

## **APPARATUS STAFFING**

### **APPARATUS STAFFING GENERALLY (continued)**

The successful completion of critical tasks during emergency fire and EMS operations has a direct impact on the overall success of incident mitigation (e.g., fire suppression and patient medical care) and upon the level and quality of service delivery to the public. Fire and EMS tasks must be completed in a timely and safe manner.

For reasons of economics, there are few fire rescue departments in the United States which operate with the optimum apparatus staffing (e.g. 5 or 6 firefighting staff members on engines and ladders). The actual number of firefighters and officers available to staff the fire rescue department apparatus will ultimately be a municipal policy decision, and reflected in the fire department's budget allotment for personnel. The fundamental policy decision must determine how many firefighters and officers are to be on duty for each fire and EMS company (engines, ladders, heavy rescue squads, and rescues) every day.

### **Firefighter Utilization**

One might assume that if there are three personnel on an engine or truck, all three of those personnel are available for interior fire attack when they arrive on the scene of a working fire. That perception is not accurate since, most often, the unit driver must remain with the unit to operate the pump, the aerial ladder or set up equipment to support firefighting operations.

In a real situation, using engine operations as an example, the following are the functions initially performed by a crew of three:

#### **Driver/Operator**

- Sets and operates the pump
- Develops water supply
- Provides equipment to part of building
- Relays radio communications
- Guides apparatus placement for incoming units

## APPARATUS STAFFING

### APPARATUS STAFFING GENERALLY (continued)

#### Officer

- Provides initial incident command
- Sizes up the incident
- Performs circle check of building
- Directs crew of one in interior attack
- Is part of two person interior fire attack crew
- Handles radio communications for crew
- Provides interior command as necessary

#### Third Person

- Lays out supply line
- Pulls and advances hand lines
- Begins interior fire attack with officer as crew of two

This example presumes that there are no immediate incident complexities such as medical or rescue emergencies. A similar example could be outlined for the staffing of a ladder truck.

The purpose of this discussion is to point out the justification of staffing engines and ladder trucks with three personnel as the absolute minimum. Personnel on units staffed by one or two personnel cannot function as independent crews on the scene of emergencies. Personnel responding on units staffed by one or two personnel must join up with other personnel from other units, after arriving on the scene, to develop crews for a fire attack.

Unit staffing of one or two fire fighters may seriously hinder successful fire attack operations, in addition to creating significant safety risks for firefighters and increased liability exposure for the fire department and the Town.

For these reasons, the Study Team suggests that the Town and NPFDP deploy no fewer than a total of three to ensure proper unit staffing of engines and ladders.

## **APPARATUS STAFFING**

### **APPARATUS STAFFING GENERALLY (continued)**

Staffing levels should be carefully monitored, with optional firefighter and officer absences (vacation leave, etc.) being controlled in order to maintain minimum staffing levels and assure that an excessive number of personnel are not authorized leave at the same time. This staffing data is invaluable in assessing the level of service.

### **Rescue Staffing**

The minimum staffing of rescue units providing pre-hospital basic or advanced life support services is generally accepted by municipalities and their fire departments to be two (2) qualified personnel. A number of metropolitan fire/EMS services staff their busier units with a minimum of three personnel due to call loads or the generally serious nature of EMS calls being handled. However, rescue units cannot function with less than two staffing on rescue units.

### **DESIRED APPARATUS STAFFING**

The standard on Fire Department Deployment and Operations is NFPA 1710, which was discussed in the Fire and EMS Stations Chapter in relation to response times. It is an industry guideline that serves as a benchmark for the fire department organization and deployment of services.

NFPA 1710 addresses fire, EMS, special, wildland, airport, and marine operations. These various operational areas are addressed with benchmark requirements based on a fire involving a 2,000 square foot detached single-family occupancy. Fire departments are expected, under the approach taken by 1710, to deploy additional resources according to occupancies and hazards in their jurisdictions.

This NFPA standard, which includes provisions relating to apparatus staffing, has been adopted and implemented, in whole or in part, in a number of cities, counties, and towns. It has also been utilized in many fire departments as a guide for goal planning documents and policies and procedures, due largely to economic impact considerations.

