

Task 2 - 9-1-1 Consolidation Feasibility Study Consolidation Model Assessment

Submitted to:



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Architects and Engineers

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1. PROJECT OVERVIEW

This report is a condensed version of the Task 2 report prepared for Atlantic County. This version has been condensed for the purposes of Internet publication. For a complete version of the report contact:

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All report appendices are available in the full version of the report.

1.1. BACKGROUND

Atlantic County, located in southeastern New Jersey, is a diverse county of 561 square miles which encompasses urban areas such as Atlantic City as well as resort communities and rural agricultural lands. The year-round estimated population is approximately 254,000 residents (2000 US Census). However, the casinos of Atlantic City and seasonal resort communities draw visitors that can raise the population at times to between 500,000 and 700,000 people.

As a result of federal initiatives and state legislation geared toward interoperability and reducing costs via increased shared services, Atlantic County has recognized the need to evaluate the 9-1-1 call handling and emergency dispatch model currently in place in the county. In the County's present 9-1-1 call handling and emergency dispatch operational model, multiple localized service providers answer 9-1-1 requests from the public. Many local agencies, primarily law enforcement, have maintained separate PSAPs. Though these PSAPs take great pride and care in the handling of emergency calls, there are certain problems inherent in this system. First, in general terms, an operational model based on many localized PSAPs tend to have a much lower level of interoperability among agencies which can hamper multi-jurisdictional responses. Second, cost-efficiencies only obtained through a consolidation of services are not achieved in the current model, placing an undo burden on the taxpayers of Atlantic County. In general terms, a consolidation of 9-1-1 and emergency communications services can provide county residents and responders with the following:

- Service improvements and efficiencies
- Technology advancements
- Funding opportunities
- Regional, state and federal partnering opportunities
- Equality of service across all agencies for all citizens and visitors in Atlantic County

In an effort to improve the countywide level of service to the community in an effective and efficient manner, L. Robert Kimball & Associates was commissioned to inventory and study the feasibility of consolidated public safety communications in the Atlantic County area.

1.2. TASK METHODOLOGY

The task of a complete consolidation analysis for Atlantic County has been broken down into four components. In brief, these components, identified as Task Reports, are as follows:

1.2.1. Task 1 - Completed

- Assessment of current PSAP conditions
- Determine the feasibility of consolidation within the County
- Identify constraints
- Identify positives and negatives of consolidation
- Provide conclusions and recommendations on the feasibility of a consolidation in Atlantic County.

1.2.2. Task 2

- Development of potential consolidation models for Atlantic County including preliminary recommendations on technology, organizational structure, recommended service levels, and high-level budget numbers.
- Human resource planning, including career ladder, employee transition plans and costs, and compensation
- High level facilities overview

1.2.3. Task 3

- Further develop the model(s) from Task 2 deemed most feasible for the County.
- Other components as identified in the scope of work

1.2.4. Task 4

- Combine the reports from the first three tasks into a single cohesive report.

2. TASK 1 – CONSOLIDATION FEASIBILITY ASSESSMENT SUMMARY

2.1. FEASIBILITY STUDY POTENTIAL CONSOLIDATION BENEFITS

In general terms, a consolidation of 9-1-1 and emergency dispatch services can be expected to provide the following benefits:

- Standardized call handling, dispatching protocols, and training decrease opportunities for error and enhance safety of responders and the public.
- Improved coordination of multi-jurisdictional and/or multi-class of service incidents.
- Increased opportunities for grants and state funding to support public safety operations and interoperability within the County.
- Cooperative consideration, responsibility, interoperability, and action across local government boundaries.
- Centralized authority to address operational and service efficiencies, equity, and accountability.
- Economies of scale in procurement, maintenance, upgrades, and replacement of systems and facilities. For example, equipping a primary and back up facility with redundant systems requires the procurement of two of each system component.
- Career ladder for PSAP employees which can reduce employee turnover and lower costs associated with hiring and training new employees.

2.2. POTENTIAL CONSOLIDATION NEGATIVES

- While consolidation has many positive aspects, there are aspects of consolidation that can be viewed as negative by the user agencies. These include:
- Loss of the personal touch and knowledge of residents currently provided by the local dispatchers
- Loss of control of PSAP staff by the current PSAP management
- Loss of 24/7 staff to perform other tasks not traditionally considered to be true emergency communications functions, such as monitoring holding cells or other municipal facilities, staffing walk-in complaint windows, and serving as a receptionist for incoming calls for all municipal departments.
- Loss of intimate geographical knowledge of local jurisdictions
- Start-up costs can delay the realization of cost savings
- While some of the issues above can be mitigated by the use of technology and dispatcher learning

curves, the reality of consolidation is there are trade-offs that must be made by the user agencies if they participate in the consolidation. Each agency will need to weigh the positives and negatives for their agency before determining if a consolidation is an appropriate choice for their agency.

2.3. TASK 1 – FEASIBILITY FINDINGS SUMMARY

Kimball's assessment of current conditions in Atlantic County found the following:

- The duplication of systems and equipment among the disparate centers, whether the same systems and equipment or those of various vendors.
- The lack of systems and equipment in some agencies.
- The varying levels or quality of service provided not only to the community but to other public safety agencies.
- The financial burden of maintaining a dispatch center for some agencies or the high cost of contracting with other agencies for services is an increasing problem for some agencies.
- Vague or inequitable methods of determining the cost to contract for services with another PSAP.
- Inadequate PSAP redundancy or back up plans and/or facilities at some PSAPs
- Potential reduction or elimination of state grant funds as a result of the State's consolidation of services initiative as outlined in S45 for PSAPs who do not consolidate.
- A wide range of user agency interest in pursuing a consolidation

Overall, Kimball found no significant technological, operational, or political constraints or roadblocks to pursuing a consolidation. While a consolidation will present challenges in all of these areas, they are balanced by significant possibilities for operational and administrative benefits. Politically, there appears to be sufficient interest in developing a more detailed plan for further consideration by the various stakeholders.

2.4. TASK 1 – FEASIBILITY STUDY RECOMMENDATIONS

Kimball makes the following recommendations related to County's consolidation feasibility study:

- Proceed with the development of potential consolidation models, including organizational structure, staffing, high-level budgetary costs, governance structure, specific technological needs, funding mechanisms, and start-up costs.
- Identify and determine the degree of all PSAP's interest in working together to establish a unified direction and budgetary commitment toward the creation of a consolidated communications center.
- Consider enlisting the professional services of a firm pertaining to the detailed requirements of site development, programming, and design of a consolidated communications facility.

- Develop a communications plan to keep all stakeholders informed as to the status of this project.

