Virginia Information Technologies Agency

FY18

PSAP GRANT PROGRAM APPLICATION

VIRGINIA INFORMATION
TECHNOLOGIES AGENCY
Integrated Services Division

FY18 PSAP GRANT PROGRAM APPLICATION

HOW TO APPLY/DEADLINE

The grant application is available and accessible from VITA ISP's website (http://www.vita.virginia.gov/isp/default.aspx?id=8578). Upon completion of the application, it is to be submitted to the electronic mailbox for grant applications - psapgrants@vita.virginia.gov. Any supporting documentation must also be submitted along with the application when making your grant application submission.

After the close of the grant application cycle, a Grant ID and email receipt notification will be sent to the e-mail address listed on the application received.

All funding requests must be submitted using the grant application. Technical assistance is available from VITA's Public Safety Communications (PSC) staff throughout the grant process. The FY18 PSAP Grant Application Cycle starts July 1, 2016 and concludes on September 30, 2016 at 5:00 pm.

ALL APPLICABLE SECTIONS MUST BE COMPLETED IN ITS ENTIRETY OR THE APPLICATION WILL BE CONSIDERED INCOMPLETE AND NOT ACCEPTED FOR CONSIDERATION.

FY18 PSAP GRANT APPLICATION

PROJECT TITLE

The Hampton/Newport News PSAP Consolidation Project

GRANT APPLICANT PROFILE/PROJECT CONTACT

PSAP/HOST PSAP NAME: City of Newport News
CONTACT TITLE: IT Project Manager, Public Safety
CONTACT FIRST NAME: Eric
CONTACT LAST NAME: Beach
ADDRESS 1: 9710 Jefferson Avenue
ADDRESS 2: 2T
CITY: Newport News
ZIP CODE: 23605
CONTACT EMAIL: beachje@nnva.gov
CONTACT PHONE NUMBER: 757-928-4364
CONTACT MOBILE NUMBER: 757-879-1365
CONTACT FAX NUMBER: 2T
REGIONAL COORDINATOR: Lyle Hornbaker

HOST PSAP AND PARTICIPATING PSAPS/LOCALITIES

City of Newport News - Host	
City of Hampton	

GRANT TYPE

☐ Individual PSAP ☒ Shared Services

TIER

- ☐ Out of Service
- ☐ Technically Outdated*
- ☒ Not Applicable
- ☐ Non-Vendor Supported*
- ☐ Strengthen

If technically outdated or non-vendor supported, application MUST include age and/or version of hardware/software.

VERSION: # YEARS of HARDWARE/SOFTWARE:

PRIORITY/PROJECT FOCUS CONSOLIDATION

FINANCIAL DATA

Amount Requested: $ 500,000
Total Project Cost: $ 25,000,000

PROJECT DESCRIPTION

Provide a detailed description of the project for which funding is being sought, including the impact on operational services and consequences of not receiving funding; the relationship to local strategic and capital improvement plans; and sustainability:

The primary goal for this grant is to hire a consultant to facilitate the consolidation of the two PSAPs in Hampton and Newport News into one emergency communications center to improve operations and levels of service. Consolidating the two PSAPs will reduce 911 transfers among agencies and provide faster response times, provide consistent technology without duplication with equipment and systems, offer better training and certification opportunities for personnel, standardize dispatch protocols, ensure situational awareness with adequate staffing, promote interoperability and allow adequate space in a new facility. Currently, each individual PSAP faces challenges with 911 transfers, space, adequate equipment rooms, data sharing capabilities, and dispatching response units during multi-jurisdictional responses. As well, the current location of each city's PSAP poses potential weather related issues. Hampton's PSAP is located on the sixth floor of their City Hall and this building is not wind rated. The PSAP at Newport News is located in the basement of City Hall near the waterfront. The region has already been planning and procuring shared services when practical to prepare for consolidation. While the local economy is improving, grant opportunities are still a valuable resource to assist with funding large scale projects such as the consolidation. Many case studies on consolidations document the importance of grants during the initial implementation as a valuable funding source due to the level of start-up costs.

PROJECT GOAL

Describe how this project addresses locally identified need(s) and supports the Virginia 9-1-1 Comprehensive Plan:

This project supports the Comprehensive 9-1-1 Plan based on Initiative #2, Develop and Apply statewide guidelines to foster a minimum level of 9-1-1 emergency response service across Virginia. The initiative identifies agencies that may choose consolidation to provide a minimum level of service by sharing services. It also addresses key areas of operation where we believe consolidations can offer benefits moving forward such as training, staff and service capabilities.

PROJECT OBJECTIVES

Describe the objectives that will support the goals identified above:

1. Prepare an RFP for hiring a PSAP Consolidation consultant.
2. Hire the consulting company that will provide a step-by-step plan of how to achieve consolidation. Points that need to be covered in the plan include:
    a. Staffing
    b. Guidance on technology purchase or replacement of CAD/RMS/JMS
    c. Personnel policies governing existing and new personnel
    d. Recommendations on organizational structure
    e. Call processing and dispatching
    f. Budget
    g. Design of facility
3. Adopt or revise the recommendations provided by the select consultant
4. Prepare budget, timeline and governance guidelines
5. Proceed with final recommendations

SHARED SERVICES (if applicable)

Describe the relationship of the project to the participating PSAPs: The City of Hampton and the City of Newport News will be combining their individual PSAP's into a consolidated PSAP with one location. The combined PSAP will be governed by a governance board and will have a single CAD operating for both cities.
Describe the intended collaborative efforts and resource sharing opportunities: A joint communications center, with proper implementation, will offer significant service improvements to Hampton and Newport news. The proper governance model being implemented by the localities will establich a coherent delivery model by introducing high standards of performance, appropriate staffing , and improved operational efficiencies. A shared center will also allow consistent administrative and specialized support since individual agencies often promote individuals and change administrative responsibilities due to promotions, turn-over and retirements. Dedicated staff will also offer better training and quality assurance programs.

IMPLEMENTATION PLAN
SHARED SERVICES & INDIVIDUAL PSAP APPLICATIONS:

For each applicable phase of the project, indicate the planned completion date.

PROJECT PHASE	PLANNED COMPLETION DATE
INITIATION – Project concept is documented, local board or governing authority approval or endorsement is received, PSAP grant application is filed, local budgets are obtained, appropriated grant funds are approved, and budgetary estimates are obtained.	**11/01/2016**
DESIGN/PLANNING - Requirements are documented, components to be purchased are identified, and general design is documented.	**10/1/2017**
ACQUISITION - RFP (or other bid related processes) are drafted, proposals are evaluated, contract is signed, purchase orders are issued, and quotes are obtained.	**10/1/2018**
IMPLEMENTATION - Purchased components are delivered and installed and training is performed	**06/01/2019**
TESTING/COMPLETION - Performance of system/solution is validated and system/solution goes “live”	**01/01/2020**

BUDGET AND BUDGET NARRATIVE

List the planned expenditures to be made with grant funds. Briefly explain the reason for each requested budget item and provide the basis for its cost. In addition, if contingency cost has been added, please identify the amount.

NOTE: In lieu of a line item breakdown, an itemized cost schedule or detailed vendor prepared quote may be submitted as an attachment, but a narrative is still required. However, budgetary quotes received from a particular vendor(s) during the application process do not commit the PSAP to use that vendor(s) once the grant is awarded.

The planned expenditure is the retaining of a consolidation consultant with an estimated time work schedule of:

Planning, Policies and Procedures – 30%
CAD Selection – 20%
Project Management – 50%

EVALUATION

How will the project as identified in the project description be evaluated and measured for achievement and success:

All tasks and timelines will be measured against the objectives outlined above to determine if the objective was met. The project's goals and objectives will have been met upon the delivery of a comprehensive consolidation plan by the consultant.

CONSOLIDATION (Primary or Secondary) - (complete only if applicable)

How would a consolidation take place and provide improved service:

A joint communications center, with proper implementation will offer significant service improvements to Hampton and Newport News. The proper governance model being implemented by the localities will establish a coherent delivery model by introducing high standards of performance, appropriate staffing, and improved operational efficiencies. A shared center will also allow consistent administrative and specialized support since individual agencies often promote individuals and change administrative

How should it be organized and staffed:

The two cities believe the best model for a consolidation is an independent agency that can focus on effective and professional emergency communication services while developing a strong cohesive relationship with each public safety discipline and agency. Therefore, the Governance Board will be created and overseen by a Board of Directors. A Director will be hired and work with the Board and Advisory Committees to ensure all decisions are vetted among the two cities.

The consolidated center will be staffed with a management team of personnel dedicated to operations, training and technology and dedicated dispatch personnel. Procedures will be put in place for current staff to successfully transition to the joint facility to ensure appropriate staffing to meet service level objectives for answering and dispatching 9-1-1 calls.

The actual number of staff will be finalized when the duties, call volumes and shifts are thoroughly reviewed and evaluated.

What services should it perform:

The consolidated center should function as the primary PSAP for the two cities currently dispatched by two individual dispatch centers. The dispatchers will answer and process all emergency 9-1-1 calls and non-emergency calls for proper dispatch and coordinate resources for responders. Personnel will utilize telephone, computer and radio networks to support daily operations for law enforcement, fire and EMS.

How should policies be made and changed:

An Operations Committee will evaluate all current policies and procedures and make recommendations for the development of dispatch protocols and procedures related to service delivery and performance standards. The committee will include dispatch personnel along with representatives from each public safety discipline for law enforcement, fire and EMS.

CONSOLIDATION (Primary or Secondary) - (complete only if applicable) – con't

How should it be funded:

The consolidated PSAP will be funded through a sharing of expenses between Hampton and Newport News. The split will be calculated based on calls for service metrics.

What communication changes or improvements should be made in order to better support operations:

N/A

EMERGENCY COMMUNICATIONS SYSTEM MUTUAL AID AND CONSOLIDATION AGREEMENT

THIS AGREEMENT, made and entered into this 1st day of May, 2015, by and among the **CITY OF HAMPTON, VIRGINIA** and the **CITY OF NEWPORT NEWS, VIRGINIA,** municipal corporations of the Commonwealth of Virginia (hereinafter referred to as the "Cities");

WHEREAS, the Cities each operate 800 MHz Public Safety Communications systems ("the Radio Systems") which are compatible and have inter-operability capability; and

WHEREAS, the Cities recognize the importance of their respective public safety agencies (police, fire, emergency medical services) and their respective Public Safety Answering Points ("PSAP") maintaining radio communications and interoperable Computer Aided Dispatch Systems; and

WHEREAS, the Cities are willing to provide radio communications inter – operability to the their public safety agencies according to the protocol set forth in this agreement; and

WHEREAS, the Cities are willing to work toward a consolidated and integrated PSAP solution; and

WHEREAS, it is deemed to be mutually beneficial to the parties hereto to enter into an Agreement concerning mutual aid and cooperation with regard to the consolidation of the Radio Systems and their respective PSAPs; and

WHEREAS, the parties hereto desire that the terms and conditions of this Emergency Communications Systems Mutual Aid and Consolidation Agreement be established.

NOW, THEREFORE, in consideration of the mutual benefits to be derived from an Emergency Communications System Mutual Aid and Consolidation agreement, the parties hereto covenant and agree as follows:

1. The Governance Board established over this project will consist of the Cities' Chiefs of Police, Chiefs of Fire and Emergency Medical Service, and Information Technology Directors, or their respective designees.

2. The Governance Board will establish a working group tasked with establishing procedures and protocols for the consolidation of the Radio Systems and PSAPs.

3. Each party will endeavor to provide communications operational support and interoperability to the other party within the capabilities available at the time the request for such support is made and within the terms of this agreement. The ultimate

goal is the consolidation of the Radios Systems to an interoperable 800 MHz system with redundant/dual Master Sites, operating on a continuous microwave system.

4. Each party will endeavor to provide Emergency Communications PSAP support and interoperability to the other party within the capabilities available at the time the request for such support is made and within the terms of this agreement. The ultimate goal is the total interoperability of the Radio Systems, Computer Aided Dispatch, and Public Safety Phone System. Each party will maintain responsibility for the costs of supporting, maintaining, repairing and upgrading its own Radio System.

5. In the event that Radio System coverage or impending Radio System upgrades do not allow for interoperability through the sharing of system keys, interoperability equipment (ICRI, ACU, or like systems) will be used to establish interoperability between the Cities' public safety agencies.

6. To the maximum extent practicable the Cities will share copies of their Radio System key files to enable programming of user radio equipment. Radio equipment includes mobile radios, portable radios, and radio control stations. These files shall be kept in a locked, secure location to which access is restricted.

7. To the maximum extent practical, the Cities will allocate and provide each other with the following:

    a. Radio System Identifier
    b. Subscriber information
    c. Radio call signs/Computer Aided Dispatch (CAD) Identifiers
    d. At least one Mutual Aid talk-group for police communications
    e. At least one Mutual Aid talk-group for fire and emergency medical services communications
    f. Additional talk groups that may be required and agreed upon by the Cities' public safety agencies.

   All individual, non–standard programming requests must be authorized by members of the Governance Board or their designee(s).

8. To the extent available, the Cities will provide the public safety agencies for both Cities use of their Radio Systems for daily operation and during emergency situations or disasters, natural or man-made.

9. If either City experiences a Radio System Failure it will be granted access to the other City's Radio System for the provision of public safety services. PSAP personnel for the City experiencing the Radio Failure will be responsible for monitoring their public safety personnel.

10. In the event of the City of Hampton's Radio System is disabled the Hampton Public Safety Agencies will communicate as follows:

    a. Hampton Fire and Emergency Medical Services will communicate on Newport News' Fire Mutual Aid talk-group through Newport News' Radio System infrastructure.

b. Hampton Police Personnel will communicate on the City of Newport News' Police Mutual Aid talk-group through Newport News' Radio System infrastructure.

11. In the event of the City of Newport News' Radio System is disabled the Newport News Public Safety Agencies will communicate as follows:

    a. Newport News Fire and Emergency Medical Services will communicate on the City of Hampton's Fire Mutual Aid talk-group through Hampton's Radio System infrastructure.

    b. Newport News Police Personnel will communicate on the City of Newport News' Police Mutual Aid talk-group through Hampton's Radio System infrastructure.

12. Only certified DCJS telecommunicators employed by the Cities will be allowed to serve as dispatchers on any radio channel.

13. When public safety personnel of one City are required to communicate through the other City's Radio System, they will limit radio communications to only that which is critical to providing public safety services.

14. All transmissions on Police and Fire/EMS Channels will:

    a. Be conducted in Common Language: only Common Language and NCIC alert codes will be recognized.

    b. Be regulated by Policies and Procedures agreed upon by the working group and approved by the Governance Board.

15. Nothing contained in this Agreement should in any manner be construed to compel any of the parties hereto to respond to a request for communications operational support when the personnel of the party to whom the request is made are, in the opinion of the requested party, needed or are being used within the boundaries of that party, nor shall any request compel the requested party to continue to provide communications operational support to another party when its personnel or equipment, in the opinion of the requested party, are needed for other duties within the boundaries of its own jurisdiction. The rendering of assistance under the terms of the Agreement shall not be mandatory; however, the party declining to assist should immediately inform the requesting party if, for any reason, assistance cannot be rendered.

16. All actions by the parties taken pursuant to this contract shall be in compliance with all applicable Federal laws, rules, and regulations, including but not limited to all Federal Communication Commission rules and regulations, and all applicable laws of the Commonwealth of Virginia.

17. Employees acting pursuant to this Agreement shall be granted authority in conformance with § 15.2-1726 of the Code of Virginia, as amended.

18. All pension, relief, disability, worker's compensation, life and health insurance and other benefits enjoyed by said communications and law enforcement personnel as employees of their respective jurisdictions shall extend to the services they perform under this Agreement outside their respective jurisdictions, and each party agrees that the provision of these benefits shall remain the responsibility of the employing party.

19. Each party agrees that, in activities involving the training of personnel pursuant to this Agreement, each party shall waive any and all claims against all other parties hereto which may arise out of such training activities pursuant to this Agreement.

20. The parties shall not be liable to each other for reimbursement for injuries to law enforcement officers, fire and rescue personnel, or communications personnel, or damage to equipment incurred when going to or returning from another jurisdiction, except to the extent that reimbursement for such expenses may be or is received from the Federal Emergency Management Agency (FEMA) or another governmental agency.

21. Neither party shall be liable to the other for any other costs associated with, or arising out of, the rendering of assistance pursuant to this Agreement, except to the extent that reimbursement for such expenses may be or is received from FEMA or another governmental agency.

22. This Agreement rescinds and supersedes all previous written agreements and oral understandings relating to the provision of mutual law enforcement services between the parties hereto as it pertains to the use of communications equipment as referred to herein.

23. Notwithstanding any other provisions contained in this agreement, either of the parties hereto may withdraw from this Agreement by giving sixty (60) days written notice to that effect to the other party.

24. This Agreement embodies the entire understanding and agreement of the parties; all prior negotiations, representations, agreements and understandings are herein contained.

25. The provision of aid pursuant to this Agreement shall not impact ownership of equipment or personnel relationships.

26. This Agreement shall be in effect from and after May 1, 2015 and shall remain in effect until superseded, amended or rescinded in writing by the parties.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by their respective authorized agents.

CITY OF HAMPTON, VIRGINIA

By: _____
Mary B. Bunting, City Manager
CITY OF HAMPTON, VIRGINIA

By: _____
Terry L. Sult, Chief of Police
CITY OF HAMPTON, VIRGINIA

By: _____
David E. Layman, Chief of Fire
CITY OF HAMPTON, VIRGINIA

By: _____
Leslie Fuentes, Director Information Technology
CITY OF HAMPTON, VIRIGINIA

Approved as to legal form and sufficiency:

By: _____
Lola Perkins, Sr. Deputy City Attorney
City of Hampton, Office of the City Attorney

CITY OF NEWPORT NEWS, VIRGINIA

By: _____
James M. Bourey, City Manager
CITY OF NEWPORT NEWS, VIRGINIA

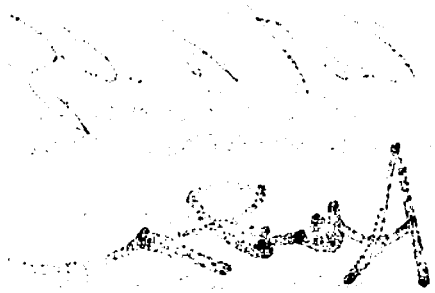
By: _____
Richard W. Myers, Chief of Police
CITY OF NEWPORT NEWS, VIRGINIA

By: _____
Robert "R. B." Alley, III, Chief of Fire
CITY OF NEWPORT NEWS, VIRGINIA

By: _____
Andy Stein, Director of Information Technology
CITY OF NEWPORT NEWS, VIRGINIA

Approved as to form:

By: _____
Assistant City Attorney



Virginia Information Technologies Agency

FY17

PSAP GRANT PROGRAM APPLICATION

VIRGINIA INFORMATION
TECHNOLOGIES AGENCY
Integrated Services Division

FY17 PSAP GRANT PROGRAM APPLICATION

HOW TO APPLY/DEADLINE

The grant application is available and accessible from VITA ISP's website (http://www.vita.virginia.gov/isp/default.aspx?id=8578). Upon completion of the application, it is to be submitted to your Regional Coordinator. Any supporting documentation must also be submitted along with the application, including mandatory budgets for projects (if applicable).

After the close of the grant application cycle, a Grant ID and email receipt notification will be sent to the e-mail address listed on the application received.

All funding requests must be submitted using the grant application. Technical assistance is available from VITA's Public Safety Communications (PSC) staff throughout the grant process. The FY17 PSAP Grant Application Cycle starts July 1, 2015 and concludes on September 30, 2015 at 5:00 pm.

ALL APPLICABLE SECTIONS MUST BE COMPLETED IN ITS ENTIRETY OR THE APPLICATION WILL BE CONSIDERED INCOMPLETE AND NOT ACCEPTED FOR CONSIDERATION.

FY17 PSAP GRANT APPLICATION

PROJECT TITLE

PSAP Consolidation of Newport News and Hampton

GRANT APPLICANT PROFILE/PROJECT CONTACT

PSAP/HOST PSAP NAME: City of Newport News
CONTACT TITLE: IT Project Manager, Public Safety
CONTACT FIRST NAME: Eric
CONTACT LAST NAME: Beach
ADDRESS 1: 9710 Jefferson Avenue
ADDRESS 2: Click here to enter text
CITY: Newport News
ZIP CODE: 23605
CONTACT EMAIL: beachje@nnva.gov
CONTACT PHONE NUMBER: 757-928-4364
CONTACT MOBILE NUMBER: 757-879-1365
CONTACT FAX NUMBER: Click here to enter text
REGIONAL COORDINATOR: Lyle Hornbaker

HOST PSAP AND PARTICIPATING PSAPS/LOCALITIES

City of Newport News - Host	
City of Hampton	

GRANT TYPE

☐ Individual PSAP ☒ Shared Services

TIER

- ☐ Out of Service
- ☐ Technically Outdated*
- ☒ Not Applicable
- ☐ Non-Vendor Supported*
- ☐ Strengthen

If technically outdated or non-vendor supported, application MUST include age and/or version of hardware/software.

VERSION: # YEARS of HARDWARE/SOFTWARE:

PRIORITY/PROJECT FOCUS CONSOLIDATION

If "Other" selected, please specify: Click here to enter text

FINANCIAL DATA

Amount Requested: $ 500,000
Total Project Cost: $ 25,000,000

STATEMENT OF NEED

This statement should reference the relationship to the current funding priorities established by the Grant Committee and include evidence of any financial need, along with additional information on the impact on operational services; consequences of not receiving funding; inclusion of project in a long-term or a strategic plan; and local sustainability:

Click here to enter text

The primary goal for this grant request is to consolidate the two PSAPs of Hampton and Newport News into one emergency communications center to improve operations and levels of service. Consolidating the two PSAPs will reduce 911 transfers among agencies and provide faster response times, provide consistent technology without duplication with equipment and systems, offer better training and certification opportunities for personnel, standardize dispatch protocols, ensure situational awareness with adequate staffing, promote interoperability and allow adequate space in a new facility. Currently, each individual PSAP faces challenges with 911 transfers, space, adequate equipment rooms, data sharing capabilities, and dispatching response units during multi-jurisdictional responses. As well, the current location of each city's PSAP poses potential weather related issues. Hampton's PSAP is located on the sixth floor of their City Hall and this building is not wind rated. The PSAP at Newport News is located in the basement of City Hall near the waterfront.

The region has already been planning and procuring shared services when practical to prepare for consolidation. While the local economy is improving, grant opportunities are still a valuable resource to assist with funding large scale projects such as the consolidation. Many case studies on consolidations document the importance of grants during the initial implementation as a valuable funding source due to the level of start-up costs.

Describe how the grant will be maintained and supported in the future, if applicable.

Click here to enter text

The City of Newport News is the fiscal agent. All required documents and reports for the grant program and any funding awarded will be coordinated between the Governance Board and the City. The cities of Hampton and Newport News are dedicated to the consolidation and committed to be good stewards of any grant funds and resources to make this endeavor successful.

Proper contracts and maintenance agreements will be entered into with selected vendors to ensure the reliability and longevity of the procured equipment and services.

The start-up costs will go well beyond the maximum grant allowed for this consolidation project. Therefore, the participating localities will support this project with local funds from the member contributions.

COMPREHENSIVE PROJECT DESCRIPTION

Identify the longevity or sustainability of the project.

A consolidated center equipped with state of the art technology will provide the two cities with many years of reliable and effective emergency communications. The Governance Board will budget and plan to properly maintain and support the equipment and technology procured for the consolidated center. A capital improvement plan will be established and considerations for future expansion and advances in technology will be included.

Describe how this project supports the Virginia Statewide Comprehensive 9-1-1 Plan.

This project supports the Comprehensive 9-1-1 Plan based on Initiative #2, Develop and apply statewide guidelines to foster a minimum level of 9-1-1 emergency response service across Virginia. The initiative identifies agencies that may choose consolidation to provide a minimum level of service by sharing services. It also addresses key areas of operation where we believe consolidations can offer benefits moving forward such as training, staff and service capabilities.

SHARED SERVICES (if applicable)

The relationship of the project to the participating PSAPs:
The City of Hampton and the City of Newport News will be combining their individual PSAP's into a consolidated PSAP with one location. The combined PSAP will be governed by a governance board and will have a single CAD operating for both cities.

Intended collaborative efforts:

Click here to enter text

Resource sharing:

The combined PSAP will be housed in one location. All staff will be employed by the new entity. All hardware and software will be operated by the PSAP and there will be only one CAD solution and one call logging solution.

How does the project impact the operational or strategic plans of the participating agencies:

Both cities are in need of moving and upgrading their current PSAP's. This combination will provide for the public safety and has the backing of both City Managers, both Police Chiefs and both Fire Chiefs.

Provide a thorough, concise, and complete description of the project, including an outline of the goals and objectives, implementation strategy, and a work plan.

The contracted consultants will ultimately provide the consolidation plan.

A. Form independent governance board
B. Hire PSAP Director
C. Land and Building Construction for consolidated PSAP
D. RFP and Acquire CAD software
E. RFP and Acquire Call Center Telephony
F. Combine PSAP Personnel

PROJECT TIMELINE FOR SHARED SERVICES & INDIVIDUAL PSAP APPLICATIONS:

For each applicable phase of the project, indicate the estimated completion date. Sample activities for each phase are included.

PROJECT PHASE	ESTIMATED COMPLETION DATE
☐ **INITIATION** (Project approved by appropriate stakeholders) Sample activities: project concept is documented, local board or governing authority approval or endorsement is received, PSAP grant application is filed, local budgets are obtained, appropriated grant funds are approved, and budgetary estimates are obtained	**10/01/2016**
☐ **DESIGN/PLANNING** (Project, system, or solution requirements are developed) Sample activities: requirements are documented, components to be purchased are identified, and general design is documented	**10/1/2017**
☐ **ACQUISITION** (Selected system or solution is procured) Sample activities: RFP (or other bid related processes) are drafted, proposals are evaluated, contract is signed, purchase orders are issued, and quotes are obtained	**10/01/2018**
☐ **IMPLEMENTATION** (Selected system or solution is configured and installed) Sample activities: purchased components are delivered and installed and training is performed	**06/01/2019**
☐ **TESTING/COMPLETION** (Selected system or solution is tested and put in production) Sample activities: performance of system/solution is validated and system/solution goes "live"	**01/01/2020**

BUDGET AND BUDGET NARRATIVE

List the planned expenditures to be made with grant funds. (NOTE: In lieu of a line item breakdown, an itemized cost schedule or detailed vendor prepared quote may be submitted as an attachment. However, budgetary quotes received from a particular vendor(s) during the application process do not commit the PSAP to use that vendor(s) once the grant is awarded.) Briefly explain the reason for each requested budget item and provide the basis for its cost. In addition, if contingency cost has been added, please identify the amount.

The planned expenditure is the retaining of a consolidation consultant. This consultant will recommend, make plans and oversee the project of consolidation.

EVALUATION

How will the project be evaluated and measured for achievement and success:

Click here to enter text

CONSOLIDATION (Primary or Secondary) - (complete only if applicable)

How would a consolidation take place and provide improved service:

A joint communications center, with proper implementation, will offer significant service improvements to Hampton and Newport News. The proper governance model being implemented by the localities will establish a coherent delivery model by introducing high standards of performance, appropriate staffing, and improved operational efficiencies. A shared center will also allow consistent administrative and specialized support since individual agencies often promote individuals and change administrative responsibilities due to promotions, turn-over and retirements. Dedicated staff will also offer better training and quality assurance programs.

A transition plan will be implemented to properly train and locate emergency communications staff into one facility with uniform technology and standards.

How should it be organized and staffed:

The two cities believe the best model for a consolidation is an independent agency that can focus on effective and professional emergency communications services while developing a strong cohesive relationship with each public safety discipline and agency. Therefore, the Governance Board will be created and overseen by a Board of Directors. A Director will be hired and work with the Board and Advisory Committees to ensure all decisions are vetted among the two cities.

