Evaluating Apparatus Staffing Level Efficiency of Littleton Fire Rescue

Executive Development

Evaluating Apparatus Staffing Level Efficiency of Littleton Fire Rescue

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Littleton Fire Rescue, Littleton New Hampshire

July 2007
CERTIFICATION STATEMENT

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

__________________________________
Joseph Mercieri, EFO student
ABSTRACT

The purpose of this applied research project is to determine the safety and effectiveness of the current apparatus staffing levels.

The following research questions were posed:

1. What standards exist that aid in the determination of staffing levels?

2. Can apparatus staffing levels affect Littleton Fire Department emergency response efficiency and safety?

3. How do similar sized combination departments staff their fire apparatus as compared to Littleton Fire Rescue to meet National standards?

4. What staffing methods can be adopted from the private sector?

5. Would additional staffing affect the department’s budget?

One questionnaire instrument and a literature review were conducted.

The results showed that apparatus-staffing level of 4 firefighters provides for greater efficiency, safety and decreases injury rates.
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INTRODUCTION

Littleton Fire Rescue provides fire emergency and emergency medical services to a growing community, but due to low staffing levels, the efficiency of these services, as well as firefighter safety, may be put in jeopardy. In the last 5 years, the community has seen a dramatic increase in commercial and residential construction. In addition to an increase in development, the department is now experiencing an increase in medical, motor vehicle extrication and tactical rescue incidents (Town Report, 2005). The added development combined with the increase in call volume has placed the department in a position to increase its manning levels to meet current service demands. The purpose of this applied research project is to determine the effectiveness and safety of the current apparatus staffing levels. The descriptive method of research was used in the development of this research project and the following questions were posed:

1. What standards exist that aid in the determination of staffing levels?
2. Can apparatus staffing levels affect Littleton Fire Department emergency response efficiency and safety?
3. How do similar sized combination departments staff their fire apparatus as compared to Littleton Fire Rescue to meet National standards?
4. What staffing methods can be adopted from the private sector?
5. Would additional staffing affect the department’s budget?
BACKGROUND & SIGNIFICANCE

Littleton Fire Rescue is a combination fire department providing fire, emergency medical services, tactical rescue, and fire code enforcement and prevention services. The department’s current Insurance Services Office (ISO) rating is 5/9 (ISO 2004). Littleton Fire Rescue’s primary response area is composed of 56 square miles and contains a residential population of 5,881 people (US Census 2000). The Department’s secondary response area encompasses both Grafton and Coos counties totaling 191 square miles with a population of over 81,743 residents. The fire department consists of 7 full time fire fighters and 14 Call firefighters. Currently the department operates out of one firehouse housing two Class-A engines, one aerial truck, and one tanker truck. The Town of Littleton is a growing community and is experiencing a large influx of both commercial and industrial development. Several large box stores have established their business in the community. In addition to the box stores, plans for strip malls, factories and hotels are now being addressed. There has also been a steady increase of permanent and seasonal residential development. Given the development potential combined with current growth, the fire department has realized a steady increase in call volume. Calls for emergency service have increased from 370 in 1996 to 790 in year 2006. This reflects a 214% increase in emergency call volume over a 10-year period as compared to 132% increase during the same time period for the entire nation (NFPA 2006 ¶). Historically, the Town of Littleton has put most of its political and fiscal focus on the revitalization of commercial establishments located on Main Street and the development of a commercial zone on
Meadow Street also know as Route 302. Little consideration has been given to address the impact of these initiatives on public safety. Both the 2006 master plan and subsequent plans do not mention the development or progression of public safety but do project the future commercial and industrial development potential. A report issued by the Texas Commission of Public Safety stated that a city and fire department should, as a minimum, address the needs of prevention, investigation and suppression as outlined in the appropriate NFPA Standards. That decision should be based on facts, the safety of its citizens, and the safety of the fire fighters providing that protection (Texas Commission of Safety 1998). Littleton Fire Rescue operates only one active engine company on a 24 hour, 7 day per week, schedule. Firefighters work a rotational shift comprised of two 10 days followed by two 14 hour nights and then 4 days off. Presently there are four platoons that provided round the clock protection. Two platoons are manned by two firefighters and the remaining two platoons are manned by one firefighter. In 2005, the fire chief unsuccessfully attempted to increase manning thru the budget process by requesting an additional eight firefighters, but was unsuccessful in his attempt. In year 2006, the fire chief again attempted to acquire additional staffing to meet the minimum criteria of four-firefighter manning on the primary response engine. Upon many hours of budget negotiations and deliberative sessions, the fire chief struck a deal with the Town Selectmen cutting the department budget, and in return, the Selectmen would endorse a Warrant Article to hire two new firefighters. In March of 2007, the voters of the community endorsed the warrant article by a margin of 2 to 1. This resulted in two out of four platoons operating with two firefighters, leaving two platoons with only one firefighter on duty. In an attempt to reduce the number of platoons working with only one firefighter, the fire chief elected to implement a change of shift scheduling
for the Department’s training officer. Originally, the training officer worked only day shifts consisting of four 10-hour days with each Wednesday off. The fire chief chose to change the training officer’s shift to work a platoon schedule thus decreasing the amount of platoons working with one firefighter to one platoon. As a result, there are now three platoons staffed with two firefighters and one platoon staffed with one firefighter. Given the additional manning combined with the training officer’s change of shift schedule, still leaves the platoon staffing level below the NFPA 1710 recommended level of four firefighters. This EFO project and research directly relates to the National Fire Academy Executive Fire Officer Program initiative to understand the need to transform fire and emergency services organizations from being reactive to proactive; with emphasis on leadership development, prevention and risk reduction (National Fire Academy, 2005). The research contained within this report shall aid Littleton Fire Rescue to examine the effectiveness of the current staffing levels and take a proactive approach to meet service demands and reduce risk to firefighters and citizens served.
LITERATURE REVIEW