## APPARATUS STAFFING

### MAXIMUM/DESIRED APPARATUS STAFFING (continued)

Staffing of fire apparatus is a key component of NFPA 1710. In developing the staffing component of the standard, the NFPA Technical Committee reviewed numerous studies, evaluations, and stakeholder reports containing empirical data on departmental response and mitigation of fire. These studies clearly documented that for safe, effective, and efficient fire suppression, each responding company needs a minimum number of firefighters and officers.

NFPA 1710 specifies the following minimum staffing levels by type of company and function:

1. Engine Companies - Fire companies whose primary functions are to pump and deliver water and perform basic firefighting at fires, including search and rescue, are known as engine companies to be staffed with a minimum of four on-duty personnel.

In jurisdictions with tactical hazards, high-hazard occupancies, high incident frequencies, geographical restrictions, or other pertinent factors are to be staffed with a minimum of five or six on-duty members.

2. Ladder Truck Companies - Fire companies whose primary functions are to perform the variety of services associated with truck work, such as forcible entry, ventilation, search and rescue, aerial operations for water delivery and rescue, utility control, illumination, overhaul and salvage work are known as ladder or truck companies. Ladder truck companies are to be staffed with a minimum of four on-duty personnel.

In jurisdictions with tactical hazards, high hazard occupancies, high incident frequencies, geographic restrictions, or other pertinent factors shall be staffed with a minimum of five or six on-duty members.

3. Other Companies (heavy technical rescue squads, etc.) - Other types of companies equipped with specialized apparatus and equipment shall be

## APPARATUS STAFFING

### MAXIMUM/DESIRED APPARATUS STAFFING (continued)

provided to assist engine and ladder companies (and provide other services, e.g. heavy rescue) deemed necessary as part of standard practice. These units shall be staffed with a minimum number of on-duty personnel required by the tactical hazards, high incident frequencies, geographic restrictions, or other pertinent factors.

4. Quint Apparatus Companies - Fire companies that deploy with quint apparatus, designed to operate either as an engine company or a ladder company shall be staffed with a minimum of four on-duty personnel. If the company is expected to perform multiple roles simultaneously, additional staffing, above the level of four, shall be provided to ensure that those operations can be performed safely, effectively and efficiently.
5. EMS Units (rescues) - On-duty EMS units shall be staffed with the minimum numbers of personnel necessary for emergency medical care relative to the level of EMS delivery provided by the fire department. EMS staffing requirements shall be based on the minimum levels needed to provide patient care and member safety.
6. Advanced Life Support (ALS) - Personnel deployed to ALS emergency responses shall include a minimum of two members trained to the emergency medical technician-paramedic level and two members trained to the emergency medical technician-basic level arriving on the scene within the established response time. These staffing patterns ensure efficient and effective on-scene operations as evidenced and supported by the American Heart Association and the National Institutes of Health.

Based on these standards and guidelines, the apparent current and future projected nature of North Providence's fire and emergency medical risks, tactical hazards, hazard of occupancies, incident frequencies and geographic restrictions the Study Team suggests the

## APPARATUS STAFFING

### MAXIMUM/DESIRED APPARATUS STAFFING (continued)

following as a possible maximum/desired primary fire rescue per unit apparatus staffing level for the North Providence Fire Department.

1. 4 - Engines—including one paramedic;
2. 4 - Engine/tankers co-located at a fire station with another major unit (ladder, heavy rescue squad or rescue)—including one paramedic;
3. 4 - Ladder trucks;
4. 5 - Quints operating as both engine and ladder;
5. 4 - Heavy rescue squad providing technical rescue services;
6. 3 - Rescue units providing emergency medical transport services with at least two certified paramedics; and,
7. 1 - Shift command units.

All other fire rescue apparatus (i.e., brush, light, and air units and boats) would be staffed on a cross-staffed basis by on-duty personnel assigned to primary units.

## **APPARATUS STAFFING**

### **NPFD SHIFT STAFFING**

This Section reviews current North Providence Fire Department shift staffing.

#### **Current Total Shift Operations Staffing**

The Study Team was advised that the current complement of personnel in the Fire Department allocated to shift apparatus staffing is 96. Figure 5.1 outlines that total staffing by rank.