The consolidated center will be staffed with a management team of personnel dedicated to operations, training and technology and dedicated dispatch personnel. Procedures will be put in place for current staff to successfully transition to the joint facility to ensure appropriate staffing to meet service level objectives for answering and dispatching 911 calls.

The actual number of staff will be finalized when the duties, call volumes and shifts are thoroughly reviewed and evaluated.

What services should it perform:

The consolidated center should function as the primary PSAP for the two cities currently dispatched by two individual dispatch centers. The dispatchers will answer and process all emergency 911 calls and non-emergency calls for proper dispatch and coordinate resources for responders. Personnel will utilize telephone, computer and radio networks to support daily operations for law enforcement, fire and EMS.

The center will support collaboration and interoperability across the region to ensure proper response and safety of citizens and responders.

How should policies be made and changed:

An Operations Committee will evaluate all current policies and procedures and make recommendations for the development of dispatch protocols and procedures related to service delivery and performance standards. The committee will include dispatch personnel along with representatives from each public safety discipline for law enforcement, fire and EMS.

How should it be funded:

Click here to enter text

What communication changes or improvements should be made in order to better support operations:

Click here to enter text

Public Safety Answering Point (PSAP) Consolidation Feasibility Study

Presented to:

City of Newport News Police Department and City of Hampton Police Department

February 8, 2016

A BLACK & VEATCH COMPANY

Contact: Terry Wright
Vice President
Telephone: 919-463-3040
Email: wright@bv.com

Table of Contents

Figures and Tables

1.0 EXECUTIVE SUMMARY

1.1. Introduction

RCC Consultants was retained by the City of Newport News and City of Hampton to conduct a study to evaluate the feasibility of either improving collaboration between the two Public Safety Answering Points (PSAPs) operated by the Newport News Police Department and the Hampton Police Department, or consolidating the two PSAPs into a single PSAP serving the two cities.

Poor economic performance at a time when costs and service demands continue to grow is forcing municipal governments, more than ever before, have to find new ways to effectively deliver quality services with limited resources. Increasingly, municipalities are turning to cooperation and consolidation of government services to achieve efficiencies in service delivery. Achieving efficiencies, along with sound fiscal management, has been the result for many successful consolidations of PSAPs.

Feasibility, for the purpose of this analysis and study, is intended to assess the viability of improving the ways similar services are provided by regional partners to achieve efficiencies in services and costs. It is intended to help answer the question: Does improving collaboration between the two PSAPs or consolidating these PSAPs make sense for the region? This study provides an analysis of the business opportunity, including an examination of the possible roadblocks that may impede the cooperative success of collaboration and consolidation, and addresses the question of whether either would provide operational efficiencies and/or improve the delivery of services to the emergency response organizations and the citizens. The outcome of the study is intended to help the regional partners make informed decisions about their participation.

Various elements relative to the existing PSAPs were examined, including PSAP operations, services provided, technologies used, operational costs, staffing levels, service levels, and geographic distribution.

Initially, a project orientation and kick-off meeting was held with the regional partners to provide an overview of the study and how the consultant's work would be carried out. Each PSAP was provided comprehensive survey forms to collect data pertaining to the operation of the PSAPs and to obtain the thoughts and perspectives of public safety and municipal leaders. PSAPs were visited for additional data collection, personnel interviews, and facility examination. Additional personnel interviews were conducted with command staff from the emergency response agencies served by the PSAPs and with administrative officials from the regional partners.

1.2. Strategic Issues

Many local governments are considering the benefits of improving collaboration or consolidating PSAPs to save money and improve services. The current fiscal environment is forcing local governments to look for innovative ways to do business. Less funding is available at the federal and state levels and local revenue sources are constrained because of the current economic slowdown. Pressure from increasing operational costs such as health benefits, energy costs, and technology costs are growing faster than local tax bases can support them. And the added

pressure of constituents that are also demanding more and better services are all forcing government to find innovative ways to provide more efficient services and better costs.

Consolidation of PSAPs is one way for local governments to act more proactively in meeting the challenges of providing better services more efficiently. Consolidation, when executed in a carefully planned manner, can offer many benefits including: improved regional decision making, improved interoperability, enhanced service delivery, resource sharing, standardized technology usage, procurement and contracting, and increased efficiencies in upgrading infrastructure and equipment.

This feasibility study seeks to assess and compare improving regional collaboration and consolidation of the two PSAPs in Newport News and Hampton. Those stakeholders from the participating municipal governments and the public safety agencies in the region must be aware of common strategic issues that can become barriers to improved cooperation or consolidation if not properly addressed. The following represent some of the more common issues and all of which are addressed in this plan.

How will consolidation affect local autonomy?

Many public safety agencies considering consolidation of services raise concerns over the loss of local agency autonomy. Law enforcement, fire and EMS agencies often believe that the delivery of their services is so unique that no one else could provide the same level of dispatching services.

Local agency autonomy and flexibility must be respected in the design and governance of a consolidated communications center. In this plan, local agency autonomy is ensured through a carefully planned governance structure and through service level agreements and operational policies.

How will consolidation of 9-1-1 and dispatch functions transform service delivery and constituent engagement?

The way in which public safety services are delivered is a concern of public safety and government leaders. The consolidated communications center will play an integral role in the delivery of these services. How well the consolidated center performs is dependent on the delivery of services that are of high quality, delivered by well trained professionals who respond to the public's needs and the needs of its constituent agencies quickly and effectively.

The delivery of quality services by highly trained communications professionals is incorporated in the framework for the consolidated communications centers. Ensuring that the public's needs and the needs of public safety agencies are addressed quickly and effectively are incorporated into the governance structure of the consolidated communications center.

Will Consolidation Save Money?

Municipal governments are generally eager to explore consolidation of services as a means of saving money. While cost savings are possible, there are two important points to consider. First, not all consolidations will result in significant cost savings. A common misconception is that

consolidating public safety communications will result in large reductions in staff. Experience has taught us that consolidations do not normally result in large staff reductions. Many communications centers suffer from sever understaffing conditions to maintain high grades of service delivery or specialized technical staff needed to operate and maintain specialized systems in the communications center. The real costs savings typically result from the elimination of redundant and expensive technology systems such as computer aided dispatch systems (CAD), 9-1-1 systems, logging recorder systems, and radio dispatch systems. The reduction of procuring, operating and maintaining separate systems can be significant.

Second, where cost savings through consolidation are achievable, the actual realization of the savings may not occur for several years. The process of consolidating public safety communications centers can be expensive and generate substantial one-time start-up and capital costs for a facility and technology needs. These costs can delay any actual cost savings.

How Will Accountability be Ensured?

The potential for meeting government, public safety, and the public's needs when agencies participate in a consolidated communications center depends, in part, on how clearly the expectations of service delivery and performance are defined. A successful consolidation must incorporate standards for accountability that are built into the tools that are used in forging the relationship among constituent agencies. That is, the plan for consolidation must incorporate discussions about mutual expectations and the contracts, reports, audits and one-to-one contacts that reflect those expectations. This consolidation plan incorporates accountability at two levels: Hierarchal Accountability; and Mutual Accountability.

Hierarchal accountability occurs at the government level through the law establishing the regional authority and through the resolutions adopted by the municipal government governing bodies. This forms the primary governance structure. Mutual Accountability is achieved through the establishment of service level agreements between the consolidated communications center and its constituent agencies, adoption of formal procedures and practices agreed upon by constituent agencies, adoption of formal processes to investigate and mitigate grievances and by regularly reporting performance against agreed upon service levels.

Harmonization of Labor Arrangements and Costs

Consolidations sometimes lead to higher human resources costs because it produces larger organized labor forces and requires the harmonization of labor arrangements that tend to incorporate the highest compensation and benefits rates and the least productive work rules. In this consolidation there are no labor agreements but there are differences in pay scales, benefits, and employee incentive programs among the municipal governments that must be addressed.

The impact of reconciling differences in these labor arrangements will be minimized by ensuring that the human resource needs of the consolidated center are carefully planned with the involvement of human resource specialists and government managers.

1.3. Key Findings

PSAP Operations – There is a strong commonality among the PSAPs that would aid in the potential transition to either an improved collaboration approach or a consolidation of PSAPs. Differences in the types and levels of service are small and can easily be overcome through the development of unified policies and procedures. Neither PSAP performs significant non 9-1-1 call-taking services such as records keeping, jailer or public information services for their respective law enforcement agencies. Both PSAPs do, however takeover 3-1-1 citizen calls after hours and on weekends and holidays.

Customers – Each PSAP currently services law enforcement, fire and EMS agencies. An improved collaboration approach would have no impact on the agencies served by each PSAP. Transitioning to a consolidated PSAP would only expand the current geographic footprint of the PSAPs. More importantly, it would improve operations across all public safety agencies. Fire/EMS agencies would benefit the most. It would eliminate the need for PSAP-to-PSAP call transfers and dispatching of mutual-aid resources.

Staffing, Service Levels, and Call Volumes – Together, both PSAPs have an authorized PSAP staffing of 104. This authorized staffing level is adequate to meet the 9-1-1 call-taking and dispatching needs of a consolidated PSAP serving both municipalities. Both PSAPs do, however, experience high levels of staff turnover and long periods of severe staff vacancies making it difficult for both PSAPs to maintain proper staffing levels consistently. It should also be noted that additional services such as answering 3-1-1 calls after hours adds to the workload and takes away highly-trained staff from answering 9-1-1 calls within established time standards.

Neither of the PSAPs has formally adopted a recognized industry standard grade of service (such as NFPA 1221) for answering 9-1-1 calls and dispatching emergency response agencies. Both are, however, acutely aware of the need to promptly answer calls and dispatch responders, and make every effort to ensure that they do so as quickly as possible given the staff they have available. The Newport News PSAP is accredited by the Commission on Accreditation for Law Enforcement Agencies, Inc. and continues to meet its standards.

Facilities – Neither of the two PSAPs is physically large enough to adequately support a consolidated communications center and both are highly vulnerable to storms that could render either or both PSAPs inoperable.

PSAPs are highly efficient, complex critical facilities housing interdependent infrastructure systems. Communities rely on these facilities to provide the critical link between the public and emergency services. Because of their uniqueness there is significant risk of serious bodily harm, extensive property damage, or disruption of vital activities if they are destroyed, damaged, or if their services are interrupted. Both PSAPs are equally at risk from environmental hazards but Hampton appears to be a higher risk. Neither PSAP is constructed to modern standards for critical infrastructure.

Consolidation of PSAP provides an opportunity for both communities to construct a facility that is more survivable and better able to continue to operate during disasters.

Cost/Budgets – Numerous factors play into developing costs and budgets for methods of improving collaboration or a consolidation effort. Using data supplied by the current PSAPs, a baseline can be established. Cost should be a serious factor in making these decisions, but should not be the overall driving force. Cost savings may be realized in the long term but improved efficiency and level of service can usually be achieved by operating independently. Based on budgetary information provided to the consultants, both PSAPs currently expend approximately $5,576,004for the separate operation of their PSAPs. Our analysis concludes that by consolidating PSAPs, the expected annual budget would be approximately $5,920,916.

Total costs will also be impacted by the decision to add additional call-taker/dispatcher staff, dedicated management and technical staff, changes/modifications to technology systems or the acquisition of new technology systems. Depending on the consolidation model and governance structure, the consolidated PSAP will also need to budget for certain support costs (e.g., human resources, facility rent and management, legal and fiscal services) that are currently provided by their respective municipalities and that are not reflected in the PSAP's existing budget but must be considered in the budget of a consolidated facility. These services could, of course, continue to be provided by the partners one of the partners or shared amongst the partners as part of consolidation mode.

Technology Systems - There are typically four significant technology considerations, with potential cost implications, that must be considered: 9-1-1 systems; radio system and console equipment; Computer Aided Dispatch (CAD) and records management systems including mobile computing; and recording systems. Of these four key considerations, the region is well-positioned in three of the four areas to allow some form of technology consolidation.

Radio dispatch console equipment currently used by the PSAPs could be reused in a consolidated environment.

The existing 9-1-1 System used in Newport News is scheduled to be replaced within 2 years. Hampton replaced their 9-1-1 system during this study. That system is technically capable of being expanded to support both PSAPs but further investigation will be required to make a final decision regarding whether or not that is a suitable alternative for either alternative.

The only technology area that would require serious consideration is the logging recorders. Existing PSAPs utilize disparate recording systems that have been sized to accommodate the needs of the PSAP they serve. Hampton recently replaced their logging recorder with the latest technology, which might be expanded accommodate a consolidated PSAP. Further examination of both systems will be necessary to determine their capacity and capability of supporting a consolidated Next Generation 9-1-1 PSAP if consolidation plans proceed. This may be the one area in which the regional partners may have to make a significant capital investment to ensure that the consolidated PSAP's technology needs are fully met.

1.4. Conclusions and Next Steps

1.4.1. Conclusions

Our study concludes that it is feasible to improve the level of emergency communications services through either greater collaboration or consolidation. While implementing a strategy of

greater collaboration will save significant money on the purchase, operations and maintenance of costly technical systems, and perhaps will improve the speed of answering of 9-1-1, it does not overcome the significant challenges that the vulnerabilities of the PSAPs present.

Consolidation offers greater opportunities to address the deficiencies described in this report and to improve the level of service to the citizens and emergency response agencies that rely so heavily on a professional PSAP. Further, we believe that consolidation is the best path to providing a solid foundation for more easily addressing next generation public safety communications technologies that are rapidly advancing. Both communities will benefit from significant cost savings resulting from operating and maintain a single PSAP, greater interoperability, less risk, and more flexibility that consolidation will bring.

The many challenges of each option can, we believe, be overcome with diligent planning and strong communications among municipal and public safety leaders and PSAP staff. These next steps will provide guidance for the regional partners in choosing a path and how to navigate the chosen path.

1.4.2. Next Steps

Potential regional partners should engage in the following key steps:

- Decide on whether the PSAPs will remain separate but engage in a coordinated regional collaboration or the two PSAPs will consolidated into a single consolidated PSAP.
- Obtain a formal commitment from those interested in moving forward.
- Agree upon a governance, legal and operational structure that addresses leadership, organizational structure, and financial needs and abilities.
- Identify a suitable structure for financing capital and operational costs. If costs will be shared, determine what types of costs will be shared among participants and in what proportion, and select a formula for allocation of those costs.
- Determine facilities, location and equipment needs.
- Prepare and approve a formal governance agreement, legislation, and documents.

2.0 OBJECTIVES, SCOPE AND METHODOLOGY

2.1. Project Scope and Objectives

The purpose of the PSAP Feasibility study was to conduct an assessment of the issues related to improving the overall effectiveness and efficiencies of the public safety communications centers in Cities of Newport News and Hampton through consolidation of the 2 PSAPs currently operating in the region.

This report presents a high-level description of operational, organizational, and logistical 9-1-1 call handling and dispatch communications requirements from a regional perspective. Two models are investigated: improved collaboration between the two existing PSAPs and the consolidation of the two PSAPs into a single PSAP serving the City of Newport News and City of Hampton. This report identifies potential benefits and potential drawbacks of both models.

The objectives of this study were to review and assess the following:

- Management structure and effectiveness
- Facility and Equipment
- Operational procedures and guidelines
- Service delivery policy and quality
- Staff selection, training and retention
- Overall center performance
- Cost of providing service

2.2. Project Methodology

The methodology employed throughout this study was one of objectively assessing the delivery of 9-1-1 call-taking and dispatching services in the Cities of Newport News and Hampton and then identify ways in which the delivery, based on industry best practices, of these services could be improved either through greater collaboration between the two PSAPs or through consolidating into a single PSAP.

The study included a series of on-site interviews, observations, data and document analysis, and a peer group survey. Work was carried out in the following tasks:

- Task 1 – Data Collection and Assessment
- Task 2 – On-Site User Interviews
- Task 3 – Site Visits
- Task 4 – Space and Technical Systems Analysis
- Task 5 – Staffing Configurations
- Task 6 – Staffing Analysis
- Task 7 – Preliminary Project Budget Estimate

This report documents the efforts and findings of Tasks #1 through Task #7.

The RCC team commenced the project with a kick-off meeting on April 30, 2015. RCC provided an orientation presentation to the participating partners and followed that by individual site visits to each PSAP for data collection, facility examination, and staff interviews. Additional information was gathered by interviews of key stakeholders including command staff from the Sheriff's Offices and local law enforcement agencies and, fire, and EMS agencies in the county and other municipalities served by these PSAPs. The team also conducted interviews during the week of May 17th and 24th. The team gathered subsequent information via telephone, e-mail and correspondence.

The following comments highlight the feedback the consultants received during the interview sessions. Participants were asked to comment about PSAP consolidation and are representative of what they viewed as the potential benefits of the feedback received from key stakeholders and their concerns.

Perceptions of Key Stakeholders

Benefits of Consolidation Include:

- Cost Savings thru Sharing of Technology and Expenses
- Standard Technology Platforms, Sharing Neighbor's Assets
- Improved Interoperability Among Regional Partners
- Better Records and Emergency Response Coordination
- Governance that Provides Direct User Representation.
- Improved staffing levels.
- Improved Information Sharing
- Standardization of Dispatching Services

Concerns About Consolidation Include:

- Potential for Loss of Jobs
- Disparity in Pay and Benefits
- Loss of Seniority
- Impact of Capital Costs and How to Balance and Distribute Costs Among Participating Partners
- Loss of Control or Participation Based on Retaining Dispatch Services in Current Municipality
- Supervision and Administration of Facility Chosen for Consolidated PSAP
- Loss of Control of Operations
- Reduction in Quality of Service
- Participants are Interested in Consolidation but only if they can Host (Domain Control).

- Initial Capital Costs and How Long to Recoup Costs
- Equitable Cost Sharing
- Inconsistent or Different Dispatch Processes and Protocols/Dispatch Processes More Oriented to Police/Dispatch Procedures Applied Inconsistently

We attempt to address these benefits and concerns throughout this report.

3.0 Regional Collaboration or Consolidation

As stated earlier in this report, the primary objective of the feasibility study is to help regional partners answer the question; what is the feasibility of improving public safety through improved collaboration or consolidation of PSAPs in Newport News and Hampton.

This section of the report is intended to provide context to the terms collaboration, consolidation and feasibility and to provide the foundation for this report.

3.1. Collaboration and Consolidation Defined

Even before the horrific events of September 11, 2001, there have been strong arguments in favor of both improved regional collaboration and consolidation of services, particularly in the context of public safety communications, where public safety agencies and local, state and federal governments find common ground and cross real and imaginary boundaries to tackle complex problems or to take advantage of opportunities. There is a rich history of public safety agencies working together and a range of institutions in place that have a regional perspective on policies and programs. The economy and well-being of the public is vulnerable to the ever-tightening fiscal constraints which moves thinking and acting regionally from the desirable to a necessity. Moreover, there are increasing incentives coming from state and federal agencies to work regionally and collaboratively in order to be eligible for funding.

This report examines both the feasibility of greater regional collaboration among the Newport News and Hampton PSAPs and the consolidation of both PSAPs as two alternatives to improving public safety services. The following definitions are used within the context of this report:

Improved Collaboration – Two or more partners use joint decision making power to establish formal arrangements (governance structure) to provide for the management of technical resources, sharing of information, interoperable communications, and operational support. Regional partners retain their separate identities and authorities over their personnel.

Consolidation – Two or more partners vest all authority and ownership in an independent agency overseen by a representative governance structure. Consolidation, in this case, would involve merging the operations of two PSAPs, all of the employees and all of the technical systems into a single stand-alone entity that is operated and managed by the new entity under a governance structure that is agreed upon by the Cities of Newport News and Hampton.

Agencies involved in efforts to strengthen organizational working relationships alter the interests of their institutional and governance structure to take into account the interests of the other regional partners involved and the public they serve. In order to do so, agencies need a way to guide the Collaboration – Consolidation continuum so that it continues to reflect the common interests of all regional partners. The first step in determining the feasibility of greater collaboration or consolidation is the involvement of all regional partners in the conversation.

Any discussion of greater collaboration or consolidation is often an extraordinarily sensitive and hotly debated topic. It is important that the regional partners remain part of the discussion, gain

as much information as they can and then make an informed decision on whether or not greater collaboration or consolidation makes sense for them.

3.2. Feasibility Defined

Feasibility, for the purpose of this analysis and study, is intended to assess the viability of greater collaboration or consolidation by/of two different regional partners achieving greater efficiencies in services and costs. This study provides a thorough analysis of the business opportunity, including an examination of the possible roadblocks that may impede the cooperative success of collaboration and consolidation. The outcome of the study is intended to help the regional partners make informed decisions about their participation and to help answer the question: Does improving collaboration or consolidating these PSAPs make sense for the region and are they:

- Legally implementable.
- Able to provide service that is equal to or better than current levels.
- Able to organize or enter into a democratic consolidated arrangement that would provide all partners a voice and a vote in the decision making and provide accountability to all participants through an independent governance structure.
- Able to maintain, at a minimum, a current level of technology and provide a mechanism for easily implementing advanced technologies.
- Financially viable (can consolidated services be provided at less than or equal to existing costs or expected future costs).

4.0 SUMMARY OF CURRENT ENVIRONMENT

4.1. Introduction

Both jurisdictions operate a PSAP out of law enforcement facilities. The Newport News PSAP operates from space within the basement of the Newport News City Hall located at 2400 Washington Avenue. The Hampton PSAP operates from the 9th floor of the Hampton City Hall located at 22 Lincoln St. Management oversight of both PSAPs falls under the organizational structure of the respective Police Department and is the responsibility of a civilian manager in Newport News and sworn law enforcement personnel in Hampton.

A Public Safety Answering Point, sometimes called public safety communications center, is the primary point of access to the emergency services system, typically by dialing the emergency number 9-1-1. The PSAP is responsible for answering incoming 9-1-1 and other emergency calls for service from the public, collecting relevant information from the caller and quickly dispatching the appropriate emergency service (law enforcement, fire and/or EMS).

4.2. Current Communications Center Structures

As would be expected, each of the existing PSAPs involved in this study has a unique character, set of customers and individualized operating environment. However, there are also many common operating parameters and functions that are shared by the PSAPs and a long history of working closely together. This section of the report looks at and documents the operational characteristics and physical spaces of the existing structure and current conditions of the NNPD and HPD PSAPs. This includes communication center operations, services, technologies, operational costs, staffing levels, service levels, and geographic distribution.

4.2.1. Newport News Police Department

The Newport News PSAP is responsible for 9-1-1 call-taking, and law enforcement, fire and EMS dispatching services for the City of Newport News.

Organizationally, the Newport News Police Communications Division is overseen by the Assistance Chief of Police for Support and Administration. Direct management of the Division is the responsibility of a civilian 9-1-1 Administrator and assisted by a 9-1-1- Manager. Supervision at the shift level is provided by 9-1-1- Dispatch Supervisors assigned to each shift.

At the time of this study, there are seven (7) supervisors and 33 Senior Dispatchers and/or Dispatcher II/I staffing the center. Supervisors are considered working supervisors, which mean that they are typically responsible for overflow 9-1-1 call-taking or primary 9-1-1 call taking during staff shortages, and providing relief for dispatchers in addition to supervisory responsibilities during their shifts.

As the PSAP for City of Newport, the center answers more than 150,000 9-1-1 calls and process more than 160,000 administrative calls annually, according to data provided by the center. The center is often configured in a call-taker/dispatcher arrangement. This means that personnel are responsible for taking incoming 9-1-1and administrative calls, and for the radio dispatching of

Figure 1 - DMPD Communications Organizational Chart

calls, and supporting emergency responders in the field. When staffing levels are sufficient, dedicated 9-1-1 call-takers are staffed.

4.2.2. Hampton Police Department

The Hampton Police Department Communications Center is a combined public safety communications center that handles 9-1-1 call-taking and law enforcement, fire and EMS dispatching services for law enforcement, fire and EMS services in the City of Hampton.

Management of the PSAP follows the hierarchal organizational structure. The PSAP is part of the Support Services Branch, which is commanded by a Major who reports directly to the Chief of Police. A Captain is responsible for the operations of the communications unit. Direct management of the unit is the responsibility of a Lieutenant who serves as the Unit Commander. A Corporal serves as the Unit Supervisor. The Lieutenant reports to the Captain.

At the time of this study, there eleven (11) communications shift supervisors, nine (9) assigned to shifts and one (1) serving as training coordinator and one (1) serving as the operations/CAD manager. There are thirty-three (33) Dispatchers staffing the center. Supervisors are working supervisors, which means that they are responsible for 9-1-1 call-taking and dispatching duties in addition to supervisory responsibilities during their shifts.

The center answers more than 108,000 9-1-1 calls and processes more than 227,000 administrative calls, according to data provided by the center. The center is configured in a call-taker and dispatcher arrangement. This means that designated 9-1-1 call-taker positions are staffed when enough staff are present on the shift and dedicated radio dispatch positions are deployed to support the radio dispatch positions. During less busy times and when there is insufficient staff, a call-taker/dispatcher configuration is used. During these times, radio dispatchers will perform both call-taking and dispatching duties. Shift supervisors often take overflow 9-1-1 calls or become a primary call-taker during staff shortages.

4.3. Mission and Goals

While the Newport News Police Department and Hampton Police Department share common overarching missions related to the provision of impartial law enforcement. The Newport News Police Department's mission is to "To work in partnership with citizens and government to provide excellence in police services". The mission of the Hampton Police Department is "Preventing crime and enforcing laws through problem solving partnerships".

While it is clearly evident that each agency shares a common service delivery mission, there are inconsistent service delivery goals between the two PSAPs. Newport News is an accredited agency (CALEA) and, as such, has written policies that establish specific 9-1-1 call-taking objectives. These include a service level objective answering 90% of 9-1-1 calls within ten (10) seconds during the busiest hours and answering 95% of all 9-1-1 calls within twenty (20) seconds. Their policies further require the answering of non-emergency and administrative calls within 20 seconds and maintaining an average 9-1-1 call abandonment rate of less than 15%. Hampton does not publish formal service level objectives or policies but their staff is encouraged and coached to answer all incoming 9-1-1 calls as quickly as possible.

A mission defines the fundamental purpose of the PSAP and its program. It provides a foundation from which the PSAP's goals, processes, objectives, and performance indicators flow.

4.4. Existing Technical Systems

Both PSAPs use state-of-the-art computer, radio and telephony equipment to deliver services. This equipment is purchased and maintained individually by the Newport News Police Department and the Hampton Police Department. Equipment within the PSAPs is maintained by a combination of municipal Information Technology Departments and maintenance contracts. Both 9-1-1 telephone systems are maintained by individual maintenance agreements with the system providers. CAD systems are supported by a combination of internal IT department staff and maintenance/service agreements with the manufacturer.

Geographical Information Systems (GIS) are maintained primarily by GIS staff in the respective cities. Additionally, the IT departments of both cities have a close collaborative working relationship and routinely work together to provide system interfaces and connectivity between the two PSAPs.

One of the challenges of consolidating PSAPs or improving collaboration among PSAPs is to standardize and/or integrate all communications, applications and data from existing centers into a new consolidated center. Technologies such as CAD, GIS, radio console systems, radio systems, 9-1-1 systems and recording systems must accommodate multiple jurisdictions and agencies, and numerous call types. These systems may also be required to interface to other jurisdictions and local sub-systems such as mobile computing systems, fire station alerting, paging, and others. State and federal databases and various third-party software providers, such as law enforcement and fire/EMS records management systems (RMS) are also important design considerations. When possible, relocation and reuse of existing equipment is an economical and responsible choice. However, issues can arise and the following need to be considered:

- The system's age, make, model and software version. The vendor's technology roadmap (upgrades and technology changes) must also be considered.
- The ability of the system to expand and accommodate the functionality and size needed in the larger consolidated PSAP.
- Connectivity to other systems. With technology and standards changing at such a rapid pace, the manner in which equipment connects or interfaces with each other can change dramatically in a short period of time. Older systems may still function well but they may no longer be able to interface with current technology that a consolidated PSAP may require.
- Older systems may be more susceptible to damage when moved or they may simply fail to operate after they have been turned off, moved and the restarted.
- Costs to upgrade older systems may not be effective and new systems may, in the long run, be less expensive.

