

# Report

*for*

## Optimum PSAP Reconfiguration Assessment

*submitted to*

**State of Maine**

*January 2010 ©*

## TABLE OF CONTENT

<b>1.</b>	<b>EXECUTIVE SUMMARY .....</b>	<b>1</b>
1.1	PROJECT OVERVIEW .....	1
1.2	METHODOLOGY .....	1
1.3	KEY DEFINITIONS .....	1
1.4	DATA COLLECTION .....	2
1.5	DATA LIMITATIONS .....	2
1.6	CONSOLIDATION HISTORY .....	3
1.7	CURRENT CONDITIONS AND KEY ISSUES.....	4
1.7.1.	<i>Separation of 9-1-1 Call Processing and Dispatch Functions .....</i>	<i>4</i>
1.7.2.	<i>Transfer of 9-1-1 Calls and Absence of Key E9-1-1 Features.....</i>	<i>4</i>
1.7.3.	<i>Routing of Wireless 9-1-1 Calls .....</i>	<i>4</i>
1.7.4.	<i>PSAP Rate Shopping .....</i>	<i>5</i>
1.7.5.	<i>Cost Shifting .....</i>	<i>5</i>
1.7.6.	<i>Lack of Collaboration Among State, County and Local Agencies.....</i>	<i>5</i>
1.8	OPTIMAL PSAP CONFIGURATION.....	7
1.9	OTHER PSAP CONFIGURATION SUMMARIES.....	7
1.9.1.	<i>26-PSAP Configuration.....</i>	<i>7</i>
1.9.2.	<i>2 and 4-PSAP Configurations .....</i>	<i>8</i>
1.10	FULL CONSOLIDATION OF PSAP AND DISPATCH FUNCTIONS .....	8
1.11	RECOMMENDATIONS.....	9
1.12	ESCB SCOPE OF AUTHORITY RECOMMENDATIONS .....	9
1.13	ESCB INCENTIVES FOR CONSOLIDATION RECOMMENDATIONS .....	10
<b>2.</b>	<b>PROJECT OVERVIEW .....</b>	<b>11</b>
2.1	METHODOLOGY .....	11
2.2	DATA COLLECTION .....	11
2.2.1.	<i>ESCB Data Collection Survey.....</i>	<i>11</i>
2.2.2.	<i>PSAP Data Collection Survey.....</i>	<i>12</i>
2.2.3.	<i>Dispatch-Only Center Survey.....</i>	<i>13</i>
2.2.4.	<i>Letters and E-mails from Concerned Stakeholders.....</i>	<i>13</i>
2.2.5.	<i>Stakeholder and Focus Group Meetings .....</i>	<i>14</i>
2.3	DATA ANALYSIS .....	14
2.4	DATA LIMITATIONS .....	15
<b>3.</b>	<b>CURRENT CONDITIONS OVERVIEW.....</b>	<b>16</b>
3.1	EMERGENCY SERVICES COMMUNICATION BUREAU (ESCB) .....	16
3.2	CONSOLIDATION HISTORY .....	17
3.3	CURRENT EMERGENCY COMMUNICATIONS OVERVIEW .....	17
3.3.1.	<i>Separation of 9-1-1 Call Processing and Dispatch Functions .....</i>	<i>18</i>
3.3.2.	<i>Transfer of 9-1-1 Calls/Absence of Key E9-1-1 Features in Dispatch-Only Sites .....</i>	<i>20</i>
3.3.3.	<i>Routing of Wireless 9-1-1 Calls .....</i>	<i>22</i>
3.3.4.	<i>PSAP Rate Shopping .....</i>	<i>23</i>
3.3.5.	<i>Cost Shifting .....</i>	<i>24</i>
3.3.6.	<i>Collaboration Among State, County and Local Agencies .....</i>	<i>25</i>
3.4	TECHNICAL OVERVIEW.....	27
3.4.1.	<i>9-1-1 Network.....</i>	<i>27</i>
3.4.2.	<i>9-1-1 Answering Equipment/CPE .....</i>	<i>28</i>
3.4.3.	<i>9-1-1 Service Provider Capability.....</i>	<i>30</i>
3.4.4.	<i>Master Street Address Guide (MSAG) Database Maintenance.....</i>	<i>30</i>

3.4.5.	Automatic Location Identification Database (ALI DB) Provider Capability .....	30
3.4.6.	Mapping .....	30
3.4.7.	Administrative Network.....	31
3.4.8.	CAD Technical Overview.....	32
3.4.9.	Logging Recorders .....	32
3.4.10.	Radio .....	33
3.5	SURCHARGE/COSTS .....	33
3.6	CURRENT REVENUES .....	34
3.7	COSTS .....	34
3.7.1.	Eligible Uses for E9-1-1 Funds.....	34
3.7.2.	ESCB Costs .....	35
3.7.3.	Local Costs.....	35
<b>4.</b>	<b>STAKEHOLDER AND FOCUS GROUP MEETINGS.....</b>	<b>37</b>
<b>5.</b>	<b>RECONFIGURATION SCENARIOS.....</b>	<b>39</b>
5.1	EXISTING 26-PSAP CONFIGURATION .....	39
5.1.1.	Operational Overview .....	39
5.1.2.	Technological Overview.....	42
5.1.3.	Costs/Economic Overview.....	42
5.1.4.	Surcharge Impact .....	43
5.1.5.	Political Overview.....	44
5.1.6.	Configuration Positives and Negatives .....	45
5.1.7.	26-PSAP Configuration Summary.....	46
5.2	15 TO 17-PSAP CONFIGURATION .....	46
5.2.1.	Operational Impact .....	46
5.2.2.	Technological Impact.....	47
5.2.3.	Costs/Economic Impact.....	47
5.2.4.	Surcharge Impact .....	49
5.2.5.	Configuration Positives and Negatives .....	50
5.2.6.	15 to 17-PSAP Configuration Summary.....	51
5.3	4-PSAP CONFIGURATION.....	52
5.3.1.	Operational Impact .....	52
5.3.2.	Technological Impact.....	52
5.3.3.	Costs/Economic Impact.....	53
5.3.4.	Surcharge Impact .....	54
5.3.5.	Configuration Positives and Negatives .....	55
5.3.6.	4-PSAP Configuration Summary.....	56
5.4	2-PSAP CONFIGURATION .....	56
5.4.1.	Operational Impact .....	56
5.4.2.	Technological Impact.....	57
5.4.3.	Costs/Economic Impact.....	58
5.4.4.	Surcharge Impact .....	60
5.4.5.	Configuration Positives and Negatives .....	61
5.4.6.	2-PSAP Configuration Summary.....	62
<b>6.</b>	<b>CONSOLIDATION OF PSAP &amp; DISPATCH FUNCTIONS .....</b>	<b>63</b>
<b>7.</b>	<b>RECOMMENDATIONS.....</b>	<b>65</b>
7.1	CONFIGURATION RECOMMENDATIONS.....	65
7.2	ESCB SCOPE OF AUTHORITY .....	65
7.3	ESCB INCENTIVES FOR CONSOLIDATION.....	66

**APPENDICES**

APPENDIX A FOCUS GROUPS—PERSPECTIVES, CONCERNS AND ISSUES .....67  
APPENDIX B CONNECTICUT OFFICE OF STATEWIDE EMERGENCY TELECOMMUNICATIONS AND MASSACHUSETTS STATE 9-1-1 DEPARTMENT.....74  
APPENDIX C GLOSSARY/ACRONYM LIST GLOSSARY/ACRONYM LIST .....77

**TABLES**

Table 1: PSAP Survey Completion..... 12  
Table 2: Dispatch-Only Center Survey Completion ..... 13  
Table 3: Focus Groups and Stakeholders Meetings ..... 14  
Table 4: Cost Shifting Examples ..... 25  
Table 5: PSAP Equipment Summary..... 29  
Table 6: PSAP Logging Recorders ..... 33  
Table 7: Emergency Services Communication ESCB FY2010 Operating Budget ..... 35  
Table 8: 26-PSAP Summary Table..... 40  
Table 9: Agency Pay Range Summary ..... 41  
Table 10: 26-PSAP Configuration Costs ..... 43  
Table 11: 26-PSAP Configuration Surcharge Analysis..... 44  
Table 12: 15 to 17-PSAP Configuration Costs ..... 49  
Table 13: 15 to 17-PSAP Configuration Surcharge Analysis..... 50  
Table 14: 15 to 17-PSAP Configuration Cost Comparison ..... 50  
Table 15: 4-PSAP Configuration Trunks & Workstations ..... 52  
Table 16: 4-PSAP Configuration Costs ..... 54  
Table 17: 4-PSAP Configuration Surcharge Analysis..... 55  
Table 18: 4-PSAP Configuration Cost Comparison ..... 55  
Table 19: Breakdown of 9-1-1 Trunks and Workstations by PSAP ..... 57  
Table 20: 2-PSAP Configuration Costs ..... 59  
Table 21: 2-PSAP Configuration Surcharge Analysis..... 60  
Table 22: 2-PSAP Configuration Cost Comparison ..... 61

**CHART**

Chart 1: Average Call Time With and Without Transfers ..... 21

## **1. EXECUTIVE SUMMARY**

### **1.1 PROJECT OVERVIEW**

In response to P.L. 2009 Chapter 219, the State of Maine, through the Emergency Services Communication Bureau (ESCB), contracted with L.R. Kimball (Kimball) to provide a report to the Joint Standing Committee on Utilities and Energy. This report provides recommendations for the optimal public safety answering point (PSAP) configuration for the state. The report follows the direction of the goal statement in Chapter 219, which requires that the configuration considerations include cost, benefit and overall impact on the state and municipalities. Following the state Legislature's decision regarding PSAP configuration, Kimball will also develop a Next Generation 9-1-1 (NG9-1-1) implementation plan. Therefore, the second task is not addressed in this report.

The ESCB is part of the Public Utilities Commission (PUC), but has broad authority to adopt whatever policies, procedures, standards and rules it deems necessary to carry out its 9-1-1 related mission. The 9-1-1 statute is silent about enforcement on everything except telephone company compliance and, in that case, the authority lies with the PUC following the ESCB's petition. The PUC, through 35 MRSA §1508-A (1) (C), has the authority to impose sanctions and penalties for violations of any statutes or rules within its domain (including 9-1-1). Therefore, it is the PUC not the ESCB that has 9-1-1 statute or rule enforcement authority.

### **1.2 METHODOLOGY**

First, the Kimball team defined "optimal" as the number of PSAPs that provided the best balance of service, efficiency and cost effectiveness (including the potential impact on the 9-1-1 surcharge). This definition and resulting optimal configuration will be used in the next task to develop a future NG9-1-1 implementation plan and design.

### **1.3 KEY DEFINITIONS**

- **Public Safety Answering Point (PSAP)**  
Although some variations exist, strictly speaking, a PSAP is an agency that receives and processes 9-1-1 calls only. As the PSAP receives each 9-1-1 call, a basic interview is completed and the call is transferred to the appropriate dispatch site.
- **PSAP Functions**  
PSAP functions include all actions associated with processing 9-1-1 calls for service from the time a citizen dials 9-1-1 until the police, fire, or emergency medical service (EMS) response is sent by a dispatcher, via radio or mobile data device.
- **Dispatch-Only Site**  
A dispatch-only site is an agency that only provides dispatch functions. These sites do not receive 9-1-1 calls directly. All 9-1-1 calls are transferred from other PSAPs. The majority of the calls are transferred by a PSAP designated to receive that municipality's calls.

- **Dispatch Functions**

Dispatch functions include all functions and tasks associated with actually sending a police, fire, or EMS response to a 9-1-1 call and any field personnel support. Dispatching is done via radio or mobile data device. These functions may begin once the call taking process is complete or simultaneously with the call taking process, depending on the PSAP/dispatch configuration.

- **Fully Consolidated Communications Center**

Simply defined, a fully consolidated center is the combining of call taking and dispatch functions for multiple municipalities within a specified geographical area into a single communications center. Examples in Maine include several county-based or regional communications centers. However, a variety of fully consolidated communications center models exists. Some are county-based and some are not.

A complete list of definitions and acronyms is located in the glossary.

## **1.4 DATA COLLECTION**

Data collection methods include:

- ESCB Data Collection Survey
- PSAP Data Collection Survey
- Dispatch-Only Center Survey
- Letters and E-mails From Concerned Stakeholders
- Stakeholder and Focus Group Meetings

## **1.5 DATA LIMITATIONS**

The project scope, budget and schedule limited the data that could be used to make PSAP configuration recommendations. Data limitations are as follows:

- The scope of this study is limited to a single component of emergency communications: 9-1-1 call handling. The reality is that emergency communications includes two intertwined components. These components are 9-1-1 call taking and dispatching of field police, fire and EMS response. Identifying costs, service issues and potential configurations based only on 9-1-1 call handling was difficult and, at times, impossible. Therefore, it should be noted that recommendations are general in nature and represent Kimball's best estimate at the time of this report due to incomplete data from the dispatch aspect of Maine emergency communications. The final or optimal number of PSAPs may differ once the variables for each potential consolidation are determined.
- Costs evaluated within this report pertain only to those for which the ESCB is responsible. A cost-benefit analysis of the shifting of costs from the state to the local level was not part of this study.

- Further reduction in the number of PSAPs would require more 9-1-1 calls transfers. These transfers inherently add to response times and impact service. The scope of the project was to conduct a high-level assessment rather than to recommend specific PSAPs for closing, if necessary. Without identifying specific PSAPs in the evaluation, it was difficult to assess the impact on service resulting from further consolidation.
- Since PSAP participation was not 100 percent, some data, such as budget costs, staffing levels and salary ranges had to be estimated. These estimates were based on agencies of similar size or knowledge and experience of the project team. Calculations that include estimates are noted throughout the report.

## **1.6 CONSOLIDATION HISTORY**

In 2003, the Maine State Legislature passed a bill requiring the ESCB to reduce the number of remaining PSAPs from 48 to between 16 and 24. A multi-year process, starting in 2005 and ending in 2008, resulted in 26 PSAPs. Although the PSAP consolidation process was successful in reducing the number of PSAPs, most PSAPs that closed continue to operate dispatch services. This consolidation resulted in the removal of E9-1-1 equipment from the 22 former PSAPs.

Currently, the remaining 26 PSAPs in Maine handle calls by various methods. Some receive and dispatch 9-1-1 calls only for their municipality. Some receive and dispatch for multiple municipalities, many receive and dispatch for multiple communities and transfer calls to dispatch-only locations. With the exception of a single county PSAP, most wireless calls are routed to the Department of Public Safety (DPS) PSAPs and then transferred, if appropriate.

The Legislature wishes to determine if further PSAP consolidation would be beneficial. In pursuit of this goal, it recently enacted 2009 P.L. Chapter 219, which directs the ESCB to prepare and submit a report by February 1, 2010, to the Joint Standing Committee on Utilities and Energy. This report will make recommendations regarding the optimum configuration of PSAPs in the state and the benefits and consequences of expanding the statewide surcharge to include PSAP costs not currently covered by the surcharge.

While the mandated 2003 PSAP consolidation was well intentioned, the result has been an emergency communications system (9-1-1 call processing and dispatching) that is more complex and fragmented than existed prior to the PSAP reduction. The PSAP reduction created six key issues including:

1. Separation of 9-1-1 call processing and dispatch functions
2. Transfer of 9-1-1 calls/absence of key E9-1-1 features in dispatch-only centers
3. Routing of wireless 9-1-1 calls
4. PSAP rate shopping
5. Cost shifting
6. Lack of collaboration between ESCB, DPS, county and local agencies

## **1.7 CURRENT CONDITIONS AND KEY ISSUES**

As discussed in the section above, the mandated 2003 PSAP consolidation has identified six key issues in the existing emergency communications system. This section provides a brief overview of each issue.

### **1.7.1. Separation of 9-1-1 Call Processing and Dispatch Functions**

Call taking and dispatch functions are intertwined and often performed by the same person, particularly in small agencies. When these functions are performed in the agency, the call information is transferred to field personnel quickly and efficiently. In addition, the benefits of having call takers and dispatchers in the same room cannot be underestimated. All employees have a “big picture” view of active incidents and can function effectively as team.

When 9-1-1 call taking is located in a separate facility and/or agency the flow of information becomes fragmented, as transferring of calls is necessary. This fragmentation slows down the overall response time to calls for service. In addition, separating call taking and dispatch functions into different facilities and/or agencies eliminates the ability to quickly share incident updates among all staff and prevents effective teamwork during busy periods.

### **1.7.2. Transfer of 9-1-1 Calls and Absence of Key E9-1-1 Features**

When 9-1-1 call takers are located in a separate facility and/or agency, the call taker must conduct a preliminary interview to determine the nature and location of the emergency. The call must be transferred to the appropriate dispatch agency and the dispatcher then must re-interview the caller and dispatch field personnel. At times, a second transfer is needed, including a third interview, to ensure all needed services such as police, fire and EMS are dispatched. The average length of time added to a call during this process is 30 seconds. While 30 seconds seems like a short period, consider that 30 seconds may be the difference between a successful incident outcome and increased property damage, personal injury, or death.

In short, each time a 9-1-1 call is transferred time delays occur. In addition to the time delays are increased opportunities for human or technological errors to occur during each transfer. The 9-1-1 industry generally recognizes that minimization of call transfers is critical to an efficient emergency communications system.

In addition to the inherent time delays already discussed, when receiving transferred 9-1-1 calls, dispatch-only sites no longer have the 9-1-1 answering equipment to receive the address and phone number of the caller through automatic location information (ALI) and number information identification (ANI). This information is critical to locating callers when 9-1-1 calls are dropped from the network, when callers are in moving vehicles and when callers are unable to speak.

### **1.7.3. Routing of Wireless 9-1-1 Calls**

While not a direct result of the consolidation, resolution of this issue is not possible until the final configuration is determined. Currently, the four DPS PSAPs answer approximately 74 percent of the 356,745 wireless calls (55 percent of total 9-1-1 calls). More than one third of these wireless calls are transferred. Given that DPS is currently receiving most of the wireless calls, these calls are often transferred to the appropriate PSAP or dispatch center. This process creates the same call transfer issues addressed in the section above.



#### **1.7.4. PSAP Rate Shopping**

Across the State of Maine, several fee structures provide financial support and revenues to the state and local government-operated PSAPs. The most prevalent service fee method is based on a per capita rate. These rates vary between state and local PSAPs and between individual local PSAPs. The range and fluctuation of these rates have created a phenomenon called PSAP rate shopping. PSAP rate shopping is defined as the act of seeking out less expensive and/or improved quality of service from one PSAP to another. Moving from PSAP to PSAP may actually increase the number of 9-1-1 call transfers and creates disjointed service provision and difficulty for the ESCB in ensuring that each PSAP has the equipment it needs. When workloads fluctuate due to rate shopping the ESCB cannot plan properly as the needs of each PSAP become a moving target.

#### **1.7.5. Cost Shifting**

Although the 2003 PSAP consolidation was intended to provide a more cost effective 9-1-1 system statewide, what actually occurred was state costs paid for by 9-1-1 surcharge funds were lowered for the state while costs for many local municipalities increased. Nearly all agencies that lost PSAP functions in the consolidation still provide dispatch services. These services require the same personnel as before the consolidation. Not only do these agencies have the same pre-consolidation personnel costs, but now they must contract with a PSAP for 9-1-1 services. For example, if the Piscataquis County PSAP was closed annual cost savings for ESCB would be approximately \$41,368.00. However, the County would then need to contract with another PSAP for 9-1-1 services while maintaining its current dispatch services. Using the high-end per-capita rate of \$3.54 and based on an estimated population of 17,235, the County would incur a cost of \$61,011.90. The net result is a cost savings at the state level and an increase in costs at the county level.

Please note that Piscataquis County is presented as an example only as its population figures were available from the US Census Bureau and *should not* be interpreted as a recommendation that the PSAP be closed.

#### **1.7.6. Lack of Collaboration Among State, County and Local Agencies**

Maine currently has an emergency communications system (call taking [or PSAP] and dispatch functions) that is fragmented and dysfunctional. A combination of multiple factors has contributed to the existing conditions including:

- Legislative mandates implemented through the ESCB
- Municipalities retaining dispatch functions
- Lack of collaboration among state, county and local agencies
- Failure to fully understand the impact of the consolidation process
- Separation of PSAP and dispatch functions

At the root of these factors is a failure of all parties to collaborate on a common goal for emergency communications statewide.

Nationally, total collaboration and cooperation between state and local governments is rare. Each has its own focus, goals and objectives, which often do not coincide with one another. In Maine, the 2003 mandated PSAP consolidation had a lasting negative impact on the relationship between municipalities, counties and state agencies. The ESCB, the Legislature (through P.L. 2009 Chapter 219) and the stakeholder representatives who participated in the study agree that the optimal PSAP configuration for Maine is one that balances service levels with costs. Further, most agree that 9-1-1 call taking and dispatch functions for a region should reside in the same agency and facility. The goal of all involved in emergency communications is the same although the approach of various agencies differs.

In Kimball's opinion, the state, through the ESCB, has a responsibility for the following:

- Provide Maine citizens with a 9-1-1 system that balances cost efficiencies with public safety service.
- Recognize that PSAP functions are only one component of the larger emergency communication system, including dispatch.
- Recognize that decisions regarding the configuration of emergency communications systems must be based on both call taking and dispatch functions, rather than cost alone.
- Proactively plan for technology that will quickly become the new "standard of care" in the 9-1-1 industry, Next Generation 9-1-1 (NG9-1-1).

PSAPs, dispatch-only sites and fully consolidated centers have a responsibility for the following:

- Provide 9-1-1 and dispatch services at the local level that are as efficient and consistent as possible.
- Recognize that NG9-1-1 will change emergency communications service delivery. Implementation of NG9-1-1 related advancements will require changes in how PSAP and dispatch services are delivered (locally vs. regionally). Dispatch-only sites will not be able to receive the benefits of new NG9-1-1 technology with existing equipment.
- Understand that there is a "cost" associated with operating individual dispatch-only sites and some PSAPs. The cost is not only financial, it is service related as well. Each time a 9-1-1 call must be transferred, service delays occur. Each agency must consider if the need to retain these services locally is based on "this is how we've always done it" and is truly in the best interest of the citizens. Kimball is not suggesting that dispatch-only sites should not exist, but that an honest evaluation of existing conditions needs to take place. This evaluation needs to focus on establishing the most effective emergency communications system for those that public safety agencies serve.