3. TASK 2 - MODEL DEFINITIONS AND COMMONALITIES

3.1. DEFINITIONS AND CONSOLIDATION MODEL OVERVIEW

- Consolidation – the combining of two or more agencies into a single agency with standardized standard operating procedures (SOPs) and a single reporting structure.
- Collocation - Two or more agencies sharing the same space and systems, but staff remain employed by separate agencies each with its own structure and SOPs.
- Hybrid – A consolidation of multiple agencies that reside along side with a collocated agency in the same facility and space.

Kimball recognizes that a single, perfect consolidation model does not exist and approaches and variations to different models are many. The “correct” choice for Atlantic County will ultimately be a local one that must factor in a number of institutional factors outside the scope of this report. However, based on the information gathered in Atlantic County, there are four models that could theoretically work with varying degrees of effectiveness within the county:

- A single, countywide consolidated PSAP
- Two regional consolidated PSAPs
- Collocation of agencies in one or more facilities
- A hybrid of consolidation and collocation

Of these four, collocation would not be recommended as it is simply a sharing of space and systems. While some cost efficiencies can be obtained, through this model by the sharing of PSAP systems, it does not offer the personnel cost efficiencies and service improvements offered in a true consolidation of services. Additionally, collocation may not comply with the intent of S45 and, therefore, could impact funding availability in the future.

A hybrid model in which some agencies are collocated and some consolidated is also not one that Kimball would recommend as an *initial* model in Atlantic County. This type of model works best with agencies that are so substantially different as to make consolidation virtually impossible. For example, consolidating a commercial, for-profit agency with government agency is almost impossible. Therefore, the best possible solution for both sides of the equation is to collocate to affect a level of cost efficiencies and service improvements realized by close proximity of operations. Atlantic County may want to look into this type of hybrid solution at some point in the future with agencies such as AtlantiCare. However, the County would be best served by establishing a truly consolidated PSAP first.

As a result of the information gathered during this project, this report will focus on the two models that are the best fit, in Kimball’s opinion, for Atlantic County at this point in time. These models are a single, countywide PSAP and two regional PSAPs that, in effect, split the county geographically. In either model the PSAP would operate under one of a variety of governance models which will be more fully examined

in subsequent reports. This report will focus on aspects of each model that will remain fairly standardized regardless of the governance model chosen by the County.

3.2. MODEL COMMONALITIES

Both PSAP models share commonalities in organizational structure and career ladder as to be virtually identical. Therefore, these issues will be addressed collectively.

3.2.1. Organizational Structure

While no single correct operational or organizational structure exists, industry standards have proven that the organizational structure similar to the one outlined below provides a consolidated PSAP with a solid basis for managing its workload, providing a high level of training, creating a career ladder for employees, and allows the PSAP director or manager to fairly and equitably manage emergency communications resources for all user agencies. Sample organizational charts for both models are shown in at the end of this section. It should be noted that the job titles and duties listed in this report are examples and/or suggestions only. The actual titles and descriptions are ultimately at the County's discretion and should be developed to best fit the County's needs. However, for purposes of this example, key positions in the sample chart are defined as follows:

- **Communications Director or Manager**

This position has overall responsibility for all communications center operational and administrative tasks. The reporting relationship for this position will be examined fully in the governance section of the Task 3 report.

- **Deputy Director or Manager – Operations**

This position reports to the director or manager. This position oversees the day to day management of operations including hiring, training, and managing staff, as well as implementing division policies and procedures. The two regional PSAPs model would likely require two people in this position, one for each PSAP.

- **Deputy Director or Manager – Technology**

This position reports to the director or manager. This position oversees all technical and equipment issues concerning the communications center. This position would also be responsible for the support of the communication center's 9-1-1 telephone system, CAD, and other PSAP systems.

- **Shift Supervisors**

This position reports to the Deputy Director of Operations. This position provides frontline supervision of on-duty operational staff on a 24/7 basis. The shift supervisor is responsible for managing real time incidents, scheduling, investigations, performance evaluations, and other operational and administrative tasks.

- **Dispatcher II**

This position reports to the shift supervisors. This position is capable of performing all operational positions, call taking, police, fire, and EMS dispatching, as needed. This position is also used in an acting

supervisor capacity. Shift supervisors are promoted from this pool of employees. Kimball recommends adding this position post-consolidation, therefore it is not referenced in the staffing recommendations in this report.

- **Dispatcher I**

This position reports to the shift supervisors. This position is capable of performing call taking functions and dispatching a single class of service such as police, fire and/or EMS. (In many jurisdictions fire and EMS are treated as a single class of service with a single dispatcher handling both.) Staff filling this position can be promoted from a telecommunicator position or hired directly as a dispatcher. Employees in this position will often be put into a Dispatcher I Trainee job title for the duration of the training process. This enables the County to pay the employee at a reduced rate of pay until he/she is able to fully function as a Dispatcher I.

- **Call takers or Telecommunicators**

This position reports to the shift supervisors. This position is the “normal” entry level position that is responsible for all call taking functions, including emergency medical dispatch (EMD), associated with handling 9-1-1 and administrative calls for the user agencies. Employees in this position will often be put into a Call taker or Telecommunicator Trainee job title for the duration of the training process. This enables the County to pay the employee at a reduced rate of pay until he/she is able to fully function as a Call taker/Telecommunicator.

- **Quality Assurance Manager**

This position reports to the director. This position is responsible for administering the quality control program for call taking, EMD, and dispatching. This position works closely with the 9-1-1 trainer and shift supervisors to identify PSAP wide and individual training needs.