The following describes the technical systems currently used in each of the existing PSAPs.

4.4.1. Telephone Systems

City of Hampton

Existing E9-1-1 telephony is supplied by Intrado, which provisions 6 wireline 9-1-1 trunk lines and 11 wireless (cellular) 9-1-1 trunk lines. Incoming 9-1-1 calls arriving at the PSAP are received by an IP-based call handling system provided by Intrado, Inc. and installed in the summer of 2015 to replace the legacy Cassidian system that was failing. This new system consists of Intrado's Viper 9-1-1 VoIP ANI/ALI controller. The Viper controller divides the call into voice and data, routing voice to the Power 911 intelligent workstations, which provide on-screen command of both landline and wireless 9-1-1 calls. Data is routed to the OSSI CAD system.

The PSAP also maintains active seven-digit non-emergency and administrative telephone lines. All 9-1-1 and non-emergency administrative telephone lines appear on all workstations in the PSAP.

The typical staff deployment includes the following

Position	# Staff Deployed
Supervisor	2
PD Chesapeake	1
PD Wythe	1
Fire Dispatch	1
Fire Tac	1*
Call-Taker	2 to 3

* Fire Tac position is typically a call-taker and included in the call-taker deployment numbers.

City of Newport News

Existing E9-1-1 telephony is supplied by Verizon, which provisions 8 wireline 9-1-1 trunk lines and 7 wireless (cellular) 9-1-1 trunk lines. Incoming 9-1-1 calls arriving at the PSAP are received by an IP-based call handling system provided by Cassidian and installed in 2012. This system consists of Cassidian's geo-diverse Sentinel Patriot VoIP ANI/ALI controller. The Patriot controller divides the call into voice and data, routing voice to the intelligent workstations, which provide on-screen command of both landline and wireless 9-1-1 calls. Data is routed to the Intergraph CAD system.

The PSAP also maintains thirteen (13) active seven-digit non-emergency telephone lines and three (3) direct ring-down lines. All 9-1-1 and non-emergency telephone lines appear on a total of 18 call-taker/dispatch workstations in the PSAP.

Typical staff deployment includes the following:

Position	# Staff Deployed
Supervisor	1
South Dispatch	1
Central Dispatch	1
North Dispatch	1
Fire Dispatch	1
Call-Taker	2 to 4

4.4.2. Computer Aided Dispatch and Records Management Systems

A major operational component for any PSAP is the Computer Aided Dispatch (CAD) and related Records Management Systems (RMS). The NNPD and HPD PSAPs currently use disparate CAD and RMS systems. NNPD presently uses an Intergraph 9.2 version MR3 for CAD and HPD uses OSSI (now SunGard) ONESolution version 15 public safety and justice software suite.

NNPD is considering upgrading the existing Intergraph CAD with the Intergraph WebRMS. HPD is presently utilizing SunGard's PISTOL RMS system. SunGard has recently upgraded and includes its RMS system as part of its ONESolution suite.

Presently disparate fire records management systems are also used between the two jurisdictions. Recently, the Fire Departments in the two cities have received a grant and are attempting to implement a standards-based information and resource sharing solution provided by FATPOT Technologies. This solution would provide interoperability between the currently disparate CAD systems in use today and will permit the Fire Departments to implement a mutual-response system. Information from each CAD system will be shared with the other overcoming the physical barriers that currently exist.

Even with the use of the FATPOT solution, there will remain a large gap between the two CAD systems. It is our understanding that the interoperability that the FATPOT solution will bring will only involve fire records and not law enforcement. A consolidated PSAP would require a unified CAD system and would, therefore, require a new procurement or the expansion of one of the two existing CAD systems to incorporate both agencies.

4.4.3. Radio Consoles

The radio console system is the critical link between the PSAP and the emergency response agencies. It interfaces with the land mobile radio network and provides the ability to support the voice communications between the PSAP and the emergency responders. It also supports other critical information such as unit ID (the designator of the unit calling into the PSAP) and other critical information.

The NNPD center is currently equipped with a total of 18 radio console positions. Eleven of these are equipped with 9-1-1 call-taking and radio dispatch capabilities and 7 are equipped as call-taker only positions. The radio consoles are manufactured by Motorola, Inc.

The HPD center is currently equipped with 12 radio console positions manufactured by Motorola Inc. All 12 positions in the PSAP are alike and are equipped with radio and call taking equipment. Both cities are presently undergoing or have completed new upgrades to their land mobile radio systems. Both systems provide a high level of interoperability between the two jurisdictions and beyond.

The number of console positions needed in a consolidated PSAP will be a function of the staffing plan and the mode of dispatch (e.g., call-taker/dispatcher or dedicated radio dispatch positions). Some other factors that need to be considered when planning consoles include:

- All telecommunicator positions in the PSAP should be designed and configured identically to allow control and operation of any radio channel and jurisdiction from any console position. Operational flexibility and internal redundancy is enhanced if all console positions have identical capabilities.
- Each console position should include two headset jacks that are integrated with the radio console system and 9-1-1 telephone system. This configuration allows the telecommunicator to use either system without having to switch headsets or utilize separate handsets for the 9-1-1 phone system. The dual jacks permit two telecommunicators to be simultaneously connected to the systems. This is particularly important for training.
- Separate consoles should be available to support training and overflow for large or special events.

4.4.4. Logging Recorder Systems

In a consolidated PSAP, the call volume, type of agencies served, size, number of field units, the number and types of telephone lines, and the number and types of radio channels that need to be recorded will play a role in the size and type of recording system that is needed. The more calls, field units, and types of recording that is needed, more capacity and functionality is required to meet the needs. Generally, cost rises as functionality and capacity increases.

Both the NNPD and HPD PSAPs utilize recording systems manufactured by NICE systems. Hampton recently installed a new system from NICE that is NG9-1-1 compliant. Newport News upgraded their NICE recording system during a recent upgrade of their land mobile radio system. It is also Next Generation 9-1-1 compliant. Both recording systems are capable of logging the voice, data and video that is anticipated by a Next Generation 9-1-1 system. It is less certain that these systems, either independently or collectively, have the storage capacity to accommodate voice, data and video that might be received by a consolidated PSAP. Future considerations for a recording system for a consolidated PSAP must anticipate the additional data resulting from NG9-1-1 that must be captured and stored.

Some additional factors that should be considered when evaluating the recording system include:

- The capability of the existing platform, in terms of capacity to record all radio channels, 9-1-1, and administrative telephone lines in a consolidated PSAP.
- The storage capacity of the storage media. Is it sufficient to record all recordings and for how long?
- What is the capability of the system to record, store, and retrieve the new types of 9-1-1 calls (e.g., text, photos and video) that are expected in the NG9-1-1 system?
- Does the recording system provide for instant play-back that can be used by the telecommunicator to instantly replay a 9-1-1 call or radio transmission that has just occurred?
- What are the capabilities of the recording system in terms of continuity of operations? Can the system be distributed geographically to eliminate a single failure point and to provide the capability of continued operations if the PSAP is operating from a back-up location?

4.5. Current Staffing Characteristics

4.5.1. Newport News Police Department

The NNPD has allocated a total authorized staff of fifty-seven (57) personnel. Of these, thirty-eight (38) are civilian 9-1-1 Dispatcher II/I, six (6) civilian 9-1-1 Dispatch Senior, seven (7) Dispatch Supervisors, one (1) Administrative Assistant/Call-Taker, one (1) 9-1-1 Manager, and one (1) 9-1-1 Communications Administrator.

Of the fifty-seven (57) authorized staff, the PSAP had a current complement of 43 at the time of the study. Ten (10) of these are working but still considered in training and six (6) new staff were in an academy. Recruitment and retention of qualified public safety dispatchers has been chronically problematic. The PSAP could not provide an accurate attrition rate but stated that they are almost always understaffed.

Public Safety Dispatchers are assigned to three (3) 8.5-hour shifts. Each shift has a minimum staffing of 7 dispatchers who are cross-trained to perform any function within the PSAP. Shifts operate on the following schedule:

Shift	Operational Hours
1st	10:45 p.m. to 7:15 a.m.
2nd	6:45 a.m. to 3:15 p.m.
3rd	2:45 p.m. to 11:15 p.m.

Each dispatcher undergoes a minimum 40-hour basic training course through an academy conducted by NNPD communications center trainers. The Academy provides the basic training courses as well as other specialty training for telecommunicators. In addition to the basic training, all dispatchers are certified as Emergency Medical Dispatchers all have received federally mandated training for anyone who operates a computer terminal that has access to the FBI's National Crime Information Center.

Following the initial training, each dispatcher is required to undergo on-the-job training under the supervision of an experienced Public Safety Dispatcher. These tend to be the most experience staff. New dispatchers are typically first assigned to learn and become competent in receiving non-emergency and emergency 9-1-1 calls. Learning police and fire radio dispatch typically begins after the new employee is competent in taking 9-1-1 calls. The entire training process, from hire to being fully functional, can take 12 to 18 months.

After a dispatcher has completed their initial training, they will receive between eight (8) and sixteen (16) hours of classroom continuing education training each year. In addition, additional specialized training is available by special request and on an ad-hoc basis as the need arises.

The total cost of operating the PSAP is reported to be approximately $3,060,492.00 or about $20.40 per 9-1-1 call. Of the total $3.0 million in operations costs reported, $2,073,145.00 are related to personnel costs and $986,747.00 are for all other operational costs.

4.5.2. Hampton Police Department

The HPD has allocated a total staff of forty-nine (49) personnel to the PSAP. Of these, there are nine (9) Supervisors, nine (9) Senior Tecommunicators, one (1) Operations/CAD Manager, one (1) Trainer and twenty-eight (28) Telecommunicators In addition to the civilian employees, the following sworn personnel are assigned to the PSAP: one (1) Lieutenant , and one (1) Corporal.

Of the fifty-two (49) authorized civilian communications centers positions, the PSAP had a full complement of staff at the time of the study but for less than 1 year. Recruitment and retention of qualified public safety dispatchers was considered to be problematic by management.

Communications Specialists are assigned to three (3) squads and work 8.5-hour shifts. Each shift has a minimum deployment 2 supervisors plus 7 to 9 telecommunicators assigned to each shift. All staff are cross-trained to perform any function within the PSAP. Shifts operate on the following schedule:

Shift	Operational Hours
Midnight	11:00 p.m. to 7:30 a.m.
B Squad	7:00 a.m. to 3:30 p.m.
C Squad	3:00 p.m. to 11:30 p.m.

Each dispatcher undergoes a basic training course through an academy conducted by HPD communications center trainers. The course is based on compulsory minimum training standards for dispatchers established by the Virginia Department of Criminal Justice Services. The Academy provides the basic training courses as well as other specialty training for telecommunicators. In addition to the basic training, all dispatchers are certified as Emergency Medical Dispatchers all have received federally mandated training for anyone who operates a computer terminal that has access to the FBI's National Crime Information Center.

Following the initial training, each dispatcher is required to undergo on-the-job training under the supervision of an experienced Master or Senior Dispatcher. These tend to be the most experience staff. New dispatchers are typically first assigned to learn and become competent in receiving non-emergency and emergency 9-1-1 calls. Learning police and fire radio dispatch typically begins after the new employee is competent in taking 9-1-1 calls. The entire training process, from hire to being fully functional, can take 9 to 12 months.

After a dispatcher has completed their initial training, they will receive between eight (8) and sixteen (16) hours of classroom continuing education training each year. In addition, additional specialized training is available by special request and on an ad-hoc basis as the need arises.

The total cost of operating the PSAP is reported to be approximately $2,515,512.00 or about $23.34 per 9-1-1 call. Of the total $2.5 million in operations costs, $1,942,784 are related to personnel costs and $572,728 are for all other operational costs.

4.6. Facilities

During the site assessment visits an initial investigation was conducted of the primary physical space and facilities currently available to provide for the PSAP function at the Newport News Police Department and Hampton Police Department. This included documenting the current physical spaces for the primary dispatch area plus associated spaces for equipment, supervisory staff, break room and locker storage space, restrooms, conference spaces, and other adjacent space. Other factors associated with the facilities such as the availability of emergency uninterruptible and back-up generation power sources, physical security, site vulnerabilities, employee parking availability and potential expansion space for future growth or hosting of a consolidated PSAP were also investigated.

4.5.1. Newport News PSAP

The City's emergency communications center is located in the basement of City Hall at 2400 Washington Street. Occupying approximately 9,000 square feet of space today, the communications center has been in its current location since the building was dedicated in 1971.

There are presently eighteen (18) 9-1-1 call-taker and dispatch consoles located in the dispatch area of the center. Separate administrative offices are assigned to management and support staff.

Even though the current communications center has supported the emergency dispatch services of the City for more than 40 years, there are a number of deficiencies that impose a significant risk to the continued operation of this mission-critical facility.

Over time, the space that the center occupies has been remodeled several times and there have been numerous technology refreshments that have added new computer and information systems. Modifications to the electrical system serving the center have been made without proper documentation of which electrical circuit serves what space or system. Electronic cabling supporting electronic systems has been abandoned in place as electronic systems have been upgraded or moved, resulting in a tangle of wires and cables that are not properly identified. Service technicians and City technical staff are unable to easily identify the proper cables during service calls and must spend valuable time tracing and identifying cables to identify troubles and ensure that other critical electronic systems are not unintentionally disconnected.

The electrical service is limited in its ability to expand to accommodate future technologies and technology refreshes. Even though the uninterruptible power supplies (UPS) serving the center were recently updated, there is only one emergency standby generator available to support the center. If that generator fails, the UPS will only power the electronic systems for 30 minutes. A failure in the generator will result in a catastrophic failure of the communications center.

Because the existing space was not designed as a purpose-built facility to support the communications center, there are several architectural deficiencies in the design of the space. Lighting in the main dispatch area of the center is harsh and was not designed to support the use of the large number of computer displays and CCTV monitors. The resulting glares and shadows add to eye strain and fatigue on the part of the communications center staff. Electronic equipment spaces were not designed to data center standards. Rather, the existing space was formerly a pedestrian hallway in the basement. Improper conditioning of the space can lead to premature failure of electronic equipment.

The communications center is not served by redundant heating, ventilation and air-conditioning systems (HVAC). Aging building HVAC systems support the communications center and they frequently fail, making the communications center uninhabitable.

Water penetration into the basement is common, especially during weather events resulting in heavy rains. City Hall's proximity to Hampton Roads and the James River increases the risk of significant flooding during a hurricane or similar event. Even though the building is not located within the 100 year flood plain, it is so close that the risk of flooding in the basement is high and poses a risk of catastrophic failure to the center.

The center's location next to the cafeteria also poses a risk of catastrophic failure due to fire. Commercial kitchens represent one of the greatest fire hazard risks in the United States today. Its location immediately adjacent to the communications center and its sensitive electronic communications poses a significant risk. Not only would the center have to be abandoned in the event of a fire, electronic systems could be damaged or destroyed as a result of fire suppression efforts.

Commercial kitchens also pose a significant health risk. Commercial kitchens are an abundant source of food, water and shelter for rodents and insects. It is not surprising then that communications center staff have reported seeing rodents and insects or evidence of their presence in the communications center. Beyond the serious health risks that can come from rodents and insects, rodents can also cause serious harm to electronic equipment as they have a propensity for gnawing on wiring.

Communications center staff working the afternoon and overnight shifts must park in open unsecured, unmonitored and poorly lit parking lots where their safety and security are at risk when they are arriving are leaving work.

4.5.2. Hampton PSAP

The City's emergency communications center is located on the 9th floor of City Hall at 22 Lincoln Street. Occupying approximately 7,000 square feet of space (A more accurate estimate of the total space occupied by the PSAP was not available. This estimate was based on rough calculations of the space.). Constructed in the 1980s, the communications center has been in its current location for more than 20 years.

There are presently twelve (12) 9-1-1 call-taker and dispatch consoles located in the dispatch area of the center. Separate administrative offices are assigned to management and support staff.

Even though the current communications center has supported the emergency dispatch services of the City for more than 20 years, there are a number of deficiencies that impose a significant risk to the continued operation of this mission-critical facility.

The most significant risk raised by police and fire staff is that of the basic design characteristics of the building itself. The building's original design apparently called for the building to survive winds of only 70 MPH. Those interviewed who were working in the center during the 2003 Hurricane Isabel, which was downgraded to a tropical storm as it entered Hampton, recounted stories of the building significantly swaying during the height of the storm.

The area of the city in which the building is located is also prone to flooding from significant storm surge. According to the National oceanic and Atmospheric Administration, inundation events are among the more frequent, costly and deadly costal hazards.

4.5.3. Backup Facility

Proper preparedness and recovery planning is critical to any PSAP to reduce the disruption of essential services when an emergency situation occurs that would render the PSAP inoperative or ineffectual. Both existing PSAPs have significant vulnerabilities to disruptions caused by both

man-made and environmental causes. In the face of any event that would cause the disruption of services at either of the PSAPs, backup services are currently provided by the other PSAP.

In our assessment, backup capabilities at both facilities are not well suited to support long term operations. Neither PSAP currently has the capacity to stand-up a full complement of call-taking/dispatch positions necessary to support prolonged operations.

Newport News does have a redundant backup center located off of Operations Drive near the Patrick Henry Mall city-owned property. The backup center is part of the City's Emergency Operations Center and occupies about 400 square feet of space. In its current configuration, the PSAP can operate all of its radio dispatch channels, three (3) call-taker positions, and one (1) supervisor position. The communications center tests the preparedness of the backup center each month by having some staff from an oncoming shift stand-up the backup facility and take and dispatch calls from the center for a period of time.

Hampton's backup facility is the existing records room of the Hampton Police Department located in the same block as City Hall. Four remote radio consolettes are used for radio dispatch and the City's telephone system is configured to take incoming 9-1-1 calls. All city staff interviewed agreed that the backup facility was inadequate to support the City's needs.

A full consolidation of the two PSAPs, if this option is chosen, would require new backup capabilities. The existing Newport News backup facility is not adequate to support the operations of both PSAPs. Adequate backup capabilities could be provided by either constructing a purpose-built facility or partnering with another agency such as York County or the Langley Air Force Base, if sufficient space in either of these facilities is available.

5.0 STAFFING ANALYSIS

5.1. Perspective

The public safety communications center industry has, for many years, faced a chronic staffing crisis. Finding, training and retaining qualified personnel has increasingly become more problematic as record low unemployment shrinks the available pool of qualified workers. Less-than-desirable working conditions, shift work and low wage scales make it difficult for many PSAPs to attract new workers and retain qualified ones.

Staffing shortages within the PSAP can be caused either by a lack of the proper number of authorized positions or by an agency's ability to fill those positions that are authorized, or a combination of both. In either case, many PSAPs around the country are operating at staffing levels not sufficient to consistently meet the demand within acceptable service levels.

This section of the report examines the existing staffing levels of the two PSAPs and assesses their individual performance to accepted industry service level standards. The impact of improving collaboration between the two centers and consolidation of the two PSAPs on staffing is also examined.

5.2. Service Level Expectations

PSAPs are labor-intensive operations driven by high standards to receive and process emergency calls quickly and efficiently. Technology systems used in the receipt of emergency calls and the dispatching of emergency resources, call center workloads, staffing levels and adequate training most directly affect service levels.

Determining appropriate service level specifications is a crucial foundation for an assessment of performance. Service level is a measure of the performance of a system. Certain goals for performance are established against which operations are measured as a means of reporting compliance with established service levels. Performance management contributes to accountability of the PSAP by ensuring responsiveness to the needs of the public, emergency response agencies and elected officials through production and reporting of information. Greater dissemination of performance information supports citizens in holding governments accountable for the delivery of public services. And if citizens see more evidence of government performance, public agencies may gain trust from these external stakeholders and receive additional political and budgetary support on which these agencies depend.

The PSAP can also use performance management as part of their overall strategy to: evaluate, control, budget, motivate, promote, celebrate, learn and improve (Behn, 2003).

The following examines the top performance measures commonly associated with personnel and the processes in today's public safety communications center. The standard categories of service, quality, efficiency, and profitability will be used as the basis for the guide.

5.3. PSAP Services and Service Levels

5.3.1. PSAP Services

PSAP and public safety communications center are terms that are often used interchangeably. A public safety communications center can be a PSAP and a PSAP can also be a public safety communications center but they can also be separate entities. It is possible for a community to have a stand-alone public safety answer point, staffed by 9-1-1 call-takers, that receives all incoming 9-1-1 calls and then transfers the calls to a public safety dispatch center – often separate public safety dispatch centers for the law enforcement agency and the Fire/EMS agency. It is also common for a combined public safety communications center (combined in the sense that it serves the municipality's law enforcement and Fire/EMS agency) to also be the designated PSAP for the municipality.

For the purpose of this report, we use the term PSAP to mean a public safety communications center. The PSAP is primarily responsible for delivering the following services to the emergency response agencies it serves:

- 9-1-1 Call-Taking and Non-Emergency Call-Taking
- Law Enforcement and Fire/EMS Radio Dispatching
- Audio and Digital Recording of Phone, Radio and Digital Images Associated with Call-Taking and the Dispatching of Emergency Responders
- Providing a Common Computer Aided Dispatch System to Initiate Public Safety Calls for Service, Dispatch, and Maintain the Status of Responding Resources
- Providing Emergency Notifications
- Other Services as Agreed

5.3.2. 9-1-1 Call-Taking, Non-Emergency Call-Taking, and Other Duties

9-1-1 Call Taking

The receipt of incoming 9-1-1 calls is perhaps the most important function of a PSAP, and in the eyes of the citizen, the efficiency of a PSAP is measured by the timely response to reported incidents. How well incoming calls to the PSAP are answered and processed impacts the speed of emergency responders reaching the scene of the incident. Emergency response time may also determine whether the outcome is ultimately successful in terms of a reduction in property damage and/or lives saved. Delays in the processing of emergency calls for service usually lead to criticism and can result in a high public profile incident.

Although a focus on public accountability is important and vital to the adoption of performance management, a focus that is too narrow can "crowd out" other vital (and complementary) objectives such as enhanced operational decision making and resource allocation in public organizations (Jett & Kim, 2011) .

Performance management methodologies for fire services and emergency medical services are well documented in industry research. But how these standards are measured is often inconsistent, making it difficult to assess performance across the industry.

The definition of "response time" depends on the perspective from which one approaches the data, and prompts several questions:

1) When does fire and/or EMS response actually begin?
2) From the time the law enforcement, fire or EMS resources are alerted after the call has been received and processed in the communications center?
3) From the time the location of the emergency has been verified?
4) From the time the emergency call enters the PSAP?
    a) When does response time end?
5) At the time the emergency responders arrive at the street address or reported location of the call?
6) After police officers and/or emergency crews have arrived at the scene of the emergency?
    a) Is the average response time of all calls a suitable measure or should a percentage target of all calls be the measure?

The lifecycle of an emergency response consists of five components: public access to emergency services, call processing and dispatch, emergency response, emergency operations and return to service. 9-1-1 call-taking and dispatch impacts three of these components. See Figure 2 for a graphical representation of these components.

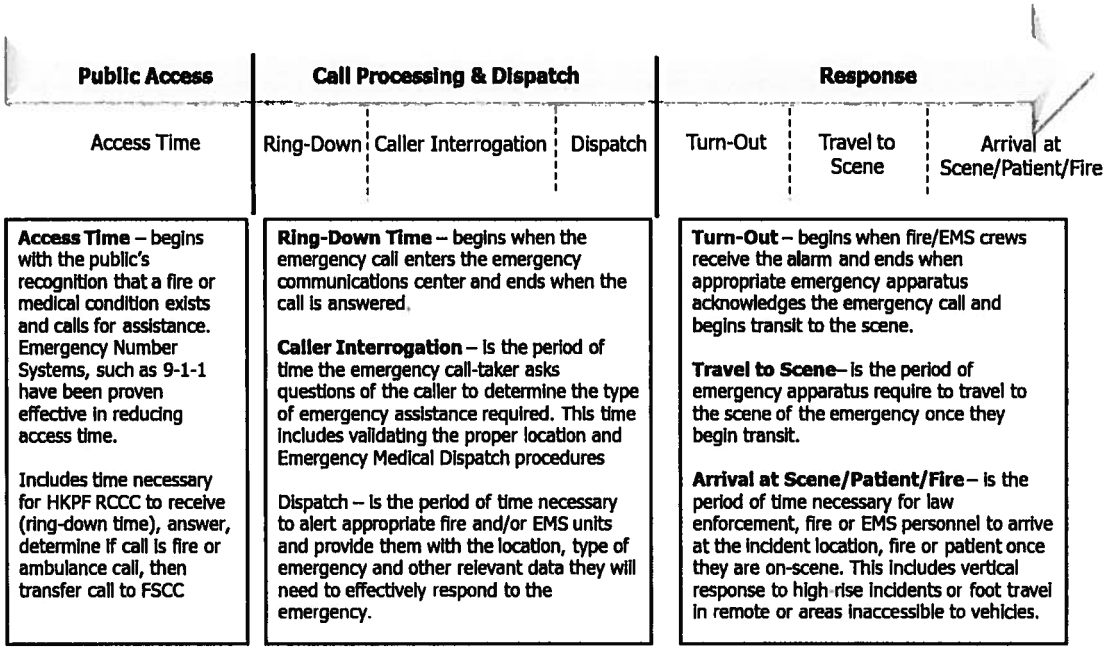


Figure 2 - Emergency Call Lifecycle

Our discussion for this study focuses on the call-processing and dispatch phase and more specifically only on the ring-down time and caller interrogation components of the call-processing and dispatch phase.

The first phase, **Public Access Phase**, begins when the need for emergency assistance first arises and continues through the caller's access into the emergency response system. Most important in this phase is the provision of the means for citizens to access the emergency response system rapidly via the universal emergency number 9-1-1.

9-1-1 is a special number that the telephone companies and wireless service providers recognize as an emergency call that needs to be directed to a PSAP based on the caller's location. The telephone company and wireless service providers route those calls to the PSAP via dedicated 9-1-1 trunk lines provided by the telephone company. Separate lines are provisioned for 9-1-1 calls from traditional land-line phones, cellular phones, and VoIP phones. These special trunk lines are provisioned to accept the anticipated 9-1-1 call volume for the PSAP and are designed to a service level where no more than 1 call in 100 calls will be blocked (the P.01 grade of service discussed earlier).

The **Call Processing and Dispatch Phase** begins the instant the 9-1-1 call is delivered to the PSAP's 9-1-1 telephone system. The period that the call rings in the PSAP until it is answered by a Telecommunicator is known as Ring-Down Time. It is this Ring-Down time that the recommended GOS service level of answering all incoming 9-1-1 calls is based.

Many PSAPs, especially those serving small to mid-size municipalities, often perform a number of non-emergency call-taking functions. This might include answering public information numbers or departmental telephones after normal business hours. Both PSAPs reported some

non-emergency related activities. Staff from the Hampton PSAP do provide some support to the Hampton Police Department Records Section by staffing the informational window at the Hampton Police Department. Neither reported being responsible for additional non-emergency type duties.

It is imperative that duties not directly related to the answering of 9-1-1 calls and dispatching of emergency responders be considered in determining staffing levels of the PSAP. These duties consume valuable resources of the PSAP and directly impact achieving service level goas of the PSAP.

Industry Standards for 9-1-1 Call-Taking

Standards for the answering and processing of 9-1-1 calls vary widely within the industry. One of the most common standards used by PSAPs is known as the P.01 standard. This standard establishes the goal of answering 99% of all incoming 9-1-1 calls within 10 seconds from the time the call appears at the PSAP. Some states have established this standard as a criterion for receiving wireline and wireless 9-1-1 surcharge funding collected by the state 9-1-1 boards. Many other PSAPs throughout the United States claim that they have adopted a P.01 grade of service for answering 9-1-1 calls.