Collectively, all involved in the delivery of 9-1-1 and dispatch services must understand that service delivery includes from the time a citizen dials 9-1-1 to the time police, fire and EMS arrive at the scene of an emergency. Implementation and management of PSAP and dispatch services requires a partnership and on-going collaboration to be effectively delivered.

## **1.8 OPTIMAL PSAP CONFIGURATION**

A 15 to 17-PSAP configuration, in Kimball’s opinion, represents the best opportunity for a migration to a system that balances costs, service levels and regional needs. The underlying assumption for this recommendation is that PSAP and dispatch functions (to the best degree possible) will be consolidated into regional facilities where possible. In this scenario, each regional center would provide PSAP and dispatch services to its defined service area. Wireline and wireless 9-1-1 calls would be routed directly to the appropriate regional center, thus eliminating the majority of the call transfers.

Planning for NG9-1-1 provides an excellent opportunity for changes to the existing system through the consolidation process. The following issues need to be specifically addressed:

- Establishment of operating standards and quality assurance through the ESCB. These operating standards are necessary regardless of whether NG9-1-1 is implemented or not. Staffing to handle these responsibilities for the ESCB would need to be added.
- Consolidation studies will need to be conducted for each of the 15-17 regions, once they are identified. The studies will identify costs, technological and operational needs for each of the regions. Existing PSAP/dispatch centers may need to become new regional “PSAPs” that require collaboration and oversight between all the participants. Full consolidation studies may not be needed if several existing PSAPs have mutual aid and interoperability arrangements with neighboring centers and they can agree on having their 9-1-1 calls sent to one of the PSAPs.

However, temporarily maintaining the current configuration until a full consolidation study, plan and potential incentives can be developed is strongly recommended. This advice is rooted in the findings that the last round of PSAP reductions led to the creation of more dispatch-only sites. The resulting split of the emergency communications process into separate call taking and dispatch functions has caused degradation and disparity in service across the state.

The P.L. 2009 Chapter 219 Goal statement is explicit in the instructions to identify costs and benefits, as well as the impact on state, county and local municipalities. The bottom line is that further reduction of PSAPs without attempting to address the separation of call taking and dispatching will only serve to further degrade and cause further inequality in 9-1-1 service statewide.

## **1.9 OTHER PSAP CONFIGURATION SUMMARIES**

### **1.9.1. 26-PSAP Configuration**

Although well intentioned, the 2003 mandated PSAP consolidation has created some significant issues within the emergency communications system statewide. As discussed more fully in Section 3, the lack of a partnership between those implementing and providing 9-1-1 and dispatch services has fragmented the overall system so that service delays through 9-1-1 call transfer, inconsistent policies from agency to agency, rate shopping and shifting of costs from ESCB to county and local municipalities are prevalent. For these reasons, adopting this configuration long-term is not recommended.

### **1.9.2. 2 and 4-PSAP Configurations**

In terms of lowering the ESCB's 9-1-1 associated costs, these two configurations would be the most advantageous. With two or four PSAPs statewide, equipment and network costs would be considerably lower than the existing configuration. However, cost is the only perspective where this configuration is best. The lower equipment and network costs would only benefit the state while local costs increase and service levels decrease. Virtually all 9-1-1 calls, except possibly those dispatched by DPS, would need to be transferred at least once. While the delay can be mitigated to some degree by implementing technology such as a statewide computer aided dispatch (CAD) system, the loss of instant communications between call takers and dispatchers and the ability of all employees to see and respond to the "big picture" regionally is significant.

Preparation for a NG9-1-1 system would also become more difficult to plan as a method of forwarding new data types to dispatch-only sites will need to be established. The specific technology needed and the associated costs have yet to be identified.

## **1.10 FULL CONSOLIDATION OF PSAP AND DISPATCH FUNCTIONS**

Agencies consider consolidation for a number of reasons. Commonly cited motives are noted below:

1. Service level improvements are the single most important reason to consider consolidation. 9-1-1 call takers and dispatchers are truly the "first responder on the scene" and can substantially affect the outcome of an incident. The types of service improvements typically achieved include:
  - Reduction or elimination of the transfer of 9-1-1 calls between PSAPs and dispatch only sites improves response times and lowers the potential for human or technology errors.
  - Quicker call processing and dispatch times, resulting in faster on-scene times for field personnel.
  - Sharing of physical space enables communications between call takers, law enforcement, fire and EMS dispatchers to be virtually instantaneous.
  - If large enough, fully consolidated communications centers can utilize a call taker/dispatcher organizational structure (if large enough). This structure enables the call takers to focus solely on the incoming call and obtain the best information possible and the dispatcher's ability to focus solely on field personnel improving field personnel safety.
  - Standardized training of all communications center employees increases regional consistency.
  - Single regional communications centers allow resource management during major incidents from a single point of control rather than fragmenting control among multiple PSAPs and dispatch-only sites.
  - Consolidated environments offer the opportunity for smaller participants to benefit from state-of-the-art technology, improved training and expanded career opportunities that would not otherwise be financially or organizationally feasible.
2. Another primary reason cited for consolidation is cost savings. While cost savings are possible, two points are critical.

- First, not all consolidations result in cost savings. A common misconception is that consolidating will result in significant personnel reductions thus significant cost savings. Consolidations do not normally involve large staff reductions. The real cost savings come from the elimination of redundant and expensive technology such as CAD, 9-1-1 answering equipment, radio consoles and logging recorders. The single set of technology and systems found in a consolidated environment reduces costs associated with procurement, connectivity and maintenance.
- Second, in those scenarios where cost savings are achievable the actual realization of the savings may not occur for several years. The consolidation process can be expensive and generate substantial one-time start-up and capital costs for facility and technology needs. These costs delay actual cost savings.

### **1.11 RECOMMENDATIONS**

- The current 26-PSAP configuration should be maintained temporarily and no additional PSAP consolidations should take place for the duration of the current FairPoint contract.
- The ESCB and local municipalities should work collaboratively to identify service level issues and solutions. Cooperation must be present at the state, county and local levels.
- Studies should be conducted to assess the feasibility of consolidating PSAP and dispatch functions as much as possible.
- Develop a plan for a future migration to approximately 15 to 17-PSAPs statewide. These PSAPs should be regionally located.
- In conjunction with the plan for 15 to 17-PSAPs, the ESCB should offer incentives to local municipalities to consolidate dispatch functions in each regional PSAP.
- A full and comprehensive consolidation study should be conducted to include all aspects of emergency communications, including dispatch, radio, etc. to develop a long-term comprehensive emergency communications plans. Each region may need to conduct its own study.
- PSAP rate shopping should be addressed via regulation through a capped fee structure and restrictions on how often service can be shifted among PSAPs.
- Wireless calls should be routed directly to the appropriate PSAP for processing. Ideally, major rerouting of wireless calls should take place one time only; when a final PSAP configuration is reached.

### **1.12 ESCB SCOPE OF AUTHORITY RECOMMENDATIONS**

Maine's enhanced 9-1-1 enabling legislation, 25 MRSA §2926, sub-§2, gives the ESCB broad responsibility for the technical and operational aspects of statewide enhanced 9-1-1. Its responsibilities include setting minimum mandatory staff training requirements for E9-1-1 call answering and dispatching as provided under Sub-§2-B. The list of responsibilities does not specifically include quality oversight of system operations, including quality oversight of PSAP conformance with the ESCB's standards. That said, the introductory language to that section is broad and allows for the inclusion of necessary matters that are not specifically identified in the statute.

In the winter of 2009, a legal question arose about whether the PUC had the authority to refuse a local or county government request to change PSAPs. The question was put to the Maine Attorney General Office, which issued an opinion to the effect that the ESCB has the authority to identify the appropriate PSAP to serve a given municipality or county and the PUC has the authority to review and approve or disapprove any request to change that service arrangement. The section of the statute that addresses this matter is 25 MRSA §2926 sub-§2-A. While the Attorney General’s opinion provides adequate basis to support the PUC’s and ESCB’s decisions in that regard, the statute should be strengthened to make that clearer. Thus, Kimball recommends that the Legislature amend the existing law for the improvement of statewide E9-1-1. Specifically, we make the following two recommendations:

1. Amend 25 MRSA §2926 sub-§1 to make it clear that the Bureau is responsible not only for the implementation and management of E-9-1-1, but also for adopting rules to enhance public safety in Maine through the statewide E9-1-1 system.
2. Amend §2926 sub-§2-A to clarify the ESCB’s authority to make the final determination about what PSAP will serve which communities

### **1.13 ESCB INCENTIVES FOR CONSOLIDATION RECOMMENDATIONS**

The ESCB is directed to “establish a total of between 16 and 24 public service answering points by 25 MRSA §2926 sub-§2-A. The Bureau shall seek to coordinate any reduction in the number of public service answering points to achieve this goal with any contractual obligations it may have or may enter into that are or could be affected by that reduction.” This would appear to leave it to the ESCB to determine how to go about accomplishing that goal.

The funding of E9-1-1 services is provided for in 25 MRSA §2927. The ESCB is authorized by Sub- §3 to “use the revenues in the E-9-1-1 fund to fund staff and to defray costs associated with the implementation, operation and management of E-9-1-1.” PSAP consolidation is clearly an operational matter. Therefore, the ESCB appropriately could offer financial incentives to encourage it.

The ESCB’s annual budget is reviewed by the joint standing committee of the Legislature that has jurisdiction over utilities and energy. This committee then makes recommendations regarding expenditures from the E9-1-1 fund to the joint standing committee of the Legislature that has jurisdiction over appropriations and financial affairs.

The following is recommended:

- The ESCB should adopt a policy position favoring the consolidation of PSAP and dispatching functions into regional centers and then support consolidation initiatives through its grant program.
- The ESCB should budget a certain amount to be distributed to PSAPs as grants to study, plan and execute consolidation.
- 25 MRSA §2927 Sub-§8 should be amended to give the ESCB authority to adopt rules establishing and governing a consolidation incentive grant program.

## **2. PROJECT OVERVIEW**

The State of Maine contracted with L.R. Kimball (Kimball) for two primary purposes.

- First, in response to P.L. 2009 Chapter 219, An Act to Promote Public Safety Answering Point Efficiency, the ESCB must supply a report to the Joint Standing Committee on Utilities and Energy that provides recommendations for the optimal public safety answering point (PSAP) configuration for the state. Chapter 219 also contains a goal statement that explicitly states that costs, benefits, as well as impact on state, county and local municipalities must be considered when studying PSAP reconfiguration. This report provides those recommendations. As outlined in the project scope of work, Kimball has reviewed 2, 4, 16 and 26-PSAP configurations. The option to add other scenarios of the project team's choosing was also available, but was not needed. Recommending the closing of specific PSAPs was not part of the project team's charge. The following sections provide an overview of the methodology used to develop the recommendations in this report.
- Second, in an effort to proactively plan for a statewide migration to the next major evolution in 9-1-1, the ESCB has requested the development of a Next Generation 9-1-1 (NG9-1-1) implementation plan. The second task will begin once the first task is complete and a final decision on PSAP reconfiguration is reached. Therefore, addressing the second task is not part of this report.

### **2.1 METHODOLOGY**

The first task was to define what "optimal PSAP configuration" meant to those commissioning this study. In conjunction with ESCB staff, the Kimball team defined "optimal" as the number of PSAPs that provided the best balance of service, efficiency and cost effectiveness (including potential impact on the 9-1-1 surcharge). This definition and resulting optimal configuration will also be used in the next task to develop a future NG9-1-1 plan and design.

### **2.2 DATA COLLECTION**

Several methods were used to collect the information needed to conduct the study. The following sections provide an overview of each of these methods.

#### **2.2.1. ESCB Data Collection Survey**

The survey was a spreadsheet-based form distributed to ESCB staff for completion. The completed survey provided costs associated with 9-1-1 networks and technology, 9-1-1 call statistics, training information, surcharge revenue, PSAP facilities overviews and historical information regarding previous consolidation efforts.

### 2.2.2. PSAP Data Collection Survey

Staff from all the 26 PSAPs statewide was asked to complete a comprehensive, spreadsheet-based survey form. This form included questions regarding staffing, budget, technology, pay scales, operational methods and opinions on further consolidation. Response to the survey was excellent. Twenty-three of 26 PSAPs returned a survey resulting in an 88.46percent participation rate. Table 1 indicates agency participation.

**Table 1: PSAP Survey Completion**

PSAP Survey Completion	
Agency	Survey Returned
Androscoggin County Sheriff's Department	Yes
Bangor Police Department	Yes
Biddeford Police Department	Yes
Brunswick Police Department	Yes
Cumberland County Communications	Yes
DPS - Central Maine Regional Communications Center (CMRCC – Augusta)	Yes
DPS - Gray Regional Communications Center	Yes
DPS - Houlton Regional Communications Center	Yes
DPS - Orono Regional Communications Center	Yes
Franklin County Sheriff's Department	Yes
Hancock County Regional Communications Center	Yes
Knox County Regional Communications Center	Yes
Lewiston/Auburn 9-1-1 Center	Yes
Lincoln County 9-1-1 Center	Yes
Oxford County Regional Communications Center	Yes
Penobscot County Regional Communications Center	Yes
Piscataquis County Sheriff's Department	No
Portland Police Department	No
Sagadahoc County Communications	Yes
Sanford Regional Communications Center	Yes
Scarborough Police Department	Yes
Somerset County Communications	Yes
Waldo County Regional Communications Center	Yes
Washington County Regional Communications Center	Yes
Westbrook Police Department	No
York Police Department	Yes



### 2.2.3. Dispatch-Only Center Survey

Although assessing dispatch-only centers is not part of the scope of this study, Kimball strongly feels that the impact on dispatch functions and service levels must be taken into consideration. Given that there are 60-plus dispatch centers statewide, gathering information from all of them was not possible within the scope, budget and time constraints of this project. Therefore, to obtain a cross section of dispatch-only centers a survey was distributed to those dispatch centers that lost or gave up PSAP functionality during the 2005 PSAP reduction initiative. Of the 18 surveys distributed, nine were returned. Table 2 indicates agency participation in the survey process.

**Table 2: Dispatch-Only Center Survey Completion**

Dispatch-Only Center Survey Completion	
Agency	Survey Returned
Augusta Police Department	No
Bar Harbor Police Department	No
Cape Elizabeth Police Department	No
Falmouth Police Department	No
Freeport Police Department	Yes
Kennebec County	No
Kennebunk Police Department	Yes
Kennebunkport Police Department	Yes
Kittery Police Department	No
Lisbon Police Department	Yes
Old Orchard Beach	Yes
Saco Police Department	Yes
South Berwick Police Department	No
South Portland Police Department	Yes
Waterville Police Department	Yes
Wells Police Department	Yes
Windham Police Department	No
Yarmouth Police Department	No

### 2.2.4. Letters and E-mails from Concerned Stakeholders

Although not a data collection method initiated by Kimball, 13 letters and four e-mails from public safety responders, municipal decision makers and citizens were received by the Kimball team. These letters voiced strong opposition to further PSAP reductions and the potential closing of specific PSAPs. Since the scope of this project does not include analysis of and recommendations for the closing of specific PSAPs, the individual concerns from each letter or e-mail that could be generically applied to this study were gathered for inclusion in this report. All correspondence has been forwarded to ESCB Director Maria Jacques for review.

### 2.2.5. Stakeholder and Focus Group Meetings

In addition to a cost-benefit analysis, determining the optimal configuration of PSAPs includes examining the impact of consolidation on the stakeholders, including existing PSAPs, field personnel and dispatch centers. For the purposes of collecting stakeholder input, 13 focus group meetings were conducted. Each meeting was designed to bring together similar groups of stakeholders. Three of the meetings were conducted via conference call. All others were conducted on-site in either Augusta or Old Orchard Beach. Table 3 provides an overview of the meetings held, dates and times, and number of participants.

**Table 3: Focus Groups and Stakeholders Meetings**

Focus Groups and Stakeholder Meetings		
Group	Meeting Date/Time	# of Participants
PSAP Data Collection Question and Answer Conference Call	09/30/09 2:00 PM	6
Maine Emergency County Communications Association	10/19/2009 1:30 PM	6
Maine National Emergency Number Association (NENA)	10/20/2009 10:00 AM	8
Maine E9-1-1 Council	10/20/2009 2:30 PM	8
Fire Commissioners and Maine Fire Chiefs' Association	10/21/2009 8:30 AM	9
Maine County Commissioners	10/21/2009 10:30 AM	8
Maine Emergency Medical Services	10/21/2009 11:00 AM	20*
Maine County Emergency Management Directors (Conference Call)	10/28/2009 1:00 PM	14*
Maine State Agencies	10/22/2009 8:30 AM	3

## 2.3 DATA ANALYSIS

Data analysis included the use of straightforward mathematical calculations, staffing formulas and calculators such as Erlang C<sup>1</sup> and Association of Public Safety Communications Officials (APCO) RETAINS<sup>2</sup> and a review of existing documents and anecdotal information received from stakeholders. Erlang C and APCO RETAINS provide the most current methodology for estimating staffing for call centers and public safety dispatching<sup>3</sup>.

<sup>1</sup>Call center traffic engineering model and calculator.

<sup>2</sup>Association of Public-Safety Communications Officials (APCO) Responsive Efforts to Address Integral Needs in Staffing (RETAINS). <http://www.apcointl.com/new/commcenter911/retains.php>

<sup>3</sup>The 1980 US Department of Justice report titled “Design and Costing of 911 Systems – A Technical Manual Final Report” was not used as two more current models exist (RETAINS and Erlang C).

## **2.4 DATA LIMITATIONS**

The project scope, budget and schedule limited the data that could be used to make PSAP configuration recommendations. Data limitations are as follows:

- The scope of this study is limited to a single component of emergency communications: 9-1-1 call handling. The reality is that emergency communications includes two intertwined components. These components are 9-1-1 call taking and dispatching of field police, fire and EMS response. Identifying costs, service issues and potential configurations based only on 9-1-1 call handling was difficult and, at times, not possible. Therefore, it should be noted that recommendations are general in nature and represent Kimball's best estimate at the time of this report due to incomplete data from the dispatch aspect of Maine emergency communications.
- There are many variables associated with any consolidation, particularly those involving call taking and dispatching. The final or optimal number of PSAPs may differ once the variables for each potential consolidation are determined.
- Costs evaluated within this report pertain only to those for which the ESCB is responsible. A cost-benefit analysis of the shifting of costs from the state to the local level was not part of this study. Therefore, while the ESCB may be able to reduce costs through further PSAP consolidation, costs at the local level increase as agencies must then pay for PSAP services. The increase in costs results from the agencies having to maintain the same dispatch staff while paying another agency to process 9-1-1 calls for them.
- Further reduction in the number of PSAPs would require more transfers of 9-1-1 calls. These transfers inherently add to response times and impact service. The scope of the project was to conduct a high-level assessment rather than recommend specific PSAPs for closing. Without identifying specific PSAPs in the evaluation, it was difficult to assess the impact on service resulting from further consolidation.
- Since agency participation was not 100 percent some data, such as budget costs, staffing levels and salary ranges, had to be estimated. These estimates were based on agencies of similar size or knowledge and experience of the project team. Calculations that include estimates are noted throughout the report.

### **3. CURRENT CONDITIONS OVERVIEW**

#### **3.1 EMERGENCY SERVICES COMMUNICATION BUREAU (ESCB)**

In 1994, the Maine Legislature created the Maine ESCB to bring enhanced 9-1-1 (E9-1-1) service to the residents of Maine. In that same year, the Legislature implemented a surcharge on all telephone lines to fund the ESCB's activities and statutory responsibilities. In December 1998, the ESCB signed a contract with Bell Atlantic (subsequently Verizon and now FairPoint Communications) to provide the network, database services and the infrastructure for a statewide E9-1-1 system.

E9-1-1 implementation was essentially completed in the fall of 2001 for all wireline telephones. At one time, the network included 48 primary PSAPs across the state's 16 counties. In 2005, the ESCB began implementation of wireless 9-1-1. By 2006, Wireless Phase II deployment, as prescribed by Federal Communications Commission (FCC) Docket 94-102, was completed by all carriers with service in Maine. In 2007, the E9-1-1 system added voice over internet protocol (VoIP) calls to its services, meeting the requirements of FCC Docket 05-116.

Over the years, the ESCB has worked closely with the public safety community developing an effective and efficient system. The ESCB has been instrumental in following efforts:

- Deployment of E9-1-1 for landline, wireless and VoIP phones throughout the state.
- After the wireless deployments, the ESCB provided mapping at every PSAP, in order to provide the location of the caller requesting assistance.
- During the difficult PSAP reconfiguration effort in 2005, the ESCB identified the need to provide the decommissioned PSAPs (but continued to provide dispatch services) with vital call data from the initial 9-1-1 call. Through a grant program, the ESCB paid for initial computer aided dispatch (CAD) interface costs that allowed some dispatch agencies to receive 9-1-1 call data.
- PSAP staff training and certification is provided by the ESCB. The training lab in Vassalboro allows new call takers to simulate real 9-1-1 calls on the actual systems they will be using at their assigned PSAPs. Emergency Medical Dispatch (EMD) was recently added to the 9-1-1 call taker training by the ESCB. EMD enables all the 9-1-1 call takers to assist distressed callers with basic life support instruction prior to the arrival of emergency response personnel. Just recently, the ESCB began implementation of a basic dispatcher course that is required of all newly hired employees of both PSAPs and dispatch only agencies. The quality of the service of the 9-1-1 call takers in Maine has always been a high priority of the ESCB.
- During the current 9-1-1 service contract, MagIC Enterprise and Data Repository were linked to the MagIC Monitor Call Detail Record systems at each PSAP. MagIC Enterprise and Data Repository are information management systems for multiple call-centers. These tools allow the ESCB to monitor the entire 9-1-1 system. Enterprise gathers system data from all 26 PSAPs and can produce reports that provide a very comprehensive look at the 9-1-1 network and PSAP call taking operations. MagIC Data Repository downloads MagIC Monitor detail of each call from each of the state's PSAPs. The calls are correlated into a single chronological file that is invaluable for reviewing specific incidents involving multiple agencies as well as system wide issues affecting multiple PSAPs.