**Figure 5.1**

#### **TOTAL FIREFIGHTER/OFFICER COMPLEMENT**

<b>RANK</b>	<b>COMPLEMENT</b>
<b>BATTALION CHIEFS</b>	4
<b>CAPTAINS</b>	8
<b>LIEUTENANTS</b>	24
<b>FIREFIGHTERS</b>	60
<b>TOTAL</b>	96

Source: NPFD Table of Organization dated 2008.

### **CALCULATING STAFFING NEEDS**

The Study Team typically utilizes a nationally recognized formula to assist in its determination of the adequacy of the total apparatus staffing of fire departments assessed. That formula can provide a measure of accuracy in determining the actual number of firefighters and officers required to staff the fire apparatus, given the minimum staffing levels approved by the municipality.

Using current North Providence apparatus minimum staffing levels, that formula is outlined as follows. To staff one position on a 24-hour basis and allow time off for training, vacations and sick leave and on-the-job injuries requires 5.1\* employees. The Study Team was advised that the average annual time off for firefighters and officers has been 475 hours, including

## APPARATUS STAFFING

### NPFD SHIFT STAFFING (continued)

time off for on the job injuries. Based on this average number of hours off, the number of personnel required could be calculated as follows for the NPFD:

\*The 5.1 number is calculated as follows:

Total hours in a year:	8,760
Firefighters work 42 hours x 52 weeks	2,184
Minus average time off "floor"	<u>- 475</u>
<b>TOTAL HOURS AVAILABLE</b>	<b>1,709</b>

Number of Employees  $\frac{8,760}{1,709} = 5.1$  staff to cover one 24-hour constant staffed position.

Based on this approach to calculating firefighter and officer staffing requirements for the current fire station and apparatus deployment model it appears that 107.1 firefighters and officers are needed.

### Current Four-station Model

The following calculations illustrate the application of this calculated formula to determining employment needs.

4 pumpers x 3 staff x 5.1	=	61.2 staff
1 ladder truck x 3 staff x 5.1	=	15.3 staff
2 rescue units x 2 staff x 5.1	=	20.4 staff
1 squad crew x 2 staff x 5.1	=	10.2 staff
1 battalion chief x 4.0	=	<u>4.0</u> staff
<b>TOTAL</b>	=	<b>107.1 staff</b>

## APPARATUS STAFFING

### NPFD SHIFT STAFFING (continued)

It should be noted that the currently approved Table of Organization for staffing of the current fire stations and apparatus includes 96 firefighter and officer positions, including battalion chiefs, captains, lieutenants and firefighters. See Figure 5.1.

The Study Team was apprised of the fact that a substantial amount of overtime is being expended each pay period by the Fire Department primarily for apparatus staffing requirements. Based on the overtime expenditure data provide to the Study Team it appears that an average of 1,749 hours of overtime is being paid each pay period. Based on an average hourly overtime rate of \$30.51, the average biweekly expenditure is estimated at \$53,361. A substantial portion of this overtime is likely due to staffing above the authorized Table of Organization.

Another contributing factor to the high payout of overtime relates to the lengthy process for personnel retiring from line-of-duty injuries to be processed out by the Rhode Island State Retirement System. As an example, the Study Team was advised that since 2007 two members of the NPFD have been awaiting retirement when it has been clear that retirement was inevitable. The Town could reduce overtime during such circumstances by dual encumbering the related positions.

#### Three-station Model Option w/ Cross Staffed Squad

The following calculations illustrate the application of this calculated formula to determining employment needs if the Town were to implement the optional three-station model and cross staff Squad 1 with Ladder 1 staff from incident-to-incident.

3 pumpers x 3 staff x 5.1	=	45.9 staff
1 ladder truck x 3 staff x 5.1	=	15.3 staff
2 rescue units x 2 staff x 5.1	=	20.4 staff
1 battalion chief x 4.0	=	<u>4.0</u> staff
<b>TOTAL</b>	=	<b>85.6 staff</b>

## APPARATUS STAFFING

### CALCULATING STAFFING NEEDS (continued)

Note: Although the battalion chief does not staff a “primary” unit, as described in this and other chapters of this Study, the 24/7 staffing of this command function is included in these apparatus staffing calculations since an absence of an assigned captain, shift commander, may have a direct impact on budgeted primary apparatus staffing requirements.