The only published standards for answering 9-1-1 calls and the dispatch of emergency responders are those of the National Fire Protection Association (NFPA). These standards describe telephone answering standards different from those of the P.01 grade of service. NFPA recommends that 95% of incoming emergency calls be answered in no more than 15 seconds and that 99% of all incoming emergency calls should be answered in no more than 40 seconds. Excepting those call types discussed below, 80% of alarm [emergency call] processing should be completed within 60 seconds and 95% of alarm [emergency call] processing shall be completed within 106 seconds. The exempted alarm types include emergency medical dispatch, calls requiring language translation, calls requiring the use of a TTY/TDD device or audio/video relay services, calls of criminal activity that require information vital to emergency responder safety prior to dispatching units, hazardous materials incidents, and technical rescue. In these situations, emergency alarm processing shall be completed within 90 seconds 90% of the time

Another important 9-1-1 related service that impacts staffing in a PSAP is the provision of Emergency Medical Dispatch (EMD) Services. The invention of EMD is generally attributed to Dr. Jeff Clawson, a physician practicing in the United States in the 1970s. EMD is a criteria-based EMS dispatch system that relies on a standard set of chief complaint/incident type protocols designed to help call-takers efficiently and quickly interrogate callers to obtain vital information about the patient's status and scene conditions. This information is then used to aid in prioritizing the severity of the emergency used to configure an appropriate response of EMS resources.

An additional benefit of EMD is the inclusion of standard medically relevant pre-arrival and post-dispatch instructions. Many in the EMS community, including associations such as the National Association of EMS Physicians (a U.S.-based professional organization of physicians and other EMS professionals) believe that the intervention process of a trained dispatcher with an emergency caller is an integral part of the EMS response system. Thus emergency medical

dispatch is sometimes referred to as Dispatcher Life Support in conjunction with Basic Life Support and Advanced Life Support components of EMS.

Today, EMD is widely regarded as an important service offering of PSAPs. Accepted training and certification programs are offered by the National Academies of Emergency Dispatch (NAED) based in Salt Lake City, Utah and the Association of Public Safety Communications Officials International (APCO). NAED maintains the Medical Priority Dispatch System program and provides training and certification of program users.

Non-Emergency Call-Taking and Other Assigned Duties

PSAP dispatchers and supervisors have other duties that they must perform in support of law enforcement and fire/EMS dispatching and to keep public safety command staff informed of critical events. These activities are operational in nature but are not part of the emergency call taking and dispatching processes. However, the performance of these operational non-emergency tasks do impact emergency call taking and dispatching functions as they can take critical resources away from the primary duties of processing emergency calls.

Administrative calls from other governmental agencies as well as non-emergency calls from the public are an unavoidable responsibility of the PSAP. Non-emergency calls within the PSAP are not a trivial part of the overall workload that dispatchers must deal with on a daily basis. Together, the Newport News and Hampton PSAPs receive an estimated 50 administrative non-emergency calls per hour.

Many PSAPs have other duties assigned to them such as performing criminal records checks, acting as jailers, public reception, issuing permits, preparation of reports and many other miscellaneous duties. The amount of time consumed by these other assigned duties can easily equal one or more full-time equivalent positions. In many cases, such as a PSAP in a small community that provides a 24-hour citizen access window, these other assigned duties are critical to local police or the municipality. As such, these duties cannot be easily transferred to a consolidated PSAP.

Both PSAPs report that after hours 3-1-1 calls are routed to the PSAP for answer by emergency communications personnel. Additionally, Hampton is responsible for taking calls for Animal Control as well as responding to emergency radio activations for the Sheriff's Office and School Transportation. The response to 3-1-1 calls and the performance of non-9-1-1 call-taking and public safety dispatch takes highly trained and expensive staff away from their primary duties and has a direct impact on attaining high service level standards. The question in any consolidation feasibility is whether or not these types of services should be included in a consolidated PSAP and, if so, what is the impact on the cost of consolidation.

5.4. Determining Optimal Staffing Needs

5.3.1. Strategic Staffing and the Basis for Staffing

Staffing needs and actions must be defined on a proactive basis and the process to hire and training staff should begin early to ensure that the PSAP is appropriately staffed to meet service level objectives. History has taught us that we cannot assume that all the staff needed to operate the communications center at the service level objectives will be readily available and can be recruited, developed, and deployed quickly and easily. Staffing constraints such as background investigations, psychological testing, and the rigorous training necessary to hiring staff have to be considered in the staffing plan.

In the United States, more than 6,000 Public Safety Answering Points (PSAPs) provide 9-1-1 call taking and emergency service dispatch functions. According to the U.S. Bureau of Labor Statistics, this job category is expected to increase at an annual rate of 18% through 2018.

PSAPs face a number of staffing implications with a significant impact on required capabilities, staffing levels or both. These include:

- Job categories that are critical to the strategic operation of the center. This includes a decision to deploy standalone 9-1-1 call-takers or deploy positions that are both call-takers and dispatchers, or the need to staff a radio dispatch position for each separate radio system.
- Job categories in which required staffing levels need to change based on changes in workload. This includes adding staff to meet increasing 9-1-1 call volume or the addition of regional partners that bring increased call volumes and radio dispatch requirements.
- Positions that have long learning curves and thus should be filled well in advance of actual need. Communications staff routinely are required to undergo aptitude testing, a background investigation, psychological testing, long classroom training followed by peer observation before they can fill a position. These processes can take many months to complete before a candidate can become a contributing employee.
- Staffing needs should be based on the achievement of clear performance goals and productivity standards. For example, goals could be the percent of calls that will be answered within a certain number of seconds, the number of calls staff should handle per hour, or the percent of calls dispatched to emergency responders within a specified time frame.
- Staff should be deployed so that staffing levels closely align with the emergency call volume. That is, more staff should be assigned when call volume is high, and fewer staff should be assigned when call volume is low.
- Staffing requirements must consider experience with non-working time such as leave, training and other periods when staff are not available for work. In other words, to compensate for staff absences, staffing levels should be multiplied by a factor that incorporates all of the time that staff are not available for work.
- Staffing estimates should incorporate methods for achieving staff minimums when unexpected conditions occur. For example, staffing plans should include mechanisms for meeting high call volumes resulting from unexpected events or to fill in for high sick leave or other unexpected absences.

Another important service that impacts staffing in a PSAP is the use of dispatch protocols. Both PSAPS employ emergency medical dispatch protocols. These dispatch protocols provide a comprehensive and consistent list of questions used to interrogate 9-1-1 callers based on the call

type. The resulting information they obtain from the caller improves the situational knowledge of the event but it does add time to the call-taking process.

5.3.2. Essential Staffing Requirements

The process for determining the proper staffing of a PSAP is complicated by the fact that much of the communications center workload is out of the center's control. The 9 1 1 and other incoming call arrive whenever citizens and others decide to place a call. While this variability in call load can be examined after the fact (e.g., measuring the variability of calls for the previous year from telephone system statistical reports), future variability can never be accurately predicted.

Determining the optimal deployment of PSAP staff that meets service level targets and is economically feasible is both part experience and a science. This section of the study examines the staffing necessary to provide a high level of service to the public who call 9-1-1.

Our analysis assumes the adoption of a published standard for answering 9-1-1 calls. The National Fire Protection Association 1221 standard is an internationally recognized standard and is used in our analysis of staffing needs. Staffing levels should, we believe, be established to meet this standard at all hours of the day.

All of the activities involved in answering and processing emergency calls to a service level objective create many challenges for the PSAP in maintaining the right number of properly trained operators in their seats at the right times of day to ensure that incoming calls are answered within the service level objective.

Staffing the proper number of telecommunicators to receive and process emergency calls within the service level objectives is based on several key factors including:

Traffic Demand – the number of calls received per time period (e.g., per hour)

Call Processing Time – how long it takes, on average, to handle each call

Service Level Objective – the percent of incoming calls to be answered within a given number of seconds

Call-Taker Obligated Time – the amount of time the call-taker is not available to answer calls on a shift (allowing for breaks, wrap-up time, and other time requiring the call-taker to be out of the available queue)

Traffic Demand

Changes in call volume will increase or decrease the number of call-takers needed to answer incoming calls within the specified service level. For example, if the number of calls entering the PSAP increases in any hour, the number of call-takers needed to answer a given percentage of those calls within a specific time frame will increase. If the incoming calls are handled more quickly, the number of staff needed to answer the calls will decrease. A change in the service level objective would also affect the number of staff needed to answer calls within the service level objective.

Figure 3 shows that 9-1-1 call volume varies significantly by time of day. On average, NNPD call-takers receive and process about 24 calls per hour during the busy afternoon and early evening hours, compared to about 6 calls per hour in the early morning hours. HPD call-takers receive and process about 16 calls per hour during the busy afternoon and early evening hours, compared to about 4 calls per hour during the least busy early morning hours.

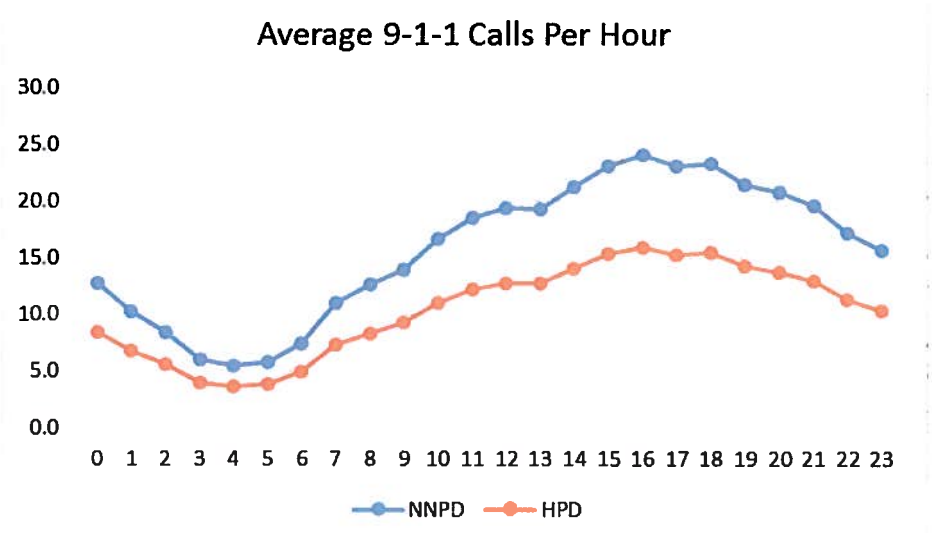


Figure 3 - 9-1-1 Call Volume by Hour of Day

Call Processing Time

Call processing time is a reflection of how long it takes the telecommunicator to interrogate the caller to obtain an accurate location, details of the nature of the emergency, complete the CAD event record and other activities such as providing pre-arrival care advice using the EMD protocols. The mode of operation can also affect the call processing time. For example, a call-taking/dispatch configuration requires the telecommunicator to execute both the call-taking activities as well as dispatch activities while engaged in the call. This adds to the call processing time.

Every incoming emergency call is unique and cannot be handled in exactly the same manner, resulting in varying call durations. Many calls are processed within a few seconds while others may require much longer periods to process due to their complexity or established protocols for a particular type of call. There is little research available that specifically examines call processing times in PSAPs. And the research that is available has varying results and is not directly comparable.

Table 1 shows that the average duration of a 9-1-1 call in Newport News ranges from a low of about 36 seconds to a high of over 40 seconds.

	NNPD
Hour of Day	Duration in Seconds
0:00	40.0
1:00	40.6
2:00	38.6
3:00	40.9
4:00	36.9
5:00	36.0
6:00	36.7
7:00	25.0
8:00	35.0
9:00	36.7
10:00	37.9
11:00	37.9
12:00	37.4
13:00	37.4
14:00	36.6
15:00	36.7
16:00	37.0
17:00	37.2
18:00	37.7
19:00	39.1
20:00	40.0
21:00	39.4
22:00	40.0
23:00	38.5

Table 1 - Average 9-1-1 Call Duration (Seconds) By Hour of Day for City of Newport News

Due to technical errors in the City of Hampton 9-1-1 system at the time of the study, accurate records on 9-1-1 call durations were not available. We expect, based on some other comparisons of available data, that the Hampton call durations will be similar.

Service Level Objective

The importance of service level objectives has been described in detail earlier in this report. Newport News, by policy, has established a 9-1-1 call answering service level objective of answering 90% of 9-1-1 calls within 10 seconds during the busiest hour of the day and answering 95% of 9-1-1 calls within 20 seconds at all times. Hampton has no published 9-1-1 call answering service level objective. For the purpose of this report and for consistency in calculating staffing needs between the two PSAPs, we have used the National Fire Protection

Association Standard NFPA 1221 service level objective of answering 95% of all 9-1-1 calls within 15 seconds.

Call-Taker Obligated Time

Call-Taker Obligate Time is the time a resource is available to receive a 9-1-1 call. If we were to calculate the number of resources required to answer and process the traffic demand given the time it takes to process the call, the result would represent a 100% utilization of that resource. A 100% utilization means that the resource must be at their position for the entire duration of their shift. No consideration is given to reflect factors such as break periods, call-wrap up time, and other factors that take the resource away from being able to answer incoming calls.

There are several reasons why a direct task allocation cannot be 100% of a resource's available time. Duty shifts include times when the operator leaves the available call-taking queue for a variety of reasons including scheduled rest breaks; attending to administrative matters, or being engaged in other activities such as making outbound calls or any of the other ancillary duties described earlier in this report. In addition, there is typically an interval between the time the incoming emergency call is completed and the call-taker is returned to call availability. This is known as wrap-up time.

High utilization rates (approaching 100%) can often be contributing factors in high employee turnover, absenteeism and disability. Quality begins to suffer as call-takers become fatigued by long periods of availability resulting in a higher risk of critical errors. High utilization rates can also result in queuing problems in which response to calls is diminished, causing delays in answering incoming calls.

The Erlang-C formula (described in more detail later in this report) is used to compute the number of agents (call-takers and/or dispatchers) that are needed to answer calls to the desired service level based on service time (call duration) and traffic intensity (number of calls received during a time period). For the Erlang formula, service time begins the moment the 9-1-1 call enters the PSAP and ends when the agent terminates the call and returns to an available status. Thus service time not only includes the actual call duration, but also other factors such as wrap-up time and other activities and tasks causing the agent to be not available for taking a new call.

We have used the following basic assumptions to develop a better understanding of how long operators are engaged in other activities that make them unavailable for taking emergency calls:

- Each 9-1-1 call will require a wrap-up time per emergency call. Wrap-up time is the period between the completion of an emergency call and when the operator is made ready to receive another emergency call. Depending on the type of 9-1-1 system, wrap-up time can be pre-programmed, or the operator can manually place him or herself back in the resource pool of operators ready to receive an emergency call. Wrap-up times can vary widely and the 9-1-1 telephone systems often don't provide accurate wrap-up time statics. The consultants were not provide wrap-up times for the PSAPs and have use a 20 second wrap-up time in these calculations. The average number of incoming emergency calls per hour, based on the data we receive, is about 26 calls per hour. At 20 seconds per call, the total wrap-up time is 500 seconds per hour (20 seconds per call X 26 calls per hour = 520 seconds per hour).

- Non-Emergency calls are a normal part of the telecommunicator's responsibilities. Because of technical difficulties in the Hampton system, accurate statistics relating to non-emergency calls could not be provided. We extrapolated combined non-emergency call data based on the non-emergency call volumes seen in Newport News and based on similar sized PSAPs we have worked with in the past. Combined, both PSAPs handle 47 administrative calls per hour, each lasting an average of 30 seconds per call. At 30 seconds per administrative call, we anticipate that telecommunicators will be engaged in administrative calls approximately 1,650 seconds per hour about or about 54 seconds per emergency call (30 seconds X 47 = 1,410 seconds per hour/ 26 calls).
- Other administrative duties as well as rest and convenience breaks combine to keep call-takers unavailable for answering calls. For the purpose of this study we have assumed that Call-takers will be out of the available resource pool for meal and convenience breaks and other administrative duties approximately 4,500 seconds (45 minutes) out of every 8 hour shift or about 6 minutes per hour (360 seconds) or about 14 seconds per emergency call.

5.3.3. Staffing to Support a High Performance PSAP

Staff to Answer 9-1-1 Calls at Desired Grade of Service

The generally accepted method used for determining staffing requirements of 9-1-1 call-taking is known as the Erlang Traffic Model, specifically the Erlang-C model. Erlang formulas were developed in the early 1900's by the Danish mathematician A. K. Erlang as a statistical measurement of telecommunications traffic. The Erlang-C formula calculates the probability of queuing of offered traffic and is the formula most often used in emergency communications center staffing analyses. The Erlang-C formula is provided below for reference:

$$Pw = \frac{\frac{A^n}{N!}\frac{N}{N-A}}{\sum_{i=0}^{N-1}\frac{A^i}{i!} + \frac{A^n}{N1}\frac{N}{N-A}}$$

According to the Erlang model, the minimum number of call-takers an emergency communications center needs at various times of the day is based on factors described earlier in this section and include:

- **Demand** – the number of calls received per time period (e.g., per hour)
- **Processing Time** – how long it takes, on average, to handle each call
- **Service Level** – the percent of incoming calls to be answered within a given number of seconds

Earlier we described another factor that is common to all PSAPs, which must also be considered when estimating the number of resources needed for a PSAP. That factor is the time that the telecommunicator is not available to immediately answer calls, also known as occupancy. Occupancy is the amount of time the telecommunicator is not available to answer calls on a shift (allowing for breaks, wrap-up time, and other time requiring the call-taker to be out of the available queue). To account for occupancy, we add the average time each resource is engaged in these other activities to the processing time to account for this resource unavailability.

Figure 4 and Figure 5 calculate the minimal number of call-takers needed by each PSAP to achieve the NFPA 1221 service level objective of answering 95% of all 9-1-1 calls within 15 seconds.

	Input Values					Results			
Time Interval	Call Volume calls	Interval Seconds seconds	Call Duration seconds	No. Of Call-Takers agents	Target Answer Time seconds	Call-Taker Occupancy percent	Immediate Answer percent	Service Level percent	Average Speed Of Answer seconds
0:00:00	12.7	3600	109	3	15	12.8	99.3	99.5	0.3
1:00:00	10.3	3600	109	2	15	15.6	95.8	96.7	2.7
2:00:00	8.4	3600	109	2	15	12.7	97.1	97.7	1.8
3:00:00	6.1	3600	109	2	15	9.2	98.4	98.8	0.9
4:00:00	5.5	3600	109	2	15	8.4	98.7	99.0	0.8
5:00:00	5.9	3600	109	2	15	8.9	98.5	98.9	0.9
6:00:00	7.5	3600	109	2	15	11.3	97.7	98.2	1.4
7:00:00	11.0	3600	109	2	15	16.7	95.2	96.2	3.1
8:00:00	12.6	3600	109	3	15	12.7	99.3	99.5	0.3
9:00:00	14.0	3600	109	3	15	14.1	99.0	99.3	0.4
10:00:00	16.6	3600	109	3	15	16.8	98.5	98.9	0.7
11:00:00	18.5	3600	109	3	15	18.7	97.9	98.5	0.9
12:00:00	19.3	3600	109	3	15	19.5	97.7	98.3	1.0
13:00:00	19.2	3600	109	3	15	19.4	97.7	98.4	1.0
14:00:00	21.3	3600	109	3	15	21.5	97.0	97.9	1.4
15:00:00	23.1	3600	109	3	15	23.3	96.3	97.3	1.7
16:00:00	24.0	3600	109	3	15	24.3	95.9	97.0	2.0
17:00:00	23.1	3600	109	3	15	23.3	96.3	97.3	1.7
18:00:00	23.3	3600	109	3	15	23.5	96.2	97.2	1.8
19:00:00	21.5	3600	109	3	15	21.7	97.0	97.8	1.4
20:00:00	20.8	3600	109	3	15	21.0	97.2	98.0	1.3
21:00:00	19.6	3600	109	3	15	19.8	97.6	98.3	1.1
22:00:00	17.2	3600	109	3	15	17.3	98.3	98.8	0.7
23:00:00	15.7	3600	109	3	15	15.9	98.7	99.1	0.6

Figure 4- NNPD Minimum Call-Taker Staff to Meet NFPA 1221

	Input Values					Results			
Time Interval	Call Volume calls	Interval Seconds seconds	Call Duration seconds	No. Of Call-Takers agents	Target Answer Time seconds	Call-Taker Occupancy percent	Immediate Answer percent	Service Level percent	Average Speed Of Answer seconds
0:00:00	8.4	3600	109	2	15	12.8	97.1	97.7	1.8
1:00:00	6.8	3600	109	2	15	10.3	98.1	98.5	1.2
2:00:00	5.6	3600	109	2	15	8.4	98.7	99.0	0.8
3:00:00	4.0	3600	109	2	15	6.1	99.3	99.5	0.4
4:00:00	3.7	3600	109	2	15	5.5	99.4	99.6	0.3
5:00:00	3.9	3600	109	2	15	5.9	99.3	99.5	0.4
6:00:00	5.0	3600	109	2	15	7.5	98.9	99.2	0.6
7:00:00	7.3	3600	109	2	15	11.0	97.8	98.3	1.3
8:00:00	8.4	3600	109	2	15	12.7	97.2	97.8	1.8
9:00:00	9.3	3600	109	2	15	14.0	96.5	97.3	2.2
10:00:00	11.0	3600	109	2	15	16.7	95.2	96.2	3.1
11:00:00	12.3	3600	109	2	15	18.6	94.2	95.3	3.9
12:00:00	12.8	3600	109	3	15	12.9	99.2	99.5	0.3
13:00:00	12.7	3600	109	3	15	12.9	99.3	99.5	0.3
14:00:00	14.1	3600	109	3	15	14.2	99.0	99.3	0.4
15:00:00	15.3	3600	109	3	15	15.5	98.8	99.1	0.5
16:00:00	15.9	3600	109	3	15	16.1	98.6	99.0	0.6
17:00:00	15.3	3600	109	3	15	15.4	98.8	99.1	0.5
18:00:00	15.5	3600	109	3	15	15.6	98.7	99.1	0.5
19:00:00	14.2	3600	109	3	15	14.4	99.0	99.3	0.4
20:00:00	13.8	3600	109	3	15	13.9	99.1	99.3	0.4
21:00:00	13.0	3600	109	3	15	13.1	99.2	99.5	0.3
22:00:00	11.4	3600	109	2	15	17.2	94.9	96.0	3.3
23:00:00	10.4	3600	109	3	15	10.5	99.6	99.7	0.2

Figure 5 - HPD Minimum Call-Taker Requirements to Meet NFPA Standards

Policies regarding9-1-1 call-taker in either an improved collaborative environment or in a consolidated PSAP must ensure that the call-taker's primary responsibility is to answer incoming emergency calls and that the minimum number of call-takers required to meet the performance objectives are available for each hour of the day. Shift supervisors should verify that the proper number of call-takers are assigned to taking only emergency calls, and they should also monitor the call-taking process throughout the shift to ensure compliance to operational policies, and they

should manage breaks to ensure that there are sufficient call-takers to maintain the performance objective.

Call-Takers in training and those experienced personnel that are coaching trainees should be excluded from the minimum required call-taker pool. Personnel in early phases of their training are apt to be slower in processing a call and can skew the service level. Qualified personnel monitoring trainees are not available for calls and should not be included in the minimum staffing deployment.

Staff to Support Radio Dispatch

The number of radio dispatch positions available to law enforcement, fire, and EMS agencies is dependent upon a number of factors such as land mobile radio system(s) available for use by the PSAP, and the dispatch console equipment used in the PSAP.

Presently, NNPD and HPD utilize separate land mobile radio systems, but both systems have undergone upgrades that have significantly improved the interoperability between the two systems. In a scenario in which the two PSAPs remain separate but improve collaboration, the differences in land mobile radio systems is not a significant factor, except where there is a need for backup and continuity of operations.

If the two PSAPs are consolidated, setting up radio dispatch consoles for two would be straight forward. All existing console equipment is compatible and can be reused in a consolidated center.

The number of personnel needed to staff a fixed dispatch position is fairly straight forward. Each position is either staffed on a 24/7 basis or on some predictable schedule.

At the present time, the NNPD PSAP deploys 3 permanent law enforcement dispatch positions and 1 fire dispatch position. The HPD deploys 2 law enforcement and 1 fire dispatch console and 1 fire tach channel, which is staffed by a call-taker. We assume that all of the current law enforcement radio dispatch positions would be carried over to a consolidated PSAP without any changes.

Fire dispatch offers the possibility of making some revisions to the way fire and EMS agencies are dispatched. It is not uncommon to separate fire and EMS dispatch on two separate frequencies. It is also common to combine all fire and EMS dispatch on a common frequency and then assign responding equipment to a dedicated tactical or fire ground channel for on-scene operations.

Many fire/EMS department leaders often believe having a dedicated fire/EMS dispatcher plus an additional tactical/fire-ground operations channel will help make their response more efficient and provide them greater support during their activities. During peak times, the existing fire/EMS radio dispatcher can become busy with many activities. Fire and EMS leaders sometimes believe that their needs become secondary to other activities in the communications center. They also express the concern that during large or prolonged events such as multi-alarm fires, they would benefit from having access to a tactical or fire ground channel that is staffed by a dispatcher during the event.

The configuration we describe here is often referred to as a two-part radio configuration. All Fire/EMS agencies are dispatched on and carry on day-to-day communications on a single combined radio channel or talk-group. When a fire or EMS call is received, the telecommunicator tones-out or pages the appropriate fire stations and/or EMS stations and provides the address, location of the emergency and the emergency type on the dispatch channel (CAD information is also simultaneously transmitted to mobile computers via the mobile computing system). At the time of dispatch, responding units are assigned to a fire-ground talk-group where they conduct communications related to the event. In PSAPs where there is sufficient staff, a separate telecommunicator is assigned to monitor the fire-ground talk-group and provide whatever support is necessary.

5.5. Staffing for a Consolidated Center

The challenge for any consolidated PSAP is assigning the right number of properly trained personnel to required positions in order to ensure timely response to incoming 9-1-1 calls and to support emergency responders in the field. Scheduling in the PSAP comprises the problem of assigning personnel to essential positions over a planning horizon (work schedule) while complying with labor laws and bargaining agreements and while maintaining a happy workforce.

The provisioning of staff for an emergency communications center is not an easy task. Some believe that the provisioning of staff is a simple matter of defining a numerical relationship between the work volumes and the number of staff required to meet that demand. Experience has taught us that we cannot assume that all the staff needed to operate an emergency communications center at high service level objectives will be readily available and can be recruited, developed, and deployed quickly and easily. Staffing constraints such as the duties and responsibilities of the center, background investigations, psychological testing, and the rigorous training necessary to hiring staff have to be considered in developing a comprehensive plan for the provisioning of manpower in the center.

In this section of the study we examine the critical factors that define the staffing needs of the PSAP . These include:

- Job categories that are critical to the strategic operation of the communications center. This includes a decision to deploy stand-alone call-takers or deploy positions that are both call-takers and dispatchers, and the need to staff dispatcher positions to support emergency responders.
- Job categories in which required staffing levels need to change based on changes in workload. This includes adding staff to meet increasing emergency call volumes or the addition of other responsibilities that may be assigned to the center by command staff.
- Positions that have long hiring and training cycles and thus should be filled well in advance of actual need. Emergency communications center staff routinely are required to undergo aptitude testing, a background investigation, psychological testing and long classroom training followed by peer observation before they can fill a position. These processes can take many months to complete before a candidate can become a contributing employee.
- Staffing needs should be based on the achievement of clear performance goals and productivity standards. For example, goals could be the percent of calls that will be answered

within a certain number of seconds, the number of calls staff should handle per hour, or the percent of calls dispatched to emergency responders within a specified time frame.

- Staff should be deployed so that staffing levels closely align with required permanent fixed positions and with the emergency call volume. That is, more staff should be assigned when call volume is high, and fewer staff should be assigned when call volume is low.
- Staffing requirements must consider experience with non-working time such as rest breaks, leave, training and other periods when staff are not available for work. In other words, to compensate for staff absences, staffing levels should be multiplied by a personnel relief factor based on past experience of absences
- Staffing estimates should incorporate methods for achieving staff minimums when unexpected conditions occur. For example, staffing plans should include mechanisms for meeting high call volumes resulting from unexpected events or to fill in for high sick leave or other unexpected absences. The communications center utilizes a call-out procedure to help manage short-notice absences as well as obtaining additional staff for unexpected events that increase call volumes beyond the capabilities of the normally scheduled shift.