- In early 2009, the ESCB oversaw the successful transition of Maine's 9-1-1 system from Verizon to FairPoint Communications.
- The ESCB is currently working to develop a statewide implementation plan for NG9-1-1 for all PSAPs.

The ESCB is part of the PUC, but has broad authority to adopt whatever policies, procedures, standards and rules it deems necessary to carry out its 9-1-1 related mission. The 9-1-1 statute is silent about enforcement on everything except telephone company compliance and, in that case, the authority lies with the PUC following the ESCB's petition. The PUC's authority, derived from 35 MRSA §1508-A (1) (C), allows it to impose sanctions and penalties for violations of any statutes or rules within its domain (including 9-1-1). Thus, it is the PUC not the ESCB that has enforcement authority.

### **3.2 CONSOLIDATION HISTORY**

In 2003, the Maine State Legislature passed a bill requiring the ESCB to reduce the number of PSAPs from 48 to between 16 and 24. A multi-year process, starting in 2005 and ending in 2008, resulted in 26 remaining PSAPs. Although the PSAP consolidation process was successful in reducing the number of PSAPs, most PSAPs that closed continue to operate dispatch services. This consolidation resulted in the removal of E9-1-1 equipment from 22 former PSAPs.

Currently, the remaining 26 PSAPs in Maine handle calls by various methods. Some receive and dispatch 9-1-1 calls only for their municipality. Some receive and dispatch calls for multiple municipalities, many receive and dispatch for multiple communities and transfer calls to dispatch-only locations. With the exception of a single county PSAP, most wireless calls are routed to DPS PSAPs and then, if necessary, transferred.

The Legislature wishes to determine if further PSAP consolidation would be beneficial. In pursuit of this goal, it recently enacted 2009 P.L. Chapter 219, which directs the ESCB to prepare and submit a report by February 1, 2010, to the Joint Standing Committee on Utilities and Energy. This report will make recommendations regarding the optimum configuration of PSAPs in the state and the benefits and consequences of expanding the statewide surcharge to include PSAP costs not currently covered by the surcharge.

### **3.3 CURRENT EMERGENCY COMMUNICATIONS OVERVIEW**

The 2003 state mandated PSAP consolidation moved the state, intentionally or by default, towards a somewhat unique model that separates call taking and dispatch functions into separate agencies and/or facilities. The 2003 consolidation resulted in the closing of 22 PSAPs. However, a large portion of these PSAPs also provided dispatch services and remained open as dispatch-only sites. These new dispatch-only sites were then required to contract with a PSAP for 9-1-1 call processing, effectively separating call taking and dispatch functions operationally and fiscally. Further consolidation of only PSAP functions will increase the number of dispatch-only sites and widen the separation in functions.

Nationally, it is common, but not recommended, to find transfers between primary and secondary PSAPs. However, most often these transfers are from a central combined PSAP/dispatch to PSAP and/or dispatch centers that have chosen not to consolidate. In other words, PSAP and dispatch functions are kept together. Although there are other New England states that function in this manner, this model is rare and opposite of national trends, which support full consolidation of not only call taking and dispatch functions, but agencies as well.

When a citizen dials 9-1-1 from a wireline phone, the call is automatically routed to one of the current 26 PSAPs. This automatic routing distributes 9-1-1 calls by PSAP service area. The 9-1-1 call is either dispatched by the receiving PSAP or transferred to the appropriate PSAP or dispatch-only site. There are currently approximately 60 dispatch centers statewide. At times, a second transfer is necessary to dispatch all required emergency services, police, fire and EMS, to a single call for service. Wireless 9-1-1 calls are predominantly answered by the four DPS PSAPs who process and either dispatch or transfer the call to the appropriate PSAP or dispatch agency.

The PSAPs also provide EMD or pre-arrival medical instructions for medical calls. However, some dispatch-only sites have elected to provide EMD. In this case, EMD would commence following the call transfer.

While the mandated 2003 PSAP consolidation was well intentioned, the result has been an emergency communications system (9-1-1 call processing and dispatching) that is more complex and fragmented than existed prior to the PSAP reduction. The PSAP reduction created six key issues including:

1. Separation of 9-1-1 call processing and dispatch functions
2. Transfer of 9-1-1 calls/absence of key E9-1-1 features in dispatch-only sites
3. Routing of wireless 9-1-1 calls
4. PSAP rate shopping
5. Cost Shifting
6. Lack of collaboration among ESCB, DPS and local agencies

### **3.3.1. Separation of 9-1-1 Call Processing and Dispatch Functions**

When assessing emergency communications two perspectives must be examined; operational and fiscal. From an operational perspective, emergency communications has two components—call taking or PSAPing and dispatch of field personnel, including maintaining the status of and providing support to police, fire and EMS field units. Fiscally, types of funding for 9-1-1 and dispatch functions can vary widely.

#### ***Operational Perspective***

Call taking and dispatch functions are intertwined and often performed by the same person, particularly in small agencies. As the 9-1-1 call taker interviews the caller, he or she either is entering the information into the CAD system for dispatch from another employee in the same room or is dispatching the call themselves. In either case, the information received from the caller is quickly disseminated to responding field personnel.

The transfer of information from caller to field responder is quick and efficient. In addition, the benefits of having call takers and dispatchers in the same room cannot be underestimated. All employees have a “big picture” view of active incidents and can function effectively as team.

When 9-1-1 call taking is located in a separate facility and/or agency the flow of information becomes fragmented, as transferring of calls is necessary. This fragmentation slows down the overall response time to calls for service. In addition, separating call taking and dispatch functions into different facilities and/or agencies eliminates the ability to quickly share incident updates among all staff and prevents effective teamwork during busy periods. Surveys completed by PSAPs, dispatch-only sites and focus group interviews with various stakeholders reveal that dispatch functions performed by well-staffed, trained and equipped centers are preferred. Unfortunately, almost all survey and interview responses also reveal the disparity of dispatching services across the state. The impact of the different methods of call taking and transfer protocols on the dispatch functions of all response agencies is detrimental to the quality of service at the response and citizen service levels.

Consolidated PSAP/dispatch centers that dispatch all response agencies for a specific geographical area appear to have the most efficient operation, as calls are not typically transferred to/from these agencies.

### *Fiscal Perspective*

Methods of funding for PSAP and dispatch functions vary widely. It is common for states to provide funding support for the 9-1-1 network and answering equipment that support call taking through surcharge funds while dispatch systems, equipment and personnel are funded at the local level.

In many states, 9-1-1 networks and call handling are regulated and/or funded by a state agency similar to the ESCB. Methods of funding and regulation vary from state to state. The differences in managing 9-1-1 related issues are illustrated in the following examples:

- Illinois passed the Emergency Telephone Systems Act<sup>4</sup> to manage its 9-1-1 system. This act provides requirements for 9-1-1 systems and associated issues. It also provides for the establishment of individual Emergency Telephone Safety Boards (ETSB). Each ETSB is established at the county level and is responsible for collecting surcharge funds and the disbursement of funds according to the criteria set forth in the Emergency Telephone Systems Act. Simplistically, this means while the state is responsible for setting 9-1-1 system requirements, actual management of the systems and surcharge funds are done at the county level in accordance with state regulations. Personnel and other costs associated with dispatch are funded through a separate operational budget for each 9-1-1 center (PSAP and dispatch combined). Although completely separate and with distinct responsibilities, the ETSB coordinator and the 9-1-1 center director collaborate on expenditures and systems planning.

<sup>4</sup><http://www.ilga.gov/legislation/ilcs/ilcs3.asp?ActID=741&ChapAct=50%A0ILCS%A0750/&ChapterID=11&ChapterName=LOCAL%20GOVERNMENT&ActName=Emergency%20Telephone%20System%20Act>.

- The State of New Jersey passed the statewide Emergency Telephony System Statute<sup>5</sup> to regulate its 9-1-1 system. This statute states that the state will pay for costs associated with the 9-1-1 network and establishes system/network requirements. Surcharge funds are collected and managed by the state. Local bodies of government apply to the state for grant money for other systems such CAD or logging recorders.

Both of these examples apply only to the 9-1-1 system / network and personnel costs associated with the support of the system / network. However, overwhelming, the majority of 9-1-1 centers in these states include both PSAP and dispatch functions. These funding examples demonstrate methods that can be used to fund 9-1-1 networks and equipment at the state level, in conjunction with local governments, without damaging service levels by splitting functions into different facilities and/or agencies.

### **3.3.2. Transfer of 9-1-1 Calls/Absence of Key E9-1-1 Features in Dispatch-Only Sites**

When 9-1-1 call takers are located in a separate facility and/or agency, the call taker must conduct a preliminary interview to determine the nature and location of the emergency. The call must then be transferred to the appropriate dispatch agency. The dispatcher then must re-interview the caller and dispatch field personnel. At times, a second transfer is needed, including a third interview, to ensure all needed services such as police, fire and EMS are dispatched. The average length of time added to a call during this process is 30 seconds. While 30 seconds seems like a short period of time, consider that 30 seconds may be the difference between:

- A person being rescued from a house fire or a fatality
- A violent criminal being apprehended or escaping
- A heart attack victim being resuscitated or dying
- A drowning victim suffering brain damage or recovering fully
- A hunting accident victim bleeding to death or recovering

In emergencies, seconds count. Should a call need to be transferred a second time, another 30 seconds is added to the call processing time. Further, additional information that is received from other callers is also delayed when the call is processed in this manner. This means that information critical to responding agencies' safety and ability to effectively manage the emergency is delayed, as the call must be processed by the receiving PSAP first. This delay may be the difference between:

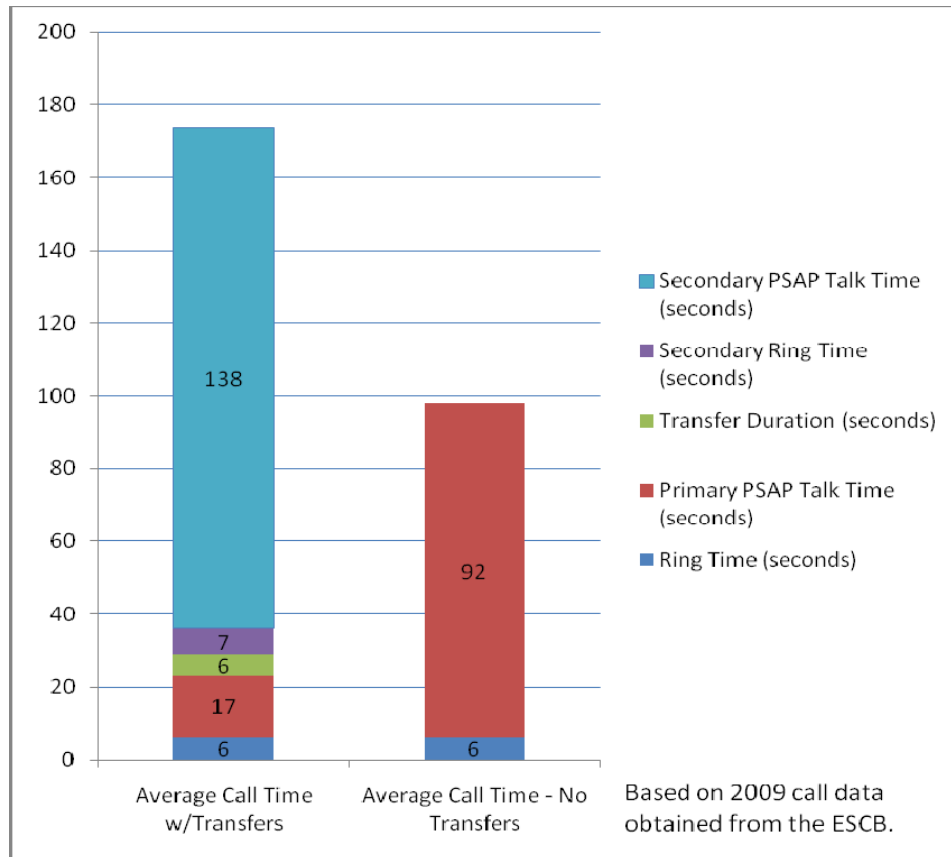
- A police officer knowing that a domestic disturbance now involves a gun or the officer walking in unaware.
- A fire company knowing exactly where a victim is located upon arrival and having to search for them, thereby delaying rescue and treatment.
- All emergency responders being aware of toxic chemicals at a scene, taking appropriate preventative measures or not knowing and entering the scene and sustaining personal injury.

<sup>5</sup> <http://www.state.nj.us/911/resource/statute/index.html>



In short, each time a 9-1-1 call is transferred time delays occur. Chart 1 below provides a graphic depiction of the transfer delays.

**Chart 1: Average Call Time With and Without Transfers**



In addition to the time delays are the increased opportunities for human or technological errors to occur during each transfer. Although time delays and the potential for human error is mitigated by technology such as a statewide CAD system, the loss of communication between call takers and dispatchers who are in the same room is substantial. The 9-1-1 industry generally recognizes that minimization of call transfers is critical to an efficient emergency communications system.

As well as the inherent time delays already discussed, when receiving transferred 9-1-1 calls, dispatch-only sites no longer have the 9-1-1 answering equipment to receive ALI and ANI. This information is critical to locating callers when 9-1-1 calls are dropped from the network, when callers are in moving vehicles and when callers are unable to speak. The following points should be noted:

- While the PSAP that originally receives a 9-1-1 call can pass along location information verbally to the PSAP or dispatch-only site receiving the transfer, this verbal exchange adds another opportunity for human error.

- PSAPs statewide do not follow the same call transfer process. Some PSAPs do not provide a verbal handoff to the receiving PSAP (blind transfer), while others announce their PSAP name and the nature and location of the emergency to the agency receiving the call. A blind transfer may cause further delays because the second PSAP may be unable to quickly locate callers that are lost during the transfer process or because the caller can no longer communicate. For wireless calls, the PSAP receiving a call from a moving vehicle would need to stay on the phone with the caller and the receiving dispatch-only site to update locations via the re-bid process.
- One of the focuses of NG9-1-1 will be to enable callers to transmit a variety of data types to PSAPs including text, photos and video. While the technology to accomplish this has yet to be determined, it is certain that a mechanism will be needed to get these new data forms to dispatch-only sites. This mechanism may take the form of new equipment or re-installing NG9-1-1 capable 9-1-1 answering equipment at dispatch-only sites so new data types can be exchanged effectively. In the current configuration, two potential solutions could provide the critical data to the dispatch-only site.
  - A statewide CAD system installed at every PSAP and dispatch-only site would provide timely delivery of critical call data.
  - Customer premise equipment (CPE) at each dispatch-only site to receive call data with each transfer.

Either of these options would require important policy decisions. A determination would have to be made as to who would pay for and maintain the equipment and network required for the system. The ESCB will need to consider whether future policy will include payment for this type of equipment.

### **3.3.3. Routing of Wireless 9-1-1 Calls**

While not a direct result of the consolidation, resolution of this issue is not possible until the final configuration is determined. Currently, the four DPS PSAPs answer approximately 74 percent of the 356,745 wireless calls (55 percent of total 9-1-1 calls). More than one third of these wireless calls are transferred. Given that DPS is currently receiving most of the wireless calls, these calls often must be transferred to the appropriate PSAP or dispatch center. This process creates the same call transfer issues addressed in the section above.

Based on PSAP survey and focus group meetings, many of the county and municipal PSAPs would like to get their own wireless calls directly from the 9-1-1 system. They cite delayed response, blind transfer, misrouted calls and dropped calls as on-going problems with the current system. Kimball agrees that the wireless calls should be routed to the appropriate PSAP initially. However, the process of re-routing all wireless calls to the appropriate PSAP is a time consuming, complex and expensive one. Re-routing cell calls to the closest available PSAP should be a priority, but only after the final PSAP configuration is determined. The ESCB will require additional staff or some other form of assistance in this effort. The following steps are required in any wireless deployment:

1. A letter officially requesting wireless deployments to each carrier or wireless service providers (WSP).
2. WSPs are allowed six months to respond to the request letter.

3. The WSPs database provider submits the carrier's cell tower list to the ESCB for PSAP deployment designations. Cell site location and sector orientation<sup>6</sup> and wireless call data has to be reviewed and assigned to the correct PSAP.
4. The database provider will prepare the completed cell site routing designations table for loading into the WSP routing database.
5. Upon completion of the routing table by the database provider, a quality assurance (QA) review by the ESCB of the new routing table will be required.
6. After final approval of the routing table, the database provider will schedule a drive test of every cell site and sector to verify routing and data delivery to the designated PSAP.
7. After all sites are successfully tested, the database providers will load the routing table.
8. This process will be required for each wireless service provider.

#### **3.3.4. PSAP Rate Shopping**

Across the State of Maine, several fee structures provide financial support and revenues to the state, county and local government-operated PSAPs. The most prevalent service fee method is based on a per capita rate. These rates vary between DPS, county and local PSAPs and between individual local PSAPs. The range and fluctuation of these rates have created a phenomenon called PSAP rate shopping.

This section provides background and identifies the causes of the current issues stemming from rate variations. For the purpose of this report, PSAP rate shopping is defined as the act of seeking out less expensive and/or improved quality of service from one PSAP to another.

There are key historical occurrences that appear to have sparked the trend of shifting service between PSAPs. The initial push came from the first round of legislatively mandated PSAP reductions where low call volume agencies and municipalities were able to select a PSAP to field and transfer or field and dispatch their emergency calls. While all citizens pay a 9-1-1 surcharge on wireline and wireless phones, the surcharge funds are limited, by law, to funding 9-1-1 systems, equipment, network, mapping and EMD. All dispatching functions and systems, as well as other communications systems and equipment, are funded at the local level. These functions and systems include logging recorders, CAD systems, radio consoles, furniture consoles, records management systems and records repositories or interfaces.

The recent surge in PSAP rate shopping followed a sharp increase in DPS rates. During focus group meetings, several local stakeholders stated they were assured DPS rates would not increase. However, there was no supporting documentation for this pledge located during the research for this study.

Research and anecdotal information did reveal a significant event that affected the rates and the course of the previous PSAP reduction process. This event was the retroactive pay due to the DPS employees, which included a 15 percent retention stipend paid to DPS employees to encourage continued service to DPS. In addition, the Legislature passed a law requiring the PUC to review and approve the proposed rates of DPS.

<sup>6</sup>Most cellular towers have three sectors, which provide 360° coverage.

The retroactive pay to DPS employees caused a temporary but significant increase in the budget for DPS. As a state run department, the DPS has little control over its budget or the court ordered retroactive pay to its employees. Their budget has external determinants from other state departments, such as the Office of Information Technology (OIT) and others that provide services for a fee. As a whole, DPS and other state departments are not able to limit the impact that such events or practices have on their annual operational budgets.

The shift of services to/from DPS PSAPs and local PSAPs is a direct effort to secure what is perceived to be the best service at the best price. From the focus group meetings and survey results, the shopping trend appears to be occurring most often in Kennebec, Aroostook and York counties. Of great influence on the demeanor of former-PSAP representatives are the experiences of those agencies that felt forced to close their PSAP, move their service to a DPS PSAP and now have chosen (or attempted) to shift services a second time. While a small number of vocal agencies are citing service issues for shopping, local government representatives cite costs.

A review of the per capita rates and other fee structures identified in the data collection survey, reveal a vast range from no charge to \$3.54 for PSAP-only services and up to \$16.22 for full dispatch services for police fire and EMS agencies. There are formula based mill rates and county taxes covering the service fees of a small number of PSAP services. The actual value of these payments is unknown, but payments are purported to be less than the current per capita rates. Regardless of which service provider is less expensive or provides the best service, it is clear that the significant difference in fees encourages the PSAP rate shopping trend. Kimball recommends that such shifting be limited to no more than once in five years (the length of 9-1-1 Fairpoint contract).

### **3.3.5. Cost Shifting**

Although the 2003 PSAP consolidation was intended to provide a more cost effective 9-1-1 system statewide, what actually occurred was that costs for which the ESCB is responsible decreased while costs for many local municipalities increased. Those agencies that lost PSAP functions in the consolidation still provide dispatch services. These services require the same personnel as before the consolidation. Not only do these agencies have the same pre-consolidation personnel costs, but they also must now contract with a PSAP for 9-1-1 services.

Table 4 below illustrates the potential cost shifting that would result should further PSAP consolidation take place. The table makes the following assumptions:

- The closed PSAP would still provide dispatch services. Therefore, no reduction in personnel would occur to offset the costs associated with contracting for PSAP services.
- The municipality would contract with DPS. Given that DPS currently charges the highest per-capita rate (\$3.54), it was chosen to provide a worst-case cost scenario.

The table is *not* intended to identify or recommend closing any of the county PSAPs listed below. These PSAPs were chosen because county population numbers were available for the sample calculations and they were used for illustration purposes *only*. If the State of Maine were to close any of these eight stand-alone county PSAPs, it would save the ESCB between \$41,369 and \$119,579 per PSAP in yearly equipment costs. However, costs at the local level will increase dramatically.

Any PSAP that is closed will have to contract with one of the remaining PSAPs in order to process their 9-1-1 calls. This would cost the counties between \$61,012 and \$193,833 a year. If a closed PSAP wanted to continue to provide EMD instructions, they would incur additional costs because the 9-1-1 fund does not pay for EMD from non-PSAPs.