Many fire chiefs believe that residential and commercial growth is threatening the ability of fire departments to protect the communities they serve. Without careful attention, long-term planning, and adequate funding, communities risk deterioration in their protection, especially in fast-growing areas (ISO, 2004, ¶ 3). The need in a district of well-spaced, one-story homes is not the same as an area covered with six-story combustible tenements (Clark, 1995).

Determining needed staffing has always been a subject of controversy. Various controlled and statistically based experiments by some cities and universities reveal that if 16 trained firefighters are not operating at the scene of a working fire within the critical time period then dollar loss and injuries are significantly increased, as are the square feet of fire spread (Freeman, 2002). The International Association of Fire Fighters (IAFF) produced the video “Staffing For Survival,” which touched on some very important statistics and studies. In this video, several key statistics from an independent staffing study done by the International City Management Association (ICMA) were highlighted. This study concluded that a 5 person fire engine crew is 100% effective, a 4 person crew is 65% effective, and a 3 person crew is only 38% effective in performing an interior structural fire attack (Freeman, 2002). Depending on what platoon is on duty, Littleton Fire Rescue responds to emergency calls with either one or two firefighters rendering the crew effectiveness below 38%. A graphic representation of this data can be found in Appendix A of this report. Budgetary constraints have also affected department manning.
to support the hiring and retention of additional firefighters. It is frequently impossible for small cities to fully staff all of the fire companies they need to handle working fires throughout the community (Peterson, 1992). Adequately staffing is necessary to maintain the safety and welfare of the firefighters as well as provide effective services to the community. In the year 2002, while performing a fire fatality investigation, the National Institute of Safety and Occupational Health determined that lack of adequate staffing attributed to the firefighters death (National Institute Occupational Health and Safety, 1991). On October 2002, Captain Steve Williams, President of the Houston Professional Firefighters Association, in his presentation to the House Committee on Science stated that, “Attempting to respond to a fire or other hazard with only two or three people per piece of apparatus is not only ineffective, it is extraordinarily dangerous. Every year in our nation, fire fighters lose their lives because there are not enough of them on scene to conduct a safe response” (Williams, 2002, page 1-2). The United States Occupational Health and Safety Association (OSHA) has complied various federal regulations that demonstrate the need to provide adequate firefighter staffing. Of interest is the OSHA Respiratory Standard that was enacted on October 3, 2003. This regulation contains a Two-in, Two-out rule that is applicable to any employees who, in their regular course of employment, are required to wear a respirator. The regulation requires that at least two employees enter the IDLH atmosphere and remain in visual or voice contact with one another at all times, and that at least two employees are located outside the IDLH atmosphere (OSHA CFR 1910.134 (g)(4)). The OSHA requirement calls for a minimum of four firefighters on scene before entering an IDLH atmosphere. In order to comply with the OSHA requirement, Littleton firefighters arrive on scene, report their findings
and then standby until adequate staffing is acquired to safely conduct an interior attack on
the fire. To further support the need for adequate apparatus staffing, on November 3,
2003, the United State Congress enacted the SAFER Act to provide federal grant funding
for the purpose of hiring additional fulltime firefighters to improve firefighter safety and
survival (Staffing for Adequate Fire and Emergency Response Firefighters Act of 2003).
The SAFER grant emphasized the need for fire departments to increase the staffing levels
to meet the National Fire Protection Agency recommended standards. Those standards
are NFPA1710 Standard for the Organization and Deployment of Fire Suppression
Operations, Emergency Medical Operations, and Special Operations to the Public by
Career Fire Departments and NFPA 1720: Standard for the Organization and Deployment
of Fire Suppression Operations, Emergency Medical Operations and Special Operations
to the Public by Volunteer Fire Departments. Although Littleton Fire Rescue is a
combination fire department, the International Association of Fire Chiefs and the
International Association of Fire Fighters clarify the appropriate standard to implement
for combination fire departments. The determining factor in selecting the proper standard
is based on whether the fire trucks are manned primarily by full-time firefighters or paid-
on-call members (Sembly, 2005). A second determining factor is the ratio of fire calls
staffed by full-time versus paid-on-call personnel (Sembly, 2005). Career fire personnel
staff Littleton Fire Rescue apparatus full-time who respond to 97% of all emergency
calls. Therefore, it would be appropriate to follow the NFPA 1710 standard for career fire
service organizations. A bulletin prepared by the American Insurance Association on fire
department efficiency placed significant emphasis on the importance of staffing fire
companies with a minimum of four firefighters (American Insurance Association,
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Bulletin 131, 1975). The International Association of Fire Chiefs, Metro Chiefs Division, not only endorses the minimum manning level of four firefighters, but goes further in stating that in order to permit the effective operation of fire companies at the scene of a structure fire, the minimum number of personnel on both engine and ladder companies should be five members per unit (Metro Fire Chiefs, 1992). Small town fire departments, with less manpower, can perform a rescue of potential fire victims 80% faster with a crew of four than with a crew of three firefighters (Morrison, 1990). Four fire fighters is the minimum number required to successfully accomplish the fire ground tasks required within an acceptable period of time. Four is not the number at which negotiations begin, but it is the absolute bare minimum required for an effective and efficient fire company (Oneil, 1993).

