline costs: (2007 dollars)	
Key Documents			
Requirements Specification	Author:		
Title:			Date:
Design Specification	Author:		
Title:			Date:
Site As-Built Reports	Author:		
Title:			Date:
Coverage plots	Author:		
Title:			Date:
Drive tests (validation)	Author:		
Title:			Date:
Standard SOP/training	Author:		
Title:			Date:
Standard MOU	Author:		
Title:			Date:

- **Frequency band** (list): VHF low/high band, UHF low band, 800 MHz
- **System make/type:** Vendor, Conventional/Trunked/Hybrid, Simulcast, and Analog/Digital (including Project 25)
- **Mod designator:** Modulation code
- **Encryption:** Type of encryption and change rate
- **Numbers of site types:** Base/repeaters, Repeaters only, and Satellite receivers
- **Coverage design:** Portable in-building (give antenna mount/height), Portable in-street (give antenna mount/height) or Mobile (give antenna mount/location), ad hoc
- **Using organizations / Number of MO/PO's:** List agencies and numbers of a Mobiles (MO) and Portables (PO).

2. MICROWAVE SYSTEM SUMMARY			
High-Level System Description			
Name:		Owner:	
Point of Contact	Name:	Title:	
Phone	Fax:	Email:	
Frequencies			
System make			
Modulation:		FEC:	
Link Protocol:			
Number of sites	No diversity:	Dual diversity:	Quad diversity:
Max T1 channels: (Indicate range if not the same for each link)			
Using organizations / Usage (in T1s)		(Add separate page if necessary for more)	
System fixed cost to date: (2007 dollars estimate)			
Yearly recurring costs: (2007 dollars estimate)			
Key Documents			
Requirements Specification	Author:		
Title:			Date
Design Specification	Author:		
Title:			Date
Site As-Built Reports	Author:		
Title:			Date
Path profiles	Author:		
Title:			Date
Outage statistics	Author:		
Title:			Date

- **Frequencies:** Single or diversity carriers, different link carriers for co-site, etc.
- **System make:** Vendor make and model of radios
- **Link protocol:** I/O protocols at modem interface
- **Modulation:** Link modulation type, e.g., QPSK
- **FEC:** Type of Forward Error Correction
- **Number of sites:** Number of sites using no diversity, dual diversity, and quad diversity:
- **No. T1 channels:** Number of T1-equivalent bandwidth channels
- **Using organizations / Usage (in T1s):** Name using organizations in the system and the number of channels they are assigned

3. OTHER WIRELESS SYSTEM SUMMARY			
High-level System Description			
Name:		Owner/Prime using agency:	
Point of Contact	Name:	Title:	
Phone	Fax:	Email:	
System/Technology:			
Provider/Vendor:			
Uplink bandwidth:		Downlink bandwidth:	
Number of sites:		Repeaters (e.g., in building):	
Coverage design:			
Using organizations / Number of subscribers		(Add separate page if necessary for more)	
Fixed costs to date: (2007 dollars)		Recurring costs to date: (2007 dollars)	
Yearly recurring costs: (2007 dollars)		Yearly landline costs: (2007 dollars)	
Key Documents			
Requirements Specification	Author:		
Title:			Date:
Design Specification	Author:		
Title:			Date:
Site As-Built Reports	Author:		
Title:			Date:
Coverage plots	Author:		
Title:			Date:
Drive tests (validation)	Author:		
Title:			Date:
Standard SOP/training	Author:		
Title:			Date:
Standard MOU	Author:		
Title:			Date:

- **System/Technology:** Type of wireless system (terrestrial or satellite)
- **Provider/Vendor:** Commercial provider or private system vendor
- **Uplink bandwidth:** Bandwidth nominally available from the subscriber to infrastructure
- **Downlink bandwidth:** Bandwidth nominally available from the infrastructure to the subscriber
- **Number of sites:** Number of cellular sites, if applicable
- **Repeaters (e.g., in building):** Numbers of buildings with in-building coverage extension
- **Coverage design:** Portable in-building (give antenna mount/height), Portable in-street (give antenna mount/height) or Mobile (give antenna mount/location), ad hoc

4. FIBER OPTIC SYSTEM SUMMARY		
High-Level System Description		
Name:		Owner:
Point of Contact	Name:	Title:
Phone:	Fax:	Email:
Wavelengths:		
System make:		
Link Protocol:		
Modulation:		FEC:
Redundancy:		
Max T1 channels: (indicate range if not the same for each link)		
Using organizations / Usage (in T1s)		(Add separate page if necessary for more)
System fixed cost to date: (2007 dollars estimate)		
Yearly recurring costs: (2007 dollars estimate)		
Key Documents		
Requirements Specification	Author:	
Title:		Date
Design Specification	Author:	
Title:		Date
Network architecture	Author:	
Title:		Date
Physical path map	Author:	
Title:		Date
Outage statistics	Author:	
Title:		Date

- **Wavelengths:** Single or multiple carriers
- **System make:** Vendor makes and models of equipment
- **Link protocol:** I/O protocols at modem interface
- **Modulation:** Link modulation type
- **FEC:** Type of Forward Error Correction
- **Redundancy:** Number of independent paths / loops
- **No. T1 channels:** Number of T1-equivalent bandwidth channels
- **Using organizations / Usage (in T1s):** Name using organizations in the system and the number of channels they are assigned

5. COMMAND CENTER SUMMARY		
High-Level System Description		
Name:		Owner:
Point of Contact	Name:	Title:
Phone:	Fax:	Email:
Purpose:		
Fixed (F) / Transportable (T) / Mobile (M):		
Location ('F' or pre-deployment if 'T' or 'M'):		
Floor space (sq ft):		Work space (sq ft):
Applications (name/purpose/type)		(Add separate page if necessary for more)
Information Networks (name/purpose)		(Add separate page if necessary for more)
Radio/wireless links (name/purpose)		(Add separate page if necessary for more)
Backup power/lifetime:		
Redundancy: (Is there a backup site or more 'T' or 'M' units – give numbers)		
Participating organizations/roles		(Add separate page if necessary for more)
System fixed cost to date: (2007 dollars estimate)		
Yearly recurring costs: (2007 dollars estimate)		
Key Documents (Add separate page if necessary for more)		
Requirements Specification	Author:	
Title:		Date
Design Specification	Author:	
Title:		Date
SOPs / MOUs	Author(s):	
Title(s):		Date(s)