**Table 4: Cost Shifting Examples**

<b>Cost Shifting Examples</b>				
<b>County</b>	<b>Population<sup>7</sup></b>	<b>Monthly ESCB Costs</b>	<b>Annual ESCB Costs/Savings</b>	<b>Costs Shifted to Municipalities</b>
Franklin County	29,467	\$8,036.22	\$ 96,434.64	\$104,313.18
Hancock County	51,791	\$7,908.24	\$ 94,898.88	\$183,340.14
Lincoln County	33,616	\$9,411.71	\$112,940.52	\$119,000.64
Oxford County	54,755	\$9,964.91	\$119,578.92	\$193,832.70
Piscataquis County	17,235	\$3,447.39	\$ 41,368.68	\$ 61,011.90
Sagadahoc County	35,214	\$9,411.08	\$112,932.96	\$124,657.56
Waldo County	36,280	\$9,447.94	\$113,375.28	\$128,431.20
Washington County	33,941	\$6,561.38	\$ 78,736.56	\$120,151.14

### 3.3.6. Collaboration Among State, County and Local Agencies

Nationally, total collaboration and cooperation between state, county and local governments is rare. Each has its own focus, goals and objectives, which often do not coincide. In Maine, the 2003 mandated PSAP consolidation had a lasting negative impact on the relationship between municipalities, counties and state agencies. The ESCB, the Legislature (through P.L. 2009 Chapter 219) and the stakeholder representatives who participated in the study agree that the optimal PSAP configuration for Maine is one that balances service levels with costs. Further, most agree that 9-1-1 call taking and dispatch functions for a region should reside in the same agency and facility. The goal of all involved in emergency communications is the same although the approach of various agencies differs.

Maine currently has an emergency communications system that is fragmented and dysfunctional. Legislative mandates implemented through the ESCB, local control of the dispatch portion, combined with a lack of collaboration between all parties, failure to fully understand the impact of the consolidation process on emergency communications as a whole and the overlap between PSAP and dispatch functions has resulted in the six key issues previously discussed.

One issue consistently pointed out to the Kimball team illustrates the lack of collaboration. This issue is how 9-1-1 calls are transferred from PSAP-to-PSAP or PSAP-to-dispatch-only site. Most PSAPs stay on the phone when the receiving agency answers and provide a verbal hand-off of the call. Other PSAPs, as a matter of policy, do not provide this hand-off and transfer the call without a verbal hand-off (blind transfer). Please note that ESCB training supports a verbal hand-off. While this may seem like a small issue, it is not. Failure to provide a verbal hand-off of calls increases the opportunity of technological or human error when processing these 9-1-1 calls.

<sup>7</sup>Based on US Census Bureau Estimated 2008 Population. [http://factfinder.census.gov/servlet/GCTTable?\\_bm=y&-geo\\_id=04000US23&-box\\_head\\_nbr=GCT-T1&-ds\\_name=PEP\\_2008\\_EST&-lang=en&-format=ST-2&-sse=on](http://factfinder.census.gov/servlet/GCTTable?_bm=y&-geo_id=04000US23&-box_head_nbr=GCT-T1&-ds_name=PEP_2008_EST&-lang=en&-format=ST-2&-sse=on)

This policy difference is an obvious point of contention between agencies and one that needs to be resolved. However, there does not appear to be any mechanism in place that allows agencies to work out these differences or any standards to which all PSAPs must adhere.

On a side note, National Emergency Number Association (NENA) Document 56-005 NENA Call Answering Standard/Model Recommendation, Section 3.7<sup>8</sup> states:

“When emergency calls need to be transferred to another PSAP, the telecommunicator will transfer the call without delay. The telecommunicator will advise the caller: “Please do not hang up. I am connecting you with (name of the agency).” The telecommunicator should stay on the line until the connection is complete and all pertinent information has been relayed to the answering PSAP.”

In Kimball’s opinion, the state, through the ESCB, has a responsibility for the following:

- Provide Maine citizens with a 9-1-1 system that balances cost efficiencies with public safety service.
- Recognize that PSAP functions are only one component of the larger emergency communications system and PSAP configuration decisions should be based on a balancing of service levels and cost, rather than cost or call volume alone.
- Work collaboratively with the local PSAPs and dispatch –only sites on establishing the most effective emergency communications services system statewide.
- Proactively plan for Next Generation 9-1-1 technology which will quickly become the new “standard of care” in the 9-1-1 industry.

PSAPs, dispatch-only sites and agencies that provide both services have a responsibility for the following:

- Provide 9-1-1 and dispatch services at the local level that are as efficient and consistent as possible.
- Work collaboratively with ESCB, other PSAPs and dispatch-only sites to establish the most effective emergency communications services system statewide.
- Recognize that NG9-1-1 will change emergency communications service delivery. To implement the advances the public will expect, how PSAP and dispatch services are delivered (locally vs. regionally) may have to change. Dispatch-only sites will not be able to receive the benefits of new NG9-1-1 technology with existing equipment.

<sup>8</sup> <http://www.nena.org/sites/default/files/NENAopsSOPcallansweringstandardfinal061006.pdf>

- Understand that there is a “cost” associated with operating individual dispatch-only sites and some PSAPs. The cost is not only financial, but service related as well. Each time a 9-1-1 call must be transferred, service delays occur. Each agency must consider if the need to retain these services locally is based on “this is how we’ve always done it” and/or the desire to retain local control and is truly in the best interest of the citizens. Kimball is not suggesting that dispatch-only sites should not exist, but that an honest evaluation of existing conditions needs to take place. This evaluation needs to focus on establishing the most effective emergency communications system for those that public safety agencies serve. PSAPs and dispatch-only sites have a responsibility to keep an open mind to an analysis of what advantages and disadvantages a consolidation effort might bring.

Collectively, all involved in the delivery of 9-1-1 and dispatch services must understand that service delivery includes from the time a citizen dials 9-1-1 to the time police, fire and EMS arrive at the scene of an emergency. Implementation and management of PSAP and dispatch services requires a partnership and on-going collaboration to be effectively delivered.

Other points that should be noted are:

- Local government representatives expressed the desire for the ESCB to have more control in implementing operational standards and providing oversight for quality assurance and training programs.
- Staff from local governments often refer to multiple state agencies collectively as “the state” when referring to issues or problems. When these issues or problems are examined they can generally be attributed to one of four agencies within state government, including ESCB, DPS, legislative staff and executive staff. Attributing issues, concerns, or complements to the correct agency is important in problem solving and maintaining a collaborative working relationship.

### **3.4 TECHNICAL OVERVIEW**

In order to deliver emergency aid to the citizens of Maine a comprehensive system of various technologies has been developed. Each system is vital to the emergency response system. These systems include:

- 9-1-1 Network and customer premise equipment (CPE)
- Computer aided dispatch (CAD)
- Logging recorders
- Radio

#### **3.4.1. 9-1-1 Network**

In Maine, FairPoint Communications delivers 9-1-1 calls to the PSAPs via an E9-1-1 service contract. The technology includes CPE (the 9-1-1 call answering system), MagIC (Call Detail Record) and mapping. The 9-1-1 service contract with FairPoint provides for the following:

- Network Services

- Database Services
- Managed Services including 24x7x365 (24-hours a day, seven days a week, 365 days a year) maintenance and remote monitoring, servicing of hardware, security and software updates.
- Equipment costs
  - 9-1-1 Workstations (Vesta Systems)
  - Data Sync/Mapping
  - Uninterrupted Power Supply (UPS) and System Monitoring

#### **3.4.2. 9-1-1 Answering Equipment/CPE**

Twenty of the 26 PSAPs have Plant/CML Pallas systems and six of the sites have Plant/CML Meridian. The Meridian and the Pallas systems are designed to operate in a client/server environment. They run on a standard Microsoft Windows PC platform. Each workstation functions independently, but still shares all of the common files needed for the application via the network server.<sup>9</sup> The Pallas system is designed for a two to seven position PSAP and Meridian is designed for larger centers. This CPE equipment was installed between October 2005 and February 2008. According to the ESCB, most of the Pallas systems are due for an upgrade because the internal private branch exchange (PBX) is no longer supported by Plant/CML. Funds have been budgeted to make the upgrades in FY2010.

The 9-1-1 system has 222 centralized automated message accounting (CAMA) trunks into the 26 PSAPs and Plant/CML CPE equipment is used at all of 134 PSAP workstations exclusive of the training center workstations. Table 5 is a breakdown of the 9-1-1 trunks and workstations by PSAP.

<sup>9</sup>Amendment IV to Contract for Special Services (E-9-1-1 Service): signed 8/11/2006, p. 13



**Table 5: PSAP Equipment Summary**

<b>PSAP Equipment Summary</b>			
<b>PSAP</b>	<b># of 9-1-1 Trunks</b>	<b># of Work Stations</b>	<b>Plant/CML CPE Type</b>
Androscoggin County Sheriff's Office	6	3	Pallas
Bangor Police Department	6	4	Pallas
Biddeford Police Department	8	4	Pallas
Brunswick Police Department	6	3	Pallas
Cumberland County Communications	12	10	Vesta Meridian
Dept. of Public Safety – CMRCC	16	16	Vesta Meridian
Dept. of Public Safety-Gray RCC	16	10	Vesta Meridian
Dept. of Public Safety-Houlton RCC	8	4	Pallas
Dept. of Public Safety-Orono RCC	8	4	Pallas
Franklin County Sheriff's Office	6	3	Pallas
Hancock County RCC	6	3	Pallas
Knox Regional Communications Center	8	4	Pallas
Lewiston/Auburn 9-1-1	16	8	Vesta Meridian
Lincoln County Communications 9-1-1 Center	8	4	Pallas
Oxford County RCC	8	4	Pallas
Penobscot RCC	12	8	Vesta Meridian
Piscataquis County Sheriff's Office	4	2	Pallas
Portland Police Department	16	10	Vesta Meridian
Sagadahoc County Communications Center	6	4	Pallas
Sanford Police Department	6	4	Pallas
Scarborough Police Department	6	3	Pallas
Somerset County Communications	8	5	Pallas
Waldo County RCC	8	4	Pallas
Washington RCC	6	3	Pallas
Westbrook Police Department	6	4	Pallas
York Police Department	6	3	Pallas
<b>Totals</b>	<b>222</b>	<b>134</b>	

### **3.4.3. 9-1-1 Service Provider Capability**

FairPoint uses a network of dedicated 9-1-1 lines or trunks for 9-1-1 call routing. When a caller dials 9-1-1, the call is immediately routed through this dedicated network to the Portland or Lewiston tandem offices. The system queries the FairPoint routing database, which is maintained by Intrado, and then delivers the call to the correct PSAP. When the call is answered at the PSAP, the 9-1-1 telephone equipment automatically retrieves the location of the phone from the ALI database, maintained by Intrado for FairPoint. The table above illustrates the number of trunks available to each PSAP.

The 9-1-1 network was designed to provide the multiple levels of redundancy. Each PSAP has a primary and an alternate path for call and data delivery. Each of the two tandems has connectivity to each PSAP, each of the two selective routers and each of the two ALI databases. Either tandem is capable of processing all 9-1-1 calls.

### **3.4.4. Master Street Address Guide (MSAG) Database Maintenance**

The MSAG Database is a list of street names and house number ranges in every community, which allows for the proper routing of 9-1-1 calls. In Maine, this database is maintained by Intrado with assistance from FairPoint and the ESCB. When 9-1-1 is dialed in Maine, the redundant selective routers will deliver the location of the wireline phone and callback number to the correct PSAP.

### **3.4.5. Automatic Location Identification Database (ALI DB) Provider Capability**

ALI provides the PSAPs with the callers telephone number, address and other emergency service information regarding the location of the call. While voice connection is established during a 9-1-1 call, the ALI database (ALI DB) is queried by the CPE for the caller's location. The ALI data is sent to the PSAPs via the 9-1-1 TDM network. FairPoint contracted with Intrado to provide ALI DBs for the State of Maine. Intrado maintains two mirrored (redundant) geographically diverse databases. . Queries are made to the DB via Intrado's MPLS network. ALI links connect both 9-1-1 tandems to each of Intrado's databases.

### **3.4.6. Mapping**

Mapping became a vital part of E9-1-1 during the deployment of wireless 9-1-1 systems. Cellular calls do not provide the traditional addresses associated with landline 9-1-1 calls. The location of cell callers has to be plotted by the location determination equipment developed by each wireless service provider. The location is delivered as latitude / longitude. Mapping systems can precisely plot these coordinates for the call taker, providing a meaningful description for determining the location of a wireless caller.

The Maine ESCB provides mapping to all PSAPs through the FairPoint contract. Plant/CML Vesta solution provides ORION MapStar at every workstation. ORION MapStar is a comprehensive and scalable mapping solution that can meet many PSAP needs and works in tandem with Plant/CML Vesta system. This system is based on using Microsoft's Windows software platform. In addition to fast and easy location of wireless and wireline calls, MapStar can provide directions, site information, mapped ALI broadcasting, event/unit filtering, structure based ALI matching and more.

In order to maximize MapStar's capabilities in addressing emergency response, it is integrated with the enterprise GIS (Geographic Information System) technology. When a 9-1-1 call is received at a PSAP, the location is automatically plotted on the map. The system uses either the latitude / longitude of a VoIP or wireless call or the street address of a landline call. The Maine Office of Geographic Information System maintains and updates the mapping information for all the PSAPs.

### **3.4.7. Administrative Network**

The administrative network includes:

- FairPoint (Plant/CML) Managed Services
- Call Record Systems Data Updates
- Mapping Updates
- UPS Alarms Monitoring

These system administrative functions are conducted over the state frame relay network. The ESCB shares the network with the DPS. Access is gained through a firewall at two geographically diverse entry points. Plant/CML's Mission Control is allowed limited access to the PSAPs equipment through these two points. The data updates are for the call record systems, mapping and alarms are monitored using this network. System updates and data downloads are allowed during the early morning hours.

The ESCB has requested and received a quote from FairPoint for an internet protocol (IP) network for these system administration functions. At this time, the ESCB pays \$3300 a month for their portion of the network. A stand-alone IP network was priced at \$4800 month. The IP network would provide greater access and increased speed and flexibility. FairPoint Managed Services includes access, security, operating system, data and virus protection updates, disaster recovery capability and monitoring of PSAP hardware and software.

Call record system includes Plant/CML's MagIC Monitor, Enterprise and Repository. There is a MagIC Monitor server at each of the 26 PSAPs. This system records the details of every incoming and outgoing call received on the PSAP CPE workstations. It provides pre-designed reports that document system, PSAP and personnel performance levels.

MagIC Enterprise and MagIC Data Repository combine the data from each of the MagIC servers into a master file of all the incoming and outgoing calls at all of the 26 PSAPs. They provide pre-designed reports that analyze the data that is accumulated from all of the PSAPs. Enterprise evaluates the data but Data Repository downloads MagIC Monitor call details of each call in each of the state's PSAPs. The calls are correlated into a single chronological file. Both systems provide the ESCB valuable tools in their oversight of E9-1-1 in Maine.

Mapping updates are made on an as-needed basis using this administrative network.

### **3.4.8. CAD Technical Overview**

CAD systems are the “nerve center” of the E9-1-1/ dispatch function. The ESCB does not provide CAD to any agency. CAD is used by both PSAPs and dispatch-only public safety communications centers to verify incidents and caller locations, create incident records, document field activity, track first responder status and activity and interface with mobile computing devices and user agency records management systems (RMS). The CAD system is interfaced to the E9-1-1 system to receive ALI, mapping and state and federal criminal information systems to perform inquiries, radio and mobile data systems and GIS for location verification and mapping.

Maine’s PSAPs and dispatch-only centers use CAD systems provided by several vendors. The primary vendor is Information Management Corporation (IMC), Spillman, Motorola and others. Disparate CAD systems present a challenge to any public safety communications enterprise where information needs to be shared in a real-time manner due to the proprietary nature of this specialized software. Great strides have been made in the industry, although much work remains to be done, towards developing “open systems” that can freely share data without compromising the intellectual property of the developers.

Maine has undertaken a project to develop a “data broker” system, which is intended to provide a data-switching hub to automatically receive standardized sets of public safety data from one CAD system, PSAP or other source and deliver it to other systems for use in their native method of operation. Each contributing user agency would have the authority and ability to define what data is shared and with which other agencies. These considerations would be detailed in appropriate inter-local agreements as necessary. This approach appears to be preferable to the enormous task of defining, procuring and implementing a statewide CAD or mandating the use of a particular CAD system across the state without regard for local needs, budgets and schedules, RMS requirements and other limiting factors.

The current PSAP, dispatch-only center, CAD and E9-1-1 landscape in Maine presents many challenges today to the equal and efficient delivery of E9-1-1 services to the citizens of the state. E9-1-1 features such as ALI are only available to dispatch-only centers if they use the IMC CAD system and the ALI is conveyed over the IMC interface. This also requires that both the PSAP and the dispatch only agency use IMC CAD.

The interface is an additional cost item for initial installation plus yearly maintenance to the dispatch centers. Unfortunately, the IMC CAD interface has been implemented with varying degrees of success statewide. Kimball understands that the data is often delivered thirty seconds to minutes after the voice call is transferred or not at all. To be effective, the data should arrive simultaneously with the voice call to enable the call taker at the receiving end to verify all of the information with the caller to rapidly effect dispatch of first responders. Many dispatch centers report they do not use the IMC interface due to its lack of reliability. Possible reasons for the perceived shortcomings of the interface could include software, network, setup and maintenance or training issues.

### **3.4.9. Logging Recorders**

Logging recorders are not provided by the ESCB. Each PSAP must provide its own recorders. Of the twenty-three PSAP survey respondents, twenty identified their logging recorder equipment type. Table 6 is an overview of the equipment currently in use:

**Table 6: PSAP Logging Recorders**

PSAP Logging Recorders	
Vendor	# of PSAPs
DSS-Acorn	12
CVDS, Inc.	5
Exacom	2
Dictaphone	1

The majority of the equipment is either new in the last two years or still well within its expected lifecycle. Only one recorder could be considered out of its expected lifecycle.

### **3.4.10. Radio**

PSAPs and dispatch-only public safety communications centers utilize a variety of local and regional radio systems to provide dispatch and command-and-control communications services to police, fire and EMS first responders statewide. These radio systems are primarily very high frequency (VHF) with some ultra high frequency (UHF) and 800 MHz systems as well. Based on the PSAP and dispatch-only survey responses for this study, respondents reported they have generally have good coverage for their service area and do not have serious capacity issues pertaining to radio communications. However, a substantial number of mobile and portable radios plus fixed-end transmitting and receiving equipment are several years old. This equipment will be in need of eventual replacement as part of the ongoing task of keeping vital public safety communications systems in mission critical readiness.

The various PSAP and dispatch agencies achieve functional interoperability by different means to ensure they can communicate agency-to-agency when needed. This is accomplished by monitoring each other's channels, exchanging radios, use of regional or statewide channels and other strategies. The project team's impression is that there is substantial historical and ongoing cooperation among the public safety agencies in this regard.

The upcoming statewide radio system upgrade will provide additional opportunities for interoperable communications. Once the currently planned system upgrade is complete, an assessment of coverage, capacity and capabilities will need to be undertaken to determine how the statewide system fits into the overall radio communications strategy for the state. This will assist local and regional PSAPs and dispatch-only centers in determining what their future migration or local upgrade should be.

## **3.5 SURCHARGE/COSTS**

Maine's statutory provision for 9-1-1 funding is found in 25 MRSA §2927, sub-§1-B. A single statewide E9-1-1 surcharge is levied on each residential and business telephone exchange line (including PBX lines and Centrex lines), wireless telecommunications service customers (including prepaid wireless), interconnected VoIP customers and semipublic coin and public access lines. The current rate is \$.37 per month per line or number. The state, its political subdivisions or any intergovernmental agency is prohibited from imposing another charge for E9-1-1 by Sec. 1. 25 MRSA §2927, sub-§1-G. Thus, all funding for 9-1-1 is centralized at the state level.

Each service provider collects the surcharge monthly from its subscribers / customers. The ESCB prescribes the form the service providers are required to use in making their remittances and the supporting data that they are required to include. Surcharges are remitted to the Treasurer of State within one month of the month in which they were collected. The Treasurer deposits the remittances into a special E9-1-1 fund (Fund). Unexpended funds from one fiscal year carry forward to the next and remain in the Fund.

### **3.6 CURRENT REVENUES**

Based on the available historical information, Maine's E9-1-1 revenues were stable between \$8.3 and \$8.5 million annually in the four years from fiscal year (FY) 2005 through 2008. In FY2009, \$2.6 million from the fund surplus was used to augment the state's general fund (Chapter 539, H.P. 1651 - L.D. 2289, PART EEEE). In an effort to reduce the surplus, the surcharge was reduced to 30 cents. The loss in revenue was more than \$2.8 million dollars. The fund balance is being used to supplement the ESCB budget due to this loss in revenue. In FY2010, the surcharge was increased to 37 cents, which will provide revenue of \$6.3 million by the end of the current FY2010. In FY 2011, the surcharge is set to increase to 52 cents. The 9-1-1 fund surplus will again be used to cover a \$4.1 million shortfall.

### **3.7 COSTS**

#### **3.7.1. Eligible Uses for E9-1-1 Funds**

Eligible uses for E9-1-1 funds are defined in Sec. 1. 25 MRSA §2927, sub-§3. The ESCB has authority to use E9-1-1 revenues to pay for its staff and for the implementation, operation and management of the statewide E9-1-1 system. The state is the customer of record for the statewide E9-1-1 system service contract with FairPoint and directly pays all associated costs.

The law also provides for the ESCB to transfer funds to the EMS account within the DPS to cover the costs of the EMS Board, which in cooperation with the ESCB, oversees the licensing and quality assurance of PSAP call takers' handling of EMD. EMD is governed by statute section 32 MRSA §85-A. The ESCB covers the EMD training tuition costs for PSAP personnel.

If the ESCB determines the E9-1-1 fund has sufficient funds, it is required to reimburse local exchange carriers (LEC) and wireless telecommunications service providers for their eligible expenses. The statute defines "eligible expenses" in this context to mean expenses:

- Incurred in preparing, correcting, verifying or updating subscriber information for use in databases necessary to implement the E-9-1-1 system.
- Determined by the PUC to meet the requirements of 32 MRSA §85 paragraph A and to be a reasonable expenses for the services provided
- When incurred by a cellular or wireless telecommunications service provider the following applies:
  - Approved by the ESCB to be properly incurred for the implementation of E9-1-1 technologies and procedures
  - Are not separately billed to customers and for which the provider is not reimbursed

### 3.7.2. ESCB Costs

The FairPoint contract costs the ESCB about \$7.2 million each year in recurring costs for the network, databases and PSAP equipment components of the system. In addition to this contract, the ESCB's FY2010 program operating budget is an additional \$3,246,726.