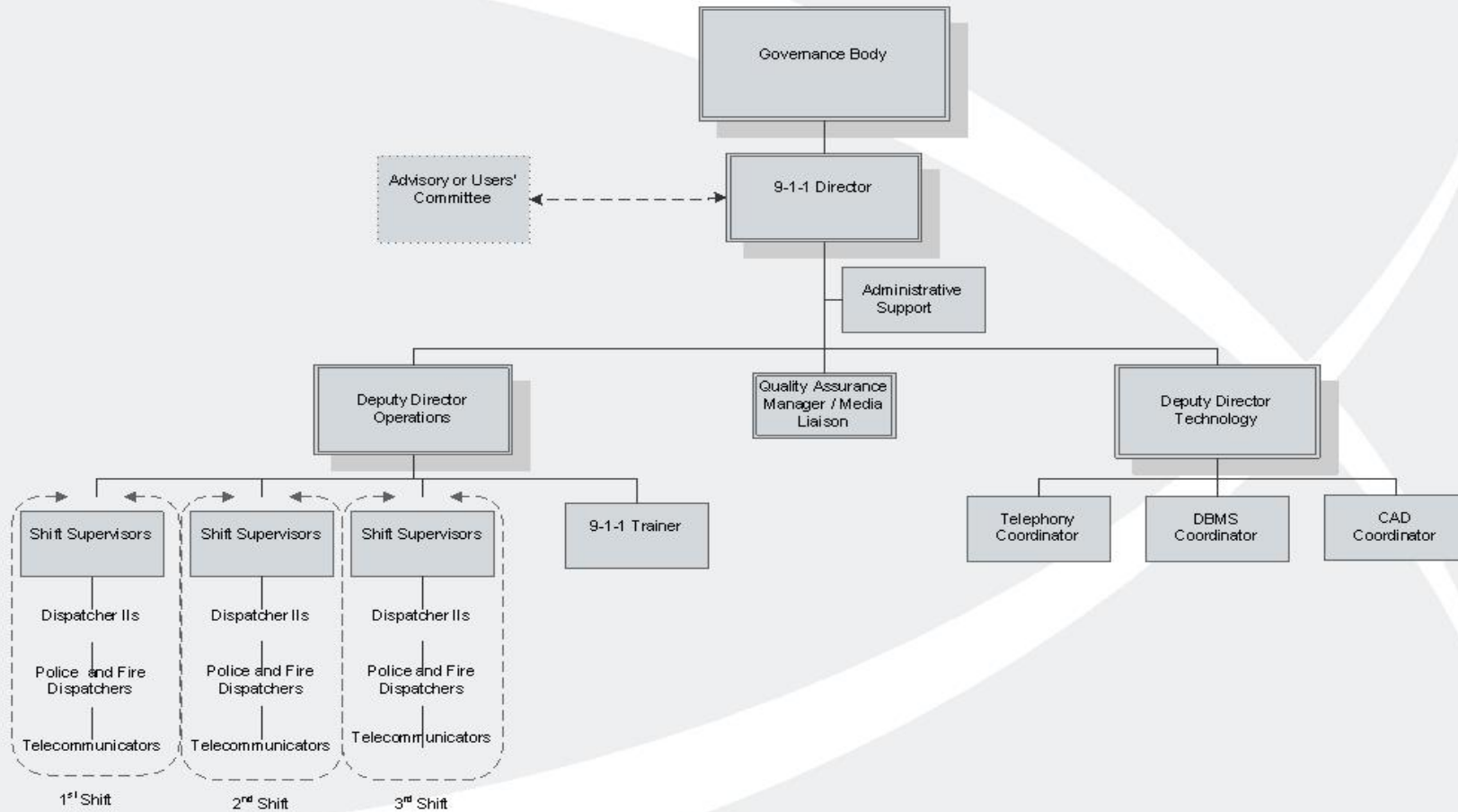
- **9-1-1 Training Coordinator**

This position reports to the Deputy Director of Operations. This position is responsible for developing and delivering a new hire training program that meets all state requirements, tracking all required employee certifications, providing training opportunities to obtain and maintain certifications, and developing and overseeing remedial employee training.

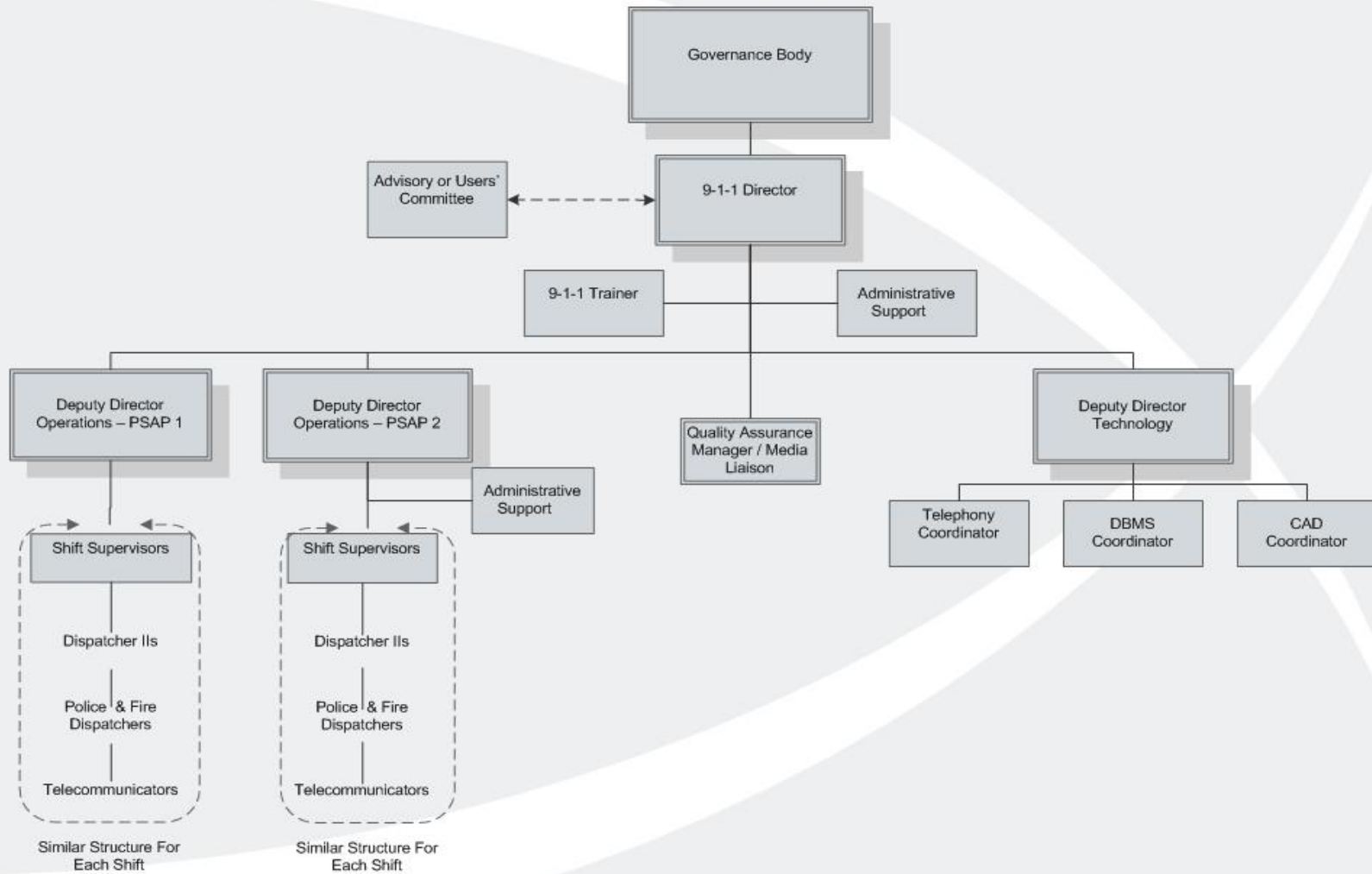
- **Advisory or User’s Committee**

This group works with the director or manager. This group can be comprised of representatives of the user agencies, municipalities, and/or public. The purpose of this group is two-fold. First, it acts in an advisory capacity to the director in establishing desired service levels and assisting in determining the future direction of the 9-1-1 Center. Second, it offers a forum where user agencies and the 9-1-1 Center can work together resolve issues that cannot be solved through a normal resolution process. This group can take many forms and will ultimately need to be tailored to the specific needs of the region. Kimball will address this issue in more depth in the governance recommendations in the Task 3 report.