5.5.1. Definitions

For the purposes of discussing staffing requirements and shift plans in this report, the following definitions are provided:

Shift: A shift is defined as a recurring period of time to which staff is assigned to work. It contains a starting time and duration.

Power Shift: A shift that overlaps other shifts and has different hours from the regular shifts-usually to increase the number of employees working during that period.

Overlapping Shift: A shift that extends into another regularly scheduled shift to provide a shorter period of increased personnel than a power shift.

Position: A job or post filled by an employee who is on-duty at the time. There are generally two types of positions. A fixed position is a position such as a radio dispatch position that is staffed regardless of the amount of activity experienced. A volume influenced position (e.g., call-taker) is staffed according to an expected or known volume of activity experienced (incoming 9-1-1 calls).

Platoon: A group of employees who rotate through shifts with the same, regular days off.

5.5.2. Coverage Requirements

To begin the discussion on schedule design, we begin with a discussion of the coverage requirements of the consolidated PSAP. There are three classifications of employees in the consolidated PSAP workforce: operational, technical, and management.

There are three operational position types within the center that must be covered: call-takers, radio dispatch positions and supervisors. Call-taker positions are volume influenced positions. These positions must be staffed based on the expected volume of 9-1-1 calls and other non-

emergency call volumes combined with the performance objectives established for answering 9-1-1 calls. Radio-dispatch positions are staffed based predetermined agreements with the police and fire departments and are considered permanent positions. Supervisor positions are also considered permanent positions. The following examines each of these positions in greater detail.

9-1-1 Call-Takers

As we have described in this report, the PSAP operates on a 24 hour basis. The 9-1-1 call workload fluctuates significantly over the 24 hour period. Our calculations indicate that a consolidated PSAP serving the Cities of Newport News and Hampton will experience an hourly call volume that ranges from a low of about 10 calls per hour to a high of about 40 calls per hour. To achieve a consistent grade of service for answering 9-1-1 calls will require shifts that deploy from 2 to 4 call-takers. Figure 6 provides the staffing estimates based on the anticipated consolidated 9-1-1 call volumes.

	Input Values					Results			
Time Interval	Call Volume calls	Interval Seconds seconds	Call Duration seconds	No. Of Call-Takers agents	Target Answer Time seconds	Call-Taker Occupancy percent	Immediate Answer percent	Service Level percent	Average Speed Of Answer seconds
0:00:00	21.2	3600	109	3	15	21.4	97.1	97.9	1.4
1:00:00	17.1	3600	109	3	15	17.3	98.3	98.8	0.7
2:00:00	14.0	3600	109	3	15	14.1	99.0	99.3	0.4
3:00:00	10.1	3600	109	2	15	15.3	95.9	96.8	2.6
4:00:00	9.2	3600	109	2	15	13.9	96.6	97.3	2.1
5:00:00	9.8	3600	109	2	15	14.8	96.2	97.0	2.4
6:00:00	12.5	3600	109	2	15	18.9	94.0	95.2	4.0
7:00:00	18.3	3600	109	3	15	18.5	98.0	98.6	0.9
8:00:00	21.0	3600	109	3	15	21.2	97.1	97.9	1.3
9:00:00	23.3	3600	109	3	15	23.5	96.2	97.3	1.8
10:00:00	27.6	3600	109	3	15	27.9	94.2	95.7	2.9
11:00:00	30.8	3600	109	4	15	23.3	98.4	98.9	0.6
12:00:00	32.1	3600	109	4	15	24.3	98.1	98.8	0.7
13:00:00	31.9	3600	109	4	15	24.2	98.2	98.8	0.7
14:00:00	35.4	3600	109	4	15	26.8	97.4	98.3	1.0
15:00:00	38.4	3600	109	4	15	29.1	96.6	97.7	1.3
16:00:00	40.0	3600	109	4	15	30.3	96.2	97.4	1.5
17:00:00	38.4	3600	109	4	15	29.1	96.7	97.7	1.3
18:00:00	38.8	3600	109	4	15	29.4	96.5	97.7	1.3
19:00:00	35.7	3600	109	4	15	27.0	97.4	98.2	1.0
20:00:00	34.6	3600	109	4	15	26.2	97.6	98.4	0.9
21:00:00	32.5	3600	109	4	15	24.6	98.1	98.7	0.7
22:00:00	28.6	3600	109	3	15	28.8	93.7	95.3	3.2
23:00:00	26.2	3600	109	3	15	26.4	94.9	96.3	2.5

Figure 6 - Estimated Call-Taker Requirements for a Consolidated PSAP

It is important to reiterate here that the recommended call-taker staffing levels are the minimum numbers of staff that need to be present and available to achieve the NFPA 1221 service level

objective. Any reduction of staff below these minimum levels for any reason (breaks, illness, training, administrative, etc.) will seriously diminish the PSAP's capacity for achieving the service level objective.

We also believe that the project volume of 9-1-1 and administrative calls a consolidated PSAP will receive requires the deployment of dedicated 9-1-1 call-takers.

Radio Dispatch Positions

The two PSAP currently deploy 5 permanent law enforcement dispatch positions. NNPD staffs 3 law enforcement channel 24/7. HPD staffs 2 law enforcement dispatch positions 24/7. Additionally, NNPD staffs 1 permanent fire dispatch channel and HPD staffs 1 permanent fire dispatch channel and a Fire Tactical Channel on an as-needed basis. Our staffing plan for a consolidated PSAP assumes that each of these positions must be staffed 24 hours per day, seven days per week.

Supervision

Supervision of each shift is a necessary and complex undertaking. There are widely varying theories on span-of-control and management styles. It is not the purpose of this study to analyze or recommend management styles.

As it relates to staffing, shift supervision involves several broad areas including administration, supervision, quality control, and training. The shift supervisor plays an important role in seeing that his/her shift provides the best service possible.

Both PSAPs currently deploy shift supervisors. NNPD currently has 6 supervisors and HPD has 9 Supervisors.

We believe that the supervisor position is critical to ensuring a high performance PSAP. The supervisor should be solely responsible for carrying out the duties of a supervisor and not be a working supervisor. Additionally, the supervisor should receive supervisory/leadership training.

A consolidated PSAP will be larger than either of the two existing PSAPs. How many subordinates that a supervisor can effectively manage is broadly debated in the industry. We have seen span of control relationships of 1:15 or greater within the public safety communications industry. Many studies and opinions of effective span of control are available. It is not the intent of this study to determine an effective span of control.

For the purpose of this study, we assume a minimum of 2 supervisors be assigned to each shift. We strongly recommend that the supervisor not routinely engage in answering 9-1-1 calls or operating a radio dispatch position.

Technical Staff

Several specific technical support functions are recommended to operate and maintain the telecommunications systems and networks that support the consolidated PSAP. Each of the functions described below fulfills system-specific requirements that are necessary to the operational readiness of these systems.

Both the City of Newport News and City of Hampton IT departments, in addition to technical services within the NNPD and HPD, provide significant technical support to and coordination among the existing PSAPs. This relationship will not change or be diminished by a consolidated PSAP. The technical positions we describe here are those technical positions that are necessary to the day-to-day operations of the consolidated PSAP. We assume that the system analyst position will be employed by the consolidated PSAP but it is possible that this could be a contracted position, with either the City or County IT department assigning a full-time equivalent to work in the consolidated PSAP.

Systems Analyst – This function plays an important role in maintaining the operational efficiency of the telecommunications systems used in the consolidated PSAP (9-1-1 telephone system, CAD, console equipment, and other management information systems operating in the center). This function interacts with equipment and system vendors, and with public safety customers. It is the Systems Analyst who will generate and prepare the system reports management and supervisory staff needs to monitor quality. As an added benefit, this function could also work with law enforcement agencies to provide crime mapping reports and other related services. Routine interaction with police, fire, and emergency medical service customers is necessary to develop and maintain functional emergency responses. Various types of reports will be generated on a daily/monthly/yearly basis and provided to management and supervisory staff.

Training Coordinator – The Training Coordinator function is responsible for developing basic and continuous training programs for operational personnel. The Training Coordinator will maintain training records for all operational and supervisory staff. The Training Coordinator will perform much of the instruction, but will also coordinate adjunct faculty from among the center supervisory staff, law enforcement agencies, fire and EMS agencies in the region.

Management Staff

A consolidated PSAP will require an Administrator to oversee the PSAP, interact with the governance structure, constituent agencies, and the public. The staffing plan also assumes one administrative assistant position.

5.5.3. Net Annual Work Hours

All of the essential operational positions that we have described for the consolidated PSAP are considered as the minimum number of full-time equivalents needed to staff these critical positions 24 hours per day. In every organization, there is a certain amount of leave and downtime scheduled for each employee plus additional unplanned downtime (such as sick leave) can also be expected. The staffing plan must therefore incorporate an adjustment factor that takes into account the fact that the actual availability or productivity of each person is something less than one full-time equivalent. This factor is typically referred to as a "relief factor" or "shift relief factor".

This factor is calculated by dividing the number of days the position must be filled by the estimated number of days that staff is available for work during a typical year. For example, if a position must be continuously filled 365 days, the relief factor is 1.66. The relief factor calculation typically considers the basic categories of vacation, holidays, military, funeral,

training, and sick days as well as meal and convenience breaks (Adapted from *Staffing Analysis, Workbook for Jails*, U.S. Department of Justice, National Institute of Corrections).

Table 2 reflects the calculation of net annual work hours based on leave information provided by the two PSAPs.

Table 2 - Calculation of Net Annual Work Hours

Leave Categories	Average Annual Hours
Vacation	180
Holiday	88
Compensatory	
Sick	60
Training	
All Other	26
Total Hours Off Per Employee/Yr	354
Total Annual Work Hours/Employee	2086
Net Annual Work Hours	1732

5.5.4. Shift Schedule

There are a number of methods that can be employed to ensure coverage of all positions within the PSAP.

Minimum Scheduling – Minimum staffing involves staffing the minimum number of staff based on the positions that need to be covered. NNPD currently schedules a minimum of 7 dispatchers to cover the 3 law enforcement radio dispatch positions, 1 fire dispatch position, 2 call-taker positions, and 1 supervisor position. HPD schedules a minimum of 7 to 8 positions to cover the 2 law enforcement dispatch, 1 fire dispatch, 2-3 call-taker, and 1 supervisor position.

While common in public safety PSAPs, this type of scheduling creates significant challenges to providing regular meal and convenience breaks for staff, covering planned and unexpected absences, and providing for training and other administrative time. Much higher overtime costs are often seen in PSAPs that employ a minimum scheduling strategy.

While overtime can be beneficial for the employer and employee, prolonged overtime can have serious problems for the employee and for the PSAP. A number of scientific studies have indicated that excessive amounts of overtime can have the following consequences:

- Increased Health Problems
- Increased Safety Risks
- Decreased Productivity
- Increased Absenteeism
- Increase Turnover Rates
- Decreased Employee Morale

- Higher Costs

Supplement Required Staff with Part-Time Dispatchers – Especially useful in small PSAPs, part-time employees can be assigned to fill-in for planned vacancies such as vacations, training, and other pre-planned absences. They may also provide some relief for short-term use such as when a scheduled telecommunicator calls-in sick. The largest drawback to utilizing part-time telecommunicators is finding and maintaining qualified personnel who are willing to work on a part-time basis. The initial and continuous training requirements are rigorous and finding candidates who can attend the basic training and fulfill the continuous training requirements is challenging.

Overlap Shift Schedules – Adjusting shift durations and or starting times presents an opportunity to strategically schedule staff to meet the fluctuating workload volumes in the PSAP. This can be accomplished by incorporating a "Power Shift" of a number of additional staff that is scheduled to work during the peak hours or by creating shifts of variable hours that overlap. A popular variable hour configuration is a 12 hour/10 hour/8 hour schedule. The 12 hour shift is deployed during the day as activity generally picks up. The 10 hour shift overlaps the 12 hour shift providing for additional staff during the peak times. The 8 hour shift provides some overlap support but is the smallest in number as it covers the least busy times of the day.

The existing PSAPs current utilize three (3) 8.5-hour shifts working a four day on/2 day off rotation. The majority of employees appear to favor this schedule, as there were no significant negative feelings about working 8.5 -hour shifts.

Table 3 reflects the total number of full-time equivalents (FTEs) needed to staff a consolidated PSAP. Two shift schedules are examined for comparison: 8 hour shifts and a variable 12/10/8 hour schedule. Several other schedule alternatives are possible and should be examined as later steps in the consolidation process. These two are provided only to examine the feasibility of consolidation.

	8 - Hr. Shifts			Variable 12/10/8 Hr. Shifts											
Position Description	Day	Night	Graves	0700-1900	1500-0100	2300-0700	# Days/Wk	Annual Hrs	Annual Hrs.	Annual Hrs.	Annual Hrs.	NAWH	FTEs	FTEs
PSAP Manager	8			8			5	2086	0	0	2086	1732	1	1
Secretary/Receptionist	8			8			5	2086	0	0	2086	1732	1	1
IT Systems Analyst	8			8			5	2086	0	0	2086	1732	1	1
Training Coordinator	8			8			5	2086	0	0	2086	1732	1	1
Call-Takers	32	24	24	48	40	24	7	29198	0	0	40878	1732	17	24
Law Enforcement Radio Dispatch	40	40	40	60	50	40	7	43798	0	0	54747	1732	25	32
Fire Dispatch	16	16	16	24	20	16	7	17519	0	0	21899	1732	10	13
Dispatch Supervisors	16	16	16	24	20	16	7	17519	0	0	21899	1732	10	13
												Total Staff Required for Consolidated PSAP	67	85

Table 3 - Summary of Staffing Needed for a Consolidated PSAP

Together, the two PSAPs are currently authorized a total of 104 civilian FTEs, creating an overstaffing of 37 positions (using 8 hour shifts). Consolidation will provide greater efficiencies in staffing, which will provide some benefits in the high attrition rates seen in the Newport News PSAP. Subsequent phases of the consolidation process will require a more careful examination of the positions that will need to be filled and the schedule that will be used. Such changes will change the total number of staff needed for a consolidated PSAP.

6.0 FACILITY CONSIDERATIONS

6.1. Introduction

The space needs for a consolidated PSAP serving the Cities of Newport News and Hampton reflect the operational requirements in terms of the area assigned, functional adjacencies, and equipment to support the mission. Neither of the existing PSAPs can support the anticipated staffing and support functions of a single consolidated PSAP. If a full consolidation of the two PSAPs is to occur, the partners will need to face the challenge of planning and constructing a new purpose-built PSAP.

Modern public safety communications facilities are highly complex structures with a large number of interdependent facility and operational systems. Planning a new PSAP must carefully consider operational and growth needs of the PSAP over a 20 year lifecycle, and it much recognize that changes in technology occur so frequently that the estimate of space needs is, in many ways, a reflection of a static condition in an evolving field.

This section of the report is intended to provide the regional partners with general insight into the space requirements for a consolidated PSAP and a preliminary planning budget. It should be noted that the consultants are not architects. The information provided in this report is intended for preliminary planning only. It is based on our considerable experience working with architects in the planning of public safety communications facilities, but any formal planning of a consolidated PSAP should be done by a qualified architectural firm experienced in public safety communications facilities.

6.2. Design Criteria and Goals

6.2.1. Site Alternatives

The analysis of facility needs in any PSAP consolidation feasibility study generally considers three options:

Existing Site and Building – Use an existing site and building and adapt or expand it for use as the consolidated PSAP. Several possible candidate sites were discussed during the interview process.

Existing Site and New Building – Use an existing site but build a new consolidated PSAP. There may be existing sites within the region that meet the necessary requirements and which are currently owned by a government partner. This alternative would eliminate the cost and administrative requirements to make use of current properties. The consultants were made aware that available land exists on the current campus of the Newport News Police Department. We did not conduct a comprehensive review of this site or other possible sites initial impression is that there is sufficient land available on the NNPD campus on which to construct a purpose-built facility.

New Site and New Building – Acquire new property and build a new purpose-built facility. This is the most expensive alternative but would allow complete flexibility in choosing the most

acceptable site and creating spaces designed specifically to meet the needs of a consolidated PSAP.

6.2.2. The Consolidated PSAP

Definition

A PSAP or emergency communications center is the protected site location where emergency 9-1-1 and other telephone calls for law enforcement, fire and emergency medical services are received and the coordinated responses of appropriate emergency response organizations are directed. It is designed and equipped to provide staff support to commanding officers and emergency communications officers in receiving emergency calls and dispatching of emergency responders.

Space Program Objectives and Assumptions

Objectives

a. To develop and submit a planning space program for a new consolidated PSAP that will serve, at a minimum, the Cities of Newport News and Hampton.

b. To maximize the operational effectiveness of 9-1-1 call-taking and the dispatching of law enforcement, fire and emergency medical services responders in accordance with the National Emergency Communications Plan of the U.S. Department of Homeland Security.

c. To maximize the number of administrative, operational, and electronic equipment spaces within the building envelope.

d. To look for cost-saving opportunities throughout the development of the space program, by programming multifunctional spaces that will serve dual roles and/or other City agencies.

e. To submit a Statement of Probable Construction Cost reflecting the findings and conclusions reached in the space program.

Assumptions

The following assumptions were used in preparing this plan.

a. A purpose-built facility will be constructed on property currently owned by either the City of Newport News or City of Hampton.

b. Demolition of existing buildings will not be required.

c. Local planning and building codes applies to the building design.

d. Allocation of space in the consolidated PSAP will be limited to those functions that are required to be in a PSAP and to those functions that are required to meet operational adjacency requirements.

e. Gross square footages will be derived from the examination and analysis of the combined NNPD and HPD PSAPs call volumes; best practices in public safety emergency communications centers; and, suggestions from user groups, administrative personnel and municipal leaders.

General Space Program Considerations

Prior to a discussion of the space required by the mission of a PSAP, several basic criteria are highlighted that establish the quantity and configuration of space. The major areas of discussion include:

- Vulnerability
- Public Image
- Flexibility
- Durability
- Expandability

Vulnerability - The consolidated PSAP will house the 9-1-1 public safety answering point, the law enforcement and fire/EMS dispatch operations for the Cities of Newport News and Hampon. The damage or destruction of the center or the interruptions of emergency response assistance for any reason could place the entire community at great risk. The structure and its human and equipment resources must be afforded a level of protection that reduces the risk of damage or destruction to the maximum extent possible.

A high level of protection consistent with the U.S. General Services Administration (GSA) Interagency Security Committee (ISC) Security Design Criteria is the design goal. Security must be an integral part of the building and site planning, starting at the earliest phase and continuing throughout the process.

Modifications and adaptations to these general GSA requirements will be considered for the project specific needs of the consolidated PSAP. The extent of the PSAP's vulnerability cannot be determined until a final site determination has been selected.

The principal areas of vulnerability include:

1) Site Access

2) Parking Areas

3) Service Zones

4) Entrances and Emergency Exits

5) Glazed Penetrations

6) Roof Penetrations

7) The Building Structure

8) Air Intake and Ventilation Points

9) Community Antenna or Satellite Dishes

10) Connections to External Utility Systems

11) Building Layout

The design responses to these and other areas of vulnerability should be addressed in the schematic design phase of a building project. However, the following provides some important areas of a facility that can impact space requirements.

1. Site Access

- A minimum defended standoff distance of 50 feet. Greater standoff is preferred. Standoff is defined as the distance from the building to the nearest point of access by unchecked vehicles. Bollards, planter, berms or other vehicle barriers that define the standoff distance shall protect the site perimeter.
- A minimum defended standoff distance of 20 feet (greater is preferred) from cleared employee vehicles on the site.
- Controlled vehicular access onto the site.
- Pan-Tilt-Zoom (PTZ) camera surveillance of the site.

2. Parking Areas

- No public parking or vehicular access within 50 feet of the center.
- Security lighting of three (3) to five (5) foot-candles should be provided.
- On-site parking areas should have controlled access by cleared vehicles only.
- Camera surveillance should be provided.

3. Service Zones

- Surface-mounted retractable barriers.
- Service vehicle yard.
- Overhead doors.
- High intensity light levels.
- PTZ camera surveillance.
- Direct supervision from center.

4. Entrances and Emergency Exits

- Limited to one public, one staff, and emergency exits by code.
- Access controlled.
- Security vestibule.
- PTZ camera surveillance.
- Direct and casual supervision from center.
- Decorative barriers.

5. Glazing Protection

- Exterior glazing should not exceed 40% fenestration of the exterior wall surfaces measured column to column and floor to floor in any given structural bay.
- All windows shall be inoperable (fixed).
- Exterior glazing should be blast resistant in compliance with GSA Security Criteria. Glazing should be laminated glass. Glazing, frames, and anchorage designs should be balanced.
- Forced entry ballistic resistance as well as blast resistance should be provided in selected areas (i.e., at the entrance lobby). The level of protection will be determined in the

Schematic design but will probably be rated at National Institute of Justice (NIJ) level 3 or better.

6. **Roof Penetrations**

- Limited in number.
- Lockable.

7. **Building Structure**

- Cast-in-place reinforced concrete construction with a minimum compressive strength of 4,000 psi.
- Vandal resistant materials.
- Inaccessible by public.

8. **Air Intake and Ventilation**

- Locate at the highest levels possible (The roof is preferred).
- High intensity lighted area.
- Security grille over openings.
- Inaccessible from public areas.
- Air quality detection devices.

9. **Antenna and Satellite Dishes**

- Inaccessible from public areas.
- As low profile as possible.
- Fenced and secured access to ground-based towers or antennas.

10. **Connection to Public Utilities**

- Limited number of junction boxes.
- Lockable manhole covers.
- Control over access to the utility chases, tunnels or corridors.
- Emergency cut-offs.

- Redundancy in all major mechanical, electrical and operating systems.
- Diverse feeds from Telephone and Power Utilities.

11. **Building Layout**

- Setbacks.
- Landscaping that limits hiding places.
- Use of decorative fencing to define zones.
- Use of bollards to prevent unauthorized vehicle use of pedestrian walks.
- Number of levels above ground should be less than 5.

The reduction in vulnerability of the center will be a combination of architectural barriers, structural hardening, electronic intrusion detection, policies and procedures, and training.

Public Image - Although the consolidated PSAP should be one of the most secure public buildings in the area, it need not be invisible nor obscure. As a contrast to the high degree of controlled access that will define the daily operation of the PSAP, escorted and some self-directed public tours of portions of the building will occur on a scheduled basis. The structure should reinforce the public's confidence that emergency communications is a high priority government service and that the human and technological resources that respond to the public's call for support are valued.

The aesthetics of the PSAP will be defined in the subsequent schematic design phase, but the visualization of the center through the programming process has been of a facility that depicts security, mission, reliability, durability, and affordability. Although the PSAP is a public facility, virtually all visits by the general public will be scheduled and organized tours. Even with this more limited public access, the public must feel confidence that the municipal governments understand the importance that is attached to appropriate response to emergencies.

Normal building materials that are used for other institutional or educational structures will be appropriate reflecting a higher degree of security and durability. While the building should be pleasing to the visiting public, at the same time, the public should be aware that access to the structure is in effect "by invitation."

Flexibility - Due to the nature of the mission, the systems and some of the spaces will be in flux. For the foreseeable future, the center will be a "console-based" operation and will be largely dependent upon the technological advances that change the manner in which calls are taken and responses given. Most of these changes will simply mean replacing one console item with another of like dimension. Some, however, could mean changes in adjacencies, equipment support areas, and numbers of staff to manage the systems.

Throughout the program, space designations have been given based upon currently envisioned methods of operation. To the extent possible, acoustical privacy is expected to be achieved through sound management techniques and not floor-to-ceiling walls.

Flexibility has been incorporated into the program through the sizing of spaces for reasonable growth and the multiple functions that can be achieved in a single space. Although each space has a primary mission and should be designed accordingly, a secondary function has also been envisioned for many large gathering spaces. This will permit internal expansion without altering the exterior configuration.

Durability - The need for low maintenance surfaces should not conflict with the security requirements of the center. Since the center is a 24-hour, 365-days-per-year operation, interruptions from maintenance and cleaning personnel should be limited. This requires the deliberate selection of finishes and materials that resist the wear and tear of a structure that is continuously in use. While the staff will be instructed in how to use the structure and systems to accomplish the mission, more than 100 employees of the center and an undetermined number of annual visitors will place daily demands on the structure.

Expandability - No public building should be planned without some idea of how expansion could occur, other than replacement. The program represented in this document exceeds the space requirements of initial opening, so that increases in the number of console/personnel positions and technology refreshes can occur without the disruption of internal construction. The planning target for forecasting space requirements was accomplished by sizing critical areas, such as the PSAP, dispatch areas, and administrative offices for a 20-30% increase through internal expansion. Also, the co-location of certain spaces will allow for easy expansion into adjoining areas.

The minimum useful life of the center is 20 years. As a planning guideline, the site chosen for the center should permit a 50% floor area expansion horizontally and/or vertically. Considerations for horizontal expansion must account for the required standoff for the facility. Vertical expansion must account for the structural hardening requirements of the facility.

Benchmarks for Programming

While other new PSAPs exist throughout the state and the nation, as would be expected, the size and complexity of mission varies. Most of the representatives from both cities have visited or are familiar with other PSAPs. Some basic spatial data used in the design of similar centers in which we have been involved has been used in this plan.

Call Volumes - The size of a PSAP is driven by the number of call-takers and dispatch staff in conjunction with the concomitant support spaces. The number of call-takers and dispatchers is a reflection of calls for service/assistance, personnel efficiency, and electronic dependability. The variable that has driven the determination of the number of call-taker and dispatcher consoles is the volume of calls that is likely to be managed and the standard by which these calls will be received and processed.

Building Efficiency - As a basis of comparing the center to other building types, building efficiency was considered. Building efficiency is the ratio of net square feet to gross square feet expressed as a percentage. A more detailed discussion of the net and gross space assignments

follows this section. However, the "design community" is accustomed to using building efficiency, defined in their terms as a measure of assignable areas to gross building area, as an important benchmark measure.

Government building design standards typically establish building efficiency ratios based on the type of building being designed. For example, office buildings can have a building efficiency ratio design goal of from 70% to 90% depending upon the building type (portioned office vs. "open office layout). Engineering/Laboratory buildings and Hospitals will typically see building efficiency ratio goals of from 60% to 72%. What is important to understand in the design of a consolidated PSAP is that the building efficiency ratio will be lower than the typical architectural design manual goals.

Building efficiency ratios of 55% to 70% are often seen in these types of buildings. It is a result of the need for redundant mechanical spaces, and large equipment spaces to support communications and telecommunications equipment.

Console Configuration - The "form-giver" in a communications center is the call and dispatch platform represented by the communications consoles and the immediately adjacent support areas. This PSAP is the visual focus of public safety communications in both NNPD and HPD and will serve as the nerve center for all emergency communications. The benchmark for this component is the size of the console and the circulation space to support that console. The exact configuration of the console will result from the more detailed study of the system architecture in a subsequent Schematic Design phase. However, for the purpose of space programming, each console position was based upon the following assignments shown in Table 1.

Table 4 - Description of Console Types

Type of Console	Area (SF)	Description
9-1-1 Call-Taker		A "cockpit" type workstation designed to minimize reach and focal distances for the call-taker. Based on a modular furniture concept, the console should provide a sit to stand adjustable work surface capable of supporting four 21" monitors. The workstation should provide integrated storage compartments for CPUs and distributed electrical power. A 100% circulation factor should be added to the 80 SF net area for four-sided circulation.
Radio Dispatch		A "cockpit" type workstation designed to minimize reach and focal distances for the dispatcher. Based on a modular furniture concept, the console should provide a sit-to-stand adjustable work surface capable of supporting five 21" monitors. The workstation should provide integrated storage compartments for CPU's and distributed electrical power. Additional workstation surface area should be provided to support radio system management and alarm terminals and printers. A I00% circulation factor should be applied to the net area.
Supervisor		A "cockpit" type workstation designed to minimize reach and focal distances for the supervisors. Based on a modular

		furniture concept, the console should provide a sit-to-stand adjustable work surface capable of supporting six 21" monitors. The workstation should provide integrated storage compartments for CPUs and distributed electrical power. Additional workstation surface area should be provided to support radio system management and alarm terminals and printers. Additional console space will be provided to support radio system management terminals, alarm and control terminals, printers and other network devices. A 100% circulation factor should be applied to the net area.