- **Information networks:** Information sharing networks to which the Command Center is/can be connected using whatever media is available
- **Radio/wireless links:** What radio/wireless means exist to link to the “outside world,” including the “information networks”

6. INFORMATION SHARING SYSTEM SUMMARY		
High-Level System Description		
Name:		Owner:
Point of Contact	Name:	Title:
Phone:	Fax:	Email:
Purpose: (Single/multiple-discipline support and objective/use)		
System Type: (Client-server software, Web-based software, phone tree, etc.)		
Update rate: (fastest user-driven rate of information refresh)		
Information content (see note)		(Add separate page if necessary for more)
Applications (name/purpose)		(Add separate page if necessary for more)
Information Networks (name/purpose)		(Add separate page if necessary for more)
Redundancy: (Is there a backup capability?):		
Participating organizations/roles		(Add separate page if necessary for more)
Development cost to date: (2007 dollars estimate)		
Yearly recurring costs: (2007 dollars estimate)		
Key Documents (Add separate page if necessary for more)		
Requirements Specification	Author:	
Title:		Date
Design Specification	Author:	
Title:		Date
User Guide(s)	Author(s):	
Title(s):		Date(s)

- **Information content:** Describe the information within the categories of “Alert and Warning,” “Tactical Operations,” “Sensor Telemetry,” “Situational Awareness,” or “Administrative” – clearly there is overlap between these categories. Please describe the type of information shared by the system in each applicable category.
- **Applications:** What software tools or capabilities are involved and their purpose
- **Information Networks:** What networks access this information
- **Participating organizations/roles:** If too many, just list type of agencies

7. NIMS AND COMMUNICATION UNIT POSITIONS TRAINING			
Agency training status			
Agency Name	# of Employees		
Point of Contact Name:	Title		
Phone:	Fax:		
Email:			
NIMS compliance submitted to EOPSS			
Class Name			Circle One
IS 700 NIMS Introduction	Yes	No	
IS 800 National Response Plan Introduction	Yes	No	
ICS 100	Yes	No	
ICS 200	Yes	No	
ICS 300	Yes	No	
ICS 400	Yes	No	
NIMS compliance reference guide			
Do you have NIMS compliant reference materials?	Yes	No	
Personnel trained in Communication Unit positions			
ICS Position	Number of trained personnel		
Communication Coordinator			
Communication Unit Leader			
Incident Communication Center Manager			
Incident/Tactical Dispatcher (radio operator)			
Communication Technician			
Communication Specialist (gateway, data, landline, cache)			
Personnel trained in Communication Unit positions			
Are you interested in Communication Unit position training	Yes	No	
Communications focused exercises in the last two (2) years			
Exercise Name	Focus	Number of participants	

- Exercises with a communication or Incident Command System (ICS) focus and were addressed in an After Action Report/Improvement Plan

8. GRANT AND SUSTAINMENT FUNDING SUMMARY		
Funding Source Information		
Name:		Owner:
Point of Contact	Name:	Title:
Phone:	Fax:	Email:
Funding Title:		
Description:		
Funding Type: (Federal, State, Municipal, private, other)		
Annual Amount:		
Total Amount:		Period of Funding:
Start date of funding:		(Fiscal Year if applicable)
Current year of funding:		
Potential SCIP Project/Initiative Funding Source Could Support		
<p>I. Governance</p> <p> I.1 SIEC--Regional Governance Projects</p> <p> I.2 Interoperability Planning Project</p> <p>II. Funding</p> <p> II.1 Acquisition Funding</p> <p> II.2 Sustainment Funding</p> <p>III. Information Sharing</p> <p> III.1 Architecture and Implementation Project</p> <p> III.2 Command Consolidation Project</p> <p> III.3 Statewide Interoperability Backbone Project</p> <p>IV. Mobility</p> <p> IV.1 Channel Planning Project</p> <p> IV.2 Command Channel Project</p> <p> IV.3 Statewide 700-800 MHz Network Project</p> <p> IV.4 Continuity of Government Communications Project</p> <p>V. Protocol</p> <p> V.1 Statewide SOPs Project</p> <p> V.2 Statewide Training and Exercises Project</p> <p>VI. Innovation</p> <p> VI.1 Innovation Project Planning and Justification</p> <p> VI.2 Project Result Tracking and Integration</p>		
Key Documents (Funding descriptions, grant applications)		
Document Name	Location: (URL, attached, contact me for details)	

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APPENDIX F: Commonwealth of Massachusetts State Interoperability Executive Committee Charter

Introduction

It is necessary for public safety organizations to communicate or share critical video, voice, or data information with other jurisdictions in day-to-day operations, natural disasters, emergency response scenarios, and terrorist incidents. Failure to accomplish the mission in each situation can result in the loss of lives and property

The Commonwealth of Massachusetts' State Interoperability Executive Committee (SIEC) is committed to cooperatively addressing the challenge of communications interoperability. This document describes the purpose, authority, outcomes, operating principles, membership, and management by which the SIEC will achieve success.

Purpose

The SIEC exists to address the challenges facing interdisciplinary communications across multiple jurisdictions. It was established to create a centralized interoperable communications planning and implementation capacity for the Commonwealth of Massachusetts.

The State Interoperability Executive Committee (SIEC) has been charged, through the direction of the Secretary of Public Safety and Safety, with developing a five-year plan for enhancing interoperable communications in the Commonwealth.

This committee provides a forum for each jurisdiction and/or agency to discuss related public safety communications initiatives that may or may not impact the work of this committee. This helps ensure individual projects have an opportunity to align with the Statewide Communications Interoperability Plan (SCIP).