For the future, with a complete determination of time “off the floor”, including vacation, sick, training, on the job injuries, and details, for example, the Town and the NPPFD may determine what its budgetary firefighter and officer position requirements are from year to year. This would also assist in assuring that the budgeted overtime requirements are appropriately funded for the NPPFD.

### SUMMARY

Decisions made regarding the staffing of fire and EMS apparatus have a direct impact on the level of fire and EMS service delivered to the community. These decisions also have an impact on the relative safety of firefighters as they perform the many dangerous tasks associated with extinguishing fires and dealing with medical and other emergencies, such as hazardous materials incidents, that fire/EMS departments are expected to handle.

Additionally, decisions regarding staffing of fire and EMS apparatus have significant fiscal implications since the major cost of a career fire department is salaries and wages for the personnel. For that reason, staffing levels become a crucial budget as well as service level issue in municipalities and their fire departments.

A number of optional staffing approaches in apparatus staffing are presented for future consideration by North Providence. Further, a formula for determining future position needs based on approved apparatus and station staffing is outlined. The objective is to provide options for the safe and cost effective delivery of quality fire and EMS services to the residents and business owners/operators in North Providence.

## **APPARATUS STAFFING**

### **RECOMMENDATIONS**

- 5.1 The Town should consider adopting the suggested staffing formula for the determination of current and future staffing requirements for the approved Table of Organization.
- 5.2 The Town and NPFDF should consider conducting a complete determination of time “off the floor,” including vacation, sick, training, on the job injuries, and details, for example, and using this data to accurately determine what its budgetary firefighter and officer position requirements are from year to year.
- 5.3 The Town should consider using the proposed staffing calculations formula for implementing any revisions in the Table of Organization related to the three-station model and cross staffing Ladder 1 and Squad 1.
- 5.4 The Town should make every effort to encourage the Rhode Island State Retirement System to streamline the line-of-duty -related retirement process to reduce the cost of maintaining constant staffing of emergency apparatus while awaiting retirement decision.
- 5.5 The Town is encouraged to dual encumber firefighter/officer positions while awaiting final retirement actions in order to avoid related overtime.
- 5.6 The Town should consider apparatus staffing options at NFPA 1710 levels as fiscal opportunities are available.

# CHAPTER SIX

## IMPLEMENTATION

## **CHAPTER SIX IMPLEMENTATION PLAN**

This Chapter provides a suggested implementation approach for the Town of North Providence and North Providence Fire Department to consider in charting a long-term approach to the delivery of qualitative fire protection and rescue.

The observations and advisory recommendations and/or options represent the Study Team's best judgment at this time. The Study Team has drawn on experiences as practitioners in fire departments and fire and emergency medical service consultant experience with more than 150 fire and EMS agencies.

There are more than 25 recommendations in this Study. The Town and North Providence Fire Department officials are encouraged to make the final decision on recommendations and options, time lines, and any fiscal outlays after gaining input from fire and EMS officers, and stakeholders.

### **REVIEW OF STUDY**

Although there may be calls for quick action on the recommendations and there may be a number of options that should receive immediate consideration, the Study Team suggests a period for review of the findings and recommendations. One cannot expect to review many pages of detailed and technical material and immediately decide on which suggestions, if any, to consider and the timing for their implementation. Moreover, in considering changes in the delivery of public safety services, incremental steps are appropriate.

As part of the review, the Town Council, Mayor, the fire chief, firefighters, and officers should be provided the opportunity to have input relative to any observations, conclusions and recommendations.

## **IMPLEMENTATION PLAN**

### **TIMING**

This Implementation Plan should be considered as a **strategic planning tool**. Additional issues may need consideration in the future; therefore, the Plan should be used as a flexible guide for decisions relative to the fire stations, apparatus, staffing and the related provision of fire and EMS services.

### **IMPLEMENTATION OBSTACLES**

While there may be differences of opinion regarding some of the recommendations contained in this Study, a substantial number of the recommendations are suggestions made to the Study Team by stakeholders, Town officials and/or members of the North Providence Fire Department.

Although Town/Fire Department/stakeholder issues may surface, open communications and input should assist in “getting beyond” these types of implementation issues.