The actual arrangement of the PSAP/Dispatch PSAP space will be dependent on many variables, but should be guided by several key operational objectives:

- The ability of the Supervisors to observe consoles within their span of control.
- The ability of the call-taker to see the dispatch consoles for visual communication.
- The ability of any wall-mounted or ceiling-suspended graphic displays to be observable from all console positions.
- Immediate adjacency of communications and telecommunication electronic equipment areas to the console positions.
- Visibility into the PSAP/Dispatch area from a public gallery.
- Close proximity of redundant systems.

As will be shown later, the PSAP/Dispatch area will consume approximately 26% of the total space and largely in a single column-free space, therefore the configuration (i.e., footprint, number of levels, etc.) and volume of the consolidated PSAP will be established by the location of this component.

Support Spaces - Other spaces within the consolidated PSAP are traditional in format, such as offices, conference rooms, lockers, etc. Several methods were used to select the appropriate space standard for these spaces including the following:

- Office sizes based upon typical grade classifications of public facilities.
- Interviews with managers and staff as part of the programming process.
- National experience of the consulting team in programming a variety of
- Governmental buildings.

Acoustics - Few spaces in a city's service infrastructure are as dependent upon noise control as the PSAP. Daily, life-threatening conditions will be addressed by call-takers and dispatchers that

will depend upon clear, audible communication. A number of important factors should be considered in the planning of the communications center.

The determination of noise levels should address the level (expressed in decibels [dBA]), the reverberation time (expressed in seconds), and sound absorption (expressed in Sabins). The later design stages must evaluate the quality of sound by addressing volume, acoustical materials, and background "white" noise. Several guidelines are offered for the later design stages but are so important to the operational objectives of the consolidated PSAP that selected benchmarks are noted in the programming stage.

During the design phase, each space should be analyzed to define acoustical tolerances for sound transmission as opposed to reverberation and vibration noise. The area of the consolidated PSAP most sensitive to noise transmission is the PSAP/Dispatch area. Care should also be exercised in the horizontal and vertical adjacencies of the mechanical room and personnel support areas such as kitchens and locker rooms.

Table 2 demonstrates the significance of the time for noise to "decay" expressed in seconds reverberation time and noise in dBA. For example, using this table for a guide in the initial planning of the PSAP/Dispatch area suggests that the objective should be less than one second for reverberation time and below 60 dBA for the ambient noise level.

Table 5 - Significance of Noise and Reverberation

Reverberation Time Range	Significance
Over 2.0 Seconds	Extremely live. Poor speech intelligibility.
Between 1.5 and 20 Seconds	Live. Fair speech intelligibility.
Between 1.0 and 1.5 Seconds	Fairly dead. Good speech intelligibility.
Below 1.0 Seconds	Dead. Excellent speech intelligibility.
Noise Level	**Significance**
Over 80 dBA	Extremely noisy. Communication nearly impossible.
70 dBA	Noisy. Communication requires raised voice level.
60 dBA	Moderate noise level. Communication in normal voice level.

All materials absorb sound to some extent, but the most effective acoustical materials are porous, but must be quite thick or have an air space to absorb low frequency sound effectively.

These design conditions may not be possible in the design of the consolidated PSAP so careful study of the wall, floor, and ceiling materials should define the Noise Reduction Coefficient (NRC) for all possible building materials.

Cost Guidelines - Another important benchmark is the cost per square foot compared to other institutional building types. Unfortunately, the availability of construction costs from similar communications center projects is scarce and are highly influenced by the local economy, labor force participation, cost of steel, and may other variables. Our experience has been that the cost of constructing PSAPs has ranged between $200 to $275 per square foot and we have seen some architectural estimates as high as $300 per square foot.

At this stage of the communications center planning process, the unit cost estimates have been placed at the high end of the institutional building types. Estimated construction costs have been

adjusted on a departmental level to reflect the various types of construction that will become part of the final construction cost determination. Many other factors will impact the final cost estimate such as new structure vs. retrofit of existing spaces, site characteristics, utility infrastructure, and the bidding "climate" at the time the center is being bid.

Net and Gross Space Assignments

Every structure is composed of assignable area (an office); non-assignable area (corridors); and building support area (wall thickness). In commercial structures, the objective is to minimize the non-assignable and building support spaces and create as much usable area as possible. In public buildings, the ratio of usable to non-usable areas is also important, but depending upon the mission, non-assignable area may be higher. Earlier discussions presented typical building efficiency ratios. At the programming level, the net area assignment is the critical number because this allocation reflects the user's specific needs on a space-by-space basis. The allocation of a square footage assignment for the gross area at this time is an educated guess based upon industry norms. The expertise of the architect will significantly impact the final gross area of the building.

One of the difficulties with architectural programming is that the amount of non-useable or assignable area is not an exact science. Many factors will impact corridor lengths and widths, the number of fire stairs, and mechanical chases that are not identifiable until a building configuration is achieved. Therefore, at this state of the planning process, the programming concentrates upon the accurate identification of the net useable spaces as a reflection of the operational mission and an "educated estimate" of the non-assignable area that will be necessary to support the known spaces.

In this program, the identification of the individual spaces and the net area is a result of interviews, site visits, benchmarking from other facilities, and past experience. As will be seen later in this section, the individual spaces have been described in eight categories that are defined as follows:

Space Designation - The individual space is identified as a result of the operational mission or the support role. Some spaces, such as mechanical rooms and equipment spaces have been treated as a net area to emphasize the unique characteristics of the space. An attempt has been made to identify the net area for mechanical and electrical support areas since the redundancy requirements should be noted as early as possible in the planning process.

Space Standard - If a code defines a space allocation per user or unit, this standard is identified. In areas such as locker rooms, conference rooms, dining areas, or console positions, a square footage per user/unit is applied based upon equipment specifications, industry standards, benchmarking from similar use conditions, and experience.

Number of Spaces/Units - Based upon the interviews with appropriate staff conducted as part of this study, the number of users or pieces of equipment that define the principal mission of the space is identified.

Net Square Feet - The net area is defined by the inside (wall to wall) length times width, exclusive of wall thickness, corridors, or mechanical chases that may support an individual

space. The total net square feet is achieved by multiplying the space standard times the number of spaces/units.

Department Grossing Factor - As stated earlier, the identification of the net area is a direct reflection of mission and operation. All of the net areas must be served by a combination of corridors, mechanical shafts and internal stairs, as well as enclosed by walls of varying dimensions. The grossing factor is expressed as a percentage of the net area. Generally speaking, a series of the same six-inch walls that surround a 10' by 15' office will surround a 100' by 150' training room. However, because 10 equally sized 150 net square foot (NSF) offices will equal one 1,500 NSF training room, approximately 380 square feet will be consumed for wall thickness for the offices as opposed to 250 to enclose the training room, or 52% more wall thickness area for the 10 offices. The grossing factor attempts to account for differing conditions to surround, access, and service each space. In a project with a diversity of spaces such as the consolidated PSAP, the grossing factors applied to the net area assignments could range from 20% (mechanical spaces) to 50% (consoles).

This departmental grossing factor assigns a percentage of unassignable area to each individual space, but with consideration to that space as a part of a department or functional component. Due to the inexact nature of defining grossing factors, absent actual floor plans, in many programs a percentage is applied across the total net area. Also, mechanical rooms are often included in the grossing factor and not identified as a net area. Because the mechanical rooms are so integral to the consolidated PSAP, these areas have been identified as a room with a "corridor and wall thickness" requirement in the program.

Gross Square Feet - This is a mathematical calculation achieved by multiplying the total net square footage for an individual space times the grossing factor.

Total Square Feet - This calculation sums the net and gross area by each individual space and provides the designer an order of magnitude estimate of the combination of individual net room assignments, along with a target for the total area of a department or functional area. During the course of design, more efficient room arrangement, corridor, or mechanical service approaches may evolve and thus reduce the total square feet. The net area will be carefully evaluated against the program and the gross area will be used as a target to achieve or better.

Building Gross Square Feet - After the total gross square feet (to include corridors, internal wall thickness, and janitor's closets) is summed, a 10% factor is added to account for exterior wall thickness, covered walkways, mechanical and electrical shafts, elevators, janitor's closets, and fire stairs serving the entire building. The departmental grossing supports a discreet functional component where the building gross factor is meant to capture unassigned spaces that support the entire building. As the design process advances, the target 10% factor may be decreased.

The estimate of grand total square feet will be used to prepare a program-level cost estimate that will be discussed later in this report.

1.1. Building Core - Houses all of Space Program

The PSAP has been divided into two major building functions and several functional components. The two basic building functional areas are:

1) the spaces that support the communications center mission

2) Communications Center - Houses the PSAP and equipment spaces.

Within the Building Core there are four (4) distinct functional components that provide various forms of support for the PSAP mission.

These components are identified as follows:

Public Spaces	Spaces for public access, security screening and waiting
Staff Support	Staff lockers, break facilities and multipurpose room
Administration	Offices for communications center staff
Facility Support	Spaces for building systems.

The communications center (approximately 26% of the facility) consists of the PSAP and dispatch areas, which are housed in one large space. Equipment spaces are located adjacent to the PSAP and dispatch area.

The presentation of the architectural space program is divided into 1) an operational description of the component; and, 2) spatial tables with comments. Each of the major components outlined previously will be presented in this manner.

6.3.1. The Consolidated PSAP Building Core

As noted earlier, there are four (4) distinct functional components of the Building Core of the center. While all of the components are integral to the operation of the center, they do not all require a close proximity with each other to support the mission. Each of the components will be described in the following pages.

Public Spaces

Operations - The perception of the mission and efficiency of the PSAP will be in part projected through the public spaces. Most members of the public will only visit limited areas of the PSAP but an attitude regarding the effectiveness of local government will be impacted by the initial impression.

The public image of the PSAP will be established by the entry lobby and waiting areas. While this area is intended to be user friendly, the space will be secure and access beyond the lobby and waiting areas will be controlled from within the PSAP 24 hours per day. During all 24 hours, visitors to the PSAP will be monitored through closed circuit television cameras viewable from the administrative areas and from the communications supervisor's console. A security post may be established in these spaces during emergency operations to assist in the flow of traffic.

The general public, official visitors and tour groups will arrive via public transportation, private vehicle, or taxi at the public lobby. No walk-ins will be permitted at the PSAP. Upon arriving at the lobby and presenting acceptable identification via a security camera and intercom device, the visitor may pass through a locked security door that is controlled remotely from the administrative areas and from the supervisors' console.

Tour groups are expected to be part of the routine of the PSAP. Space for viewing of call-taking and dispatch operations has been planned. Visitors will be escorted from the public spaces to the viewing area outside of the PSAP and dispatch area. The viewing area will provide ample glazing so that an unobstructed view of the operations is possible.

Space - The net area assigned to the three (3) spaces that comprise this component is 1,392 square feet.

A departmental grossing factor has been applied against each space reflecting the size, function, anticipated location, and special service requirements. Overall, as shown in Table 6, an average grossing factor of 20% has been added to the total net area reflecting the fact that the public spaces component has large areas.

Table 6 - Public Spaces

Space No.	Space Designation	Space Standard	# Spaces/Units	Net SF	Gross Factor	Gross SF	Total SF	Comments
1.100	Public Spaces						1392	
	Public Spaces						1392	
1.101	Public Lobby	100	1	100	20%	20	120	Display
1.102	Reception Desk	100	1	100	20%	20	120	Capable of Being Secured From Access to Communications Center
1.103	Visitor's Viewing Area	80	12	960	20%	192	1152	Controlled Access - Window Viewing of Dispatch area for tours etc.
	Sub Total	**280**		**1160**		**232**	**1392**	

Relationships - The public spaces component is the bridge between the community (parking area/public access) and the secure operational areas that define the PSAP. While this area should be inviting and pleasing to those conducting business at or with a scheduled visit to PSAP, the lobby and related spaces should project security and reliability. All doors leading into and out of this area will be remotely controlled. Access control mechanisms will be used to permit authorized personnel to enter and exit this space. Although staff can enter the building at this point, most will enter through a separate staff entrance.

6.3.2. Staff Support Center

This component of the PSAP, which essentially supports the personnel who staff the communications and EOC, has two distinctly separate sub-components. The staff entry is a major identification and access point for authorized personnel. Control of this area is paramount

to the security of the PSAP. The staff services area provides spaces that allow for greater efficiency of the staff that will operate the PSAP.

Operations - The majority of staff will enter the PSAP through a controlled access staff entry. This entry should be as close as feasible to staff parking. Both the staff entrance and staff parking areas should be part of the security camera coverage of the PSAP. Staff identification can be accomplished through a combination of controlled access card systems, visual, voice recognition, or bio-medical methods. The staff entrance should provide easy access to locker facilities, mail room and other staff areas.

Staff services areas support the human assets of the PSAP, providing toilet, locker and shower facilities for center staff. These spaces will be used primarily by call-taker and dispatch personnel, but will also support transient personnel during emergency operations. Larger female locker areas reflect the higher ratio of female to male employees common in PSAPs.

A stress mediation room is provided for staff who may need a temporary quiet area to recover from a particularly stressful event. The space can service several other functions such as a private counseling area where supervisors can meet with staff privately.

Space - In Table 7, the individual spaces that form this component are shown. The net square footage is 2,961 to which an average grossing factor of 15% has been added. All entrances should be monitored and controlled. The staff entrance should be away from any surrounding streets, if possible.

Relationships - The primary relationships are between the staff entry and staff parking area. The amount of staff parking will be completely dependent upon the site area and constraints. The staff entry lobby should be in close proximity to the parking area and should lead into a corridor system from which direct access to male and female lockers and mail room is available. The staff lockers, mail distribution room, and kitchen/dining area are a cluster of related spaces.

Table 7 - Staff Support Areas

1.200	Administrative Offices & Support					1331		
	Administrative Offices & Support					1331		
1.201	9-1-1 Commander	192	1	192	20%	38	230	Conference Seating for 4 Adjacent to Commander's Office
1.202	9-1-1 Manager	144	1	144	20%	29	173	
1.203	Training Coordinator	144	1	144	20%	29	173	Private Office
1.204	Systems Administrators	106	1	106	20%	21	127	Three staff to share one office with three workstations and workbench
1.205	Spare Office	144	1	144	20%	29	173	Private Office
1.206	Spare Office	144	1	144	20%	29	173	Private Office
1.207	Files Area	9	15	135	20%	27	162	Adjacent to Administrative Offices and Accessable to Receptionist
1.208	Copy & Work Room	50	1	50	20%	10	60	1 Photocopy Machine @ 50 ft^2 Including Work Surface
1.209	Supply Room	10	5	50	20%	10	60	Storage Racks @ 10 ft^2/each

Sub Total	**943**	**1109**	**222**	**1331**	

Administration Center

The administration component provides the central management oversight for the consolidated PSAP and emergency management operations of the cities. The function of the administrative component is to provide management support for the entire communications/emergency management mission.

Operations - The administration of the center is divided into two functional components. The consolidated PSAP is under a single director who has the responsibility for ensuring that the building systems and support functions are in good order. The administration spaces will provide offices and work stations for up to 7 staff. This portion of the PSAP operates primarily during normal business hours, but may be operational 24 hours as circumstances warrant.

Space – Private offices define the predominant type of space in this functional component. The net square feet assigned to the Administration Area is 1,242 including a 20% departmental grossing factor. Table 8 summarizes the area assignments with brief comments.

Relationships – Copy and work areas, conference room, supply room and administrative toilets are to be located in proximity to administrative offices. Official visitors will be escorted to these areas by staff. Within the administration area, the staff offices surround the clerical workstation and the open files areas. The conference room should be located to serve the staff and potential official visitors.

Table 8 - Administration

Space No.	Space Designation	Space Standard	# Spaces/Units	Net SF	Gross Factor	Gross SF	Total SF	Comments
1.300	Meeting and Training						4621	
	Meeting and Training						4621	
1.301	Conference Room/Department Operations Center	20	20	400	20%	80	480	Dual Purpose Room Serving as a Departmental Conference Room and Police and Fire/EMS Departmental Operations Center
1.302	Conference Room Storage	120	1	120	20%	24	144	Storage of AV Equipment and DOC Equipment
1.303	Multiurpose Room	25	90	2250	20%	450	2700	Dual Purpose Room Serving as Classroom for Dispatcher Training and Police Recruit Training
1.304	Table/Chair/Mat Storage	180	1	180	20%	25	205	Adjacent to Multipurpose Room
1.305	Computer Training Lab	35	26	910	20%	182	1092	Dedicated Computer Training Lab for CAD, GIS and other Systems.

Sub-Total	**1270**	**4215**	**989.5**	**4621**

Facility Support

Without the spaces and equipment included in this component, the center is inoperable. None of the spaces in this component should be accessible to the public and only designated maintenance and system technicians will have access to these spaces. This component should be designed to be the least vulnerable of all spaces in the center. Therefore, the obscure and remote location of this component is essential.

Operations - This component has four (4) distinct functions including: 1) mechanical and maintenance; 2) electrical switching equipment, emergency electrical generation equipment, and UPS equipment; 3) fire suppression equipment; and, 4) telephone company point of presence (POP) service entrance. None of these functions is directly related.

The mechanical areas accommodate the mechanical rooms (i.e., AHU, pumps, boilers, etc.) and maintenance work areas for the center. During the design phase, the location of mechanical equipment will be given greater study to determine the appropriate location of chillers, compressors, and fans. Wherever the final locations, HVAC design principles must be considered in light of the high security requirements and the redundancy that must be built into the center. In this regard, rooftop locations for some of the mechanical equipment may offer the most effective security solution.

Space for emergency generators inside the building has not been included, opting for a more traditional method of exterior installation. Again, because of high security requirements, final design should consider the security requirements of generators.

This program has also not considered requirements for completely self-contained operations of the PSAP during disasters. Additional facilities for potable water storage and waste water holding or treatment would have to be added to the building design if this becomes a desired criterion.

Diverse telephone service entrance facilities have been included in the design. This permits the routing of telephone cables from two separate central offices to serve the PSAP providing redundant pathways for 9-1-1 calls. Incoming service would be routed to customer premise equipment from these locations via in-house wiring.

Access to the mechanical and electrical areas for purposes of service and maintenance is essential without compromising the security integrity. While a limited amount of approved internal access to these areas is desirable, the more important is external access for servicing and replacing equipment. Any penetrations to the exterior must be carefully designed and controlled. For example, air intake and exhaust grills for equipment must be equipped with security barriers to prevent unauthorized access or damage to vital mechanical or technical systems. Site permitting, a secure, enclosed service yard should be provided with remotely controlled gates observed through CCTV cameras from the administrative areas and supervisor's console. Only authorized service vehicles will have access to the service yard.

Space - In this architectural program, an attempt has been made to define the actual design area for the major mechanical rooms such as those shown in Table 9, primarily to highlight the importance of these spaces to the operation of the center. Many programmers treat the mechanical spaces as part of the grossing factor. However, for the consolidated PSAP program, in consultation with engineers and based on previous experience, the size of these key rooms has been shown with the attendant grossing factor to reflect wall thickness, redundant systems, and corridors to access these rooms.

Table 9 - Facility Support Spaces

Space No.	Space Designation	Space Standard	# Spaces/Units	Net SF	Gross Factor	Gross SF	Total SF	Comments
1.500	Facility Support Spaces						550	
	Communications/Telecommunications/Management Information Systems						**550**	
1.501	Dispatch Console Electronics	12	3	36	25%	9	45	Adjacent to Dispatch Area. Raised Flooring
1.502	Management Information	12	5	60	25%	15	75	Adjacent to Dispatch Area & Near EOC. Raised Flooring
1.503	9-1-1 CPE	12	6	72	25%	18	90	Adjacent to Dispatch. Raised Flooring
1.504	Voice Radio System	12	3	36	25%	9	45	Future System
1.505	Broadband Data System	12	3	36	25%	9	45	Future System
1.506	Data/Entry Tech Support	120	1	120	25%	30	150	Adjacent to Dispatch Area & Near EOC. Raised Flooring
1.507	Future Expansion/Refresh	16	5	80	25%	20	100	Space to Support Future Technology Refreshes.
	Sub-Total	**196**		**440**		**110**	**550**	

Relationships - As has been noted earlier, the mechanical spaces have no direct relationship to one another, but should be located within the same areas of the building to permit easy service access. Mechanical spaces should be located on exterior walls to provide air intake and exhaust.

6.3.2. Communications Center

The entire technological focus of the consolidated communications center is the PSAP/Dispatch areas. The success of the consolidated concept depends upon providing an efficient arrangement of spaces, the appropriate technology, and the environment that promotes effective emergency communications.

The PSAP and Dispatch area accommodates 30 console positions providing 9-1-1 call-taking, law enforcement dispatch, and fire/EMS dispatch for all public safety agencies.

Operations - in earlier sections of this report, the objectives and staffing needs for emergency and non-emergency communications were discussed. To a major extent, the space for the PSAP/Dispatch area is defined by the configuration of the consoles, and this configuration can vary between functional areas such as call-taking, law enforcement dispatch and fire/EMS dispatch.

Call-Taker and dispatch consoles will be of a modular furniture design. The configuration of each console position will be a cockpit style that will support a number of computer screens and related systems. It should be noted that supervisory positions require a slightly larger footprint. This is a result of the need for additional storage space for manuals and reference materials and the presence of additional equipment related to specific operations within the center.

A shift supervisor's office is provided for the shift supervisors. This is a shared office that provides desk seating and filing space for each of the supervisors. A tape transcription room has been identified to provide a secure facility for the logging recorder equipment and a private area in which to make transcriptions that may be required by law enforcement and fire inspectors for investigations or evidentiary purposes.

Several equipment spaces are required to support console equipment and other telecommunications and information management systems. Individual equipment spaces provide the facilities for discrete systems and related equipment. All equipment spaces are located on raised access flooring to permit the orderly routing of cables. A Systems Analyst work area is also provided to support maintenance on communications and information management systems. This functional area comprises the second largest amount of space dedicated to a functional area at 1,880 net square feet. Departmental grossing factors of 75% and 20% were applied increasing the space to 3,290 square feet. Table 10 identifies the specific space allocations in this functional area.

Relationships - The PSAP/Dispatch area will be a high-ceiling, column-free space of approximately 4,550 gross square feet and include the console stations organized according to functional area. The entire space should be positioned on raised access flooring or positioned directly over equipment spaces to permit routing of power and control cabling. The City may elect to provide some greater definition to this space during the detailed design phase. For example, each of the functional areas may be segregated into separate spaces enclosed by walls or other acoustical panels. The basic functional relationships are between consoles supporting the same or similar operations. Call-Takers often utilize direct eye contact and voice communications with dispatchers during some incidents, but this is more a matter of convenience than efficiency.

Equipment spaces should be located immediately adjacent to the PSAP/Dispatch areas. This can be a side-by-side or the equipment spaces located immediately below the PSAP/Dispatch floor in a multi-story facility. In either case, several dedicated electrical circuits will feed every console position and a comprehensive cable routing system provided to each console position.

Table 10 - Dispatch Areas and Equipment Spaces

Space No.	Space Designation	Space Standard	# Spaces/Units	Net SF	Gross Factor	Gross SF	Total SF	Comments
1.400	PSAP and Dispatch Area						3150	
	PSAP and Dispatch Area						**3150**	
1.401	Call-Taker and Dispatch Console Positions	80	20	1600	75%	1200	2800	Modular Communications Furniture w/Electronic Storage & Seating for Training
1.402	Supervisor Console	100	2	200	75%	150	350	Modular Communications Furniture w/Electronic Storage & Seating for Training
	Real Time Crime Consoles	80	3	240	75%	180	420	Modular Communications Furniture w/Electronic Storage
1.403	System Administrator Workstation	64	1	64	20%	12.8	77	Modular Communications Furniture With Electronic Systems
1.404	Video Wall Projection	80	1	80	20%	16	96	Integrated Video Monitors for Traffic and Other Cameras
1.405	Supervisor's Lockers	16	6	96	20%	19.2	115	
1.406	Files and Shelving	12	10	120	20%	24	144	
	Sub-Total	**432**		**1800**		**1350**	**3150**	

6.3.3. Program Summary

Based upon the information available and the analysis of organizational and operational requirements that define the appropriate spatial response, the emergency communications center will require approximately 17,284 gross square feet to meet projected need. As has been stated several times in this report, that while the target planning criteria was based on current workloads and those project through the next decade, internal expansion has been considered through the co-location of like spaces, making the center as efficient as possible for this type of facility. In Table 14, a summary of the total program is illustrated.

Table 11 - Summary of Total Program

Space No.	Space Designation		Gross SF	Unit Cost	Space Cost
1.100	Public Spaces		1,392	$ 200	$278,400
1.200	Administrative Offices & Support		1,331	$ 200	$266,160
1.300	Meeting and Training		4,621	$ 200	$924,200
1.400	PSAP and Dispatch Area		3,150	$ 275	$866,250
1.500	Facility Support Spaces		550	$ 200	$110,000
1.600	Electrical/Mechanical		840	$ 200	$168,000
1.700	Staff Support Areas		2,520	$ 200	$503,930
		Sub-Total	**14,403**		**$3,116,940**
Total Facility		Net to Gross Conversion Factor of 1.2	17,284	211	$3,642,015

6.4. Consolidated PSAP Planning Costs

While it is not practical to accurately project the costs of constructing an emergency communications center at an undetermined time in the future, the consultants acknowledge a desire to have some basic idea of the costs associated with building a new emergency communications center. Table 13 reflects the approximate cost of constructing a new emergency communications center on property owned by either the City of Newport News or Hampton. No attempt has been made to level constructions costs to the local area or bidding climate at the time of constructions. The sole purpose of these estimates is to provide an order of magnitude pricing for a new facility.

Table 13 - Statement of Probable Construction Costs

Construction Costs		
Estimated Construction Cost		$3,741,742
	Sub-Total	$3,741,742
Project Costs		
Site Preparation @ 15% of Construction Costs (Excluding Contaminated Soils Mitigation)		$546,302
On-Site Parking for Employees (24 Cars @ $3,500/Space)		$84,000
Physical Security Enhancements @ 5% of Construction Costs		$182,101
	Sub-Total	$812,403
FF&E and Specialty Equipment		
Fixtures, Furnishings and Equipment @ 12% of Construction Costs		$437,042
Emergency Stand-By Generators & UPS Systems @ 10% of Construction Costs		$364,202
Relocation of Existing Communications Equipment @ 5% of Construction Costs		$182,101
	Sub-Total	$983,344
Project Fees		
Architectural, Engineering and Specialty Consultants Fees @ 10% of all above		$543,776
System Training and Commissioning Fees @ 10% of Construction + FF&E		$462,536
Project Administration @ 6% of all costs		$326,266
	Sub-Total	$1,332,578
Contingencies		
Design & Construction contingency @ 15% of all Costs		$1,015,551
	Sub-Total	$1,015,551
Total Estimated Project Costs		**$7,785,891**

7.0 Assessing Cost Effectiveness and Allocation of Costs

One of the largest factors for the partners in considering the feasibility of consolidating PSAPs is whether the expenditure for a consolidated PSAP is more cost effective than performing the function alone. This discussion of the cost of improved collaboration or operating a consolidated PSAP is intended to serve as a blueprint for the detailed budget planning which must occur. It expresses the priorities, goals, plans and targets of improved collaboration or consolidation to the extent that they can be determined at this early stage of development.

A pro-forma budget provides a high-level opinion of the annual operating costs of a consolidated PSAP operating under the control of governance authority. It assumes that these operations are combined into a single stand-alone facility as the basis for the budget.