The SIEC has developed and approved the following vision for interoperability in the Commonwealth:

“Stakeholders optimally share critical information in a rapid, efficient, simple, reliable, and sustainable way utilizing a variety of video, voice and data technologies by following common protocols.”

To move forward to the vision stated above the mission for the Statewide Communications Interoperability Executive Committee is to:

“Develop, implement and oversee common approaches, strategies, plans and procedures to achieve day- to-day communications interoperability between all stakeholders. This mission will be accomplished through best practices, common procedures, allocation of necessary resources, and training and exercising.”

Authority

This committee has the authority to evaluate the state of both current and emerging communications interoperability in Massachusetts, create a plan for statewide communications interoperability, oversee implementation of the plan, and develop appropriate policies, procedures, and guidelines. Therefore;

- All policies, plans, and projects will be submitted to and approved by the [insert office, position or approving body].
- This committee can make recommendations to help direct the use of [insert type of funding] funds earmarked for capital improvements and operational upgrades to improve [insert scope of project, i.e. regional/statewide/etc.] public safety communications and interoperability.
- This committee should identify additional sources of funding allotted through cross-discipline and cross-jurisdictional coordination.
- The members of the committee were selected by [how were each selected] and given the authority to [insert authority granted to members by their jurisdiction/region]. Although the individuals may come from one particular discipline within a jurisdiction or region, they will represent the overall interests of all disciplines in the jurisdiction or region while serving on the committee.

Outcomes

The desired outcomes that the committee will accomplish are listed below:

- Conduct an assessment to better understand the current baseline of communications interoperability in the state.
- Task a working group to identify and recommend future technologies that will enhance the communications interoperability capability in the state
- Create a state-wide Communications Interoperability Strategy and Spending Plan.
- Manage implementation of the Communications Interoperability Plan.
- Create working subcommittees that are charged with working on key areas of the SCIP.
- Create state-wide best practices, policies, procedures, and protocols for communications interoperability and incorporate them into existing regional interoperability agreements.
- Ensure the training of key communications personnel—especially dispatchers and dispatch center supervisors as well as technical communications support staff.
- Ensure training opportunities around communications interoperability are available to all necessary and authorized public safety practitioners.

Operating Principles

The SIEC will govern the implementation of the statewide plan using the following operating principles:

- Consider each jurisdiction's/ regions unique needs—recognize and respect them, and attempt to address them if they negatively impact statewide communications interoperability capabilities.
- Think interdisciplinary.
- Reach out constantly to subject matter experts in the many identified areas of interest to the committee.
- Use a phased approach. Do not attempt to solve all the problems at once.
- Ensure all strategic initiatives fit within the desired future goals and strategy.
- Identify matters within the committee's control, and apply resources toward those matters rather than areas that are not within the committee's control.
- Keep in mind the needs of the “feet on the “street” front line personnel.
- Identify a balance between infrastructure and subscriber unit needs.
- Distribute the responsibility of managing communications interoperability so that it does not rest on any one individual, agency, or technology.
- Ensure the state takes on a collaborative approach in dealing with the issue.
- Stay aligned with other regional and/or state systems.
- Avoid acronyms and codes to eliminate confusion or misunderstanding.
- Speak with one voice when reporting externally.
- Do not lose the sense of urgency that 9/11 brought to this issue.
- Keep the issue of communications interoperability in front of politicians as they are elected and administrations change.
- Consider security concerns during the planning of future communications solutions.

Membership

The following table outlines the jurisdictions/disciplines and the respective members that will represent this committee:

Massachusetts Statewide Communications Interoperability Plan

SAFECOM Recommendation/ # of Representatives	Organizational Representation
Governor's office (1)	<ul style="list-style-type: none"> • Executive Office of Public Safety & Security (EOPSS)
State and local elected officials (2)	<ul style="list-style-type: none"> • State elected official • MA Municipal Association
State and local health officials (2)	<ul style="list-style-type: none"> • Department of Public Health • MA Health Officers Association
State and local law enforcement (2)	<ul style="list-style-type: none"> • State Police • MA Chiefs of Police Association
State and local homeland security offices (6)	<ul style="list-style-type: none"> • Executive Office of Public Safety and Security (EOPSS) • Western Homeland Security Council • Central Homeland Security Council • Northeastern Homeland Security Council • Urban Area Security Initiative (Metro Boston) • Southeast Homeland Security Council
	<ul style="list-style-type: none"> • Executive Office of Transportation (EOT) • MA Highway Association
Critical infrastructure (2)	<ul style="list-style-type: none"> • Information Technology Division (ITD) • Criminal History Systems Board (CHSB)
State and local emergency medical services (1)	<ul style="list-style-type: none"> • Emergency Medical Care Advisory Board (EMCAB)
State and local fire response services (2)	<ul style="list-style-type: none"> • MA Department of Fire Services • Fire Chiefs Association of MA
State and local emergency management (2)	<ul style="list-style-type: none"> • MA Emergency Management Agency (MEMA) • State Association of Emergency Management Professionals
Tribal governments (1)	<ul style="list-style-type: none"> • Wampanoag Tribe of Gay Head (Aquinnah)
Urban Area Security Initiative (UASI)	<ul style="list-style-type: none"> • See above in State and Local Homeland Security Offices
Military organizations operating in the state (DoD, National Guard, etc.) (2)	<ul style="list-style-type: none"> • National Guard • Coast Guard

Massachusetts Statewide Communications Interoperability Plan

Federal agencies that need to be interoperable with state and local emergency responders (2)	<ul style="list-style-type: none"> • FEMA • FCC
Other non-government organizations, such as the Red Cross and utility companies (2)	<ul style="list-style-type: none"> • Massachusetts Hospital Association (MHA) • Private Utility Company Representative
Other organizations with abilities and resources for prevention of or response and recovery from crises or disasters (3)	<ul style="list-style-type: none"> • Executive Office of Environmental Affairs (EOEA) • Massachusetts Communications Supervisors Association (MCSA)
Regional planning committee chairpersons for 700 and 800 MHz (2)	<ul style="list-style-type: none"> • Chair of Regional Planning Committee • Member from Association of Public Safety Communications Officials (APCO)