Single Consolidated PSAP Organizational Chart



Regional PSAPs Organizational Chart



3.2.2. Career Ladder

In Atlantic County's current emergency communications model, the small size of the individual PSAPs often dictates that the dispatch staff become proficient in and is able to perform simultaneously all aspects of emergency communications including call taking and dispatching police, fire, and EMS agencies. While effective in a small, single agency environment, this model often limits the ability of dispatch staff to progress beyond a lead dispatcher or supervisor position for two reasons. First, the majority of the current local PSAPs are part of larger law enforcement agencies that often have sworn officers in PSAP management positions as part of the law enforcement agency's organizational structure thus preventing an upward career path for dispatch staff. Second, the small size of each PSAP often limits or prevents the establishment of other PSAP positions such as 9-1-1 training coordinator, quality assurance manager, and/or technical positions. Once all police and fire dispatch services are combined into a single entity (whether a single or two regional PSAPs), call processing and dispatching becomes significantly more complex. This added complexity demands that PSAP staff become more "specialized" and that call taking and dispatching functions be split into separate job functions. Further, police, fire and/or EMS dispatching should also be split into two or three distinctly separate jobs as the skills and knowledge necessary for each are significantly different. It is a common practice, however, to combine fire and EMS into a single dispatch position as they are very similar in nature and a large degree of response overlap exists. Whether this separation occurs is dependent upon the needs and wishes of the County.

In addition, operational and technical management positions are filled with civilian staff, often on a promotional basis. This new organizational model will provide numerous career path opportunities for dispatch staff, will provide a performance incentive, and will improve employee retention as a result.

In a consolidated center such as Atlantic County will need, the career path begins with the most common entry level position, the telecommunicator or call taker. This critical position is responsible for receiving and processing incoming E9-1-1 and administrative calls, including performing EMD for all user agencies. All other operational positions are built upon the skill sets learned as a telecommunicator. Kimball highly recommends that all operational employees be required to learn and function as a telecommunicator as part of his or her normal job duties. Normally, during a major incident the number of dispatchers needed to handle the incident remains relatively stagnant while the number of incoming calls increases. For example, while an additional dispatcher may be needed to handle a tactical channel, the real staffing need is most often to handle an increased volume of incoming calls. Training all operations staff in call taking will ensure that the PSAP has maximum flexibility in immediately handling these situations and creates a larger pool of staff to utilize when covering overtime.

The next step in the career ladder is the Dispatcher I position. This position is a promotion from the telecommunicator or call taker position, but can also be filled effectively with new hires although new hires will have a longer training period. This position requires telecommunicator certification and training in the dispatching of a single class of service such as police, fire and/or EMS. The staff that fill these positions are responsible for dispatching all user agencies within that class of service as part of their standard job responsibilities and performing as a call taker as needed.

The next step in the career ladder is the Dispatcher II position. This position is a promotion from a Dispatcher I position. The staff that fill these positions are responsible for telecommunicator certification, dispatching all classes of service, and performing as a call taker as part of their normal job responsibilities. In addition, this group provides a pool of acting supervisors that can be used to supplement shift supervisor

staffing levels and provide necessary training for possible promotion to a shift supervisor position. While this position provides the most scheduling flexibility, not all staff members are able to achieve an acceptable performance level in a larger consolidated environment. This position is challenging and is an excellent “proving ground” for future shift supervisors.

Shift supervisors are the last and highest ranking front-line operational position. This position requires extensive knowledge in call taking and dispatching for all classes of service. This position manages the PSAP operations in real-time on a 24/7 basis. While this position can be effectively filled with supervisory staff from other similar PSAPs, it is most often filled through in-house promotion.

In addition to the career path created by these basic positions, a stand alone consolidated PSAP also offers management (both operational and technical), and support positions, training and quality assurance, as other career options for staff members.

4. TASK 2 - SUMMARY

4.1. STAFFING/ORGANIZATIONAL STRUCTURE/HUMAN RESOURCE PLANNING

The organizational structure, staffing development, and general human resource planning are very similar in both a single and two regional PSAP model. As such both models will be summarized collectively.

4.2. STAFFING

Under the County's current 9-1-1 and emergency dispatch model the 18 PSAPs participating in this study employ 132 full time and approximately 46 part time employees (some of whom work at multiple departments). With the exception of one agency, these PSAPs are part of the local police department and overall management falls to the sworn personnel from the departments. These employees perform combined call taker and dispatcher functions. Supervisory staff are most often included in minimum operational staffing levels.

Should the County proceed with a consolidation, it will need to effectively manage a countywide call volume of an estimated 1.17 million 9-1-1 and administrative calls annually. The County will need to create a PSAP or PSAPs with a multi-layered approach to not only call processing and dispatching but at the management level as well. Once all police and fire dispatch services are combined into a single entity (whether a single or two regional PSAPs) call processing and dispatching becomes significantly more complex. This added complexity demands that PSAP staff become more "specialized" and that call taking and dispatching functions be split into separate job functions. Further, to ensure that all user agencies are receiving the same high level of service, police and fire/EMS dispatching should also be split into two distinctly separate jobs as the skills and knowledge necessary for each are significantly different.

The suggested management structure for both consolidation models is very similar. Both have a director, deputy directors, administrative support, and QA and training supervisors. Again, this expanded and more specialized structure becomes necessary as a result of the PSAP(s) size, technological complexity, and number of user agencies served. The primary difference between the single and two regional PSAP models is that two regional PSAPs would need a certain amount of "redundant" or duplicate staff such as a second deputy director of operations and administrative support to manage the logistical and continuity issues associated with having two mirrored PSAPs. Obviously, this added staff will increase the number of staff needed and the associated personnel costs.

The second primary difference in staffing levels between a single and two regional PSAPs is the number of fire and EMS dispatchers needed. While two dispatchers on-duty 24/7 would adequately cover the County's needs in a single facility, when split between two facilities it becomes necessary to maintain two positions in each PSAP to account for busy periods and breaks and lunch periods. This need increases the number of fire/EMS dispatchers needed and substantially increases the associated personnel costs.