**Table 7: Emergency Services Communication ESCB FY2010 Operating Budget**

<b>Emergency Services Communication ESCB</b>	
<b>FY2010 Operating Budget</b>	
ESCB Salaries and Benefits	\$ 521,726
All Other	\$ 115,000
MEGIS Contract for Addressing & Mapping Support Related Expenses	\$ 475,000
EMS Employee for EMD Licensing	\$ 100,000
EMD Contract for training, materials, etc.	\$ 600,000
Basic Dispatcher & Continuing Education Training	\$ 35,000
Telco Reimbursement & FairPoint costs outside of contract	\$ 500,000
Consulting services for Next Gen planning	\$ 300,000
Matching Money for Federal ENHANCE 9-1-1 Act Grant <sup>10</sup>	\$ 500,000
PSAP Contingency Fund	\$ 100,000
FairPoint Contract	\$ 7,210,980
<b>Total FY2010 Budget Projection</b>	<b>\$10,457,706</b>

### 3.7.3. Local Costs

Local governments experience related E9-1-1 costs that are not funded through the surcharge. Local governments fund these costs through general taxes and service fees. The PSAPs' non-state funded costs fall largely into the following categories:

- Administrative phone systems
- CAD systems
- Radio dispatch systems
- Office equipment
- Office supplies
- PSAP facilities and related overhead
  - Heating, ventilation, air conditioning (HVAC)

<sup>10</sup> The State did not qualify for this grant since surcharge funds were diverted to assist in balancing the state budget.

- Utilities
- Backup power, etc.
- Additional software licenses
- Other equipment
  - TDD/TTY
  - Headsets
  - Uniforms
- Training
- Employee salaries

Kimball surveyed Maine's 26 PSAPs to obtain information about these costs. Responses were received from 23 PSAPs. The three non-respondents were the Westbrook and Portland Police Departments and the Piscataquis County Sheriff. In order to provide as complete a picture as possible, the costs for two of these three PSAPs were assumed to be close to the costs of similarly sized PSAPs for which we did have data. Please note that there were no comparable PSAP costs available to estimate costs for Portland, so our analysis must be considered in that context.



## **4. STAKEHOLDER AND FOCUS GROUP MEETINGS**

A key component in this study was gathering data and input from identified stakeholders. This component was accomplished by conducting a series of stakeholder and focus group meetings. The purpose of these meetings was to provide a forum in which stakeholders could share their opinions, concerns and perspectives regarding further PSAP consolidation. In addition, these meetings ensured that Kimball gained a clear understanding of the current emergency communications environment at the state, county and local levels. The meetings took place from October 19 through October 23, 2009. A complete list of meetings is located in Section 2.

In addition to these meetings, 13 letters and four e-mails were received voicing strong support for keeping specific PSAPs open. The issues and concerns contained in these documents are included in the information that follows.

Concerns and issues raised by the stakeholders that attended the interviews and focus group meetings are summarized in this section. Care has been taken to not attribute specific concerns, issues, or positions to specific groups or individuals unless a public position was shared with Kimball. No attempt was made to verify the validity of any individual complaint or issue. The information gathered was used as anecdotal evidence of existing issues and concerns and to gauge the political environment among the stakeholders as it relates to past and future PSAP consolidation. A complete listing of issues and concerns is located in Appendix A.

Following is a listing of the key opinions, concerns and issues expressed pertaining to PSAP reconfiguration:

- Most stakeholders want to leave the configuration as it currently is or pursue further regionalization as fully consolidated (call taking and dispatching) centers.
  - Many feel that separating call taking functions from dispatching functions into separate facilities needs to stop as it lowers the quality of service.
- Any reconfiguration initiative should include a process for minimizing or eliminating transferred calls.
- PSAP rate shopping has negatively impacted service levels.
- Selection of PSAP sites should be based on quality of service rather than the rates charged.
- Stakeholders see staffing and service degradation as challenges resulting from consolidation.
- Reconfiguration decisions should be based on service and stakeholder input first, then costs.
- Dispatch-only sites are concerned about the inability to measure true call processing time to identify how much time elapses before call transfers are received.
- Costs and funding concerns were expressed.
  - Use of 9-1-1 surcharge funds by the State for the purposes of balancing the state budget (raiding of the surcharge fund). Although most recognized this issue is out of the control of the PUC, some felt that the PUC could have taken additional measures to ensure the fund raiding did not happen.

- Differing fee structures across the state.
  - True costs to municipalities may be difficult to identify with a shift from a local to a State fee structure.
  - Mechanism to control fees and costs needs to be established.
  - Some local level participants feel the “State” is now charging for services it took away.
  - Many tied studying further consolidation to the E9-1-1 fund raids. The thought process by many being that there was no longer enough money to run the system.
  - Local government and response agencies feel strongly that the state was the only entity to save money in last round of PSAP reductions, while local costs increased.
  - Local government needs financial incentives to participate in consolidation.
- 
- Local governments oppose state forced initiatives, not necessarily against consolidation.
  - Several counties want all wireless calls routed directly to their PSAPs to alleviate the transferred and dropped calls and blind transfers.

## **5. RECONFIGURATION SCENARIOS**

### **5.1 EXISTING 26-PSAP CONFIGURATION**

#### **5.1.1. Operational Overview**

##### Staffing

Table 8 below summarizes the 26-PSAP 9-1-1 call data for 2009, recommended minimum staffing and equipment levels. The information includes:

##### 9-1-1 Call Volume

- Average number of 9-1-1 calls received during the busiest hour of the busiest month
- Workstations needed to process the “busy hour calls” plus an overflow position
- Staff needed to handle the call volume.
  - The 9-1-1 call volume was used to calculate the number of call takers needed.

*Please Note:* The staffing estimates were calculated based on 9-1-1 call volume only. These staffing numbers *do not* reflect additional staff needs to handle the following:

##### Dispatch Responsibilities

- Administrative calls
- Other non-emergency communications tasks

Therefore, these estimates *should not* be used to estimate the overall staffing levels needs at each individual PSAP as the estimates do not reflect the total workload PSAP employees are currently handling.

**Table 8: 26-PSAP Summary Table**

26-PSAP Summary Table							
#	PSAP	2009 Wireline Calls	2009 Wireless Calls	Total 2009 911 Calls <sup>11</sup>	# Calls Busy Hr. <sup>12</sup>	Work Stations Needed <sup>13</sup>	Staffing/ Call Volume <sup>14</sup>
1	Androscoggin Sheriff's Office	6,583	2,174	8,757	2	2	6
2	Bangor Police Department	12,852	7,120	19,972	5	2	6
3	Biddeford Police Department	8,263	3,301	11,564	3	2	6
4	Brunswick PD	10,014	2,703	12,717	2	2	6
5	Cumberland Co Comm	13,397	4,199	17,596	4	2	6
6	DPS - Augusta (CMRCC)	17,335	50,934	68,269	47	6	13
7	DPS - Gray RCC	12,340	156,527	168,867	31	5	19
8	DPS - Houlton RCC	10,302	7,162	17,464	4	2	6
9	DPS - Orono RCC	0	48,128	48,128	12	3	6
10	Franklin Co SO	6,097	3,291	9,388	2	2	6
11	Hancock County RCC	9,545	1,014	10,559	2	2	6
12	Knox RCC	16,904	4,666	21,570	20	4	6
13	Lewiston / Auburn 9-1-1	21,150	9,083	30,233	27	5	13
14	Lincoln Co Comm Center	6,521	5,317	11,838	3	2	6
15	Oxford County RCC	14,449	4,881	19,330	5	2	6
16	Penobscot RCC	23,859	7,417	31,276	5	2	13
17	Piscataquis Sheriff's Office	4,121	968	5,089	6	2	6
18	Portland Police Department	31,109	15,601	46,710	10	3	13
19	Sagadahoc Co Comm Center	9,599	2,551	12,150	3	2	6
20	Sanford Police Department	7,014	4,176	11,190	3	2	6
21	Scarborough PD	7,526	2,085	9,611	3	2	6
22	Somerset Co Comm	16,937	4,554	21,491	5	2	6
23	Waldo County RCC	6,751	1,049	7,800	2	2	6
24	Washington County RCC	6,131	3,646	9,777	2	2	6
25	Westbrook PD	9,805	2,780	12,585	2	2	6
26	York PD	5,590	861	6,451	2	2	6
	<b>Total</b>	<b>294,195</b>	<b>356,187</b>	<b>650,382</b>		<b>66</b>	<b>197</b>

<sup>11</sup> All 9-1-1 statistics were provided by the ESCB. 2009 figures include January - October. The remaining two months were estimated.

<sup>12</sup> Number of calls during the PSAPs' busiest hour and month. Based on data received from the ESCB.

<sup>13</sup> Based on number of work stations needed for 9-1-1 call volume during the average busiest hour/month. One extra position was added to each PSAP for call overflow.

<sup>14</sup> Reflects that total number of full time employees required to handle the 9-1-1 call volume only. Based on 150 seconds of total call time including 120 seconds of talk and 30 seconds of wrap up time. In addition, NENA standards for 9-1-1 call answering were applied (90 percent answered within 10 seconds).

Table 9 below lists the pay ranges for each of the 26 PSAPs. These pay ranges are limited to wages only (no benefits costs are included). This information was obtained through the data collection survey distributed to the PSAPs. N/A denotes that either a survey response was not received or the information was not contained in the response. The pay ranges were then calculated to determine an average hourly rate of \$16.88 for a dispatcher. This figure was used to project personnel costs in subsequent sections.

**Table 9: Agency Pay Range Summary**

<b>Agency Pay Range Summary</b>				
<b>Agency</b>	<b>Full Time Dispatchers</b>		<b>Part Time</b>	
	<b>Low</b>	<b>High</b>	<b>Low</b>	<b>High</b>
Androscoggin County SD	\$13.09	\$16.43	\$10.00	\$11.75
Bangor PD	\$15.38	\$18.75	\$15.00	\$21.00
Biddeford PD	N/A	N/A	N/A	N/A
Brunswick PD	\$14.81	\$17.64	N/A	N/A
Cumberland County Communications	\$15.84	N/A	\$12.01	N/A
DPS – CMRCC*	\$14.44	\$19.30	N/A	N/A
DPS - Gray RCC*	\$14.44	\$19.30	N/A	N/A
DPS - Houlton RCC*	\$14.44	\$19.30	N/A	N/A
DPS - Orono RCC*	\$14.44	\$19.30	N/A	N/A
Franklin County SD	\$12.31	\$16.00	\$9.25	\$10.25
Hancock County RCC	\$14.01	\$18.83	N/A	N/A
Knox County RCC	\$14.11	\$16.61	\$14.11	N/A
Lewiston/Auburn 9-1-1	\$14.00	\$18.86	\$13.03	\$15.07
Lincoln County 9-1-1	\$14.85	\$19.57	N/A	N/A
Oxford County RCC	\$13.03	\$15.67	\$12.00	N/A
Penobscot County RCC	N/A	\$17.56	N/A	N/A
Piscataquis County SD	N/A	N/A	N/A	N/A
Portland PD	N/A	N/A	N/A	N/A
Sagadahoc Co. Communications	\$14.09	\$17.77	N/A	N/A
Sanford RCC	\$15.24	\$19.00	\$15.24	\$19.00
Scarborough PD	\$17.45	\$20.20	\$14.13	N/A
Somerset County Communications	\$14.50	\$17.75	\$15.95	\$19.53
Waldo County RCC	\$14.51	\$20.37	\$11.80	\$14.51
Washington County RCC	\$12.36	\$15.69	\$10.04	N/A
Westbrook PD	N/A	N/A	N/A	N/A
York PD	\$15.26	\$21.39	\$13.88	\$18.62
<b>Pay Range Hi/Low:</b>	\$12.36	\$21.39	\$9.25	\$21.00
<b>Average Full Time Per-Hour Rate:</b>	<b>\$16.88</b>			

\*Pay range does not include 15 percent stipend paid to DPS employees.

### **5.1.2. Technological Overview**

Section 3 provides an overview of current technology.

### **5.1.3. Costs/Economic Overview**

There are 327 authorized full time employees and 62 authorized part time employees working in Maine's 26 PSAPs (excluding Portland, for which Kimball had no data). Based on actual call volume, 197 full time call taking personnel are needed just to answer 9-1-1 calls. Sixty-six workstations are needed to answer the state's call volume as compared with the 134 that are currently installed.

Purchasing 9-1-1 equipment was an option that was evaluated, but quickly eliminated as viable. It is important to keep in mind that there are costs associated with owning the equipment in addition to purchasing it. The following non-quantifiable cost considerations were evaluated and resulted in removing this option from consideration.

- The ESCB would still have to provide trouble support for the equipment.
- If the ESCB wants to provide trouble support in house, it will require additional staff with the requisite expertise available 24x7x365.
- If the ESCB wants the equipment vendor to provide trouble support, the vendor will have to arrange for a technician to be nearby so he (or she can) respond within the required timeframe, which increases cost.
- Vendors typically provide trouble support for owned equipment at a cost higher than they would if the equipment were leased from them.
- The ESCB will want to consider maintaining an inventory of spare equipment in the event a piece of equipment fails and has to be replaced immediately.

Table 10 shows a five-year cost projection for the 26-PSAP configuration. The economic impact assessment began with the following basic assumptions:

- The ESCB's program operating costs, separate from E9-1-1 system costs, would remain level in FY 2011. Total costs have been estimated at \$9,470,702.
- Existing managed services would be moved to an IP network in 2011
- ESCB would choose not to exercise its option to renew the FairPoint contract in October 2011
- ESCB would fund the following equipment hardware and software, and services:
  - 9-1-1 call handling
  - Mapping
  - 24x7x365 system maintenance and monitoring
  - Uninterrupted Power Supply (UPS) and UPS monitoring
- FairPoint's equipment lease costs would be comparable to another vendor's pricing
- In anticipation of replacing existing equipment in 2012, ten percent of the current equipment costs were added to 2012-2015 totals

- Costs for deployment and installation of new equipment were not factored into configuration costs.
  - According to the ESCB, Verizon was paid \$294,840 for installing equipment at the 26 PSAPs
  - These costs are shown in conjunction with the ESCB’s current cost

**Table 10: 26-PSAP Configuration Costs**

26-PSAP Configuration Costs						
Costs	2011 Total	2012 Total	2013 Total	2014 Total	2015 Total	5 Year Total
Current	\$9,470,702	\$ 9,927,707	\$ 9,927,707	\$ 9,927,707	\$ 9,927,707	<b>\$49,181,531</b>
26 PSAP	\$9,494,702	\$ 9,951,707	\$ 9,951,707	\$ 9,951,707	\$ 9,951,707	<b>\$49,301,531</b>
Staffing	0	\$ 9,130,108	\$ 9,130,108	\$ 9,130,108	\$ 9,130,108	<b>\$36,520,434</b>
9-1-1 With Staffing	\$9,494,702	\$19,081,816	\$19,081,816	\$19,081,816	\$19,081,816	<b>\$85,821,965</b>

In conducting this analysis, the staffing levels that would be needed to handle Maine’s existing 9-1-1 call volume were calculated. This provided a basis for comparison with the actual staffing levels that exist at Maine’s PSAPs. As noted in earlier sections of this report, there are 327 authorized full time staff members and 62 authorized part time staff members working in Maine’s 26 PSAPs (excluding Portland, for which Kimball had no data). These employees answer 9-1-1 calls, dispatch emergency responders and handle other administrative duties within their agency such as answering the department’s administrative telephone lines. Based on actual call volume, 210 full time call takers are needed just to answer 9-1-1 calls.

The 9-1-1 costs with staffing uses an estimated salary for 197 call takers in the 26-PSAP configuration tables and sixty-six workstations are needed to answer the state’s call volume (compared with the 134 that are currently installed). An additional fourteen training workstations located in Vassalboro have been included in total cost estimates. The cost comparison tables use current equipment level of 148 workstations in its calculation.

In conclusion, this configuration is the most costly for the state as compared to the 2, 4 and 15 to 17-PSAP configurations.

**5.1.4. Surcharge Impact**

The ESCB’s published budget projections for 2011 provided the baseline for this analysis. The ESCB’s program operating costs, separate from E9-1-1 system costs, were assumed to remain level. This information is reflected in the “Current Costs” row in Table 10.

In the face of market trends and an uncertain economy, we assumed a level subscriber count at the current 1,425,767. The surcharge rates presented reflect the rate needed to cover the costs discussed in the previous section.

Table 11 identifies the surcharge rates over a six-year period for the 26-PSAP configuration. The various “Costs” sections identify anticipated costs for the various options. The “Surcharge Funds” row identifies the actual surcharge revenue that will be collected based on the surcharge. The “5 Year Total” column shows the difference between anticipated costs and the surcharge rate. In each example, the surcharge will not meet the anticipated costs. The ESCB plans to use existing fund money to cover the anticipated shortfall. In July 2009, the surcharge rate was increased from 30 cents to 37 cents.

The FY2011 rate has been set to increase to 52 cents. However, the Legislature has given itself the authority to review actual need in the upcoming legislative session. The rate set for FY2010 was 37 cents. This rate will bring in \$6.3 million, which is far short of the \$10.5 million in projected costs. In FY2011, the surcharge tables are based on the assumption that the 52 cents rate will not change. Again, this rate will not cover the projected budget and it anticipated that existing fund money will be used to cover the shortage. For FY2012 through 2015, the surcharge rates shown in the table reflect the rate needed to cover most of the identified costs.

**Table 11: 26-PSAP Configuration Surcharge Analysis**

<b>26-PSAP Configuration Surcharge Analysis</b>								
<b>Costs</b>	<b>Comm. Devices</b>	<b>2010 Total</b>	<b>2011 Total</b>	<b>2012 Total</b>	<b>2013 Total</b>	<b>2014 Total</b>	<b>2015 Total</b>	<b>5 Year Total</b>
Current Costs	1,425,767	10,457,706	9,470,702	9,927,707	9,927,707	9,927,707	9,927,707	<b>\$49,181,531</b>
Surcharge		\$.37	\$.52	\$.58	\$.58	\$.58	\$.58	
Surcharge Revenue		6,330,405	8,896,786	9,923,338	9,923,338	9,923,338	9,923,338	<b>\$48,590,139</b>
26 PSAP Costs	1,425,767	10,457,706	9,494,702	9,951,707	9,951,707	9,951,707	9,951,707	<b>\$49,301,531</b>
Surcharge		\$.37	\$.52	\$.58	\$.58	\$.58	\$.58	
Surcharge Revenue		6,330,405	8,896,786	9,923,338	9,923,338	9,923,338	9,923,338	<b>\$48,590,139</b>
911 Costs with Staffing	1,425,767	10,457,706	9,494,702	19,081,816	19,081,816	19,081,816	19,081,816	<b>\$85,821,965</b>
Surcharge		\$.37	\$.52	\$1.11	\$1.11	\$1.11	\$1.11	
Surcharge Revenue		6,330,405	8,896,786	18,991,216	18,991,216	18,991,216	18,991,216	<b>\$84,861,652</b>

**5.1.5. Political Overview**

Maintaining the current 26-PSAP configuration will offer the least politically challenging course of action for the ESCB and the state and local governments. It provides an opportunity to stabilize existing PSAP operations and make improvements to the current statewide 9-1-1 system. This can occur while the ESCB prepares for the anticipated overall enhancement of the 9-1-1 network that NG9-1-1 will present to the public safety communications community. Immediate additional PSAP consolidation would add to the current political rift between the ESCB, county and local governments and response agencies. The positive impact of maintaining the current configuration can be realized only if action is taken to rectify the separation of call taking and dispatching functions between the PSAPs and dispatch centers.



The political impact of continuing the current configuration without state, county and local governments and response agencies collaborating, planning and implementing a resolution to the separation of call taking and dispatching functions, will only continued the degradation of service and dysfunction trend in response, relationships and services at all levels statewide. This is the case regardless of the final configuration.

Apart from the service issues, the concept of cost savings has and will continue to have, a significant political impact. While further consolidation of PSAPs can be viewed as potential cost savings for the state, this is not the case locally. Unfortunately, reduction of PSAPs has not and does not, automatically lead to reductions in necessary facilities, staffing and costs required to provide public safety communications services to the citizens of Maine.

### **5.1.6. Configuration Positives and Negatives**

#### *Positives*

Though additional reduction in the number of PSAPs may appear to be a method of further simplifying the network and technology in size and cost, there are benefits to maintaining the current 26-PSAP configuration. This configuration:

- Allows the ESCB to further review and repair degradation in service resulting from the separation of call processing between call taking (PSAPs) and dispatching (dispatch-only centers).
- Maintains integrity of local based response by local agencies, while state based responses remain under control of state agencies
- Maintaining this configuration will temporarily afford an opportunity for state, county and local government entities to better balance and regulate the service fees/rates structures prior to any additional consolidation.

#### *Negatives*

- Inherent flaws in the current call processing methodology statewide may not be addressed properly if the configuration remains status quo. This methodology includes the need to transfer 9-1-1 calls and the statewide policy for doing so.
- Continuation of the current degraded services trend resulting from the separation of call taking and dispatching functions.
- The most recent reduction did not result in overall reduced costs, only a shift in costs from the state to county and local levels. This shift created further disparity in the types of systems, levels of service and further separation of coordination among response agencies. Maintaining the status quo would not change these issues.
- Continuation of the PSAP rate shopping
- Increased costs to ESCB
  - Upgraded or replaced equipment
  - Network components

- Training
- Personnel
- Increased costs to ESCB, county and local agencies
  - Facilities maintenance
  - Renovation or replacement
  - Peripheral equipment and systems

### **5.1.7. 26-PSAP Configuration Summary**

Although well intentioned, the 2003 mandated PSAP consolidation has created some significant issues within the emergency communications system statewide. As discussed more fully in Section 3, the lack of a partnership between those implementing and providing 9-1-1 and dispatch services has fragmented the overall system so that service delays through 9-1-1 call transfer, inconsistent policies from agency to agency, rate shopping and shifting of costs from the state to county and local municipalities are prevalent. For these reasons, adopting this configuration long-term is not recommended.