- The officers of the SIEC shall be a Chair and Vice-Chair. Future officer positions will be determined and approved by the SIEC.
- All officers must be voting members of the SIEC.
- The officers shall be elected by the members at their first meeting and, thereafter, officer elections be held every two (2) years at the end of the year.
- The officers shall hold office until the meeting held within two-years from the adoption of these or until their successor, if any, is chosen or in each case until he or she sooner dies, resigns, is removed, or becomes disqualified.
- Votes will be apportioned to organizations by one vote per organization per individual.
- Voting members are to be responsible for representing their jurisdiction/region. If a voting member is unable to attend a committee meeting, an alternate voting member from that jurisdiction/region may be appointed for that meeting. The voting member must notify the committee chair prior to the meeting that an alternate has been designated to represent him/her at the meeting. Without such prior notification, the alternate will not count when determining if a quorum has been established or be allowed to participate in votes during the meeting.
- Advisory members are part of the committee by virtue of their position and ensure that all disciplines are represented in the committee. These members are required to attend all committee meetings and provide feedback to the voting members for decision-making purposes. However, they will not vote. Additionally, a number of regional and state agencies provide advisory members to represent

the views of their organization and provide coordination for implementing aspects of the state communications interoperability plan.

- The committee may add ad hoc members as necessary. These members may come from local (including surrounding jurisdictions), regional, state, tribal, or Federal public safety agencies or planning organizations. They may sit on the committee on a temporary basis as needed.
- Every effort should be made by SIEC members and their alternates to assure the public that no conflicts of interest exist in the management of SIEC business and that those cases that do occur from time to time shall be disclosed to the SIEC chair and that appropriate action have been taken to avoid and abstain from conflict of interest situations. The general standard of conduct is to avoid any action that might result in or create the appearance of using public office for private gain; or giving preferential treatment to anyone; or impeding governmental efficiency or economy; or the loss of independence and impartiality in the decision-making process; or making decision outside of the official decision-making process; or creating a lack of public confidence in the integrity of the SIEC.
- In voting on any issue the member must identify himself/herself and the agency which he or she represents. A member may not vote on issues that directly impact the entity or grant money toward the entity involving his or her entity.

Decision Making

The SIEC will use the following measures when deliberating or making decisions:

- Each jurisdiction/region has one vote to be cast by its voting member. If the voting member is unable to attend, the alternate voting member will cast the vote for the jurisdiction/region.
- The SIEC will utilize Roberts Rules of Order for deliberation at its meetings and sub committee meetings.
- Simple majority rules. All decisions and recommendations approved by a simple majority will be considered a decision or recommendation of the committee when presented to the Governor or his/her designee for consideration. As much as possible, the majority opinion will be reflected.
- Committee members are free to express to their authorizing body or office how they voted/stood on the position.
- A two-thirds majority vote is required for charter amendments.
- Quorum will be met when [#] out of the [#] voting members (or their designated alternates) are present. If a sufficient quorum is not achieved, votes will be tabled.

- Committee members will be held accountable through their authorizing body or office. The authorizing body or office has the final decision in all matters related to committee participation
- Decisions and recommendations of the committee will be reported to the authorizing body or office through the committee chair.
- This committee will report status, actions, and recommendations to a larger audience through following a communications plan mutually developed and agreed to by the members of the SIEC. This communications plan will be developed independent of this charter.

Logistics

- The committee initially will meet frequently in order to establish a statewide communications interoperability plan. The location for initial meetings has been at MEMA in Framingham, MA. Once the plan is completed and approved, this committee will meet as necessary to implement the initiatives set forth in the plan.
- Committee meetings will take place on a regular basis at the convenience of the committee and the schedule will be communicated to the members with sufficient time to allow for scheduling by members.
- The committee will meet at facilities provided by each jurisdiction/region on a rotating basis. The location for the next meeting will be determined at the conclusion of each meeting based upon consensus of the SIEC members.

Signatures

Role	Signature	Printed Name	Date

Massachusetts Statewide Communications Interoperability Plan

AGENDA - Commonwealth of Massachusetts SIEC

November 5, 2007

Insert Time

Insert Location

Attendees:	P (Present)	A (Absent)	G (Guest)
Juliette Kayyem		Jim Slater	Oliver Mason
Blair Sutherland		Ed Kelley	Paul Connolly
Nancy Ridley		Chris Beaurpere	Kevin Partridge
Dana Ohannessian		Phil Mahoney	
John Tommaney		Ralph Swenson	
Terry Dunn		Robert McElhaney	
George Fosque		Ed McNamara	
Dave Troup		Russ Sienkiewicz	
Gerald Reardon		Scott Billings	
Mark Cady		Peter Thomas	

Agenda Topics:			
	Agenda Items	Presenter	Time
1.	Introductions	B. Sutherland	20 minutes
2.	Status of Previous Action Items	TBD	10 Minutes
3.	SharePoint Overview	P. Mahoney	30 Minutes
4.	Discussion of DRAFT SIEC Charter and Agenda	T. Williams (SAIC)	60 minutes
5.	SIEC Chair and Vice-Chair Vote	B. Sutherland	20 minutes
6.	Review Strategic Plan	T. Williams (SAIC)	120 Minutes
7.	Next Steps – Action Items for Next Meeting	B. Sutherland	15 minutes

Status of Previous Action Items:				
	Item	Responsible	Goal	Status
1.				
2.				
3.				