The chart below compares the recommended staffing levels for each PSAP model. These estimates should be considered broad guidelines only. There are a variety of factors discussed throughout this report which will impact the final staffing numbers. These estimates are to be considered a starting point for planning only as the number of call takers and dispatchers needed is likely to decrease once all project variables are addressed. Although already stated in the staffing section for each position, it should be noted that the staffing estimates are made based on the following assumptions:

- All administrative calls currently handled by PSAP staff would be routed to the new consolidated center(s). An administrative call review will need to be conducted in the planning phase and call taker staffing levels adjusted accordingly.
- Fire and EMS will be separated from police dispatch creating new positions.
- Up to five police agencies may be large enough to support a dispatch position designated solely for that agency. An in-depth review of channel load and call volume would need to be conducted in the planning phase and the number of positions adjusted accordingly.
- The remaining 13 police agencies are divided (for purposes of this general overview only) into two agencies per dispatch position. Again, the actual consolidation of agencies into dispatch positions will require an in-depth analysis in the planning phase and position numbers will be adjusted.
- A position for police “Look-Ups” or local, state, and NCIC inquiries may be needed and is included in the dispatcher estimates.
- Although mentioned in the career ladder section of this report, no Dispatcher II (dispatchers that dispatch police, fire, and EMS) staff levels are estimated. Kimball strongly supports the establishment of this position. However, it is a position that is best established after a consolidation occurs as across-the-board training levels must be standardized and overall agency needs must be established and addressed. Most often this position does not require the addition of new positions, but the upgrading of existing Dispatcher I positions.

PSAP MODEL STAFFING COMPARISON			
Single PSAP Model		Two Regional PSAP Model	
Job Title	Staff Needed	Job Title	Staff Needed
Director/Manager	1	Director/Manager	1
Deputy Director - Operations	1	Deputy Director - Operations	2
Deputy Director - Technology	1	Deputy Director - Technology	1
Technological Support	3	Technological Support	3
Administrative Support	1	Administrative Support	1
QA Supervisor	1	QA Supervisor	1
Training Supervisor	1	Training Supervisor	1
Shift Supervisors	14	Shift Supervisors	14
Dispatchers - Police	85	Dispatchers - Police	100
Dispatchers – Fire/EMS	14	Dispatchers – Fire/EMS	28
Telecommunicators/Call takers	33	Telecommunicators/Call takers	32
Total Staff Needed	155	Total Staff Needed	184

4.3. ORGANIZATIONAL STRUCTURE/HUMAN RESOURCE PLANNING

A countywide consolidation will create a need to split job responsibilities and create new positions if the PSAP(s) is to provide a desirable level of service to the user agencies and the community. Therefore, one of the most critical first steps in planning a new agency is developing an organizational structure. This structure includes the identification of job titles and descriptions and chain of command. This structure

will establish the skeleton of the organization and will be necessary for the development of standard operating practices, discipline, evaluations, complaint investigations, adequate systems oversight and maintenance, quality assurance, and training. In addition, this structure creates a career path for employees.

Once a basic structure is determined, a review of job titles and descriptions should take place to establish what, if any, titles will need to be addressed with New Jersey Civil Service. Establishing new titles can be a time consuming process that is, in part, out of the County's control, therefore this issue should be addressed as early in the planning process as possible.

Labor unions will need to be involved in the planning process as early as possible as well. Since eight unions are currently represented within the county PSAP staff it is imperative to review contracts, identify issues, and begin the necessary dialog to establish a single entity. As with New Jersey Civil Service, labor union issues can sometimes be involved and require protracted negotiations before a resolution can be reached. Therefore, this process should start as soon as possible.

In conjunction with job titles and descriptions, new pay scales and benefit packages will need to be developed. Not only does the pay scales of the consolidating agencies need to be equalized, but appropriate pay levels for newly created positions will need to be established. To create parity in pay among staff to be combined in a consolidated environment, Kimball recommends balancing pay and benefits to bring no loss or harm to the current pay and benefit levels if at all possible. Concern that current employees among the various county PSAPs would suffer a significant pay and/or benefit loss was repeatedly mentioned in the management interview phase of this project. Kimball concurs that the County should make every effort to ensure that its' new employees do not suffer a financial loss.

The existing staff of the disparate agencies can be expected to fill 85 to 95% of the necessary personnel in the consolidated center. Through attrition and qualification procedures a real possibility exists that several existing staff members do not transition to the new consolidated center(s). A hiring process will be necessary to fill the additional staff positions.

The existing supervisory staff can be expected to transition to the new consolidated center in the same fashion as the operational staff. Again, a hiring or promotion process will be necessary to fill any additional staff positions.

Selection of the Training and Quality Assurance supervisory staff should first be attempted through existing qualified staff. If an internal process does not provide qualified individuals, an external hiring process will be needed.

Kimball recommends that the PSAP's governance structure, once decided upon, conduct a selection process to locate and hire the director/manager and deputy director/manager as early in the consolidation process as possible. A director with consolidation experience will be an invaluable resource during the consolidation process. Once these positions are in place, they will need to hire a suitably qualified administrative assistant in support of the administrative and supervisory level staff.

4.4. CAD/RMS/MDC

A PSAP consolidation will require the standardization of CAD systems. The County will need to choose a single system for its' new PSAP(s). Although it's possible that some equipment may be reusable, it is likely that the County will need to purchase new equipment for two primary reasons. First, although some of the agency CAD systems are relatively new, by the time a new facility is constructed and renovated the equipment will be substantially older. The average time frame on new construction is about 36 months. Kimball would not recommend attempting to relocate and re-use equipment that is an average of 5 - 7 years old as it is approaching the end of the CAD life cycle. The second reason is that the current equipment would likely need upgrades and/or other modifications to be useable in a consolidated environment. It is unlikely that those upgrades or modifications would be cost-effective.

Many of the County's agencies use a CAD system manufactured by Enforsys, Inc. Some desire to retain this system was expressed to Kimball during the data collection and interview phase of the process. Retention of Enforsys could be advantageous fiscally and from a personnel comfort level perspective. However, the system would need to be evaluated to ensure that it is robust enough and has the functionality necessary in a larger consolidated PSAP.

A completely new CAD system provided by a new vendor is estimated to cost \$2,225,000 for a single facility and \$2,330,000 for two regional facilities. An additional \$300,000 would be added if new servers were required as well. Although Enforsys costs could not be determined at this time, it is entirely possible that the cost would be substantially less as the incumbent vendor.

MDC

For either a single or two regional PSAPs utilizing a single MDC system, it is unlikely that any of the individual servers supporting MDCs now would be able to be re-used. If multiple independent MDC systems were to be interfaced with CAD for individual agencies, some or all of the existing MDC servers could be re-used. In all likelihood this would substantially increase maintenance costs for CAD due to the number of individual interfaces that would need to be implemented.

RMS

Based on the purchase dates of equipment provided during the data collection phase of the project, most or all RMS workstations should be able to be re-used. Whether existing RMS servers can be re-used is heavily dependent on whether a centralized RMS is implemented or if multiple independent systems would remain in place. Multiple independent systems would be able to re-use existing servers, but in all likelihood this would substantially increase to maintenance cost for CAD. This increase would reflect the number of individual interfaces that would need to be implemented.