### **FISCAL IMPACTS**

The anticipated costs and/or savings and cost avoidance relate to renovation of facilities and staffing changes. The fiscal impacts will depend on which, if any, recommendations are implemented by the Town and the NPF. The primary areas related to costs include:

- A. Renovating an aging fire station;
- B. Acquiring replacement fire and EMS apparatus on a consistent schedule;
- C. Providing appropriate minimum staffing levels for current fire and EMS apparatus;
- D. Maintaining a comprehensive fire and EMS records management system; and,
- E. Providing desired apparatus staffing levels as determined financially feasible.

## **IMPLEMENTATION PLAN**

### **FIRE DEPARTMENT ACCREDITATION**

In 1988, the International Town/County Management Association (ICMA) and the International Association of Fire Chiefs (IAFC) executive boards signed a memorandum of understanding that committed both organizations to the development of a voluntary national fire service accreditation system. The framework for a fire department accreditation model was developed, beta test fire department accreditations were conducted and an accreditation model was finalized and implemented under the management of the Commission on Fire Accreditation International (CFAI).

The accreditation analysis categories included in the model are as follows:

1. Governance and Administration;
2. Assessment and Planning;
3. Goals and Objectives;
- D. Financial Resources;
4. Programs;
5. Physical Resources;
6. Human Resources;
7. Training and Competency;
8. Essential Resources; and,
9. External Systems Relations.

The Study Team employed portions of the CFAI model as a framework for this North Providence Study to provide established criteria for review and the reader with information on a number of the latest trends in the fire service.

Members of the Study Team have been involved with the CFAI since its inception and are peer fire department assessors. Additionally, the preparation made by the NPFDD for this Study and the data and information collected is very similar to that necessary for the Fire Department to pursue accreditation.

## **IMPLEMENTATION PLAN**

### **CFAI ACCREDITATION (continued)**

As stated in the CFAI accreditation manual, a Town government and fire department could accrue a number of important benefits from becoming an accredited fire and EMS agency. For North Providence, this may include:

- A. Quality improvement through self assessment;
- B. Provision of assurance to peers and the public that the NPFDD has defined missions and objectives and strives to go beyond them;
- C. Identification of strengths and weaknesses within the NPFDD;
- D. Provision of detailed evaluation of the NPFDD and its services;
- E. Establishes a method or system for addressing deficiencies and building on the strong points;
- F. Growth for the NPFDD and its personnel;
- G. Establishment of a forum for the communication of management and leadership philosophies;
- H. National recognition for the NPFDD by peers and the public;
- I. Creation of a mechanism for developing concurrent documents, such as strategic and business plans and a “desktop manual” of everything the NPFDD is involved in; and,
- J. Further development of pride in the organization, from NPFDD members, community leaders, and citizens.

In the judgment of the Study Team, the North Providence Fire Department has many of the characteristics of an excellent fire and EMS department. For the future, the Town of North Providence, the North Providence Fire Department, and stakeholders could benefit in many ways from the North Providence Fire Department becoming an internationally accredited fire agency with the CFAI.

## **IMPLEMENTATION PLAN**

### **RETURNS ON INVESTMENT**

In upgrading the fire and EMS stations, apparatus, and staffing of a fire and EMS department, it is not possible to delineate all the positive outcomes. Improving the quality of life in a community, saving lives, and reducing property loss do not necessarily involve quantitative analysis.

A number of the anticipated returns on investment for the facilities, apparatus and staffing recommendations in this Study include:

- A. Improved ability to assess needs and plan for future fire and EMS improvements through implementation of a comprehensive NPFDD records management system;
- B. Improved cost effective service through implementation of automatic mutual aid;
- C. Improved firefighter safety and effectiveness through automatic mutual aid;
- D. Upgraded timely tracking of fire and EMS risks through implementation of the computerized RHAVE risk assessment process; and,
- E. Enhanced services and administration of the NPFDD through CFAI accreditation.

While there are costs associated with implementation of a number of the recommendations contained in this Study, there may also be offsets to those costs as appropriate options are implemented by the Town and NPFDD.

### **UPDATING THE PLAN**

The Town of North Providence and the North Providence Fire Department are encouraged to update this Plan each year. The update should include progress, obstacles, fiscal impacts, and anticipated outcomes.

**APPENDIX A**  
**OPTIONS & RECOMMENDATIONS**

**APPENDIX A**  
**STUDY RECOMMENDATIONS & OPTIONS**

The following are the recommendations of the North Providence, Rhode Island, Fire Services Deployment Study.