## **5.2 15 TO 17-PSAP CONFIGURATION**

The number of PSAPs in this configuration is approximately the same as the number of counties in the state. While a single PSAP per county is a widely used model nationwide, Kimball is not suggesting that the PSAPs in this scenario or in Maine necessarily be defined by county geographical boundaries or operated by county governments. The optimal configuration may be a combination of counties that contain more than one PSAP and PSAPs that handle more than one county. The state, county or local governments or new regional organizations may operate the PSAPs. There are simply too many undetermined variables to identify specifically what the final configuration will look like. However, a regional approach that combines PSAP and dispatch functions is highly recommended.

All calculations in this section are based on a mid-point of 16 PSAPs.

### **5.2.1. Operational Impact**

The number of PSAPs in this scenario is based on consolidating 9-1-1 and dispatch functions as much as possible. The data available to Kimball suggests that the 15-17 fully consolidated PSAP scenario (combining 9-1-1 and dispatch into a single facility) would provide best balance of service levels and costs. However, each potential full consolidation effort will require an individual feasibility study that identifies all pertinent variables for 9-1-1 and dispatch functions.

#### ***Staffing***

Based on 9-1-1 call volume only, 171 call takers would be needed. This number is based on total 9-1-1 call volume and does not take into consideration the disbursement of staff among the 15-17 PSAPs. A direct comparison of staff between the existing configuration and this one is not possible. Although staffing levels in the existing 26-PSAP configuration is at 327 full time and 62 part time employees, these numbers include staff needed for dispatch functions. It is also not possible to estimate the additional number of employees needed for dispatch functions in the 15 to 17-PSAP scenario since the relevant dispatch data was not available and specific PSAPs are not identified.

Should the approximately ten PSAPs that are closed choose to continue providing dispatch services, local costs may increase as personnel levels stay the same, but PSAP services must be contracted and paid for elsewhere.

### ***Call Taking Workstations***

The number of call taking workstations would be significantly reduced in a 15 to 17-PSAP configuration. In order to handle the state's 9-1-1 call volume in the new configuration 92 9-1-1 call taking workstations would be required. The current configuration has 134 workstations in the 26 PSAPs.

Careful consideration needs to be used in the reconfiguration because a large number of calls annually will be redistributed when ten PSAPs are closed. Wherever possible, the calls should be answered and dispatched from the same PSAP.

Based on historical data and actual consolidation initiatives that are ongoing, eight of the ten PSAPs that are closed would be expected choose to continue to dispatch for the agencies they now serve. Should these PSAPs become dispatch-only sites, delays caused by the transfer of calls will be an issue.

### **5.2.2. Technological Impact**

Based on the expected lifecycle of existing 9-1-1 workstations, the ESCB will be procuring new equipment in a 15 to 17-PSAP configuration. Existing equipment they currently lease through the 9-1-1 service contract with FairPoint could be used during the roll-out of the new equipment. The reconfiguration process will need to start as soon as possible. Most of the actual work will take place when the current contract with FairPoint expires.

This configuration provides for the same level of redundancy that exists in the current 9-1-1 system.

The 9-1-1 system for the 15 to 17-PSAP configuration would reduce the number of 9-1-1 centralized automatic message accounting (CAMA) trunks from 222 to 144. (Trunking needs were based on existing trunking for 26 PSAPs minus the trunking for 10 PSAPs) Call taking workstations would be reduced from 134 to 92, offering substantial equipment savings.

At the end of the FairPoint contract, the ESCB, through the procurement process, will have the ability to identify other system options.

### **5.2.3. Costs/Economic Impact**

Table 12 includes a five-year total cost column reflecting projections for the 15 to 17-PSAP configuration. Budgetary pricing with and without staffing costs are provided. The budgetary costs include the ESCB's program operating costs.

Unless these PSAPs also have the capability to dispatch the first responders of the decommissioned PSAPs, there still would be the need for local governments to house, staff and fund dispatching services for the first responders.

The economic impact assessment began with the following basic assumptions:

- Local agencies would operate the PSAPs

- Equipment from the decommissioned PSAPs would not be reused due to lifecycle limitations
- The ESCB's program operating costs, separate from E9-1-1 system costs, would remain level
- ESCB would fund the following equipment hardware and software, and services:
  - 9-1-1 call handling
  - Mapping
  - 24x7x365 system maintenance and monitoring
  - Uninterrupted Power Supply (UPS) and UPS monitoring
- Existing managed services would be moved to an IP network in 2011
- ESCB would choose not to exercise its option to renew the FairPoint contract in FY2012

As previously noted, the ESCB currently leases equipment from FairPoint. Leased costs for the 15 to 17-PSAP configuration reflects a savings over the current FairPoint contract pricing for the existing 26 PSAPs, even with the addition of costs to move existing managed services to an IP network.

Lease option assumptions include:

- FairPoint's equipment lease costs would be comparable with other vendors' equipment lease costs
- In anticipation of replacing existing equipment in 2012, ten percent of the current equipment costs were added to 2012-2015 Current Costs Totals.
- Costs for the deployment and installation of new equipment were not factored into the configuration costs.
  - According to the ESCB, Verizon was paid \$294,840 for installing new equipment at the 26 PSAPs.

Kimball used the average of existing hourly wages and benefits in determining personnel costs. Our cost analysis for this PSAP configuration did not include supervisory personnel. Supervisory personnel were not included because a senior call taker or an on-duty sworn officer often handles the supervisory function in small PSAPs during any given shift. In addition, these PSAPs may only staff supervisors on the busiest shifts, but not on the slow periods.

The number of full-time call takers needed to operate 16 communication centers on a 24 hour, 365 day basis would be 171, at a budgetary cost of nearly \$8 million each year. Seventy-eight workstations would be required to handle the state's 9-1-1 call volume plus an additional 14 workstations at the training lab in Vassalboro. Maine's existing 26 PSAPs 327 authorized full time staffers and 62 authorized part time staffers. While the 15 to 17-PSAP configuration might appear to reflect a significant reduction in staff and associated costs, unless these 16 PSAPs can also dispatch first responders for the entire state, affected local governments will still need to provide, equip and pay for personnel to do that work.

Kimball's cost analysis is presented in Table 12 below in conjunction with the ESCB's current costs for purposes of comparison.

**Table 12: 15 to 17-PSAP Configuration Costs**

<b>15 to 17-PSAP Configuration Costs</b>						
<b>Costs</b>	<b>2011 Total</b>	<b>2012 Total</b>	<b>2013 Total</b>	<b>2014 Total</b>	<b>2015 Total</b>	<b>5 Year Total</b>
Current	\$9,470,702	\$ 9,927,707	\$ 9,927,707	\$ 9,927,707	\$ 9,927,707	<b>\$49,181,531</b>
15 to 17 PSAP	\$9,476,702	\$ 8,320,523	\$ 8,320,523	\$ 8,320,523	\$ 8,320,523	<b>\$42,758,795</b>
Staffing	0	\$ 7,925,119	\$ 7,925,119	\$ 7,925,119	\$ 7,925,119	<b>\$31,700,478</b>
9-1-1 With Staffing	\$9,476,702	\$16,245,643	\$16,245,643	\$16,245,643	\$16,245,643	<b>\$74,459,273</b>

In conclusion, the 15 to 17-PSAP (without personnel) configuration would provide the ESCB with a savings over the current 26-PSAP configuration.

#### **5.2.4. Surcharge Impact**

As the previous section indicates, the baseline for analysis is the ESCB’s published budget projections for 2011. Assumptions that the ESCB’s program operating costs, separate from the FairPoint contract costs for the E9-1-1 system, would remain level were made. This information is reflected in the “Current Costs” row in Table 12. In the face of market trends observed in our present uncertain economy, our analysis assumed a constant number of subscribers at the current 1,425,767 level.

Table 13 identifies surcharge rates over a six-year period for the 15-17 PSAP configuration. The various “Costs” sections identify anticipated costs based on the various options. The “Surcharge Funds” column identifies actual surcharge revenues anticipated on the surcharge shown. The “5 Year Total” shows the difference between anticipated costs and the surcharge rate. In each example, the surcharge will not meet anticipated costs. In July 2009, the surcharge rate was increased from 30 cents to 37 cents. The 2011 rate has been set to increase to 52 cents on July 1, 2010 but the legislative will review actual need in its upcoming session. The rate set for FY2010 was 37 cents. This rate will bring in \$6.3 million, which is far short of the \$10.5 million in projected costs. In FY2011, the surcharge tables are based on the assumption that the 52 cents rate will not change. Existing fund money will be used to cover the shortages in both years. In FY2012 thru 2015 the surcharge rates in the table reflects the rate needed to cover the costs of the various options.

**Table 13: 15 to 17-PSAP Configuration Surcharge Analysis**

<b>15 to 17-PSAP Configuration Surcharge Analysis</b>								
	<b>Comm. Devices</b>	<b>2010 Total</b>	<b>2011 Total</b>	<b>2012 Total</b>	<b>2013 Total</b>	<b>2014 Total</b>	<b>2015 Total</b>	<b>5 Year Total</b>
Current Costs	1,425,767	10,457,706	9,470,702	9,927,707	9,927,707	9,927,707	9,927,707	<b>\$49,181,531</b>
Surcharge		\$.37	\$.52	\$.58	\$.58	\$.58	\$.58	
Surcharge Revenue		6,330,405	8,896,786	9,923,338	9,923,338	9,923,338	9,923,338	<b>\$48,590,139</b>
15 to 17-PSAP Costs	1,425,767	10,457,706	9,476,702	8,320,523	8,320,523	8,320,523	8,320,523	<b>\$42,758,795</b>
Surcharge		\$.37	\$.52	\$.48	\$.48	\$.48	\$.48	
Surcharge Revenue		6,330,405	8,896,786	8,212,418	8,212,418	8,212,418	8,212,418	<b>\$41,746,458</b>
911 Costs with Staffing	1,425,767	10,457,706	9,476,702	16,245,643	16,245,643	16,245,643	16,245,643	<b>\$74,459,273</b>
Surcharge		\$.37	\$.52	\$.94	\$.94	\$.94	\$.94	
Surcharge Revenue		6,330,405	8,896,786	16,082,652	16,082,652	16,082,652	16,082,652	<b>\$73,227,393</b>

Based on the current projected costs of providing 9-1-1 equipment and services in Maine the projected costs are as follows:

**Table 14: 15 to 17-PSAP Configuration Cost Comparison**

<b>15 to 17-PSAP Configuration Cost Comparison</b>	
2012 Current Projected Costs	\$9,927,707
15 to 17-PSAPs Projected Costs	\$8,320,523
<b>Difference</b>	<b>\$1,607,184</b>

In conclusion, this is the second most costly option for the state when focusing only on 9-1-1 system costs. As noted in previous sections, the local costs remain.

### **5.2.5. Configuration Positives and Negatives**

#### *Positives*

- When combined with dispatch services, the 15 to 17-PSAP configuration scenario, would be very effective in providing complete 9-1-1 services (call taking and dispatch) statewide. Call transfers would be significantly reduced, thereby eliminating the service delay associated with each transfer.
- Based on the existing call volume, a 15 to 17-PSAP configuration is capable of handling the call volume within the State of Maine.

- Existing CPE systems can be used in a 15 to 17-PSAP configuration, while new equipment is being installed.
- When compared to the existing configuration, savings in CPE and workstation costs are achievable.
- Larger regional combined communications centers offer career opportunities for its employees not readily available in small PSAP or dispatch centers.
- Regional emergency communications centers provide more local knowledge, incident management and mutual aid coordination that cannot be replicated in large PSAPs.

### ***Negatives***

- Approximately ten existing PSAPs will close. However, the closing of PSAPs does not necessarily equate to job loss. Often when larger regional centers are established all employees from the closing PSAPs are needed. Individual consolidation assessments are needed to determine this component.
- Should the PSAPs that close continue to provide dispatch services, then the number of 9-1-1 call transfers will increase.
- Should the PSAPs that close continue to provide dispatch services, local costs may increase if another PSAP must be paid to receive calls.

### **5.2.6. 15 to 17-PSAP Configuration Summary**

This configuration, in Kimball's opinion represents the best opportunity for migration to a system that balances costs, service levels and regional needs. The underlying assumption for this recommendation is that PSAP and dispatch functions will be consolidated into regional facilities where possible. In this scenario, each regional center would provide PSAP and dispatch services to its defined service area. Wireline and wireless 9-1-1 calls would be routed directly to the appropriate regional center, thus eliminating the majority of call transfers.

Planning for NG9-1-1 provides an excellent opportunity for changes to the existing system through the consolidation process. Issues that will need to be specifically addressed include:

- Establishment of operating standards and quality assurance, potentially through the ESCB.
  - Staffing to handle these responsibilities for the ESCB would need to be added to their budget.
  - Proposed staffing for QA was not included in any of the cost tables.
- Consolidation studies will need to be conducted for each of the 15-17 regions, once they are identified.
  - The studies will identify costs, technological and operational needs for each of the regions.
  - Existing PSAP/dispatch centers may need to become new regional communications centers that require collaboration and oversight between all the participants.
  - Full consolidation studies may not be needed if several existing PSAPs have mutual aid and interoperability arrangements with neighboring centers and agreement can be reached in sending 9-1-1 calls to one of the PSAPs.

## 5.3 4-PSAP CONFIGURATION

### 5.3.1. Operational Impact

The 4-PSAP configuration would significantly impact the 9-1-1 system in Maine. The number of call taking workstations and call takers would be significantly reduced. In order to handle the state’s 9-1-1 call volume in the new configuration 32 9-1-1 call taking workstations would be required. The current configuration has 134 workstations in 26 PSAPs.

Based on the limited data available for this report, the 4-PSAP configuration would likely operate best under a state agency such as the DPS. This recommendation will not be well received among county and local governments and response agencies who have repeatedly voiced concerns about further state mandates and loss of local control.

Twenty-two PSAPs would be closed. Eighty percent of 9-1-1 calls will need to be transferred in order to dispatch emergency personnel to the scene of an incident. As a result, each transferred call for service will have a delayed response. All of the closed PSAPs will need to continue to dispatch for the agencies that they now serve. Delays caused by the transfer of calls will be an issue. Dropped calls, blind transfers and lack of call data will also create problems. Service levels statewide will be negatively impacted.

#### *Staffing*

Based on current call volumes, the number of full-time staff needed to operate four communication centers on a 24 hour, 365-day basis would be 80 call takers and 25 supervisors. The 24 PSAPs that are closed will not realize any savings because all of the agencies will need to continue to provide dispatch for their communities and will need to contract for PSAP services.

### 5.3.2. Technological Impact

Based on the expected lifecycle of the existing 9-1-1 workstations, the ESCB will be procuring new equipment in a 4-PSAP configuration using equipment currently leased through the 9-1-1 service contract with FairPoint.

In the 4-PSAP configuration, the number of 9-1-1 CAMA trunks required would be reduced from 222 to 64. Call taking workstation equipment would be reduced from 134 to 32.

Table 15 is a breakdown of the 9-1-1 trunks and workstations by PSAP.

**Table 15: 4-PSAP Configuration Trunks & Workstations**

4-PSAP Configuration Trunks & Workstations		
PSAP	# of 9-1-1 Trunks	Workstations
PSAP 1	16	8
PSAP 2	16	8
PSAP 3	16	8
PSAP 4	16	8



All four PSAP locations would require a Plant/CML VESTA Meridian type solution. There are currently six Meridian systems currently deployed in Maine. Four of these could be reused during the transition phase of the new statewide call center configuration. The following systems should be incorporated into each workstation: UPS, instant recall recorders (IRR) and Spectracom NetClock. The individual PSAPs could continue to provide their own logging recorder, but the ESCB should consider providing recorders for this configuration.

In a 4-PSAP configuration, 9-1-1 calls will be delivered over 64 CAMA 9-1-1 trunks—16 CAMA trunks to each PSAP and eight CAMA trunks to each tandem.

This configuration provides for the same level of redundancy that exists in the current 9-1-1 system. The Portland Central Office should be engineered as a primary for two PSAPs and the Lewiston Central Office should be engineered as a primary for the remaining two PSAPs locations.

FairPoint (Plant/CML) can still use the state frame-relay network for the managed services portion of their contract but based on the quote the ESCB received from FairPoint for an IP network, it would be comparable to current costs. The IP network would allow better and faster access to their system.

The MSAG database and the ALI database will need to be updated in order to route the calls to the correct PSAP in a 4-PSAP configuration. FairPoint and the ESCB will have to work with Intrado to assign the various communities to the appropriate PSAP. At the end of the FairPoint contract, the ESCB, through the procurement process, will have the ability to identify other call delivery options.

### **5.3.3. Costs/Economic Impact**

Table 16 shows a five-year cost projection. The current costs line reflects the ESCB's 2011 budget projection under the existing arrangement with FairPoint. Any reconfiguration prior to the expiration of the current contract will not affect the ESCB's obligation under the existing contract with FairPoint. As with the other PSAP configurations, budgetary pricing is provided with and without staffing costs. There may be additional costs not included in this study associated with preparing, modifying and leasing new or existing facilities to house the four PSAPs. Current statutes do not allow for the payment of construction costs with 9-1-1 funds.

The baseline for analysis is the ESCB's published budget projections for 2011. Assumptions that the ESCB's program operating costs, separate from the FairPoint contract costs for the E9-1-1 system, would remain level were made. In the light of the market trends observed in the present uncertain economy, the analysis assumed a constant number of subscribers at the current 1,425,767 level.

The only difference between the costs of the 2-PSAP and 4-PSAP configurations are the number of workstations needed and the number of personnel needed to staff the facilities 24x7x365. Based on current call volumes, staff needed to operate four communication centers 24x7x365 would be 80 call takers and 25 supervisors at a budgetary cost of \$5 million each year. The 4-PSAP configuration would require the ESCB to provide personnel to answer 9-1-1 calls for the entire state. The following assumption was used for this analysis:

- Personnel costs would be based on the existing average hourly wages and benefits in Maine's DPS PSAPs

Thirty-nine workstations would be needed in the 4-PSAP configuration.

Lease option assumptions include:

- FairPoint’s equipment lease costs would be comparable with other vendors’ equipment lease costs
- ESCB would fund the following equipment hardware and software, and services:
  - 9-1-1 call handling
  - Mapping
  - 24x7x365 system maintenance and monitoring
  - Uninterrupted Power Supply (UPS) and UPS monitoring
- In anticipation of replacing existing equipment in 2012, ten percent of the current equipment costs were added to 2012-2015 Current Costs Totals. It is assumed in a 4 PSAP configuration the additional ten percent would cover the costs of installation of new equipment.

These costs are reflected in the table below and are presented in conjunction with the ESCB’s current costs.

**Table 16: 4-PSAP Configuration Costs**

<b>4-PSAP Configuration Costs</b>						
<b>Costs</b>	<b>2011 Total</b>	<b>2012 Total</b>	<b>2013 Total</b>	<b>2014 Total</b>	<b>2015 Total</b>	<b>5 Year Total</b>
Current	\$9,470,702	\$ 9,927,707	\$ 9,927,707	\$ 9,927,707	\$ 9,927,707	<b>\$49,181,531</b>
4-PSAP	\$9,460,502	\$ 6,785,336	\$ 6,481,336	\$ 6,481,336	\$ 6,481,336	<b>\$35,689,847</b>
Staffing Costs	0	\$ 5,030,900	\$ 5,030,900	\$ 5,030,900	\$ 5,030,900	<b>\$20,123,601</b>
9-1-1 With Staffing	\$9,460,502	\$11,816,236	\$11,512,236	\$11,512,236	\$11,512,236	<b>\$55,813,448</b>

In conclusion, the 4-PSAP option would result in a savings to the ESCB over the current FairPoint contract pricing arrangement for the existing 26 PSAPs.

#### **5.3.4. Surcharge Impact**

The baseline for analysis is the ESCB’s published budget projections for 2011. The assumption was made that the ESCB’s program operating costs, separate from the FairPoint contract costs for the E9-1-1 system would remain level. The analysis also assumed a constant number of subscribers at the current 1,425,767 level.

Table 17 identifies the surcharge rates over a six-year period for the 4-PSAP configuration. The various “Costs” sections identify anticipated costs based on the various options. The “Surcharge Funds” row identifies the actual revenues projection based on the listed surcharge rate. The “5 Year Total” shows the difference between anticipated costs and the surcharge rate. In each example, the surcharge will not meet the anticipated costs.

The surcharge rates for the 4-PSAP configuration have the same limitation noted in the 26 and the 15 to 17-PSAP configuration regarding 2010 and 2011. Rates have already been set by the Legislature, but the Legislature does have the ability to adjust the rate based on actual need. Projected budget shortfalls will be covered by available fund money. FY2012 thru 2015, the surcharge rates in the table reflect the fiscal year rate needed to cover the 4-PSAP Costs identified in the Table 16

**Table 17: 4-PSAP Configuration Surcharge Analysis**

<b>4-PSAP Configuration Surcharge Analysis</b>								
	<b>Comm. Devices</b>	<b>2010 Total</b>	<b>2011 Total</b>	<b>2012 Total</b>	<b>2013 Total</b>	<b>2014 Total</b>	<b>2015 Total</b>	<b>5 Year Total</b>
Current Costs	1,425,767	10,457,706	9,470,702	9,927,707	9,927,707	9,927,707	9,927,707	<b>\$49,181,531</b>
Surcharge		\$.37	\$.52	\$.58	\$.58	\$.58	\$.58	
Surcharge Revenue		6,330,405	8,896,786	9,923,338	9,923,338	9,923,338	9,923,338	<b>\$48,590,139</b>
4-PSAP Costs	1,425,767	10,457,706	9,460,502	6,785,336	6,481,336	6,481,336	6,481,336	<b>\$35,689,847</b>
Surcharge		\$.37	\$.52	\$.37	\$.37	\$.37	\$.37	
Surcharge Revenue		6,330,405	8,896,786	6,330,405	6,330,405	6,330,405	6,330,405	<b>\$34,218,408</b>
911 Costs with Staffing	1,425,767	10,457,706	9,460,502	11,816,236	11,512,236	11,512,236	11,512,236	<b>\$55,813,448</b>
Surcharge		\$.37	\$.52	\$.69	\$.67	\$.67	\$.67	
Surcharge Revenue		6,330,405	8,896,786	11,805,351	11,463,167	11,463,167	11,463,167	<b>\$55,091,637</b>

\*Based on the current projected costs of providing 9-1-1 equipment and services in Maine.