4.5. RADIO/LOGGING RECORDERS

4.5.1. Radio Communications Systems

A PSAP consolidation will require interface to regional legacy radio systems as well as the County's trunked system. Relocating legacy radio equipment onto the County's infrastructure could decrease connectivity costs, however, downtime, FCC licensing, and equipment replacement are all issues that may arise. Long-term plans should include transitioning all County agencies onto the ACRN and implementation of a Countywide T&V paging system.

A new PSAP facility will require connectivity that is capable of supporting a number of applications; Radio channels, 9-1-1 trunks, data applications. The County's existing microwave network is functioning properly and provides a good foundation for connectivity to a single or two regional PSAPs. However, it is likely that the County will have to replace one or more hops to connect the County radio network to a new PSAP facility. In a two regional PSAP model, connectivity is also required between the facilities to support data applications. Fiber connectivity is also an option if available.

Kimball recommends that the County procure a new radio dispatch console system for either a single or two regional PSAPs. A number of radio consoles in the County have been purchased recently and may be re-used in a back up facility. A single radio dispatch console system will provide the greatest functionality with the ACRN, personnel comfort, and equipment performance.

4.5.2. Logging Recorder

According to initial findings, a single consolidated PSAP will require a 256 channel logging recorder. Two regional PSAPs will require 128 channel logging recorders at each facility. The County will determine the actual number of channels to be recorded based on need and final radio network configuration. A number of existing logging recorders can accommodate the 128 channel capacity, however, downtime, lack of capable expansion, and equipment reliability are issues that must be considered.

4.6. TELEPHONY

PSAP consolidation requires a fault-tolerant 9-1-1 telephony network with multiple layers of protection. Whether the County implements a single or two PSAP model, Kimball recommends that the 9-1-1 telephone network employ dual enhanced 9-1-1 tandem switches, loop avoidance, and serving wire center avoidance. PSAP facilities should also employ diverse cable entry.

The back up facility for a single consolidated PSAP should employ a PSAP control circuit to re-route 9-1-1 calls during times of heavy call volume or adverse conditions.

Purchases of PSAP equipment for a consolidated PSAP(s) and additions or modifications to the supporting 9-1-1 telecommunications network infrastructure should consider the bandwidth needs of a Next

Generation 9-1-1 system. Early transition planning from legacy 9-1-1 systems to NG 9-1-1 systems is essential to ensure that available 9-1-1 funds will meet the County's needs.

The existing customer premise equipment in the County uses old analog technology and is not recommended for use in a single or two regional PSAPs. Procurement of a digitally switched, IP enabled CPE is recommended for a PSAP consolidation.

4.7. FACILITIES

A facility such as a PSAP is a complex structure that has many requirements. The facility exterior must be hardened, internal and external security considered, and the interior carefully planned to house the various technical, operational, and administrative components.

There are two primary options for selecting a facility. First, an existing structure could be used. This option will require a site assessment by an engineer, architect, or other professional with extensive knowledge of NFPA 1221, the International Building Code, and other 9-1-1 facility national standards. As a result of the stringent standards and recommendations for this type of facility, renovation can often be cost prohibitive. Therefore, the County should examine all options before proceeding with a renovation.

The second option is to build a new facility. Building a new facility is a major undertaking. It will require the acquisition of land, if not already County owned, the design and programming of a new facility, and the actual construction must take place. Again, site assessment and facility programming and design should be done in conjunction with a professional with an extensive background in working with this type of specialized facility. This process can take approximately 36 months to complete from start to finish.

Until potential sites are chosen, Kimball is able to offer only an industry rule of thumb on costs for a new facility. The driving factor in new facility construction costs is the size of the facility. To accurately size the facility the estimated call volume will need to be more closely assessed, especially the administrative calls currently handled by the various individual PSAPs. The County will also need to decide whether to include room for an EOC and determine how much future expansion room is desired.

New construction cost estimates for a single PSAP range from \$10.2 to \$19.2 million. Cost estimates for two regional PSAPs range from \$14.4 to \$21.6 million. These cost estimates include the structure only. All building systems, furniture, and other contents will be additional costs. Both of these estimates are based on the assumptions discussed in this report, therefore should be used for preliminary planning purposes only. It is likely that these figures represent a high end estimate and will decrease once the final facility size has been determined.

4.8. COSTS

Costs for each of the consolidation models will be impacted by a number of variables that are undetermined at this time. These variables include:

Accurate sizing of the facility or facilities

- Size will be dependent upon the combined 9-1-1 and administrative call volume. An adequate estimate can be made of the 9-1-1 calls. However, an in-depth review of administrative calls, which

make up the majority of the call volume estimate, will need to be conducted in the planning phase.

- Size will also be dependent upon inclusion of EOC space. Should the County decide not to include EOC space, the construction costs will be less.
- Size will also be dependent upon the amount of space the County decides to add for any future expansion or addition of agencies.

Selection of sites(s)

- The final selection of PSAP sites could have a significant impact on the final overall costs for building construction. Costs associated with renovation as opposed to new construction and purchase of land, if necessary, may impact the final facility cost.
- The location of the sites may alter the basic systems estimates quoted in this report as additional connectivity may be needed such as microwave hops or fiber.

Regional Construction Costs

- Should the regional construction costs be significantly higher or lower than is quoted in this report the cost of the facility or facilities will vary. Kimball used a rule of thumb based on national averages to estimate construction costs.

4.8.1. Personnel Costs

The personnel costs included in this report are based on the suggested organizational structure outlined. This structure includes a number of positions that do not currently exist within the county. Therefore, the County's final decision on what the PSAP structure will best fit Atlantic County could increase or decrease estimated personnel costs.

As little personnel and budget information was available, Kimball relied upon average pay range estimates determined in the data collection and interview phase of the project. Management position pay ranges were estimated using anecdotal regional information regarding potential position pay ranges and national trends for the director's position. The director's position is assumed to be a department or division head level position. These figures should be considered a starting point for planning purposes only.

As already noted, the staffing figures should be considered broad guidelines only and are likely to decrease once all project variables are addressed, perhaps by as much as 25-30%.