**CHAPTER TWO - WORKLOAD AND RISK ASSESSMENT**

- 2.1 The Fire Chief should assure that fire and emergency medical incident data records are maintained and readily available for planning purposes for the future.
- 2.2 The Town is encouraged to provide sufficient resources in order for the Fire Department to maintain a state-of-the-art fire and EMS records management system that is integrated with the dispatch computer aided dispatch system and is available at all work sites and offices.
- 2.3 The Fire Chief should assure that the NPFDF reports its fire incident data as part of the National Fire Incident Reporting System, either through the State (if appropriate) or directly to the U. S. Fire Administration.
- 2.4 The Fire Department is encouraged to implement the Risk, Hazard and Value Evaluation (RHAVE) risk assessment model to enhance fire and EMS risk evaluation.

**CHAPTER THREE - FIRE AND EMS STATIONS**

- 3.1 The Fire Chief should insure that the operations and dispatch staffs of the NPFDF consider their responsibilities for the various components of response time and take action to make improvements that reduce response time.
- 3.2 The Town and Fire Chief should assure that the fire/EMS records management system, including the integrated computer aided dispatch system, are maintained and enhanced as state-of-the-art systems.

## **APPENDIX A - RECOMMENDATIONS & OPTIONS**

- 3.2 The Town and Fire Department should consider a thorough rehabilitation of current Fire Station 1 in three to five years.
- 3.4 The Town and Fire Department should consider implementing full automatic closest unit dispatched mutual aid with all appropriate surrounding fire and EMS agencies in order to improve response times and firefighter safety.
- 3.5 The Town should consider implementing the three-station fire station location option, including Fire Station 2, for improved cost effectiveness.
- 3.6 The Town is encouraged to take action to alleviate the imbalance in rescue unit mutual aid responses between North Providence and the City of Providence by billing all Providence EMS patients treated and transported standard approved rates and also billing the City of Providence for these services not paid by each patient or patient's insurance.

## **CHAPTER FOUR - FIRE AND RESCUE APPARATUS**

- 4.1 The Town and NPFD should consider continuing to maintain one strategically located ladder truck.
- 4.2 The Town should consider maintaining two strategically located rescue units.
- 4.3 The Town is encouraged to maintain a reserve unit for each primary apparatus type (engine, ladder truck and rescue).
- 4.4 The Town is encouraged to consider cross staffing Ladder 1 and Squad 1.
- 4.5 The Town should consider reducing the NPFD engine fleet by one engine, if one of the three-station options is adopted.
- 4.6 The Town and NPFD should consider implementing cross staffing of a heavy rescue unit with ladder crew.

## **APPENDIX A - RECOMMENDATIONS & OPTIONS**

- 4.7 The Town and NPF D are encouraged to conduct a focused assessment of utility vehicle needs—car, pickup, trucks, vans.
- 4.8 The Town and NPF D should consider adopting criteria for scheduled fire rescue apparatus replacement.
- 4.9 The Town and NPF D are encouraged to implement a scheduled apparatus replacement capital equipment multi-year program based on adopted criteria.

## **CHAPTER SIX - FIRE AND EMS APPARATUS STAFFING**

- 5.1 The Town should consider adopting the suggested staffing formula for the determination of current and future staffing requirements for the approved Table of Organization.
- 5.2 The Town and NPF D should consider conducting a complete determination of time “off the floor,” including vacation, sick, training, on the job injuries, and details, for example, and using this data to accurately determine what its budgetary firefighter and officer position requirements are from year to year.
- 5.3 The Town should consider using the proposed staffing calculations formula for implementing any revisions in the Table of Organization related to the three-station model and cross staffing Ladder 1 and Squad 1.
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- 5.5 The Town is encouraged to dual encumber firefighter/officer positions while awaiting final retirement actions in order to avoid related overtime.

## **APPENDIX A - RECOMMENDATIONS & OPTIONS**

- 5.6 The Town should consider apparatus staffing options at NFPA 1710 levels as fiscal opportunities are available.

Fire, EMS, and Dispatch Management Consultants

106 Schooner Way, Suite 110

Chester, Maryland 21619

(410) 604-0650