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**APPENDIX H: SCIP PROGRAM PERFORMANCE
QUARTERLY REPORT**

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APPENDIX I: EXECUTIVE ORDER BY GOVERNOR DEVAL L. PATRICK ESTABLISHING SIEC

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**Massachusetts Executive Office of Public Safety and Security
Statewide Communications Interoperability Plan (SCIP)
Strategic Project Initiatives by Potential Funding Sources**

Initiative/Project Names	ROM Project Estimates	Potential Funding Sources																				
		Public Safety Interoperability Communications Grant - SCIP/HS	Urban Area Security Initiative (Maine States only)	State Homeland Security Initiative	Law Enforcement Terrorism Prevention Program	Metropolitan Mutual Response System	Cham Corpse Grant	Federal Security Grant Program	Emergency Management Performance Grant	Budget Zero Mitigation Program	Ferry Security Grant Program	Congressional Eminent	FHS - DPH - GRANT A	FHS - DPH - GRANT B	DOT - JAG Grants	USDOT - Federal Highway	TED	State Funding	State Appropriation	Municipal Local Funding	Non-Profit	Private Foundation
I. Governance - SIEC Regional Governance	\$ 350,000	●	●	●	◐	◐	●	◐	●	◐	◐	●	●	●	●	●	●	●	●	●	●	●
I. Governance - Interoperability Planning	\$ 3,600,000	●	●	●	◐	◐	●	◐	●	◐	◐	●	●	●	●	●	●	●	●	●	●	●
II. Funding - Acquisition Funding	\$ 300,000	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
II. Funding - Sustainment Funding	\$ 300,000	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
III. Information Sharing - Architecture and Implementation	\$ 1,500,000	●	●	●	◐	◐	●	◐	●	○	●	●	●	●	●	●	●	●	●	●	●	●
III. Information Sharing - Command Consolidation	\$ 675,000	●	●	○	●	◐	○	◐	◐	●	●	○	○	●	◐	●	●	●	●	●	●	●
III. Information Sharing - Statewide Interoperability Backbone	\$ 5,150,000	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
IV. Mobile Interoperability - Tactical (Voice) Channel Planning	\$ 2,175,000	●	●	●	●	◐	●	●	●	●	●	◐	◐	●	●	●	●	●	●	●	●	●
IV. Mobile Interoperability - Command Channel	\$ 8,075,000	●	●	●	●	●	●	●	●	●	●	◐	◐	●	●	●	●	●	●	●	●	●
IV. Mobile Interoperability - Statewide 700-800 Mhz Planning	\$ 2,000,000	●	●	●	●	●	●	●	●	●	●	◐	◐	●	●	●	●	●	●	●	●	●
IV. Mobile Interoperability - Continuity of Government Communications	\$ 2,000,000	●	●	●	●	●	●	●	●	●	●	◐	◐	●	●	●	●	●	●	●	●	●
V. Protocols - Statewide Standard Operating Procedures (SOP)	\$ 600,000	●	●	●	●	●	●	●	●	●	●	◐	◐	●	●	●	●	●	●	●	●	●
V. Protocols - Statewide Training and Exercises	\$ 390,000	●	●	●	●	●	●	●	●	●	●	◐	◐	●	●	●	●	●	●	●	●	●
VI. Innovation - Project Planning and Justifications	\$ 35,000	●	◐	◐	◐	◐	◐	◐	◐	◐	◐	●	◐	◐	●	●	●	●	●	●	●	●
VI. Innovation - Project Results Tracking and Integration	\$ 45,000	●	◐	◐	◐	◐	◐	◐	◐	◐	◐	●	◐	◐	●	●	●	●	●	●	●	●
Totals:	\$27,195,000																					

	Best	Possible		None
Quality of Match	●	◐	○	

SCIP Mission: " Stakeholders optimally share critical information in a rapid, efficient, simple, reliable and and sustainable way utilizing a variety of video, voice and data technologies by following common protocols.

Functional Area Goals / Obj#	Goals/Objectives	Performance Measure	Annual Performance Goal	Vital Sign	Status	Recommended Actions/Comments
Governance G1	SIEC has statewide authority to establish architecture (operational, system, and technical standards), procedures, and funding.					
Objective G1-01:	Obtain a Statute or Executive Order establishing the SIEC and Regional Sub-Committees with appropriate authorities.			Governance		
		Executive Order Completed	Executive Order Completed			In process - lawyer assigned
Objective G1-02:	Establish a method for conflict resolution among stakeholders.			Governance		Roberts rules already excercised at SIEC meeting of November 2007
		# of motions proposed	N/A			
		# of motions passed	N/A			
		# of motions failed	N/A			
		% SIEC Members rate SIEC participation as "Satisfactory"	75%			
Objective G1-03:	The SIEC shall provide a representative proactive decision-making body with statewide architecture definition and resource allocation authority established in its charter.			Governance		In process - Charter is under development and in second
		# of representatives	TBD			
		# of decisions made	N/A			
		Total \$ allocated	TBD			
Governance G2	SIEC establishes architecture (operational, system, and technical standards),procedures, funding					
Objective G2-01:	Develop inter-regional and statewide protocols for disciplines			Governance		
		# of operations, system and technical standards developed	TBD			
		# of operations, system and technical standards adopted	TBD			
		# of operations, system and technical standards promulgated	TBD			
Objective G2-02:	Develop statewide protocols for utilization of portable gateway devices			Governance		
		# of statewide protocols developed	TBD			

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Functional Area Goals / Obj#	Goals/Objectives	Performance Measure	Annual Performance Goal	Vital Sign	Status	Recommended Actions/Comments
		# of statewide protocols adopted	TBD			
		# of statewide protocols promulgated	TBD			
Objective G2-03:	Specifically involve parties (fire, police, NGO, etc) at the "cities and towns" level so they understand that their individual issues/concerns are being addressed.			Governance		
		# of parties by organizational type	TBD			
Objective G2-04:	Establish a forum to include public participation in the process			Governance		
		# of focus groups conducted				
		# of other "touch points" with the public by type				
Governance G3	Have a collaborative approach to interoperability among all stakeholders by implementing agreed upon standards, protocols and procedures					
Objective G3-01:	Hold quarterly stakeholder meetings to discuss issues and identify new ideas			Governance		
		# of quarterly meetings held				
		# in attendance by meeting				
Objective G3-02:	Strengthen written MOUs with regional disciplines			Governance		
		# of MOUs developed				
		# of MOUs adopted				
		# of MOUs promulgated				
Objective G3-03:	Develop common requirements for MOU's for adoption by all participating entities			Governance		
		# of common requirements for MOUs developed				
		# of common requirements for MOUs adopted				
		# of common requirements for MOUs promulgated				
Objective G3-04:	Foster a close working relationship with stakeholder committees.			Governance		
		# of committee meeting attended				