Single PSAP Model		
	# of Staff	Total Annual Cost
FTE Mgr/QA/Training/Admin****	6	\$336,000
Technical Staff	3	\$180,000
FTE Shift Supervisors*****	14	\$683,746
FTE Call Takers**	33	\$1,266,342
FTE Dispatchers***	99	\$4,317,093
Estimated Annual Overtime		\$100,000
Subtotal	155	\$6,883,181
Estimated Benefits @ 50.4% of Annual Salaries and Overtime		\$3,469,123
Totals	155	\$10,352,304

Two Regional PSAP Model		
	# of Staff	Total Annual Cost
FTE Mgr/QA/Training/Admin****	7	\$401,000
Technical Staff	3	\$180,000
FTE Shift Supervisors*****	14	\$683,746
FTE Call Takers**	32	\$1,227,968
FTE Dispatchers***	128	\$5,581,696
Estimated Annual Overtime		\$100,000
Subtotal	184	\$8,174,410
Estimated Benefits @ 50.4% of Annual Salaries		\$4,119,903
Totals	184	\$12,294,313

- *Includes PTE that may be employed by multiple employers
- PTE Costs estimated at 15 hours per week per employee @ \$18.53 per hour.
- **Based on Average Pay of \$38,384 Obtained Through Agency Interviews
- ***Based on Average Pay of \$43,607 Obtained Through Agency Interviews
- **** FTE Mgr/QA Training numbers DO NOT include uniformed supervision.
- *****Although an accurate number could not be determined, current overtime is thought to be minimal and not significant for budgetary purposes. This assumption is based on agency interviews.
- *****Supervisor pay is based on the average dispatcher pay plus 12%.

As the charts illustrate, the personnel costs for a two regional PSAP model would be significantly higher. The primary reason for this disparity is that a two regional PSAP model will require an increased level of staffing, both management and operational staff, as certain tasks would need to be performed at both facilities rather than a single PSAP.

4.8.2. Technology and Facilities Cost

The facilities and systems related capital costs of the single PSAP model as opposed to a two regional PSAP model are outlined in the charts below:

Cost Summary - Single PSAP Model		
Category	Cost	Notes
Facility	\$17,280,000	1,200 square foot (sq. ft.) per position (32 positions) @ \$450 per Sq Foot inclusive of EOC space
CAD/RMS/MDC	\$2,525,000	New CAD/RMS Vendor including 300K for new servers
Radio/Logging Recorders	\$2,860,000	Primary/Back up facility, logging recorders, sample microwave hops
Telephony	\$650,000	CPE only - Does not include administrative telephone system
Dispatch Furniture/Chairs	\$512,000	Ergonomic dispatch furniture @ \$15,000 each and 24/7 chairs @ \$1,000 each
Total	\$23,827,000	Upper Mid-Range Estimate for Facility and Systems

Cost Summary - Two Regional PSAP Model		
Category	Cost	Notes
2 Facilities	\$19,440,000	1,200 sq. ft per position (18 positions each facility) @ \$450 per Sq Foot inclusive of EOC space
CAD/RMS/MDC	\$2,630,000	New CAD/RMS Vendor including 300K for new servers
Radio	\$2,057,000	RDACS and logging recorders for both facilities
Telephony	\$700,000	CPE only - Does not include administrative telephone system
Dispatch Furniture/Chairs	\$576,000	Ergonomic dispatch furniture @ \$15,000 each and 24/7 chairs @ \$1,000 each (36 positions)
Total	\$25,403,000	Upper Mid-Range Estimate for Facilities and Systems

As can be seen in these charts, a two regional PSAP model is a more expensive choice from a facility and systems perspective. The following should be noted:

- A high end size range per position estimate was used for this summary, 1,200 square feet per operational workstation which includes space for an EOC. A complete comparison of size estimate costs can be found on the chart in Section 13.4. Again, the County would need to decide how much space would meet its needs.
- A mid-range cost per square footage was used for this summary, \$450 per square foot. A complete comparison of square footage costs can be found on the same chart referenced above.
- Capital costs associated with connectivity infrastructure are not included in these estimates with the exception of two microwave hops in reference to the 1450 19th Street site. These capital infrastructure connectivity costs are not able to be determined until a site or sites have been selected.
- Other than the physical structure, costs related to administrative office/EOC space are not included. These costs would include office furniture, machines, computer network hardware, and administrative telephone systems.

- The CAD cost estimates in this report are based on the selection of a new vendor. Should an incumbent vendor be selected costs may be significantly lower.
- Systems costs in this report are based on fully equipping a single 32 position or two 18 position centers with furniture, CAD, CPE, and radio consoles. This position count represents a full countywide consolidation. It is very likely the County will not need all of these positions equipped initially depending on the number of agencies that choose to consolidate. Therefore, cost savings could be achieved initially by equipping a lower number of workstations. Equipping the workstations as needed in the future would enable the County to spread the capital costs out over a number of years.
- These estimates are limited to capital costs only and do not include any annual systems maintenance.

4.8.3. Annual Maintenance Costs

Annual maintenance costs for the CAD/RMS/MDC, CPE, radio consoles, and logging recorder(s) vary from vendor to vendor. However, for purposes of this report, Kimball estimated these costs using a general planning rule of thumb as noted on the chart. The chart below outlines these estimated costs:

Estimated Annual Systems Maintenance Costs			
Category	Single PSAP Cost	2 Regional PSAP Cost	Notes
CAD/RMS/MDC	\$252,500	\$263,000	10% of system cost. Includes new servers.
Radio	\$171,050	\$205,700	10% of system cost.
Telephony	\$128,000	\$144,000	\$4,000 per position (32 and 36 positions respectively)
Total	\$551,550	\$612,700	

As is apparent by the chart, the single PSAP model would be the less expensive option. This is primarily due to the redundant equipment needed in two PSAP regional model. The more positions the higher the maintenance costs will be.

These costs refer only to the systems listed. Annual maintenance and other recurring costs for other building systems or connectivity, T1 connections for example, are not included.

4.9. MODEL POSITIVES AND NEGATIVES

Either model reviewed in the report would be a viable solution for Atlantic County. Both would consolidate 9-1-1 and emergency dispatch services within the county, albeit to different degrees. Both models would serve to improve public safety communications within the County and provide a higher level of service to the community and field personnel. However, there are some positives and negatives to each model. They are as follows:

4.9.1. Single PSAP Model Positives

- An increase in service levels that result from an organizational structure which includes separate job titles for call taking, police, fire and/or EMS dispatching. The establishment of fire and EMS dispatchers will significantly increase the level of service currently provided to county fire and EMS agencies. Staff would be better trained in specific fire and EMS techniques and needs. Police dispatchers would no longer have to divide their attention to cover the needs of police, fire, and EMS.
- All operational personnel would be in the same facility. When all staff are in close proximity to each other, the staff are able to communicate more easily and maintain a clearer picture of countywide public safety overall. This type of communication and overall awareness enables the PSAP staff to provide a higher level of service to the field personnel particularly and to the community by extension. Although a benefit that is intangible and not quantifiable, it is one of the primary benefits of a consolidated center.
- More efficient deployment of internal staff and resources. In a single facility personnel can be more effectively utilized based on situational need. In addition, a single PSAP model requires fewer staff which equates to a lower overall personnel budget and fewer positions to fill on a 24/7 basis. Fewer positions should result in less overtime spent to cover sickness and vacation.
- More efficient monitoring and deployment of countywide resources. In a single facility staff are better able to monitor and re-deploy field resources which, in turn, improve service levels to those field resources and the community. Communications between the consolidated PSAP and other PSAPs in the county are more streamlined and effective, lessening the opportunity for human error.
- All administrative staff would be in the same facility. A single facility will enable the administrative staff to be on-site at all times and accessible to and from operations. This close proximity will help establish a single entity identity for the PSAP staff that would be difficult if staff is split between two PSAPs.
- Cost estimates for facilities, systems, and personnel suggest that a single PSAP model is more cost-effective for the County. Beginning with the facility itself, estimates are clear that a single facility will be less expensive to establish and maintain than two regional facilities. When splitting the work load between two PSAPs redundancies are created such as administrative/management and operational positions that must be present in both facilities. As a result costs go up for the two regional PSAP model.
- Training, meetings, administrative oversight, and budget preparation and administration are more easily achieved in a single PSAP model. Although not quantifiable the added logistics of managing and traveling between two facilities would negatively impact the productivity of administrative and management staff, thereby creating hidden personnel costs.