**Table 18: 4-PSAP Configuration Cost Comparison**

<b>4-PSAP Configuration Cost Comparison</b>	
2012 Current Projected Costs	\$9,927,707
4-PSAP Projected Costs	\$6,785,336
<b>Difference</b>	<b>\$3,142,371</b>

### 5.3.5. Configuration Positives and Negatives

#### *Positives*

- A 4-PSAP configuration based on a statewide regional plan would be effective in providing 9-1-1 call taking services.
- Based on the existing call volume, a 4-PSAP configuration is capable of handling the call volume within Maine.

- Existing CPE systems can be used in a 4-PSAP configuration.
- Savings in CPE, trunking, and workstation costs

### *Negatives*

Twenty-two agencies will no longer be taking 9-1-1 calls directly. The majority of these former PSAPs are assumed to continue to dispatch police, fire and EMS. Over 80 percent of the 9-1-1 calls will have to be transferred to dispatch agencies. Response time will be increased because the dispatch agencies will have to re-interview callers to determine the location and the nature of the emergencies. After the information is confirmed, the appropriate response agency will be dispatched.

- Local costs will increase
- Critical data that arrives with the E 9-1-1 call cannot be transmitted to these dispatch agencies.
  - The 4-PSAP configuration will require an additional system to provide the dispatch agencies with the vital call data when the calls are transferred.
  - The call data must arrive at the same time as the call transfer. Technology, such as a statewide CAD system, can deliver this data to these emergency responders. Currently, Maine does not have a statewide CAD system.
- This configuration would be unpopular politically. The majority of stakeholders voiced opinions that service levels were best when 9-1-1 and dispatch functions were kept together when possible.
- This configuration is unlikely to promote the consolidation of dispatch services.

### **5.3.6. 4-PSAP Configuration Summary**

In terms of lowering the state's 9-1-1 associated costs, this configuration would be the second most advantageous. With four PSAPs statewide, equipment and network costs would be considerably lower than the existing configuration. However, cost is the only perspective where this configuration is best.

The lower equipment and network costs would only benefit the state while local costs increase and service levels decrease. Virtually all 9-1-1 calls, except possibly those dispatched by DPS, would need to be transferred at least once. While the delay can be mitigated to some degree by implementing technology such as a statewide CAD, the loss of instant communications between call takers and dispatchers and the ability of all employees to see and respond to the "big picture" regionally is significant.

Preparation for a NG9-1-1 system would also become more difficult to plan as a method of forwarding new data types to dispatch-only sites will need to be established. The specific technology needed and the associated costs have yet to be identified.

## **5.4 2-PSAP CONFIGURATION**

### **5.4.1. Operational Impact**

The number of call taking workstations and call takers would be significantly reduced in a 2-PSAP configuration. In order to handle the state's 9-1-1 call volume in the new configuration twenty-four 9-1-1 call taking workstations would be required. The current configuration has 134 workstations in 26 PSAPs.

Based on the limited data available for this report, the 2-PSAP configuration would likely operate best under a state agency such as the DPS. This recommendation will not be well received among county and local governments and response agencies who have repeatedly voiced concerns about further state mandates and loss of local control.

Twenty-four PSAPs will be closed. Most of the 9-1-1 calls will need to be transferred in order to dispatch emergency personnel to the scene of an incident. As a result, each call for service will have a delayed response.

All of the closed PSAPs will need to continue to dispatch for the agencies that they now serve. Delays caused by the transfer of calls will be an issue. Dropped calls, blind transfers and the lack of call data will also create problems. Service levels would decrease as a result.

### *Staffing*

Sixty-five full time equivalents (13 supervisors and 52 call takers) would be needed to handle the state's entire 9-1-1 call volume. The 22 PSAPs that are closed will not realize any savings and costs could increase because all of the agencies will need to continue to provide dispatch for their communities and contract with a PSAP for call processing services.

### **5.4.2. Technological Impact**

Based on the expected lifecycle of the existing 9-1-1 workstations, the ESCB will be procuring new equipment in a 2-PSAP configuration. Existing equipment currently leased through the 9-1-1 service contract provided by FairPoint Communications could be used during the transition period.

Each PSAP must be capable of handling 9-1-1 traffic for the entire state.

The systems at each PSAP must be redundant with no single point of failure.

The 2-PSAP 9-1-1 configuration system would reduce the number of 9-1-1 CAMA trunks from 222 to 48. Call taking equipment would be reduced from 134 to 24 workstations. Table 19 is a breakdown of the 9-1-1 trunks and workstations by PSAP.

**Table 19: Breakdown of 9-1-1 Trunks and Workstations by PSAP**

<b>911 Trunks and Workstations by PSAP</b>		
<b>PSAP</b>	<b># of 9-1-1 Trunks</b>	<b>Workstations</b>
PSAP 1	24	12
PSAP 2	24	12

Both PSAP locations would require using a Plant/CML VESTA Meridian solution. There are currently six Meridian systems currently deployed in Maine. Two of these could be reused for a new statewide call center configuration. The following systems will still be incorporated into each workstation: UPS, Instant Recall Recorder (IRR) and Spectracom NetClock. The ESCB will need to provide logging recorders for the 2-PSAP configuration.

In a 2-PSAP configuration, 9-1-1 calls will be delivered to the two PSAPs over same 9-1-1 trunks. There would be 24 CAMA trunks to each PSAP and 12 CAMA trunks to each selective router location.

FairPoint (Plant/CML) would be able to continue using the state frame-relay network for the managed services portion of their contract but based on the quote the ESCB received from FairPoint for an IP network, it would be comparable to the current costs. The IP network would allow better and faster access to their system.

The MSAG database and the ALI database will need to be updated in order to route the calls to the correct PSAP in a 2-PSAP configuration. FairPoint and the ESCB will need to work with Intrado to assign the various communities to the appropriate PSAP. At the end of the FairPoint contract, the 9-1-1 ESCB, through the procurement process, will have the ability to identify other call delivery options.

### **5.4.3. Costs/Economic Impact**

Table 20 shows a five-year cost projection. Current costs reflect the ESCB's budget projection for 2011. Budgetary pricing with and without staffing costs are provided. Thirty-one (24 PSAP and 7 training) workstations would be needed. The ESCB may incur additional costs not included in this study associated with preparing or modifying new or existing facilities to house the two PSAPs.

This economic impact assessment began with five basic assumptions:

1. The state (DPS) would operate both PSAPs.
  - o This assumption is based on use of existing facilities with adequate space such as CMRCC as a significant cost saving measure.
2. The ESCB's program operating costs, separate from E9-1-1 system costs, would remain level.
3. Equipment from the decommissioned PSAPs would not be reused.
4. The ESCB would choose not to exercise its option to renew the FairPoint contract in FY 2012.
5. Existing managed services would be moved to an IP network in 2011.

The current FairPoint contract is a lease arrangement. The ESCB leases all equipment.

- ESCB would fund the following equipment hardware and software, and services:
  - o 9-1-1 call handling
  - o Mapping
  - o 24x7x365 system maintenance and monitoring
  - o Uninterrupted Power Supply (UPS) and UPS monitoring
- 9-1-1 call handling hardware/software
- Mapping hardware/software
- UPS and UPS monitoring capability

Costs in 2011 reflect a savings over the current FairPoint contract pricing for the existing 26 PSAPs due to the move of existing managed services to an IP network.

- Provisioning the two PSAPs would commence in 2012
- FairPoint’s equipment lease costs would be comparable to any other vendor’s equipment lease costs
- In anticipation of replacing existing equipment in 2012, ten percent of the current equipment costs were added to 2012-2015 Current Costs Totals.
  - It is assumed in a 2-PSAP configuration, the additional ten percent would cover the costs of installation of new equipment.

The 2012 pricing reflects the cost of the IP network for managed services and the purchase of a master logging recorder for each PSAP. The 2-PSAP configuration would require the ESCB to provide personnel to answer 9-1-1 calls for the entire state. The following assumption was used for this analysis:

- Personnel costs would be based on the existing average hourly wages and benefits in Maine’s DPS PSAPs

Kimball calculated an average hourly pay rate based on the PSAP survey results. On that basis and the number of full-time call takers and supervisory staff needed to operate these communication centers 24/7, the budgetary cost for personnel would be \$3.1 million each year. Sixty-five full time equivalents (13 supervisors and 52 call takers) would be needed to handle the state’s entire 9-1-1 call volume.

In the state’s current 26-PSAP configuration (excluding Portland, for which Kimball had no data), there are 327 authorized full time staffers and 62 authorized part time employees. These employees handle 9-1-1 call taking, emergency dispatching and other administrative duties within their agency (for example, answering the department’s administrative telephone lines). While having DPS take over the answering of 9-1-1 calls might appear to have the potential to reduce costs significantly, local agencies must still dispatch the calls for service, coordinate the responders and conduct their day-to-day business. They will still need most, if not all, of the personnel they currently have now. Local costs will remain the same and potentially increase in coming years.

The state’s fiscal year costs for a 2-PSAP configuration are reflected in the table below and are presented in conjunction with the ESCB’s current costs.

**Table 20: 2-PSAP Configuration Costs**

<b>2-PSAP Configuration Costs</b>						
<b>Costs</b>	<b>2011 Total</b>	<b>2012 Total</b>	<b>2013 Total</b>	<b>2014 Total</b>	<b>2015 Total</b>	<b>5 Year Total</b>
Current	\$9,470,702	\$9,927,707	\$9,927,707	\$9,927,707	\$9,927,707	<b>\$49,181,531</b>
2-PSAP	\$9,446,702	\$6,728,402	\$6,576,402	\$6,576,402	\$6,576,402	<b>\$35,904,311</b>
Staffing	0	\$3,097,778	\$3,097,778	\$3,097,778	\$3,097,778	<b>\$12,391,112</b>
2-PSAP with Staffing	\$9,446,702	\$9,826,180	\$9,674,180	\$9,674,180	\$9,674,180	<b>\$48,295,423</b>

When examining costs from a 9-1-1 or PSAP perspective only, the 2-PSAP option would bring a significant savings to the ESCB’s budget, although not to local budgets.

#### 5.4.4. Surcharge Impact

The ESCB’s published budget projections for 2011 provided the baseline for this analysis. The ESCB’s program operating costs, separate from E9-1-1 system costs, were assumed to remain level.

In Maine, as in much of the rest of the country, landlines are declining and wireless and VoIP lines are increasing. In the face of that fact and the uncertain economy, neither growth nor decline was assumed in the overall numbers of consumers using one or the other of these services. The ESCB’s staff provided the current number of subscribers, 1,425,767, which was used for this surcharge analysis.

Table 21 identifies the surcharge rates over a six-year period for the 2-PSAP configuration. The various “Costs” sections identify anticipated costs based on the various options. The “Surcharge Funds” row identifies the actual money that will be collected, based on the listed “Surcharge”. The “5 Year Total” shows the difference between anticipated costs and the surcharge rate. In each example, the surcharge will not meet the anticipated costs. The surcharge rates for the 2-PSAP configuration have the same limitations that were noted in the other PSAP configurations. The surcharge rate for FY2010 was 37 cents and FY2011 has been set at 52 cents, but the Legislature does have the ability to adjust the rate. In the surcharge analysis table it is assumed that the rates for will remain at 52 cents. Shortfalls will be covered by available fund money and FY2012 thru 2015 rates presented in the table reflect the amount needed to cover the 2-PSAP Costs identified in the Table 20.

**Table 21: 2-PSAP Configuration Surcharge Analysis**

<b>2-PSAP Configuration Surcharge Analysis</b>								
	<b>Comm. Devices</b>	<b>2010 Total</b>	<b>2011 Total</b>	<b>2012 Total</b>	<b>2013 Total</b>	<b>2014 Total</b>	<b>2015 Total</b>	<b>5 Year Total</b>
Current Costs	1,425,767	10,457,706	9,470,702	9,927,707	9,927,707	9,927,707	9,927,707	<b>\$49,181,531</b>
Surcharge		\$.37	\$.52	\$.58	\$.58	\$.58	\$.58	
Surcharge Revenue		6,330,405	8,896,786	9,923,338	9,923,338	9,923,338	9,923,338	<b>\$48,590,139</b>
2-PSAP Costs	1,425,767	10,457,706	9,446,702	6,728,402	6,576,402	6,576,402	6,576,402	<b>\$35,904,311</b>
Surcharge		\$.37	\$.52	\$.39	\$.38	\$.38	\$.38	
Surcharge Revenue		6,330,405	8,896,786	6,672,590	6,501,498	6,501,498	6,501,498	<b>\$35,073,868</b>
911 Costs with Staffing	1,425,767	10,457,706	9,446,702	9,826,180	9,674,180	9,674,180	9,674,180	<b>\$48,295,423</b>
Surcharge		\$.37	\$.52	\$.57	\$.56	\$.56	\$.56	
Surcharge Revenue		6,330,405	8,896,786	9,752,246	9,581,154	9,581,154	9,581,154	<b>\$47,392,495</b>

\*Based on the current projected costs of providing 9-1-1 equipment and services in Maine.



**Table 22: 2-PSAP Configuration Cost Comparison**

<b>2-PSAP Configuration</b>	
<b>Cost Comparison</b>	
2012 Current Projected Costs	\$9,927,707
2-PSAP Projected Costs	\$6,728,402
<b>Difference</b>	<b>\$3,199,305</b>

#### **5.4.5. Configuration Positives and Negatives**

##### *Positives*

- Based on the existing call volume, a 2-PSAP configuration is capable of handling the call volume within the State of Maine.
- Existing CPE systems can be used in a 2-PSAP configuration.
- This choice would be the least expensive for the ESCB should it choose to evaluate only 9-1-1 related costs.

##### *Negatives*

- Every 911 call made in the State of Maine will need to be transferred to a dispatch center in order to provide emergency response to calls for help. Each emergency response will be delayed because of these transfers.
- If one PSAP is out of service, it places the entire burden on the surviving PSAP.
- This scenario would completely separate PSAP and dispatch functions, dramatically increasing the number of dispatch-only sites. While the costs to the ESCB would be reduced, costs to local municipalities would increase.
- Potential job loss in rural areas. While only two larger PSAPs would create a demand for staff, it is unlikely that it would be geographically possible for some employees to commute to either of the two PSAPs.
- Ensuring that dispatch-only sites receive data types associated with NG9-1-1 could be difficult and costly.
- Critical data that arrives with the E9-1-1 call cannot be transmitted to these dispatch agencies.
  - The 2-PSAP configuration will require an additional system to provide the dispatch agencies with the vital call data when the calls are transferred.
  - The call data must arrive at the same time as the call transfer. Technology, such as statewide CAD systems, is capable of delivering this data to these emergency responders but it is not provided in Maine at this time.
- This configuration would be unpopular politically. The majority of stakeholders have voiced their opinion that service levels were best when 9-1-1 and dispatch functions were kept together when possible.

#### **5.4.6. 2-PSAP Configuration Summary**

In terms of lowering the state's 9-1-1 associated costs, this configuration is the most advantageous. With only two PSAPs statewide, equipment and network costs would be the lowest. However, cost is the only perspective where this configuration is best. The lower equipment and network costs would only benefit the state while local costs increase and service levels decrease. Virtually all 9-1-1 calls, except possibly those dispatched by DPS, would need to be transferred at least once. While the delay can be mitigated to some degree by implementing technology such as a statewide CAD, the loss of instant communications between call takers and dispatchers and the ability of all employees to see and respond to the "big picture" regionally is significant.

Preparation for a NG9-1-1 system would also become more difficult to plan as a method of forwarding new data types to dispatch-only sites will need to be established. The specific technology needed and the associated costs have yet to be identified. (The cost of making the data available to the dispatch-only sites should be the responsibility of the ESCB using fund money. Costs related to the connectivity and data retrieval are the responsibility of the dispatch-only sites.)

## **6. CONSOLIDATION OF PSAP & DISPATCH FUNCTIONS**

This report refers repeatedly to the benefits of full consolidation of PSAP and dispatch functions into a single communications center (usually county or regionally based). This section provides a brief overview of the benefits of full consolidation. Please note that full consolidation can take a variety of forms including local, county and regional PSAP/dispatch centers.

Agencies consider consolidation for a number of reasons. Commonly cited motives include the following:

1. Service level improvements are the single most important reason consolidation should be considered. 9-1-1 call takers and dispatchers are truly the “first responder on the scene” and can substantially affect the outcome of an incident. Following are the types of service improvements typically achieved:
  - Reduction or elimination of the transfer of 9-1-1 calls between PSAPs and dispatch only sites improves response times and lowers the potential for human or technology errors.
  - Quicker call processing and dispatch times, resulting in faster on-scene times for field personnel.
  - Sharing of physical space enables communications between call takers, law enforcement, fire and EMS dispatchers to be virtually instantaneous. This improved communications enables field personnel to receive information more quickly and accurately which is particularly important in multi-jurisdictional incidents. This communication is the least tangible quantifiable benefit of consolidation, but is one of the most important.
  - If large enough, a fully consolidated communications center can utilize a call taker/dispatcher organizational structure. This structure enables the call takers to focus solely on the incoming call and obtain the best information possible. The dispatcher’s ability to focus solely on field personnel improves field personnel safety.
  - Standardized training of all communications center employees increases regional consistency.
  - A single regional communications center allows resource management during major incidents from a single point of control rather than fragmenting control among multiple PSAPs and dispatch-only sites.
  - A consolidated environment will offer the opportunity for smaller participants to benefit from state-of-the-art technology, improved training and expanded career opportunities that would not be otherwise financially or organizationally feasible.
2. Individual agencies no longer wish to support the training and technology needed or handle the personnel issues for PSAP and/or dispatch staff. Reassigning sworn personnel functioning as management and support staff to other positions is possible by eliminating the PSAP or dispatch-only site.
3. Another primary reason cited for consolidation is cost savings. While cost savings are possible, two points are critical.

- First, not all consolidations result in cost savings. A common misconception is that consolidating will result in significant personnel reductions thus significant cost savings. Consolidations do not normally involve large staff reductions. The real cost savings come from the elimination of redundant and expensive technology such as CAD, 9-1-1 answering equipment, radio consoles and logging recorders. The single set of technology and systems found in a consolidated environment reduces costs associated with procurement, connectivity and maintenance costs.
- Second, in those scenarios where cost savings are achievable the actual realization of the savings may not occur for several years. The consolidation process can be expensive and can generate substantial one-time start-up and capital costs for facility and technology needs. These costs delay the actual cost savings.

## **7. RECOMMENDATIONS**

### **7.1 CONFIGURATION RECOMMENDATIONS**

- The ESCB should maintain the current 26-PSAP configuration temporarily and refrain from any additional consolidations for the duration of the current FairPoint contract, at minimum.
- The state, county and local municipalities should work collaboratively to identify service level issues and solutions. Cooperation must be present at the state, county and local levels.
- Studies should be conducted to assess the feasibility of consolidating PSAP and dispatch functions as much as possible.
- Develop a plan for a future migration to approximately 15 to 17-PSAPs statewide. These PSAPs should be regionally located.
- In conjunction with the plan for 15 to 17-PSAPs, the ESCB should offer incentives to local municipalities to consolidate dispatch functions in each regional PSAP.
  - 9-1-1 programs in Connecticut and Massachusetts offer grants and/or subsidies to encourage consolidation efforts (see Appendix B)
- A full and comprehensive consolidation study should be done to include all aspects of emergency communications (including dispatch, radio, etc.) to develop a long-term comprehensive emergency communications plans.
  - Each region may need to conduct its own study.
  - PSAP rate shopping should be addressed via regulation through a capped fee structure and restrictions on how often service can be shifted among PSAPs
- Wireless calls should be routed directly to the appropriate PSAP for processing. However, the redirection of these calls should not take place until a final configuration is in place. Given complexity, time needed and cost, major re-configuration of routing should wait until the PSAP reconfiguration is decided. (Additional staffing or assistance will be required for any rerouting effort). Should the timeline for achieving a final configuration be lengthy, a decision to reroute calls in the interim may need to be considered.

### **7.2 ESCB SCOPE OF AUTHORITY**

Maine's enhanced 9-1-1 enabling legislation at 25 MRSA §2926, sub-§2 gives the ESCB broad responsibility for the technical and operational aspects of a statewide enhanced 9-1-1. Its responsibilities include setting minimum mandatory staff training requirements for E9-1-1 call answering and dispatching as provided under Sub-§2-B. The list of responsibilities does not specifically include quality oversight of system operations, including quality oversight of PSAP conformance with the ESCB's call handling standards. The statute specifically states the list is not all-inclusive and that gives the ESCB broad authority to address any topic it deems necessary for the prudent operation and administration of the statewide system.

During the course of this study, Kimball learned that a question had arisen about the ESCB's authority to make the final determination about what PSAP serves a particular community and the PUC's authority to refuse a local or county government request to change its PSAP. Rep. H. David Cotta asked the Maine Attorney General Office for an interpretation of the law and the Attorney General issued an opinion confirming that the ESCB and the PUC do have that authority. We think an Attorney General's opinion provides an adequate basis for the PUC and ESCB to take effective action. A copy of this opinion is located in Appendix C. Nevertheless, the fact that the legal question arose indicates the statute needs to be clearer on that point. This is particularly important in the context of this study.