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Functional Area Goals / Obj#	Goals/Objectives	Performance Measure	Annual Performance Goal	Vital Sign	Status	Recommended Actions/Comments
		% members surveyed respond favorably				
Governance G4	Have conolidated FCC licensing of interoperable frequencies and establish Memorand of Understanding (MOA) to authorize usage to stakeholders					
Objective G4-01:	Establish MOA's to authorize the usage of interoperability frequencies by stakeholders			Governance		
		# of MOAs developed				
		# of MOAs adopted				
		# of MOAs promulgated				
SOPs G1	A statewide approach with standard operating procedures to be utilized for joint, multidiscipline or multi jurisdiction operations. These procedures will be consistent with National Incident Management System protocols.					
Objective G1-01:	Adopt standards and curriculum for COM unit leader (COML), COM tech and COM Coordinator			SOPs		
		# of SOPs developed				
		# of SOPs adopted				
		# of SOPs promulgated				
Objective G1-02:	Develop Regional-Statewide protocols and procedures (incident and discipline driven), including Statewide Emergency Radio Protocols for trapped Responders or Responders in trouble			SOPs		
		# of SOPs developed				
		# of SOPs adopted				
		# of SOPs promulgated				
Objective G1-03:	Employ common information formats and content, including mandatory descriptive English			SOPs		
		# of SOPs with the above				
SOPs G2	Multidisciplinary statewide protocols that enable responders to act in a coordinated fashion at the scene of a significant incident.					
Objective G2-02:	Adopt standards and curriculum for COM unit leader, COM tech and COM Coordinator.			SOPs		
		# of SOPs developed				
		# of SOPs adopted				
		# of SOPs promulgated				
Objective G2-02:	Develop Regional-Statewide protocols and procedures, including Statewide Emergency Radio Protocols for trapped or responders in trouble.			SOPs		
		# of SOPs developed				
		# of SOPs adopted				

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Functional Area Goals / Obj#	Goals/Objectives	Performance Measure	Annual Performance Goal	Vital Sign	Status	Recommended Actions/Comments
		# of SOPs promulgated				
Technology G1	Have minimum statewide technology standards to implement statewide architecture					
Objective G1-01:	Develop minimum criteria for equipment purchase			Technology		
		Criteria developed				
		Criteria accepted				
		Criteria promulgated				
Objective G1-02:	Develop channel naming and templates for standardization			Technology		
		Channel Naming and templates developed				
		Channel Naming and templates accepted				
		Channel Naming and templates promulgated				
Objective G1-03:	Select (through evaluation) available radio technology that can support interoperability			Technology		
		Objective completed				
		Results promulgated				
Objective G1-04:	Select (through evaluation and if appropriate) underutilized technologies, including embedded data features			Technology		
Objective G1-05:	Select (through evaluation and assessment) available methods of radio interoperability concepts that work best in Massachusetts			Technology		
Objective G1-06:	Employ the SAFECOM network hierarchy, that is, Personal Area Network (PAN), Incident Area Network (IAN), Jurisdiction Area Network (JAN), Extended Area Network (EAN) to achieve Optimal interoperability in the near-term.			Technology		
Objective G1-07:	Define mandatory statewide architectural requirements, including system, operational, and technical standard views.			Technology		
Technology G2	A reliable statewide communication backbone					
Objective G2-01:	Insure that technologies adopted have sufficient technological flexibility to meet interoperability standards, but remain financially attainable for large and small communities alike as interoperability frequency assignments or talkgroups on a statewide 800-MHz system.			Technology		

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Functional Area Goals / Obj#	Goals/Objectives	Performance Measure	Annual Performance Goal	Vital Sign	Status	Recommended Actions/Comments
Objective G2-02:	Employ properly specified voice, video and data all have specific bandwidth requirements for the statewide backbone to determine what is really needed (including growth) and realizing that over-specifying can be just as dangerous as under-specifying.			Technology		
Objective G2-03:	The Optimal interoperability solution must have built-in redundancy and be fault tolerant with no single points of failure, so it must be designed and supported to ensure reliable, continuous coverage in a way that is (i) transparent to users or (ii) covered by SOPs.			Technology		
Technology G3	Have tactical interoperability "on the scene".					
Objective G3-01:	Develop a series of interoperable communications channels (VTAC/UTAC/ITAC/700 MHz) that leverages imbedded infrastructure and plans to incorporate future technology			Technology		
Technology G4	Utilize existing regional and sub-regional networks with gateways to the statewide backbone					
Objective G4-01:	Provide gateways to the statewide backbone.			Technology		
Technology G5	Have interactive web site for end users that provides situational awareness.					
Objective G5-01:	Provide customized web site to provide situational awareness			Technology		
T&Ex G1:	All regions conduct regular interoperable communications exercises that test the capabilities of all stakeholders within their regions					
Objective G1-01:	Objective G1-01: Provide resources to conduct regular interoperable communications exercises.			Technology		
Objective G1-02:	Objective G1-02: Conduct after-action reviews of exercises to determine/measure if we are in keeping with our vision.			Technology		
Objective G1-03:	Objective G1-03: Design training to encourage day-to-day usage			Technology		
T&Ex G2:	Have all stakeholders trained in accordance with standardized training programs.					