Allocation of the costs of operating the consolidated are based on an activity based budgeting method. The pro-forma budget reflects the costs in every functional area of the consolidated PSAP's programs and is tied to strategic goals. All costs described in this pro-forma budget are based on the expense of providing the services of the consolidated PSAP as a self-sustaining entity today.

For the purpose of this study, the assessment of cost effectiveness will consider both the cost to provide the service as well as the quality or level of the service received. In other words, will the Cities of Newport News and Hampton receive equal or better service at an equal or lower cost?

7.1. Pro-Forma Budget

The budget presented in this report is a hypothetical statement of the anticipated costs to operate the consolidated communications center in its first year of operation.

The total expected annual expenditures to operate a consolidated PSAP are $6,312,440.

To provide a benchmark against which the consolidated PSAP cost estimates can be compared, Table 14 compares the consolidated PSAP costs with the budgeted PSAP costs as reported by the two PSAPs.

Table 14 – Comparison of PSAP Operating Costs

Partner Agency	Reported PSAP Costs	Average Cost/Authorized FTE	Cost/9-1-1 Call
Newport News	$3,060,492	$ 53,693	$22.22
Hampton	$2,515,512	$ 51,336	$29.16
Consolidated	$5,920,916	$ 88,371	$27.56

While the forecasted consolidated PSAP budget is larger than the combined budgets of the two PSAPs, neither of the budgets provided by the regional partners included costs of the spaces (e.g., rent, facility maintenance, insurance, etc.). Comparatively, the cost of a consolidated PSAP will achieve the goal of providing improved services at equal or lower costs.

		Proposed Budget	Totals
Personnel			
Salaries	$	2,762,276	
Overtime	$	43,664	
Taxes and Benefits	$	939,174	
	Total Personnel Expenses		$ 3,745,113
Operating Expenses			
Facility Operations			
Utilities	$	25,941.06	
Custodial	$	14,519.25	
Maintenance & Repair	$	35,233.38	
Security	$	14,132.07	
Health & Safety	$	6,775.65	
Office Equipment	$	8,000.00	
Materials/Supplies	$	4,500.00	
Memberships & Subscriptions	$	1,200.00	
Postage & Shipping	$	200.00	
Insurance	$	1,000,000.00	
Employee Uniforms	$	15,500.00	$ 1,126,001
Contract Services			
Human Resources	$	29,760.00	
Payroll	$	29,016.00	
Accounting	$	8,000.00	
Legal	$	40,000.00	
Professional Development	$	246,828.00	$ 353,604
Technology Maintenance and Support			
Maintnance & Upgrades	$	473,266	
Leased Circuits and Connections	$	222,931	
			$ 696,197
	Total Operating Expenses		$ 2,175,802
	Total Consolidated Budget		$ 5,920,916

7.1.1. Budgeted Appropriations

The expenditures for the consolidated PSAP are budgeted in four (4) major spending categories: Personnel (salary and benefits); operating expenses; contract services; and maintenance and support. (Figure 7).

Personnel – Appropriation needs for the consolidated PSAP are developed using available budgetary data for fixed costs such as salaries, benefits and internal charges. Where budgetary data is not available, national averages from sources such as the U.S. Bureau Labor Statics is used. On average, salaries and benefits make up approximately 74% of the total estimated budget.

Personnel requirements for the consolidated communications center include call-takers, dispatchers, shift supervisors, technical positions, and a consolidated communications center director or manager.

A staffing analysis determined the number of full time equivalents required to staff the consolidated PSAP. Two shift deployment options were examined: 8 hour, and a combination 10/ 12/8 hour shift.

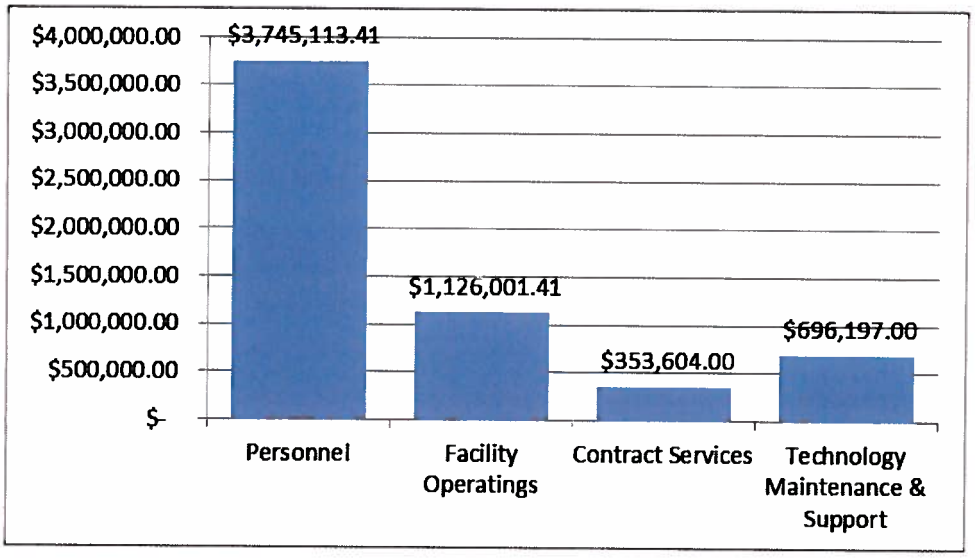


Figure 7 - Budgeted Costs by Category

An 8 hour shift configuration will require a total of 67 full-time equivalents, including the administrative staff. A combination 12/10/8 hour shift configuration would require a total of 85 full-time equivalents.

Operational staff also includes shift supervisors. For the purpose of this report, we applied the shift relief factor to supervisor positions to ensure that there would be enough supervisors to provide a fully trained supervisor for each shift. Many PSAPs fill supervisor vacancies with highly experienced dispatchers in an acting supervisor role. If the consolidated PSAP decides

upon the use of acting supervisors to full supervisor vacancies, the total FTE needs could be reduced by 2.

Two technical positions, a training coordinator and a systems analyst are needed to address the high standards of training and the upkeep of the many technical systems used in the consolidated PSAP. These positions are common in consolidated PSAP. Their pay range is often based on a PSAP supervisor's pay range, but in this case the PCSO PSAP included similar positions. Their salary ranges were used for this category.

Finally, the consolidated PSAP will need a communications center director who will be responsible for the operations and performance of the consolidated

Operating Expenses – Operating expenses are the costs associated with operating the consolidated PSAP. At this early stage of planning, assumptions of costs are highly variable. Final decisions of the regional partners as to the location of consolidated PSAP, the proffering of in-kind services and the rates for services at the time of consolidation will affect these estimates.

Appropriations for all operating expenses equal $2,175,802.00 (Figure 8).

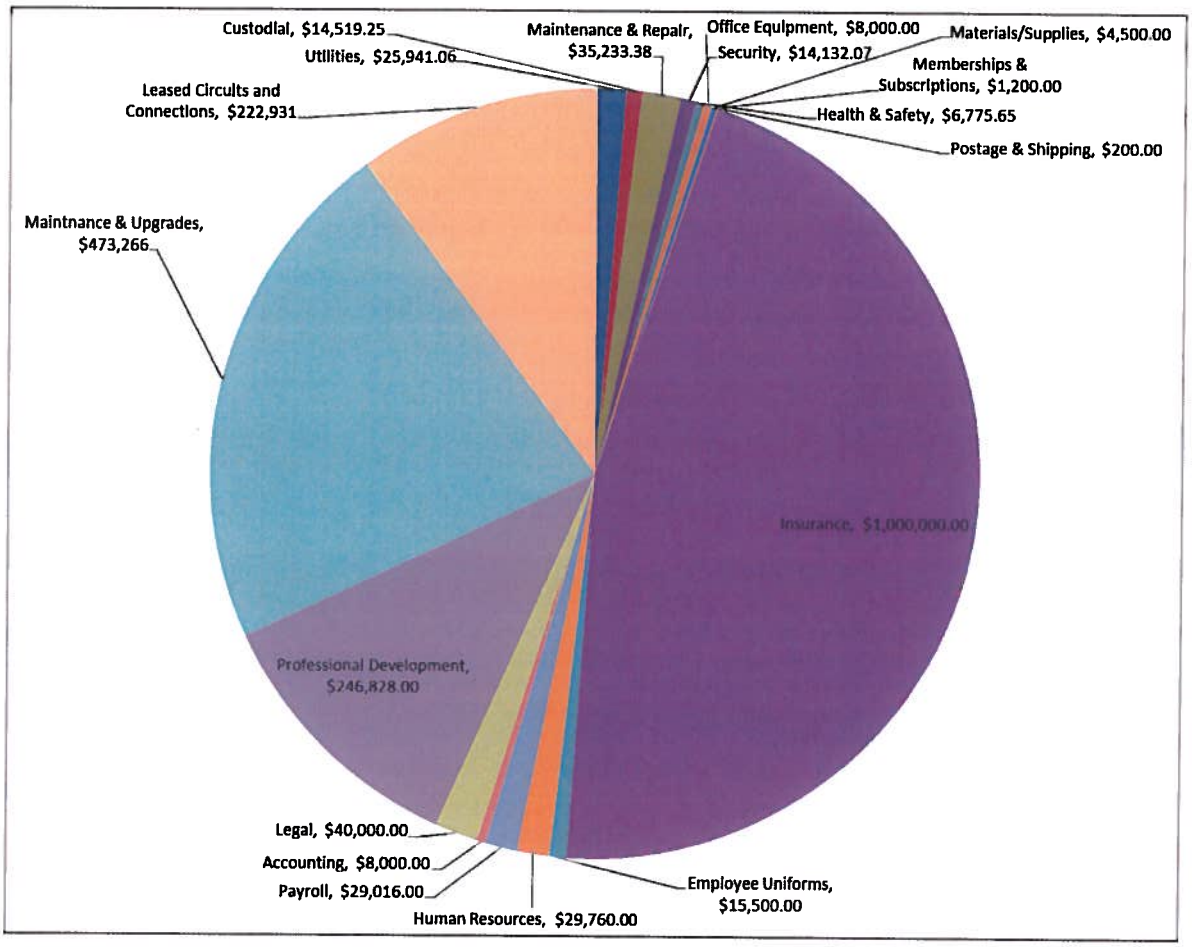


Figure 8 - Summary of Operational Expenses

Contract Services – Services for the administration of human resources, payroll, professional development (training), legal services, and information technology systems support are expected to be contracted to one or more of the participating jurisdictions. The actual costs of these services will be determined through negotiations between the governance structure of the consolidated PSAP and the individual jurisdictions or departments providing the contracted services. Costs may vary because of these negotiations.

The cost of maintaining professional accreditation (CALEA) of the consolidated communications center is not included in this budget because of the complexities of achieving accreditation for the new consolidated facility. Typically, the fees for communications center accreditation are less than $10,000 but the processes and effort to achieve accreditation are significant and could require the efforts of one or more full-time staff to prepare for and maintain accreditations. While we strongly encourage accreditation, this will be a policy decision on the part of the governance of the consolidated PSAP.

The cost of contracted services equals $353,604.

Maintenance and Support – Critical systems in the consolidated PSAP (e.g., 9-1-1 telephone system, CAD System, generators, uninterruptable power supplies and similar systems) require annual maintenance contracts to ensure continuous operations. Appropriations for maintenance and support of these systems vary depending upon the system, its size, and configuration. The final equipment needs and configurations for the consolidated PSAP cannot be determined at this early stage. Appropriations for maintenance and support are, however, are estimated to be $ $696,197 based on the most common systems contained in a consolidated communications center.

7.2. Allocation of Costs

Cost allocation is one of the most challenging aspects of consolidating PSAPs and systems. To be successful, participating jurisdictions will need to decide which factors are most important in determining an equitable allocation of costs. There are many methodologies for allocating costs used in funding similar authorities and consolidated communications centers. Some of the more popular methodologies include annual subscription fees, State Equalized Value (SEV) share, and weighted formulas.

Given the differences in mission of the Authority and a consolidated public safety communications center, a combination of cost allocation strategies should be employed.

7.2.1. Allocating Costs

A proportional method of allocating the fixed and variable costs of the consolidated PSAP is typically used by to ensure the equitable allocation of cost among the participating jurisdictions. The proportional formula method can allocate costs based on the share of certain factors associated with serving the consolidated PSAP's customers (law enforcement, fire and EMS agencies). Common factors include measures of fiscal capacity and the demand for services (or consumption of 9-1-1 call taking and dispatch services). These and other inputs are common components in many formulas; however, the manner in which they are operationalized and combined does differ.

Factors used in weighted formulas varies widely across the country. Our experience indicates that consolidated PSAPs rely on one or a combination of the following criteria in determining the weighted formula:

- Proportional Call Volumes
- Proportional Population
- Assessed Valuation
- Console Minutes
- Pay for Direct Positions
- Proportional Call Volumes

Proportional Call Volumes or Usage Based

Proportional call volume is the most frequent basis for cost allocations. It is generally regarded as the simplest criterion to explain and is representative of activity load created by each user of the consolidated dispatch services (e.g., law enforcement, fire and EMS agencies).

Data on call volume is easily obtained from 9-1-1 emergency telephone equipment and computer aided dispatch (CAD) systems. Call volume can, at times, become somewhat controversial. Different PSAPs have varying ways of defining a call for services. For example, if a public safety agency traditionally considers every emergency responder assigned to an event a call (e.g., one traffic accident could become five calls if 2 police officers, 1 fire truck, 1 rescue truck, and 1 ambulance are dispatched). Such a strategy could result in a higher use factor in the formula and, thus, an increase in the cost allocation to that agency. That agency would likely change their operations to reduce their burden in the cost allocation formula. . In some consolidations of public safety communications centers, public safety agencies have changed the way they characterize a call in order to manipulate the weighted formula in their favor.

Positive Attributes:

- Connects each partner's costs to the actual work load their service area generates for the PSAP.
- Easy to administer, assuming availability of reliable records at PSAP.

Negative Attributes

- Partner costs may fluctuate as a result of major incidents such as natural disasters. (Some PSAPs have established longer measurements intervals such as a 3 year rolling average to overcome this issue).
- Selected activities may not be the most accurate measure of work-load.
- Start-up statistics may not be comparable between jurisdictions due to differences in procedures, definitions and technology.

Proportional Population

Proportional population is also frequently used but is more difficult to apply. Agencies in areas where there are large fluctuations in populations (e.g., seasonal or daytime/nighttime fluctuations) find it difficult to utilize this criterion in funding formulas to distinguish the population and population density.

There have been numerous research studies into the effect of population (population density, population demographics and/or population socioeconomic status) on emergency services. Even though their conclusions may differ, they agree that some or all of these efforts have an impact on emergency services and, by extension, on the consolidated communications center workload.

A strong argument could be made that population should be a criterion in the formula that determines the allocation of costs. Though, we also acknowledge that agreeing on what the population is for each participating jurisdiction and how to consider population (e.g. population density or population fluctuations) will be difficult.

Positive attributes:

- Easy to administer. Based upon readily available information.
- Population component tends to provide some stability even when activity fluctuates.
- Property value introduces ability to pay into formula.

Negative attributes:

- Does not incorporate transient or seasonal populations.
- Population is not always the most reliable gauge for demand on public safety services. Regional attractions, transportation corridors, major event venues or other factors unique to a particular community may impact demand more than the population total.

Assessed Valuation

Assessed valuation can be considered a predictor of the participating jurisdiction's ability to pay its share of the costs. The calculation is based on the total assessed value of all property located within the boundaries of the participating jurisdiction (as determined by the Assessor's Office). Each participating jurisdiction's total assessed value is divided by the total assessed value of all participating jurisdictions to determine the percentage of the total valuation.

It has been our experience that municipalities have varying definitions of real property and such an assessment can be complicated by the number of incorporated cities and towns in the service area.

Console Minutes

Console minutes are usually determined by measuring the traffic of the radio system the console is controlling (similar to determining the number of calls). Measuring console time in a trunked radio system is usually done by a system management application that is part of the radio system.

Pay for Direct Positions

Pay for direct positions is a useful criterion when the consolidated communications center must provide dedicated resources to support the operations of one of the center's constituent agencies. For example, each of the participating agencies will have law enforcement and fire/EMS radio channels configured for their own use. The entire cost of operating those positions could be allocated to the partner directly. Those positions that are shared, such as call-takers, supervisors, the technical positions, receptionist, and the manager could be allocated via a formula.

Hybrid Methods

It is also common for regional partners to enact a tax levy to pay for the cost of providing 9-1-1 dispatching services, or paying a portion of the costs from a tax levy and the remaining from a use based funding formula.

Reaching a Weighted Cost Allocation Formula

The distribution of costs between participating jurisdictions in a fair and equitable manner is the cornerstone to any successful consolidation. Currently, NNPD represents over 60% of the 9-1-1 call load and their current operating budget is about 57% of the combined PSAP budgets.

Reaching consensus on how the costs of a consolidated PSAP will be equitably divided between the partners at such an early stage of the process is difficult at best. There is still many decisions that must be made and much work ahead before a final decision can be made on the allocation of costs. We believe that it is prudent for the partners, if they believe that consolidation makes sense, to appoint a budget committee that will be responsible for addressing the detailed consolidated PSAP budget and how those costs will be allocated.

8.0 FEASIBILITY EXAMINED

8.1. Comparable Service

This report is intended to examine the fundamental policy question of whether a consolidation of the PSAPs in Newport News and Hampton permits the delivery of "comparable service" at reduced operating costs. And if those costs cannot be reduced through consolidation, should consideration then be given to whether superior service can be delivered through some form of improved collaboration or renewed focus on sharing of technical systems and services.

Establishing an objective definition of comparable service has been, and will continue to be, one of the difficult issues confronting the regional partners as they debate the merits and limits of improve collaboration or consolidation. For this reason, we recommend that the regional partners consider both cost and operational advantages afforded by each scenario in determining whether or not improving collaboration or consolidation makes sense for their municipality and the region. This study provides an analysis of the business opportunity, including an examination of the possible roadblocks that may impede the cooperative success of collaboration and consolidation, and addresses the question of whether either would reduce costs and provide operational efficiencies and/or improve the delivery of services to the emergency response organizations and the citizens. The outcome of the study is intended to help the regional partners make informed decisions about their participation.

8.2. Strategic Considerations

Many local governments are considering the benefits of consolidating public safety communications centers to save money and improve services. The current fiscal environment is forcing local governments to look for innovative ways to do business. Less funding is available at the federal and state levels and local revenue sources are constrained because of the current economic slowdown. Pressure from increasing operational costs such as health benefits, energy costs, and technology costs are growing faster than local tax bases can support them. And the added pressure of constituents that are also demanding more and better services are all forcing government to find innovative ways to provide more efficient services and better costs.

Consolidation of public safety communications centers is one way for local governments to act more proactively in meeting the challenges of providing better services more efficiently. Consolidation, when executed in a carefully planned manner, can offer many benefits including: improved regional decision making, improved interoperability, enhanced service delivery, resource sharing, standardized technology usage, more efficient procurement and contracting, and increased efficiencies in upgrading infrastructure and equipment.

Those stakeholders from the participating municipal governments and the public safety agencies in the region must be aware of common strategic issues that can become barriers to consolidation if not properly addressed. The following represent some of the more common issues seen in consolidating PSAPs and many of which were raised during our interviews. This report attempts to answer all of these questions.

How will consolidation affect local autonomy?

Many public safety agencies considering consolidation of services raise concerns over the loss of local agency autonomy. Law enforcement, fire and EMS agencies often believe that the delivery of their services is so unique that no one else could provide the same level of dispatching services.

Local agency autonomy and flexibility must be respected in the design and governance of a consolidated communications center. In this plan, local agency autonomy is ensured through a carefully planned governance structure and through service level agreements and operational policies.

How will consolidation of 9-1-1 and dispatch functions transform service delivery and constituent engagement?

The way in which public safety services are delivered is a concern of public safety and government leaders. The consolidated PSAP will play an integral role in the delivery of these services. How well the consolidated PSAP performs is dependent on the delivery of services that are of high quality, delivered by well-trained professionals who respond to the public's needs and the needs of its constituent agencies quickly and effectively.

The delivery of quality services by highly trained communications professionals is incorporated in the framework for the consolidated PSAP. Ensuring that the public's needs and the needs of public safety agencies are addressed quickly and effectively are incorporated into the governance structure of the consolidated PSAP.

Will Consolidation Save Money?

While cost savings are possible, there are two important points to consider. First, not all consolidations will result in significant cost savings. A common misconception is that consolidating public safety communications will result in large reductions in staff. Experience has taught us that consolidations do not normally result in large staff reductions. Many public communications centers often suffer from sever understaffing conditions and are unable to maintain high grades of service delivery required. They often don't have the specialized technical staff needed to operate and maintain specialized systems in the PSAP. Real cost savings typically result from the elimination of redundant and expensive technology systems such as computer aided dispatch systems (CAD), 9-1-1 systems, logging recorder systems, and radio dispatch systems. The reduction of procuring, operating and maintaining separate systems can be significant.

Second, where cost savings through consolidation are achievable, the actual realization of the savings may not occur for several years. The process of consolidating PSAPs can be expensive and generate substantial one-time start-up and capital costs for a facility and technology needs. These costs can delay any actual cost savings.

How Will Accountability be Ensured?

The potential for meeting government, public safety, and the public's needs when agencies participate in a consolidated PSAP depends, in part, on how clearly the expectations of service

delivery and performance are defined. A successful consolidation must incorporate standards for accountability that are built into the tools that are used in forging the relationship among constituent agencies. That is, the plan for consolidation must incorporate discussions about mutual expectations and the contracts, reports, audits and one-to-one contacts that reflect those expectations. This consolidation plan incorporates accountability at two levels: hierarchical accountability; and mutual accountability.

Hierarchical accountability occurs at the government level through laws establishing regional municipal government governing bodies. This forms the primary governance structure. Mutual accountability is achieved through the establishment of service level agreements between the consolidated PSAP and its constituent agencies, adoption of formal procedures and practices agreed upon by constituent agencies, adoption of formal processes to investigate and mitigate grievances and by regularly reporting performance against agreed upon service levels.

How will the Harmonization of Labor Arrangements and Costs be Addressed?

Consolidations sometimes lead to higher human resources costs because it produces larger organized labor forces and requires the harmonization of labor arrangements that tend to incorporate the highest compensation and benefits rates and the least productive work rules.

The impact of reconciling differences in these labor arrangements will be minimized by ensuring that the human resource needs of the consolidated center are carefully planned with the involvement of human resource specialists and government managers.

8.2.1. Consolidation Objectives

The following objectives are important factors in considering the feasibility of consolidating the PSAPs of the Cities of Newport News and Hampton from the current two centers to a single consolidated public safety PSAP utilizing common systems and serving multiple law enforcement, fire and EMS agencies.

1. Improved Service Levels
    a. Reduction in the time necessary to process incoming 9-1-1 calls and the transferring of 9-1-1 calls between PSAPs, resulting in faster processing, dispatching of emergency responders, and response times, as well as reducing the potential for dropped calls, information loss on transfer and confusion to the callers.
    b. Improved and more consistent service levels and standard operating procedures (SOPs) across the region.
    c. Improved quality of service by increasing capacity to handle emergency call traffic and to support law enforcement and fire/EMS dispatching needs more efficiently.
    d. Improved utilization of staff and workload levels, reducing staffing fluctuations caused by time off, illness, or other absences, creating an opportunity to provide sufficient staff to provide Emergency Medical Dispatch and support for other critical dispatching activities.

2. Cost Savings through Economies of Scale
    a. Coordination of support activities such as training, public education, common technology systems (e.g., CAD, 9-1-1, GIS standards, etc.).
    b. Implementation of standard technology platforms and shared infrastructure, uniform implementations and/or upgrades
    c. Achieve long-term cost efficiencies from eliminating duplication of expensive technology purchases and/or upgrades and duplication of operations and maintenance costs.
    d. Potential reduction of costs associated with the number of 9-1-1 circuits needed.
3. Improved Interoperability
    a. Improvement in the coordination of emergency response and the effectiveness of inter-agency communications.
    b. Improved records and information sharing between participating agencies
    c. Enhanced resource management during large-scale multi-agency/multi-jurisdictional response incidents from a single point of control.
4. Equity and Fairness in the Process and Outcomes
    a. Strong governance structure that assures equitable representation and inclusion in the decision-making processes.

8.2.2. Consolidation Approach

Legislative Impacts

There does not appear to be any legislative impediments to consolidating the NNPD and HPD PSAPs. The Commonwealth of Virginia permits the organization of special service authorities, which are approved by the Virginia General Assembly. Subject to the provisions of the Act, the special services authority board is given all powers necessary or appropriate to carry out the purposes of the Act and the business of the Authority.

Even though the State is allowing the issue of consolidation to grow organically, the national trend is to legislate consolidation of PSAPs. Although, Virginia is forced to deal with Next Generation 9-1-1 and the services necessary to support that, they come to the realization that there will be more competition for the wireline and wireless surcharges currently being collected. States are beginning to realize that if they encourage or legislate consolidation, competition for available funding is reduced by an overall reduction in the number of PSAPs in a state. Virginia is not contemplating legislatively mandating the consolidation of PSAPs within the Commonwealth.

Consolidation Models

The form of consolidating PSAPs varies throughout the United States and there is little scholarly guidance available describing accepted or best-practice forms of PSAP or public safety communications center consolidation. While most municipal consolidation efforts focus on combining multiple municipal governments or services (e.g., school districts, public service authorities, police departments, fire departments) into a single government or service serving

multiple municipalities, consolidation of PSAPs and public safety communications centers can take different forms.

We acknowledge that the regional stakeholders in Newport News and Hampton have discussed and have formed some initial impressions of consolidating the two existing PSAPs into a single PSAP serving both municipalities. The consultants were, however, tasked with examining two primary alternatives: improved regional collaboration and a consolidation of the two PSAPs. The following describe these two alternatives and some of the benefits and risks associated with each.

There are a number of advantages and disadvantages associated with consolidation. These include:

Advantages

- A more cost-effective solution due to potential for sharing capital and operations and maintenance costs of technology systems and facilities.
- Improved staffing capabilities, training and standard operating procedures.
- Reduction of duplicated services and unnecessary redundancy.
- More efficient response to all emergencies and improved situational awareness for emergency responders through improved information sharing.

Disadvantages

- Higher start-up costs associated with facility construction or modifications, new technology purchases, initial training, harmonization of pay and benefits among PSAP staff, etc.
- Lack of political support to close existing dispatch centers.
- Potential reduction in back-up and disaster recovery due to consolidation of all operations in a single facility. Requires careful continuity of operations and disaster recovery planning.

It is, we believe, also important for a fully consolidated PSAP to support a strong service culture. Research as indicated that organizations that promote a strong service culture tend to have customers that perceive that they receive generally superior service and the employees of the organization experience positive outcomes. Law enforcement, fire and EMS agencies being dispatched by the consolidated PSAP must have input into the SOPs used to dispatch their responders and have some reasonable assurances of how these services will be developed through customer service agreements.

8.2.3. Improved Collaboration

There are already deep relationships existing between the two PSAPs that are based on similar needs for emergency communications and public service. Both have aligned themselves for mutual aid support and interoperability. There are, however, ways the two PSAPs and municipalities can improve collaboration that will enhance daily operations and provide for better backup and continuity of operations for both PSAPs. Doing so will improve operations and reduce costs.

For the purpose of this report, improved collaboration means the sharing of this infrastructure or technologies with distributed, local operation of the shared systems including CAD, E9-1-1, logging recorders, GIS systems, RMS, and radio systems. Like consolidation, improving collaboration can lower costs by reducing or eliminating redundancy and duplication of effort, in which the two PSAPs carry out similar or identical tasks.

Today, each PSAP currently owns, operates, and maintains their own technology systems (9-1-1 system, CAD, RMS, logging recorders, GIS systems, and land mobile radio systems), and they undertake their own support of these systems. Additionally, each PSAP undertakes its own recruiting and training of its own employees. Such duplications are costly and unnecessary.