Kimball recommends that the Legislature amend the existing law for the improvement of statewide enhanced 9-1-1. Specifically, the following is recommended:

- Amend 25 MRSA §2926 sub-§1 to make it clear that the Bureau is responsible not only for the implementation and management of E-9-1-1, but also for adopting rules to standardize PSAP operational procedures that enhance public safety in Maine through the statewide E9-1-1 system.
- Amend §2926 sub-§2-A to clarify the ESCB's authority to make the final determination about which PSAP will serve which community and the PUC's authority to accept or reject a municipality's or county's request to change from one PSAP to another.

### **7.3 ESCB INCENTIVES FOR CONSOLIDATION**

25 MRSA §2926 sub-§2-A directs the ESCB to "establish a total of between 16 and 24 public service answering points. The Bureau shall seek to coordinate any reduction in the number of public service answering points to achieve this goal with any contractual obligations it may have or may enter into that are or could be affected by that reduction." This would appear to leave it to the ESCB to determine how to go about accomplishing that goal.

The funding of E9-1-1 services is provided for in 25 MRSA §2927. The ESCB is authorized by Sub- §3 to "use the revenues in the E-9-1-1 fund to fund staff and to defray costs associated with the implementation, operation and management of E-9-1-1." PSAP consolidation is clearly an operational matter over which the ESCB appropriately could offer financial incentives. The ESCB's annual budget is reviewed by the joint standing committee of the Legislature having jurisdiction over utilities and energy, which then makes recommendations regarding expenditures from the E9-1-1 fund to the joint standing committee of the Legislature, having jurisdiction over appropriations and financial affairs.

The following is recommended:

- The ESCB should budget a certain amount to be distributed to PSAPs as grants for the purpose of studying, planning and executing full consolidations.
- The ESCB should adopt a policy position favoring the consolidation of PSAP and dispatching functions into regional centers and then support consolidation initiatives through its grant program.
- 25 MRSA §2927 Sub-§8 should be amended to give the ESCB authority to adopt rules establishing and governing a consolidation incentive grant program.

## **APPENDIX A**

### **FOCUS GROUPS—PERSPECTIVES, CONCERNS AND ISSUES**

## **Appendix A**

### **Focus Groups – Perspectives, Concerns and Issues**

#### **State, ESCB and DPS Focus Groups:**

The following State of Maine (ESCB and DPS) opinions, concerns and issues were expressed:

- Local units of government are against state forced initiatives (unfunded mandates), not necessarily against consolidation.
- Issues with how the ESCB is managed by state government including:
  - Surcharge funds being “raided” by the state at the executive level.
  - ESCB appears to be a conduit from PUC to PSAPs, not the other way around.
  - The make-up of the 9-1-1 Board should be adjusted to include direct county representation.
  - The 9-1-1 Board appears to show favoritism to state agencies.
  - The ESCB should have equal influence from all agencies served.
- Local government and response agencies feel strongly that the state was the only entity to save money in last round of PSAP reductions, while local costs increased.
- Local governments and response agency representatives are concerned about arbitrary consolidation decisions made without local input. Specific concerns are:
  - PSAPs should be strategically placed and agency input should be included if further consolidation occurs.
  - Consolidation should improve services and create cost efficiencies for all participants.
  - Some participants are concerned that the consolidation process will lead to further pressure toward DPS handling all call taking statewide.
  - Stakeholders believe the state makes decisions based on costs not service and are concerned this approach will lead to negative political impact and fluctuating costs and fees.
- There is no confidence in the state to successfully plan and operate a PSAP reconfiguration based on historical efforts.
- Local units of government need financial incentives to participate in consolidation.
- Stakeholders at the local level do not want state mandated consolidation.
- Some local level participants feel state is now charging for services it took away.

#### **Consolidation Challenges and Related Service Issues**

- Stakeholders see staffing and service degradation as challenges resulting from consolidation.
- Many local agencies believe incentives should be provided to encourage consolidation
- Reconfiguration decisions should be based on service and stakeholder input first, then costs.



- Most stakeholders support minimizing the number of 9-1-1 call transfers.
- Most stakeholders want to leave configuration as it currently is or pursue further regionalization as fully consolidated (call taking and dispatching) centers.
- Stakeholders are supportive of localized service for familiarity with geography and agencies served.
- It would be difficult to have a large area covered by a single PSAP due to disparate geography, cultural differences and union issues. Therefore, stakeholders feel service levels will be adversely affected.
- Personal contact with citizens and agencies dispatched was lost during the last consolidation effort.
- Service issues including the loss of geographic knowledge, even with use of mapping, erosion of public confidence in 9-1-1. (An example given of bank manager admitted using non-emergency line rather than suffer delays of dialing 9-1-1) and multiple examples of misrouted calls and misdirected responders.
- Concerns that the state will not develop and enforce requirements and protocols (standardization).
- Reportedly, DPS does not have the same service level policies and quality of service as county and municipal PSAPs.
- The culture of splitting call taking and dispatching functions needs to change as it causes a splintering of service. The splintering lowers the quality of service.
- Concerns about the impact of rate shopping, due to economic conditions, has on service.
- Concerns about coordinating response and recovery initiatives, if further reductions occur. Most EOCs are collocated with regional communications centers.
- Consolidation related service issues have compelled some local municipalities to advise citizens to dial the responding agency directly rather than call 9-1-1.
- Natural consolidation/regionalization should be encouraged and will happen.
- County PSAP representatives believe the thirteen existing county PSAPs should remain intact.
- Participants expressed concerns that DPS was taking on a larger workload than it can effectively handle.
- Stakeholders would like the ESCB to take the lead on establishing standardization of services and costs.
- County/municipal agencies will still need to provide dispatch services no matter how many PSAPs exist.
- Selection of PSAP sites should be based on quality of service rather than the rates charged.
- All stakeholders want equal and consistent service statewide.

## **Local Impact**

- Some stakeholders are concerned about legislative impact on plans and budgets already in place for new facilities or other capital expenses.
- Fear that further consolidation will increase local financial burdens and result in a decrease in service levels.
- Some stakeholders do not believe further PSAP consolidation will save money.
- Dispatch centers saw no decrease in staff only, an increase in time and difficulty in processing calls. Costs also increased:
  - Some agencies increased staff
  - Increased local costs experienced due to training
- Rate shopping is a deterrent to further consolidation.
- Dispatch-only sites are concerned about the inability to measure true call processing time to identify how much time elapses before call transfers are received.
- Municipal stakeholders want surcharge dollars used at the local level to reduce the burden on taxpayers.
- Cost concerns including:
  - Differing fee structures across the state
  - Rate shopping, fee structure changes and inconsistencies are issues
  - True costs to municipalities may be difficult to identify with a shift from local to a state fee structure.
  - A mechanism to control fees and costs needs to be established.
- County and municipal PSAPs feel they are able to provide services for less cost than the DPS sites as counties are in better financial condition than is the state/DPS.
- Some government entities are augmenting their revenue by taking on additional dispatch functions for other municipalities.
- Stakeholders expressed the following survey / study concerns:
  - The survey results do not reflect real user agencies.
  - The surveys may not contain correct data.
  - There is no opportunity for stakeholders to review the study before it is released to public and decisions are made at state level.
  - Stakeholders would like an opportunity to question findings and recommendations.

## **Funding Issues and Consolidation Incentives**

- State and local governments have differing views, opinions and knowledge bases regarding rate increases, surcharge usage and local service fees. For example:

- DPS concerned that local government entities do not know that DPS has no control over what is or is not covered by their budget. DPS is told what they will pay for services by other state agencies (e.g. OIT). DPS cannot control costs.
- The state should provide incentives instead of forcing a consolidation initiative.
- Consolidation efforts need to focus on service.
- The regional communications centers are successful because collaboration was not forced.
- Need incentives supporting collaborative initiatives.
- Concerns about how services will be paid for including:
  - Larger agencies feel as if they are subsidizing smaller agencies.
  - Feels like taxpayers are not receiving service they are paying for.
- Affected stakeholders feel they have no control and suggest:
  - Regulation and standardization of costs, fees and structure.
  - Control of fees to reduce rate shopping.
  - Review rate case hearings.
- Stakeholders want the state, through ESCB, to pay to improve staffing, training, technology and EMD in PSAPs and dispatch centers.
- A consolidation incentive could be funding to support data and voice interoperability.
- Rate shopping could be controlled through legislation.
- Local agencies are concerned that state government does not have a mechanism to adjust operations budget or staffing.
  - Fee structures and formulas are different among locals
  - Some PSAPs would like to see a per call basis fee, however they concerned that larger agencies will resist as they see it as having to carry the larger load.

### **Technology**

- Need more technology (faster access to ALI, mapping and protocols) available to all agencies .
- Dispatch-only sites have no ALI, or have IMC ALI interface (which is reportedly not reliable).
  - Location information must be manually typed into CAD.
  - All agencies are concerned about losing ANI/ALI and mapping if they lose PSAP status.
  - Sites that currently do not receive ALI must receive verbal relay of location.
  - Locating callers will become more difficult if further separation between dispatch and call taking occurs through further consolidation.
- Disparity among CAD systems prevents sharing of data with other agencies.

- Stakeholders are interested to know how radio and data systems will be affected by further consolidations, specifically how and if the statewide radio and data systems may be leveraged to support more daily operations of local government response agencies.
- Stakeholders want to know how to address radio interoperability to allow further consolidation.
  - MSCommNet will no longer allow local monitoring of state frequencies.

### **EMD and Staffing**

- The method of providing EMD is inconsistent. What agency will provide EMD is call specific rather than agency specific.
  - Agency that performs EMD should also dispatch call.
  - Dispatch-only centers that perform EMD do not receive funding or training.
  - EMD mandate occurred at same time of last reconfiguration. The ESCB provides EMD training to PSAP staffs, but additional costs are not covered.
- PSAPs are required to staff two workstations 24x7, however many dispatch-only sites staff only one position 24x7.

### **Protocols and Training**

- Agencies are following different caller transfer protocols. A single protocol should be followed by all agencies.
  - Blind transfers are common.
  - No standard regarding call announcements on transfers exists.
- There are training differences between DPS and county/municipal PSAPs including:
  - Insufficient SOPs and coordinated training.
  - Training issues cited at DPS sites.

### **Wireless Call Routing and Processing**

- Several counties want all wireless calls routed directly to their PSAPs to alleviate the transferred and dropped calls (particularly wireless) and blind transfers.
- Any reconfiguration initiative should minimize or eliminate transferred calls.

### **Other Stakeholder Input**

Kimball received correspondence from a variety of individual stakeholders. Key issues and concerns are as follows:

- Any further consolidation should take into account more than just the call volume of each PSAP. Geography and local knowledge play a significant role in the high level of service being provided by small PSAPs with low call volume.
- The state and local agencies would be best served by maintaining at least one PSAP in each county.

- Emergency management needs a direct line of communication with its own PSAP to provide the most efficient incident management for the citizens.
- Maintaining a county PSAP/dispatch center is more economically feasible as PSAP services do not need to be paid for in addition to a dispatch staff.
- Further consolidation will increase call transfers, thereby increasing emergency response times and the possibility of dropped calls and will lower safety levels for citizens and responders.
- Losing 9-1-1 equipment and mapping would impact the ability of small dispatch centers to provide safe and reliable service to the community.

### **Configuration Preferences**

During the stakeholder and focus group meetings, two configuration preferences were shared by multiple groups and individuals. The number one configuration preference among stakeholders is to maintain the current configuration with improvements to technology and standardization of protocols statewide. This preference is viewed as one that will foster natural consolidation among agencies. This is also seen as an opportunity for the state, through ESCB, to develop and provide funding or technology incentives for further consolidation.

The second most frequently mentioned configuration preference is to maintain the 13 regional centers (county run operations) with improvements to technology and standardization of protocols statewide. This preference is seen as one that can be most successful in reuniting the call taking and dispatch processes into one operation. It is important to note that the second preferred configuration comes in two different forms:

- 13 regional centers with DPS sites handling only state agencies
- 13 regional centers, plus a pre-determined number of municipal run centers based on call volume and DPS sites to handle only state agencies

All cited preferences included expansion of state funding toward additional technology, equipment and services. They also included focus on improving services, regulating fees and standardization of protocols statewide.



**REPORT FOR:  
OPTIMUM PSAP RECONFIGURATION ASSESSMENT  
SUBMITTED TO:  
STATE OF MAINE**

---

**APPENDIX B**

**CONNECTICUT OFFICE OF STATEWIDE EMERGENCY  
TELECOMMUNICATIONS**

**MASSACHUSETTS STATE 9-1-1 DEPARTMENT**

## **Appendix B**

### CONNECTICUT

The Office of Statewide Emergency Telecommunications (OSET) oversees the development and maintenance of coordinated statewide emergency service telecommunications for public safety organizations and the residents of the state of Connecticut. The OSET oversees the 9-1-1 system in state of Connecticut. They provide several subsidies to offset the cost of PSAP operations for municipalities.

Municipalities with population of 70,000 or more receive an annual subsidy from OSET to offset the cost of PSAP operations.

Regional Emergency Communications Centers (RECCs) receive an annual subsidy to provide 9-1-1 services. A minimum of three municipalities are needed to form an RECC.

The formula for the calculation of the subsidies to RECC is based on:

1. Aggregate population of the municipalities
2. A calculation of 9-1-1 calls received in relationship to the state median number of 9-1-1 calls in the previous calendar year shall be used.
3. The emergency service count for the municipalities served.

OSET provides funding to offset the cost forming new RECCs and provides an annual subsidy to existing RECCs. This subsidy is based on a funding formula. Currently, eight regional dispatch centers in the state receive subsidy funding.

RECC transition grants for reimbursable expenses are limited to costs associated with the relocation of existing emergency telecommunications systems and non-recurring costs. It shall not exceed two hundred fifty thousand dollars. Reimbursable expenses include the following:

1. Moving telephone lines related to emergency telecommunications radio systems
2. Changes to existing radio systems of the affected parties that are required by the move
3. Emergency telecommunications equipment required by the regional telecommunications center to facilitate the incorporation of another municipality.
4. Analysis, design or planning of a new regional emergency telecommunications center or multi-town PSAP. Municipalities are eligible for analysis, design and planning costs, allocated on a one-time basis, for new regional centers at the rate of fifteen thousand dollars for the first two member municipalities plus an additional five thousand dollars for each additional member municipality.

[http://www.ct.gov/dps/lib/dps/office\\_of\\_statewide\\_emergency\\_telecommunications\\_files/oset-files/e9-1-1\\_fund\\_regulations\\_for\\_web\\_site\\_8-1-07.pdf](http://www.ct.gov/dps/lib/dps/office_of_statewide_emergency_telecommunications_files/oset-files/e9-1-1_fund_regulations_for_web_site_8-1-07.pdf)

(Adopted, effective January 24, 1997, amended March 6, 2006)

## MASSACHUSETTS

The State 9-1-1 Department oversees the 9-1-1 program in Massachusetts. The 9-1-1 Department has a grant program that encourages the development and/or improvement of Regional Emergency Communication efforts. The funding for feasibility study and Regional development, expansion, or upgrade is distributed on a competitive basis. The 9-1-1 Department had a total of \$8 million available for Fiscal Year 2010.

All construction and structural improvement items funded through this grant need pre-approved by the 9-1-1 Department. The grant is only permitted to fund construction and structural improvement costs to physical space used directly for the provision of enhanced 9-1-1 service. Such funds may be used to defray costs associated with construction or structural improvement of a multi-purpose building only to the extent that such funding is applied to a specific portion of the building's total space that is dedicated directly to the provision of enhanced 9-1-1 service.

Allowable items to be funded through this grant include:

- Architectural and engineering services, including creation of specifications, blueprints, floor plans, etc.
- Construction materials.
- Plumbing, electrical and cabling materials.
- Labor.
- Other facility construction or structural improvement items pre-approved by the Department.

The State 911 Department has established the following order of priority:

1. Development of regional PSAPs and regional emergency communication centers.
2. Expansion of regional PSAPs and regional emergency communication centers.

Within each of these categories, additional priority consideration will be given to applicants who have received funds to support developing, starting up, or expanding regional PSAP or RECC facilities in the 2009 Fiscal Year State 911 Department Regional PSAP and RECC Development Grant.

[http://www.mass.gov/?pageID=eopsmodulechunk&L=3&L0=Home&L1=Public+Safety+Agencies&L2=State+911+Department&sid=Eeops&b=terminalcontent&f=setb\\_REGIONAL\\_and\\_REGIONAL\\_SECONDARY\\_PSAP\\_and\\_RECC\\_DEVELOPMENT\\_GRANT\\_2009&csid=Eeops](http://www.mass.gov/?pageID=eopsmodulechunk&L=3&L0=Home&L1=Public+Safety+Agencies&L2=State+911+Department&sid=Eeops&b=terminalcontent&f=setb_REGIONAL_and_REGIONAL_SECONDARY_PSAP_and_RECC_DEVELOPMENT_GRANT_2009&csid=Eeops)

© 2009 Commonwealth of Massachusetts



**APPENDIX C  
GLOSSARY/ACRONYM LIST**

## GLOSSARY/ACRONYM LIST

Term	Definition
ALI	Automatic Location Identification - Address information that is displayed when a caller dials 9-1-1 that assists in locating that caller.
ALI DB	Automatic Location Identification Database
ANI	Automatic Number Identification - Calling party phone number information that is displayed when a caller dials 9-1-1 that assists in locating that caller.
APCO	Association of Public Safety Communications Officials - A member driven association of communications professionals that provides leadership, influences public safety communications decisions of government and industry, promotes professional development, and fosters the development and use of technology for the benefit of the public.
CAD	Computer Aided Dispatch - Key system within the PSAP, dispatch-only site or regional communications center. Calls are entered into CAD, field personnel dispatched, and incident updates are entered.
Call Transfer	When a 9-1-1 is received by one PSAP and then is transferred to another PSAP or dispatch-only site for processing.
CAMA	Centralized Automatic Message Accounting - A type of analog transmission protocol that transmits telephone number via multi-frequency encoding. Originally designed for billing purposes.
Centrex	A business telephone service offered by some Local Exchange Carriers that provides PBX type features over access lines.
CMRCC	Central Maine Regional Communications Center
CPE	Customer Premise Equipment - Also known as call answering equipment
DB	Database
DHS	US Department of Homeland Security
Dispatch Functions	Include all functions associated with sending a public safety response to a 9-1-1 call and any needed support of field personnel.
Dispatch-Only Site	An agency that does not receive 9-1-1 calls directly and performs only dispatch functions.
DPS	Department of Public Safety
E9-1-1	Enhanced 9-1-1 - Provides the PSAP with calling party location and phone number information
EMD	Emergency Medical Dispatch - The provision of pre-arrival instructions to callers with medical emergencies.
Emergency Communications Centers	A fully consolidated agency that provides 9-1-1 call processing and dispatch functions.

Term	Definition
EMS	Emergency Medical Service
ESCB	Emergency Services Communication Bureau
ESN	Emergency Service Number - A three to five digit number representing a unique combination of emergency service agencies (Law Enforcement, Fire, and Emergency Medical Service) designated to serve a specific range of addresses within a particular geographical area.
ETSB	Emergency Telephone Safety Board - Oversight board used in the State of Illinois
FCC	Federal Communications Commission
Fully Consolidated Communications Center	An agency that combines 9-1-1 call processing and dispatch functions into a single agency.
GIS	Geographic Information System - A computer software system that enables one to visualize geographic aspects of a body of data. It contains the ability to translate implicit geographic data (such as a street address) into an explicit map location. It has the ability to query and analyze data in order to receive the results in the form of a map. It also can be used to graphically display coordinates on a map i.e. Latitude/Longitude from a wireless 9-1-1 call
IP	Internet Protocol
IRR	Instant Recall Recorder - Allows instant playback of phone or radio conversations in a communications center.
Logging Recorders	Audio recorder devices that record radio transmissions and telephone conversations. A key PSAP system.
MRS	Maine Revised Statutes
MRSA	Maine Revised Statutes Annotated
MSAG	Master Street Address Guide - A list of street names and house numbers in each community which allows the correct routing of 9-1-1 calls.
MSCommNet	Maine State Communications Network is a project sponsored by the Radio Services Operations Division of OIT (Office of Information Technology). The State is developing and commissioning a unified statewide land mobile radio network for State law enforcement, public safety, and public service agencies.
NENA	National Emergency Number Association - A not-for-profit corporation established in 1982 to further the goal of "One Nation-One Number". NENA is a networking source and promotes research, planning, and training. NENA strives to educate, set standards and provide certification programs, legislative representation and technical assistance for implementing and managing 9-1-1 systems.
NFPA	National Fire Protection Association

Term	Definition
NG9-1-1	Next Generation 9-1-1 - Term used to describe the move to IP based networks for processing 9-1-1 calls. Commonly used to refer to the ability of a PSAP to receive new data types such as text, photos, and video.
OIT	Office of Information Technology
PSAP	Public Safety Answering Point - Agency that receives and processes 9-1-1 calls. Under the strictest definition, a PSAP performs 9-1-1 call taking functions only.
PSAP Functions	Include all actions associated with processing 9-1-1 calls for service from the time 9-1-1 is dialed until field personnel are dispatched.
PUC	Public Utilities Commission
QA	Quality Assurance - Process put in place to ensure industry standards are met and operating policies are followed.
Rate Shopping	When a municipality moves from PSAP to PSAP in order to process costs at the least expensive cost.
RETAINS	Responsive Efforts to Address Integral Needs in Staffing - 9-1-1 industry recognized method for projecting needed staffing levels
RMS	Records Management System - System usually interfaced with CAD to compile and analyze data and produce reports.
SOP	Standard Operating Procedure
TDD/TTY	Telecommunications Device for the Deaf / TeleTypewriter - Devices used by the deaf community to communication
Telecommunicator	Generic term for a 9-1-1 call taker or dispatcher
UPS	Uninterrupted Power Supply - Power back up for critical equipment
VoIP	Voice Over Internet Protocol
WSP	Wireless Service Provider - Cell phone carrier such as US Cellular, Verizon, etc.