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Functional Area Goals / Obj#	Goals/Objectives	Performance Measure	Annual Performance Goal	Vital Sign	Status	Recommended Actions/Comments
Objective G2-01:	Utilize guidance from the DHS and SAFECOM on standards and curriculum.			T&Ex		
Objective G2-02:	Provide online training for protocols			T&Ex		
Objective G3-03:	Incorporate communications training needs into all training starting with the recruit			T&Ex		
Objective G4-04:	Provide training and exercise for key government administrative staff and decision makers			T&Ex		
T&Ex G3:	Stakeholders understand how to access, implement and utilize statewide systems, protocols and procedures to support incident communications interoperability.					
Objective G3-01:				T&Ex		
Usage G1:	All interoperable communications systems are developed and implemented in a manner so that they can be used on a daily basis.					
Objective G1-01:				T&Ex		
Usage G2:	Utilize statewide and regional communications systems to support incident communications needs for emergencies, disasters, planned events, training and exercises.					
Objective G2-01:	Use interoperability systems at planned events to allow systems and users to be tested.			Usage		
Objective G2-02:	Ensure that multiple agencies involved during planned events are interoperable.			Usage		
Objective G2-03:	Use of tactical teams to support mobile solutions.			Usage		
Usage G3:	Employ protocols that accommodate communications need increasing as an incident escalates.					
Objective G3-01:				Usage		
Usage G4:	Employ best practices to provide efficient use of systems for responders.					
Objective G4-01:				Usage		

SCIP Mission: " Stakeholders optimally share critical information in a rapid, efficient, simple, reliable and and sustainable way utilizing a variety of video, voice and data technologies by following common protocols.

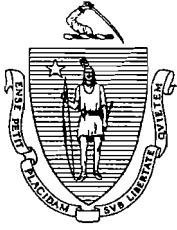
Functional Area Goals / Obj#	Goals/Objectives	Performance Measure	Annual Performance Goal	Vital Sign	Status	Recommended Actions/Comments
Usage G5:	Develop models for sustainability of regional and state systems.					
Objective G5-01:				Usage		
Strategy G1:	Have a statewide interoperability strategy, encompassing issues and needs of all stakeholders (where stakeholders are defined in Section 5.1.1).					
Objective G1-01:	Develop a state interoperability plan for use both day-to-day and during mutual aid / large scale response operations			Strategy		
Objective G1-02:	A supportable roadmap of specific and supportable actions needed to achieve day-to-day information sharing between all stakeholders meeting NIMS requirements.			Strategy		
Objective G1-03:	Identify technologies in use and coverage areas to determine gaps.			Strategy		
Objective G1-04:	Develop "use cases" surrounding various types of incidents to determine technology/procedural adequacy of current systems and to determine how to augment/replace existing systems.			Strategy		
Objective G1-05:	Include design and implementation of innovative public private partnerships to offset cost for system deployments (e.g., placement of commercial radio tower or other "high sites" on state land, or variable highway display signage could be sponsored by a corporation and utilized for a variety of emergency/information/direction etc, versus being used by advertisers).			Strategy		
Strategy G2:	Have an inclusive process with outreach to local and regional jurisdictions.					
Objective G2-01:	Develop and implement a comprehensive plan to keep stakeholders and all other interested parties up to date on project progress and SEIC activities.			Strategy		
Objective G2-02:	The SIEC shall provide a representative proactive decision-making body with statewide architecture definition and resource allocation authority established in its charter.			Strategy		
Objective G2-03:	Specifically involve parties (fire, police, NGO, etc) at the "cities and towns" level so they understand that their individual issues/concerns are being addressed.			Strategy		

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Functional Area Goals / Obj#	Goals/Objectives	Performance Measure	Annual Performance Goal	Vital Sign	Status	Recommended Actions/Comments
Objective G2-04:	Establish a forum to include public participation in the process.			Strategy		
Objective G2-05:	Utilize education and training to increase participation in the process.			Strategy		
Implementation G1:	Adoption of interoperability standards by all stakeholders.					
Objective G1-01:	Achieve radio interoperability between all stakeholders in one region within six months.			Implementation		
Objective G1-02:	Revision of standards as experience and exercises indicate.			Implementation		
Objective G1-03:	Establish the mechanisms to encourage and foster adoption of statewide protocols and procedures through continuous bi-directional stakeholder outreach, engagement, education and training.			Implementation		
Objective G1-04:	Ensure that implementation of interoperability solutions have coordination between regions and state resources			Implementation		
Objective G1-05:	"Purchasing guidelines" are employed for phasing new equipment into the overall system concept.			Implementation		
Objective G1-06:	Reconcile differences in data formats in different CAD systems.			Implementation		
Implementation G2:	Develop and foster an interactive website					
Objective G2-01:	Users should be able to update their own data in real time			Implementation		
Objective G2-02:	Website should have aspects that are read only			Implementation		
Objective G2-03:	Templates and protocols are listed on the web site			Implementation		

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Functional Area Goals / Obj#	Goals/Objectives	Performance Measure	Annual Performance Goal	Vital Sign	Status	Recommended Actions/Comments
Implementation G3:	Increase focus on communications at exercises.					
Objective G3-01:	Exercises that focus on different aspects of communications.			Implementation		
Implementation G4:	Develop a plan to implement the system either by phase or other method that brings about the states interoperability vision.					
Objective G4-01:	Phased implementation which leverages off of existing investments.			Implementation		
Objective G4-02:	Provide long-term "technical support" so cities and towns receive professional support and service for "compatible" equipment acquisitions (otherwise they may be reluctant to change current practice)			Implementation		



THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE DEPARTMENT
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OFFICE OF THE SECRETARY OF STATE

DEVAL L. PATRICK
GOVERNOR

TIMOTHY P. MURRAY
LIEUTENANT GOVERNOR

By His Excellency

DEVAL L. PATRICK
GOVERNOR

EXECUTIVE ORDER NO. 493

Establishing the State Interoperability Executive Committee

WHEREAS, the safety and well-being of the people of the Commonwealth depend on our ability to provide effective and efficient homeland security and public safety;

WHEREAS, the ability of first responders to communicate with one another across disciplines and jurisdictions during a natural disaster or terrorism threat, a concept known as communications "interoperability," is vital for their own safety and for the accomplishment of their core mission to protect life, health, and property;