Some form of a collaborative arrangement of collaborative arrangement can be derived in which each PSAP, remaining a separate entity, can configure and operate on each of these systems just as if it were their own private system (virtual systems) but can share the capital and maintenance costs of the system with other participants. Because they are common platforms, the sharing of data across users is easier and more efficient.

The 9-1-1 system is a good example of the ability to virtualize individual service but allow for interoperation. A shared 9-1-1 system can route 9-1-1 calls to the individual PSAPs just as the separate systems do today. But at times when staffing may be short or there is a transient increase in the number of incoming 9-1-1 calls, the system can be configured to divert 9-1-1 calls going unanswered in the busy PSAP to another PSAP on the network. This allows for the prompt answering of 9-1-1 calls and, if the participants are sharing CAD and other systems, that call can be taken at the secondary center and entered into the CAD system, which sends the call back to the proper PSAP for dispatch.

Outside of virtualizing technology systems, an improved collaboration scheme can also include the sharing of other essential services such as training, quality assurance measurement, GIS maintenance, technology system maintenance, public information and education, and even SOP development.

The advantages and disadvantages of this a greater collaboration model include:

Advantages

- Potentially a more cost-effective solution due to sharing of capital and operations and maintenance costs associated with technology systems and through some personnel reductions.
- Improved back-up and disaster recovery capabilities through separation of physical locations. Assumes that individual PSAPs are planned with excess capacity to host affected PSAP in a continuity of operations situation.
- Less costly than undertaking a major facility renovation or the construction of a new facility.
- Shared technical support and shared systems may increase interoperability and situational awareness.

Disadvantages

- Duplication of dispatch personnel and supervisory/management staff.

- Network (cyber) security concerns.
- Increased costs for an appropriately sized and scalable broadband network to interconnect facilities.

8.3. How will Consolidation or Improved Collaboration Affect Public Safety

There is one thing that is certain; neither consolidation nor improved collaboration will affect the volume of calls for law enforcement, fire or EMS received. Call-takers will continue to answer calls and emergency responders will be swiftly dispatched.

Either scenario will provide an opportunity for the cities to act more strategically in the delivery of 9-1-1 call-taking and the dispatching of emergency response organizations at significant cost savings. Both will offer more redundancy in critical emergency communications systems and improve the capacity of continuity of operations.

One of the major concerns express over the idea of consolidating PSAPs is the need to maintain "officer/responder safety". Such concerns are typically the result of the feeling that PSAP staffs develop personal relationships with local emergency responders and develop greater geographic knowledge of the service area. Consolidation would break-up the bond developed between PSAP staff and emergency responders, and staff will not be familiar with the service area thus diminishing officer/responder safety.

These are among the most frequently invoked arguments in any early discussion about consolidation. We know of no conclusive research that shows that appropriately trained and managed personnel in consolidated PSAPs cannot or are incapable of providing effective support with the same care an attention as personnel in standalone PSAPs. The argument is further diminished by the simple fact that standalone PSAPs routinely hire new staff that have no specific knowledge of the service area nor have they built close personal relationships with emergency responders. Both will develop over time.

We cannot, however, ignore the simple truth that consolidating two PSAPs will create some knowledge gaps and that staff from NNPD could not easily sit down at a HPD dispatch channel and work as effectively as a HPD employee or vice-versa. Consolidation would likely see NNPD and HPD staff assigned to familiar radio channels. New staff hired will not have these institutional barriers and will work all areas of the PSAP. A full transition to a seamless PSAP will occur over time.

In the final analysis, the 9-1-1 call-taking and dispatch of emergency response agencies will improve and emergency responders will notice no significant changes in the way they are dispatched or supported during the emergency event.

9.0 GOVERNANCE

9.1. Governance is Key to Regional Interoperability

Administration of shared public safety services and systems that improve regional interoperability requires the collaboration and participation of public safety stakeholders in the region. Creating the capacity to work collectively among and between agencies, levels of government, and a variety of disciplines means overcoming established barriers to cooperation. Representatives of the various agencies, disciplines and levels of government must come together to formulate and agree on a unified strategy for achieving interoperability.

Barriers to cooperation are not exclusively technical issues that can be addressed by purchasing and installing compatible communications systems. To the contrary, planning for and implementing integrated interoperable systems is a complicated process that involves an array of political, organizational, legal, technical, cultural and personal issues that must be addressed and agreed upon. Because of the inherent complexity of these issues, a formal organizational structure is a necessary first step to ensure that the principal participants, stakeholders and users are intimately involved in the process.

Defining a governing body that establishes a mission, membership, decision making, structure and direction is one of the key components to planning and implementing a successful interoperability strategy in a region. The governance structure ensures a place at the table for all relevant agencies and users, and formalizes and upholds equality or representative roles in decision making. It is the vehicle through which agencies, stakeholders and users participating in or using interoperable systems:

- Articulate a united vision and determine the scope and focus of interoperability
- Identify legal, policy, administrative, funding and technical requirements and any obstacles to achieving interoperability
- Garner support from other local, regional, state and federal decision makers
- Monitor planning, implementation and management activities
- Define interoperability requirements
- Oversee systems acquisition
- Resolve obstacles to implementation
- Review system performance and make recommendations concerning systems improvements, enhancements, and next phases

9.1.1. Governance Structure

- Local governments working together to improve interoperability have structured their governing bodies in different ways, such as interlocal agreements, contracts, and legislatively. The U.S. Department of Homeland Security provides guidance in interoperability governance through the SAFECOM program. SAFECOM identifies the following three components of interoperability governance:

- Governing Body
- Authority
- Partnerships

9.1.2. Governance Model

Governance relates to decisions that define expectations, grant power, and verify performance. For the consolidated PSAP, governance is consistent management, cohesive policies, processes and decisions for 9-1-1 dispatch and interoperable communications services throughout Newport News and Hampton.

Virginia Code provides for the establishment of an independent entity created pursuant to statutory authority for the purpose of enabling local governments to cooperate in the exercise of government functions within the framework of the statutes.

This section of the report examines the use of an established entity (for example: a Public Safety Communications Authority) for the purpose of providing governance for a consolidated PSAP. While our study is not intended as a legal review, we did examine relevant sections Virginia Code and the formation of a Regional Communications Authority will enable the Cities to create the primary governance structure for a consolidated PSAP.

Governing Body

It is assumed for the purposes of this discussion that the powers of a Public Safety Communications Authority will be vested in members of an Executive Committee or a Board of Directors that is composed of a representative membership of the founding partners. Representation can be along lines of "one member-one vote", weighted differentially based on population or other parameters, or otherwise determined based on agency/membership representation and/or affiliation identified in the AUTHORITY charter or enabling agreements.

We further assume that the AUTHORITY will also include a variety of policy committee and support groups that will focus on specific issues of concern. Figure 9 is a conceptual model of our vision of the AUTHORITY and how it could relate organizationally to the consolidated PSAP.

A consolidated PSAP Task Force under the direction of the Executive Committee or Board of Directors will be responsible for establishing a shared vision and the collaborative decision-making of the consolidated PSAP. Representation on the PSAP Task Force will be determined largely by final decision of the form of representation of the Executive Committee or Board. Representation can include all of the chief officers of the law enforcement and Fire/EMS agencies from the regional partners or can include selected representative members from law enforcement, Fire/EMS, county officials, and others as may be desired.

Sub-committees or working groups of the consolidated PSAP Task Force will be responsible for advising the task force on policy and operational issues related to their specialty areas. Representation on these subgroups typically includes technical and operational experts from the represented agencies and ad hoc members with expertise in specific areas.

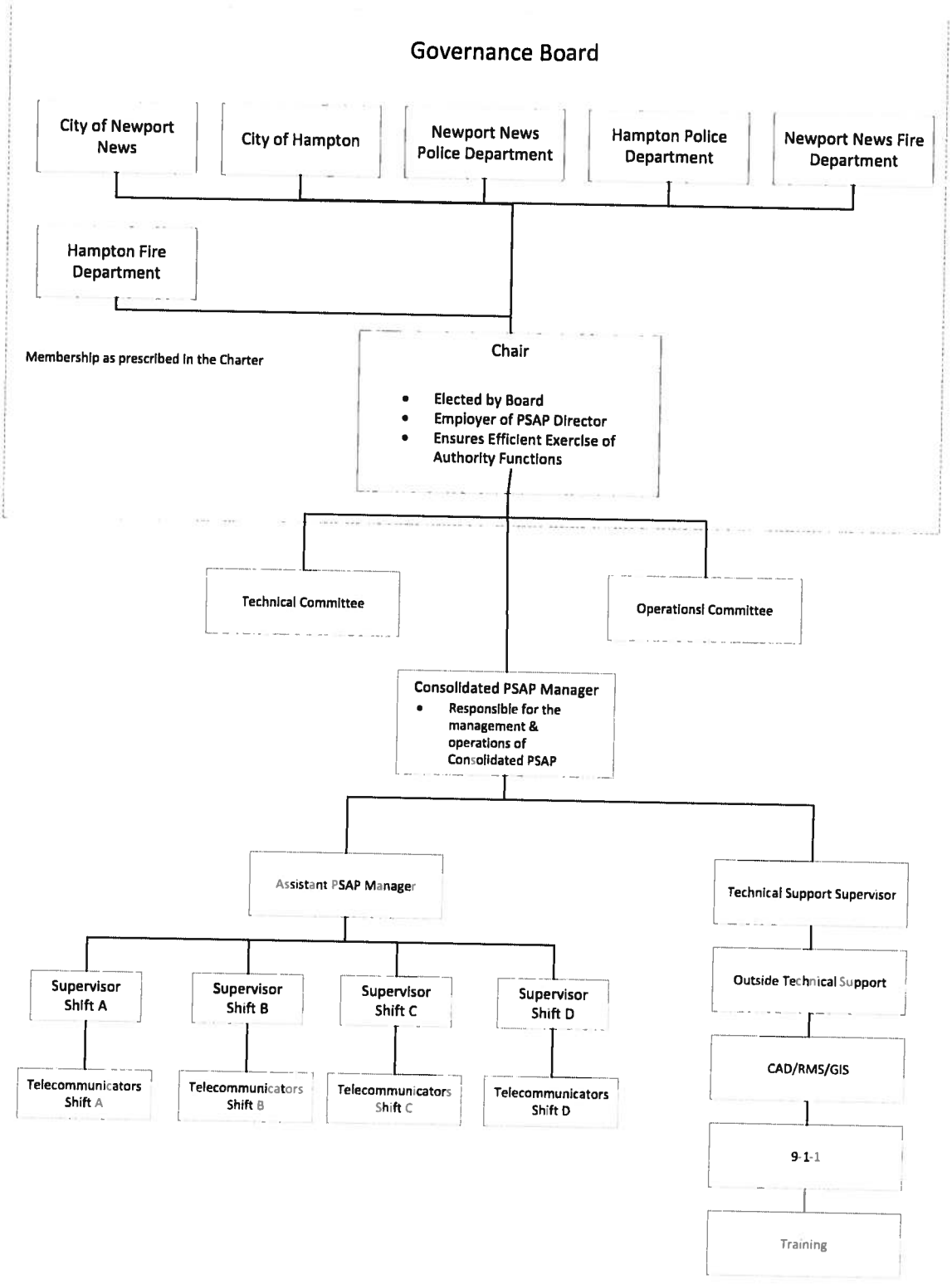


Figure 9 - Conceptual Governance Model

Roles and Responsibilities

The Authority Executive Committee or Board will face numerous issues during the planning, implementation, management and future enhancement of interoperable communications systems and the formation of a consolidated PSAP. Key issues that must be addressed include on-going strategic planning, organizational forms and structures, leadership and decision making, division of roles and responsibilities, addressing conflicts and issues, ensuring proper participation from stakeholders, and evaluating process and their impacts.

Much of the specialized work of the Authority will be accomplished by board committees. Board committees are used as a means to provide highly focused advice and recommendations about specific program activities.

The Authority, by resolution, may designate one or more committees. Committee membership shall be chosen from among the member political subdivisions or other such organizations or groups designated by the Board. Committees may be formed:

- When it is apparent that issues are too complex and/or numerous to be handled by the entire Board
- To support ongoing, major activities; for short-term activities, or as ad hoc committees that cease when their specific activities are completed
- To recommend policy for approval by the entire Board

The PSAP Manager should be a full-time position that is responsible for the administrative and managerial work overseeing the daily needs of the consolidated PSAP. This includes: supervising lower-level supervisors, determining proper staffing levels, ensuring proper training and continuous education actives, coordinating with various working groups of the Authority and stakeholder emergency response agencies, implementing standard operating procedures, and monitoring quality assurance and other standards related to the consolidated PSAP. The PSAP manager will answer to the Authority Chairperson.

Partnerships

The Authority is a unique collaboration between local governments, public safety agencies, non-governmental organizations, and the community. It is a multi-faceted partnership attuned to local needs and environments.

By maintaining strong partnerships across the region and the state within this interoperability framework, the Authority and consolidated PSAP fulfills its mission of promoting optimal interoperability.

10.0 KEY FINDINGS AND NEXT STEPS

10.1. Introduction

This study assesses the feasibility of improving collaboration between the two PSAPs and consolidating both PSAPs into a single consolidated PSAP. While feasibility must ultimately be determined at the each regional partner, this study shows that consolidation of the two PSAPs is feasible, but there is still a question of whether consolidation is advisable.

Consolidating PSAPs, or finding ways to improve the efficient delivery of dispatch services, creates an opportunity to act more strategically to achieve important new benefits that probably cannot or have not be achieved without consolidation. These benefits include:

- A single comprehensive strategy for dispatch services
- Ongoing public confidence and support
- Improved operational policies and practices
- Provision of services not already provided
- Improved accountability and quality
- Technical systems flexibility
- Long-term efficiency and cost containment
- Improved performance
- Larger, more fully dedicated staff pool
- Career paths and diverse opportunities for staff
- Standardized and enhanced training
- Improved interoperability among agencies
- More rapid and efficient integration to new technologies

There has been a growing emphasis on consolidating public safety answering points and communications centers for several years as a way of reducing costs. Sparked by the continual decreasing trend of landline funds, the immergence of NG9-1-1, and increased dependency on advanced technologies, government leaders are looking for ways to control costs while maintaining or improving emergency service delivery. Much of the emphasis for consolidating PSAPs has been brought on by entities looking for ways to make dollars received from regular telephone and cellular telephone 9-1-1 service fees go further.

Too often cost savings from consolidating PSAPs is measured in the reduction of staff. More often than not, we find the opposite to be true. While not true in this case, the optimal use of existing staff will require further examination and there are other challenges that must be factored such as harmonizing the pay and benefits of human resources involved in the consolidation, which could result in higher personnel costs overall.

Still, there are still many significant ways that improved collaboration or consolidation can benefit a community. We have seen many cases where PSAPs simply don't have staff to provide essential services to basic standards. Consolidation enables them to provide better services to the community and to the emergency responders they serve. There is also a benefit in the cost containment and cost efficiency in technology systems through consolidation. Reducing the number of expensive technology systems such as radio systems, 9-1-1 call handling software, logging recorders, network design and others, have dramatic and immediate effects in reducing costs. Additionally, savings are typically achieved through collaboration efforts related to CAD, RMS and GIS support services. Fortunately, DPMS and PCSO have already moved forward in achieving efficiencies in these specific areas.

For many decision makers, the decision to consolidate incorporates a full examination of the benefits of consolidation and the cost of consolidation, both short and long term.

10.1.1. Benefits of Improved Regional Cooperation and Consolidation

From a service perspective, both the NNPD and HPD PSAPs are providing adequate services to their citizens and the public safety agencies in their service areas. We found no evidence of any of the PSAPs customers expressing dissatisfaction with the 9-1-1 call-taking and dispatching services they provide.

Both PSAPs struggle to maintain adequate staffing levels and both agree that it is difficult to recruit, train and retain staff to maintain adequate staffing levels. Both alternatives will provide an opportunity to address these deficiencies by properly planning the number of call-takers necessary to achieve a recognized service level standard.

We believe that the greatest benefit of consolidation of these PSAPs is the potential for cost and performance savings from shared technology systems and in providing a more robust and reliable facility for emergency communications. . Currently, each center purchases and maintains their own logging recorder, 9-1-1 call handling system, and radio network equipment. In addition to the capital expenses associated with purchasing these systems, each department must pay expensive maintenance agreements to maintain the system throughout its lifecycle. Consolidation would eliminate the duplication costs of purchasing and maintaining separate systems, including support staff.

Today's systems are based on technologies that permit the sharing of infrastructure between the two PSAPs. This flexibility enables the two PSAPs to take advantage of technology costs savings in a scenario of greater collaboration or in a consolidation.

Neither of the two existing PSAPs are well suited to support the workload that is anticipated to come from the next generation of public safety communications. Next Generation 9-1-1 and public safety broadband systems will provide a conduit for much more information flow into and out of the PSAP. This increased workload will likely require additional staff and newer types of consoles to effectively operate.

These new technologies provide an additional opportunity for the law enforcement agencies to take advantage of greater information and situational awareness. Many law enforcement agencies are now considering adding real-time crime centers to broaden their situational awareness and to

aid in planning. Because the PSAP will be the primary information hub, it becomes the logical place to house the real-time crime center. Neither of the two PSAPs have sufficient space to accommodate such operations.

10.1.2. Challenges of Improved Coordination and Consolidation

It is clear that the both PSAPs have a successful record of cooperation and mutual assistance. Still, greater coordination or consolidation will bring many challenges. Public safety communications centers operate in a complex and highly stressful environment, and they must satisfy the needs of the multiple stakeholders they serve: the public, law enforcement, fire, EMS and others. To be effective, the changes to the status quo must come with the recognition that new ways of collaborating or consolidating these PSAPs must be executed in a complex social, political and organizational environment.

During our interviews and site visits, we experienced the typical environment of any public safety communications center – the equipment, terminology, and processes of taking 9-1-1 calls and dispatching law enforcement responders. But there are also strong local flavors that are unique to each PSAP. A culture of customer service is evident in both PSAPs and stakeholders that were interviewed stressed how important it was to their operations. Some fear that consolidation would prevent them from providing the same level of personal service to a new group of customers.

As may be expected, some amount of reluctance was expressed in our interviews of communications center frontline and support staff. The concerns and issues express centered on the reduction in customer services, the dispatchers' knowledge of the area, relationships with local law enforcement, fire and EMS responders, and a significant reluctance in the potential for loss of jobs.

Preparing for merging the organizational cultural differences between communications centers into a single consolidated center is difficult and must be considered in consolidation plans. The truth is, it can take years for these subcultures to adapt and form in a consolidated environment. Both organizations must consider and plan for cultural changes.

In addition to the cultural changes that will occur as a result of consolidation, the PSAPs must also consider the impact to departmental operations. Removal of the 9-1-1 call-taking and dispatch functions to a consolidated center outside of their current locations would likely not even be noticed by any of the fire, EMS, county and state agencies that have little (if any) physical day to day interaction with PSAP personnel. It is, however, the ancillary functions that these centers perform for their respective departments that will be noticed. This will be particularly evident for HPD where public safety communications center staff are often assigned to the Police Records Section information window at the Police Department. HPD will have to accommodate for the loss of staff due to consolidation.

Consolidation also impacts continuity of operations in the region. Each PSAP currently backs up the other in the event of a catastrophic failure. In reality, neither of the existing PSAPs are well suited for long-term use as a back-up facility but consolidation will effectively eliminate current back-up arrangements. The regional partners will have to address continuity of operations either through agreements with other PSAPs or jointly creating a back-up facility.

Improving collaboration can overcome challenges associated with procuring, operating and maintaining technical systems. If properly planned and supported by policies and procedures, collaboration can help to improve the level of service by balancing the 9-1-1 call loads, and improving the information exchange on call transfers. But such practices can also result in increased animosities between PSAP staffs especially if the greater call load of Newport News is regularly overflowed to Hampton, effectively increasing their workloads.

10.2. Conclusions and Next Steps

10.2.1. Conclusions

Our study concludes that it is feasible to improve the level of emergency communications services through either greater collaboration or consolidation. While implementing a strategy of greater collaboration will save significant money on the purchase, operations and maintenance of costly technical systems, and perhaps will improve the speed of answering of 9-1-1, it does not overcome the significant challenges that the vulnerabilities of the PSAPs.

Consolidation offers greater opportunities to address the deficiencies described in this report and to improve the level of service to the citizens and emergency response agencies that rely so heavily on a professional PSAP. Further, we believe that consolidation is the best path to providing a solid foundation for more easily addressing next generation public safety communications technologies that are rapidly advancing. Both communities will benefit from significant cost savings resulting from operating and maintain a single PSAP, greater interoperability, less risk, and more flexibility that consolidation will bring.

The many challenges of each option can, we believe, be overcome with diligent planning and strong communications among municipal and public safety leaders and PSAP staff. These next steps will provide guidance for the regional partners in choosing a path and how to navigate the chosen path.

10.2.2. Next Steps

While written in a general context, these steps are relevant to options being considered by the jurisdictions participating in this feasibility study. The following outlines a number of steps that partners should consider as they move toward a decision and ultimate solution:

- Obtain commitment from those interested to pursue one or the options of improving collaboration or consolidating PSAPs.
- Develop a working group to guide the next steps.
- Agree upon a governance, legal, and operational structure that addresses leadership, organizational structure, and financial needs and abilities of the chosen option.
- Identify a structure for financing capital and operational costs. If costs will be share, determine what types of costs will be shared among participants and in what proportion, and select a formula for allocation of costs.
- Determine facilities, location, and equipment.

- Address organizational and human resource issues.
- Prepare and approve agreements and/or necessary governance documents.

Commitment

The partners should seek commitment from their respective governments to either create a structure of greater collaboration, the consolidation of the two PSAPs, or to maintain the status quo. This commitment can initially be formal or informal. At this early stage, a verbal commitment may be the only commitment necessary. Once some of the other technical, financial and operational issues are worked out, a more formal resolution or other commitment can be sought.

Implementation of a Working Group

An implementation working group should be formed to provide leadership and guidance to the process. This group should meet on a regular basis to ensure the project is moving forward and to make recommendations on how the organization will be equipped, governed, structured and financed, and where it will be housed. The group should be representative of the participating entities. Depending on the governance structure selected, the working group may have a continuing role in the organization after it is operational. The working group should address or make recommendations in the following areas: financial, legal, human resources and labor relations, organizational/structural, and facilities and equipment. It is highly recommended that subgroups containing the requisite expertise be formed around each of these topics.

Governance Legal, and Organizational Structure

Establishing the structure of improved collaboration or a consolidation is a critical step toward a successful effort. Several alternatives are available for governance and a legal framework. They vary in complexity and strength. The governance decision should incorporate consideration for representation, legal strength of the agreement, duration of the relationship, funding mechanisms, and the extent of the body's governing authority.

Financial

Many financial considerations will need to be addressed by the working group, not the least of which is determining how it will be funded and the equitable distribution of costs amongst the partners. Funding options will vary depending upon which options is chosen.

If greater collaboration is chose, then the financial considerations can focus primarily on how capital, maintenance and operational costs will be allocated between the partners. Other considerations, depending on who greater collaboration is configured, could include addressing additional costs such as increased call-taker staff, technical expertise, and facility costs.

The working group or a subcommittee should also investigate how 9-1-1 surcharges and other available grants could help to offset the capital or operational costs of technology systems, personnel or facilities. If grants are available, a determination will have to be made as to which of the participating jurisdictions will be the applicant and associated agreements on how those funds will be used and how any match will be divided amongst the partners.

If consolidation is chosen, the working group or a subcommittee will have to develop an operating (including staffing) budget based on then current data available. It will also need to develop a capital budget based on current needs with input from technical and other committees. This will include the costs of building, operating and maintaining a new consolidated facility.

Once cost estimates accurately reflect the anticipated operating, staffing, and capital costs for the consolidated PSAP, the working group or its subcommittee will need to develop a funding formula to equitably distribute the costs amongst the partners. Consideration will have to be given to how 9-1-1 surcharges will be used and whether or not there are available grants that are applicable to the project.

Facility, Location and Equipment

For the consolidation option, the working group should appoint a subcommittee to conduct a comprehensive examination of the space needs for a consolidated PSAP. This will likely involve hiring an architect to develop an architectural space plan. This will provide a more in-depth look at the specific needs for a consolidated facility. Consideration must also be given to the location. This report describes an existing facility that may be suitable for a consolidated PSAP and potential land that may be available upon which to construct a consolidated PSAP. The choice of a location will influence the building design and the ultimate cost of the project. The architectural firm can also provide guidance in this area.

The working group should appoint a subcommittee that is comprised on the technology representatives from each of the PSAPs and the Newport News and Hampton IT departments to evaluate and prepare a plan for the technology systems. In either scenario (greater collaboration or consolidation) the technology systems will be shared and the main operating components of these systems should be constructed on a redundant and protected topology. This will inevitably require the distribution of network components between multiple connected data centers.

Organizational and Human Resource Issues

There are a number of organizational, human resources and labor relations issues that will need to be addressed. Decisions must be made regarding the management structure of a scheme for greater collaboration or of the consolidated PSAP.

The first decision is what the management structure will look like. A greater collaboration scheme might only require a policy board governance structure but a consolidated PSAP will require core management and technical responsibilities. Some of the core management functions are currently in place in the existing PSAPs. For example, there are existing civilian PSAP managers, supervisor staff, and technical staff available. Decisions will have to be made on what positions will be necessary for a consolidated PSAP and how those positions will be filled.

When addressing staffing costs, levels, and duties, union employment contracts must be considered. There are presently two unions that represent PSAP personnel in the two PSAPs. This process can complicate or slow a consolidation process as it is unlikely that representation of a consolidated PSAP staff will be accomplished by multiple contracts. A single labor agreement will need to be negotiated. Consideration should be given to involving or negotiating with the unions early in the consolidation process.

A final determination of the number of positions and their duties will have to be made. This includes the decision whether or not to strive for a recognized standard for answering 9-1-1 calls, whether or not to deploy standalone call-takers, how radio positions will be deployed (e.g., regain the current configuration of law enforcement and fire dispatch positions or alter their deployment).

A decision on if shift supervisors will be utilized and whether or not they will be working supervisors. How supervisor vacancies will be filled will also have to be addressed. Will the consolidated PSAP employ enough supervisors to allow for their relief by a supervisor or will an experience dispatcher serve as an acting supervisor in the supervisor's absence.

New positions such as the Technology Systems Specialist will have to be considered. This person will need specific talents in working with computer systems, mapping and geographic data files, radio systems, telephone systems, CAD, and RMS systems. This position is only necessary if consolidation is the chosen method. Both cities IT departments will also play a significant role in the management of these systems, whose involvement must also be considered.

Agreements/Governance Documents

Much of the efforts described above will lead to a more detailed plan that will result in some form of a legal agreement between the regional partners. This may take the form of a simple resolution and agreement between the parties or the formation of some form of special authority or quasi-governmental organization that is responsible for the management of the consolidated PSAP. In either case, this will lead to the formal definition of the organization, its mission and goals, representation, powers and duties, finances and other formal agreements for the operation of the consolidated PSAP.

A consolidation solution will also require additional effort in combining or creating specific policies and procedures. These can be driven by existing policies and procedures but must be modified to fit the unique characteristics of the consolidated PSAP and the labor agreement. Policies and procedure for 9-1-1 call-taking and dispatching will also have to be harmonized and created for the consolidated center.

Call-taking and dispatching protocol development will benefit by the establishment of subcommittees comprised on the user community. Law enforcement representatives should be included to solicit appropriate input concerning law enforcement policies, and fire representatives to help craft fire dispatch policies. For the consolidated PSAP to be effective, it will have to serve multiple agencies, each wanting some degree of input into how their emergency responders are served. Seeking their guidance and input during the procedure development will go a long way towards building consensus and will help to eliminate conflicting or multiple procedures for the same event type.

Accreditation

The working group should also consider how consolidation will affect the existing Commission on Accreditation of Law Enforcement Agencies and APCO International accreditation. Making such extensive changes in the way these PSAPs operate in collaboration may require significant effort to update policies and procedures and require another site visit.