4.9.2. Single PSAP Model Negatives

- The primary drawback to this model is the need to establish a separate back up facility. Whereas, in a regional model the PSAPs are able to back each other up thereby providing a “hot” back up for each, often a single PSAP must activate a “cold” facility as needed.
- However, back up provisions for a single PSAP can be very effectively managed by establishing a

“cold” facility and developing a partnership with another county or Atlantic County agency that does not participate in the consolidation. In this scenario the partner agency would handle incoming 9-1-1 calls and monitor radio traffic for the short time duration needed to activate the back up facility. In addition, this back up facility can be used to expand the call processing abilities of the primary PSAP in the event of a major incident. Other back up provisions are possible as well. The County would need to tailor a solution that best meets its needs.

4.9.3. Two Regional PSAP Model Positives

- The single primary advantage to this model is the ability of the PSAPs to provide back up provisions for each other. This model would provide each PSAP with a “hot” back up immediately upon need.
- An increase in service levels that result from an organizational structure which includes separate job titles for call taking, police, fire and/or EMS dispatching. The establishment of fire and EMS dispatchers will significantly increase the level of service currently provided to county fire and EMS agencies. Staff would be better trained in specific fire and EMS techniques and needs. Police dispatchers would no longer have to divide their attention to cover the needs of police, fire, and EMS. It should be noted however, that the establishment of two PSAPs rather than a single dilutes the benefits of consolidating to a degree. A service level increase would be expected with two regional PSAPs, but it will be lesser than that achieved in a single PSAP model.
- Based on opinions gathered during the interview and data collection project phase, two regional PSAPs may be a preferred political choice for a number of user agencies. Agencies expressed doubt that a single PSAP would be able to effectively manage the needs of both the rural and urban communities present in Atlantic County.
- Some agencies felt that regionalization with the agencies they work with most would be the best solution in that it would allow the dispatchers to maintain the “personal touch” with the communities served. When agencies consolidate communications, there is often a concern that the dispatchers will ‘lose touch’ with the areas they serve. In actuality, by consolidating operations and standardizing how tasks are handled, dispatchers are often able to learn larger geographic areas because there is no requirement to remember the discrete methods for handling a task from one agency to the other. When required, assignment of specific dispatchers to specific geographic regions becomes an operational and policy decision.

4.9.4. Two Regional PSAP Model Negatives

- Although an increase in service levels would be expected in this type of consolidation, that increase will be less than would be seen in a single PSAP model. While this type of consolidation dramatically reduces the need for call transfer and inter-PSAP communications, there will still be a need for extensive communications between the two PSAPs and those agencies that choose not to participate in a consolidation. These types of communications often can delay incident coordination and can open the door to unnecessary opportunities for human error.
- This type of model increases administrative and operational logistics problems. Administratively, two PSAPs would significantly increase the amount of time needed to develop and administer budgets, effect training, manage staff meetings, and perform general administrative functions.
- Operationally, managing resources becomes more difficult and costly across two PSAPs.

- This model is likely to be the least cost-effective from all perspectives, facilities, systems, and personnel as higher levels of workstations and personnel are needed.
- If staff is divided between two regional PSAPs it is likely that there will be PSAP specific differences in the way tasks are accomplished. This may create a lack of standardization between the two PSAPs and make administration more difficult.
- Two PSAPs will tend to polarize the staff to each PSAP rather than the County identity as a whole. Each center will have its own culture and be a less cohesive group than would be seen in a single PSAP. Less cohesion can translate to less effective teamwork and lower service levels.

5. RECOMMENDATIONS

5.1. MODEL RECOMMENDATION

While either a single or two regional PSAP model are viable solutions for Atlantic County, Kimball strongly recommends the single PSAP model. As discussed the model positives and negatives in Section 14.9, a single PSAP model will provide the County a higher level of improved service at a lower cost. Not only will the service provided to the community and user agencies be superior to that of two PSAPs, but the day to day logistics of managing a single PSAP rather than two will be far simpler. In addition, this model promotes a more cohesive work group which should translate to superior teamwork and a higher level of effectiveness.

5.2. PLANNING RECOMMENDATIONS

The planning phase of any consolidation is complex and includes many tasks and subtasks. However, should Atlantic County decide to move forward with a consolidation the following tasks should be addressed early in the planning process:

- Decide which consolidation model best fits Atlantic County's needs
- Identify potential facility sites and enlist the professional services of a firm qualified to determine the suitability of each site as the potential location for a PSAP
- Develop a governance structure and funding mechanism for the PSAP(s). These topics will be discussed in detail in the next phase of this project.
- Establish preliminary agreements with agencies. Many agencies are not willing to commit to a consolidation until all of the details and costs have been determined. Conversely, not all details and costs can be determined until the participating agencies are identified. Therefore, when necessary, Kimball recommends developing a preliminary agreement between the County and the agencies contingent up finalization of project details.
- Establish a Consolidation Committee comprised of stakeholders from the various participating agencies and the County.
- Review administrative call volume. The estimated number of administrative calls currently handled by the various county PSAPs is a significantly large number as to impact the total number of staff needed in the PSAP. It is likely that many of these calls would not be appropriate for a consolidated PSAP to handle. A policy needs to be determined regarding which calls will be handled by the PSAP and which will remain with the original agency. Once this process is done, more accurate staffing levels and space estimates can be determined.

- Enlist the professional services of a firm pertaining to the detailed requirements identification, programming, and design of a consolidated communications center.
- Consider enlisting the assistance of a consulting firm to assist the County in the planning and implementation project phase.
- Identify an organizational structure for the PSAP(s) and begin working with New Jersey Civil Service to create new positions as needed.
- Establish pay scale and benefit levels for the new organizational structure
- Begin working with labor unions regarding employee transitional issues
- Identify any infrastructure needs such as tower sites and/or microwave hops. System specifications are normally done later in the project timeline. However, certain infrastructure issues such as the procurement of a new tower site can be protracted in the time needed to reach a resolution.