WHEREAS, the Commonwealth of Massachusetts' State Homeland Security Strategy requires the development of a five-year statewide plan for communications interoperability, to enable emergency response agencies and other stakeholders to exchange critical communications and data with one another, permitting them to work together effectively and efficiently to prevent, respond to, and recover from domestic incidents, regardless of cause, size or complexity;

WHEREAS, to ensure that the goals and objectives of the State Homeland Security Strategy with respect to interoperability are achieved, a five-year comprehensive state plan, the Statewide Communications Interoperability Plan (“SCIP”), has been developed, adopted, and funded through federal grants;

WHEREAS, consistent leadership and management are necessary to ensure that planning, equipment procurement, training and funding requirements are in place when implementing the SCIP;

WHEREAS, the Executive Office of Public Safety and Security is the designated State Administrative Agency (“SAA”) responsible for application, management, and administration of federal grant funds to be applied to interoperability planning and implementation, including, but not limited to, those funds received from the United States Department of Homeland Security;

WHEREAS, the Secretary of Public Safety and Security (“the Secretary”), as the head of the SAA, has the final responsibility to render decisions on funding for interoperability planning and implementation;

WHEREAS, the Regional Homeland Security Advisory Councils, whose membership includes representation of the key public safety disciplines within each homeland security region, are responsible for developing and guiding the implementation of regional homeland security plans that are driven by regional needs and vulnerabilities; and

WHEREAS, future expenditures on interoperability made by the state, its regions, and localities must cross jurisdictional boundaries and strive for the common goal of statewide communications interoperability;

NOW, THEREFORE, I, Deval L. Patrick, Governor of the Commonwealth of Massachusetts, by virtue of the authority vested in me by the Constitution, Part 2, c. 2, § 1, Art. I, do hereby order as follows:

Section 1. The Executive Office of Public Safety and Security (“EOPSS”) is hereby designated as the SAA for any and all federal grants applied to attaining statewide interoperability and the objectives of the SCIP, including, but not limited to, the Public Safety Interoperable Communications Grant Program. The Governor may at any time and for any reason change this designation by letter or other form. The designation in this section does not affect any previous designation made by the Governor in regard to any other federal grant programs.

Section 2. The SAA will have final authority on behalf of the Commonwealth with regard to all requests, awards, and expenditures of federal funds made in support of interoperability efforts and shall ensure the proper disbursement of and accounting for federal interoperability funds for the Commonwealth, in accordance with federal grant guidance and program standards.

Section 3. In order to more effectively and efficiently manage and direct statewide interoperability efforts, there is hereby formally established within the EOPSS an advisory committee called the State Interoperability Executive Committee (“SIEC”).

Section 4. The Secretary or his designee shall chair the SIEC. The SIEC shall be composed of the following persons or their designees: the Secretary of Transportation and Public Works; the Secretary of Energy and Environmental Affairs; the Commissioner of Public Health; the Chief Information Officer of the Commonwealth; the Executive Director of the Criminal History Systems Board; the Executive Director of the Statewide Emergency Telecommunications Board; the Director of the Massachusetts Emergency Management Agency; the Adjutant General of the Massachusetts National Guard; the Director of the Massachusetts Office of Business Development; the chairs of the Western Massachusetts Homeland Security Council, the Central Massachusetts Homeland Security Council, the Northeastern Massachusetts Homeland Security Council, the

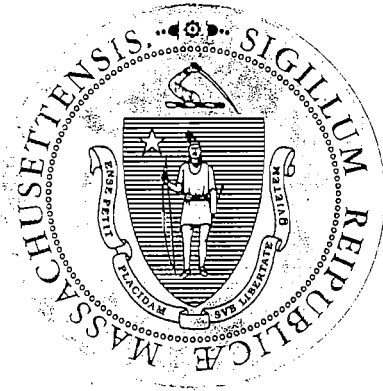
Southeast Massachusetts Homeland Security Council, and the Metro Boston Homeland Security Region (Urban Area Security Initiative); the Colonel of the State Police; the State Fire Marshal; and no more than twelve members to be appointed by the Governor, including at least one representative from each of the following organizations or disciplines: the Massachusetts Chiefs of Police Association, the Massachusetts Fire Chiefs Association, the Massachusetts Municipal Association, local emergency service providers, local health officials, local transportation agencies, local emergency management agencies, public safety dispatch communications, non-governmental charitable organizations, state legislators, tribal government, relevant federal agencies, and such other persons as the Governor may, from time to time, appoint. SIEC members shall serve at the pleasure of the Governor and without compensation.

Section 5. The SIEC will advise the SAA on priorities and approval of all interoperability expenditures and requests for expenditure of federal funds. In carrying out this responsibility, consistent with the goals and objectives of the State Homeland Security Strategy, the SIEC will issue objectives and goals; provide guidance for the development of standard operating procedures and best practices when implementing interoperable communications statewide; and give other advice necessary to achieve statewide interoperability and the objectives of the SCIP.

Section 6. The operations of the SIEC will be in accordance with a charter, approved by the SIEC and updated annually, setting forth the roles and responsibilities of the SIEC members, its governance structure, and its policies and procedures.

Section 7. The SIEC shall be entitled to the cooperation of every department, agency, and office of the Commonwealth in furtherance of its functions.

Section 8. This Executive Order shall remain in effect until amended, superseded, or revoked by subsequent Executive Order.



Given at the Executive Chamber in Boston this 29th day of November in the year of our Lord two thousand and seven, and of the Independence of the United States, two hundred and thirty-one.

A handwritten signature in black ink, appearing to read "Deval L. Patrick".

DEVAL L. PATRICK
GOVERNOR
Commonwealth of Massachusetts

A handwritten signature in black ink, appearing to read "William Francis Galvin".

WILLIAM FRANCIS GALVIN
Secretary of the Commonwealth

GOD SAVE THE COMMONWEALTH OF MASSACHUSETTS