PROCEDURES

The research procedure used in preparing this paper consisted first of a literature review that was conducted initially in the Learning Resource Center located at the National Emergency Training Center, Emmitsburg Maryland, in February 2006. Additional literature review was conducted between March and May of 2006 at the Town of Littleton Library, Littleton Fire Department library and database, New Hampshire Local Government Center Resources, State of New Hampshire Fire Academy library and the author’s personal library.

In March of 2006 a questionnaire was sent to 21 New England based combination fire departments whose demographics and organizational structure were
similar to that of Littleton Fire Rescue. Using the New Hampshire Local Government Center database, the author was able to query the database to find combination fire departments of similar size, organizational structure and population served. A copy of the questionnaire can be found in Appendix B of this report. The questionnaire requested data on department size, call volume, budget, apparatus staffing levels and apparatus manning levels. The data collected was reviewed and used to compare Littleton Fire Rescue manning levels to other similar sized fire departments.

**Limitations**

In 1998 Littleton Fire Rescue incorporated the software “Fire Programs” to track department statistics. During the eight-year cycle, much of the statistical information was recorded without a standardized format. In addition, the program purchased was a “partial” software package and unable to provide complete statistical information. It was also found that the fire reports did not include data such as structural valuation, fire loss, number of personnel on-scene and value of building saved.

Additionally, the questionnaire was developed to query combination fire departments located in New England, primarily the State of New Hampshire. The purpose of limiting the questionnaire to such a defined population was to discourage the denunciation of the report’s analysis when presented to Littleton Town Officials. Readers should exercise due care in extrapolating data from questionnaire to career fire departments, to volunteer fire departments, or to fire departments that are not located in the New England area.
Definitions:

- **Call firefighter:**
  
  Paid On Call Firefighters, or POCs as they are commonly called, function in much the same capacity as fulltime career firefighters by responding to calls related to fire, medical, and other emergencies. As the name implies, being a Paid On Call Firefighter affords members the opportunity to be compensated for time spent on calls. POCs are also paid for training.

- **Code enforcement:**
  
  The process of enforcing fire code laws and regulations within a community.

- **Combination Fire Department:**
  
  A Combination Fire Department is a department where one or more of the active firefighters are volunteers, but not all active firefighters are volunteers. This organization usually has a limited number of personnel who are paid on a full or part-time basis. This may only be the Chief of the Department, and/or paid drivers for the apparatus. The majority of the personnel or firefighters are members who normally donate their time to the organization with no expectation of compensation.

- **EMS:**
  
  Emergency Medical Service

- **Engine Crew:**
  
  Firefighters assigned to an engine.

- **Fire Engine:**
  
  A fire engine is one of many specialized fire suppression apparatuses. A
fire engine is designed to pump water using an engine and onboard water supply, which can be replenished via a fire hydrant, water tender or any other available water source by using suction. Engines are also known as pumper as they are used to pump water onto fires.

- **IDLH:**
  
  Immediately Dangerous to Life and Health.

- **ISO Rating:**

  ISO collects information on municipal fire-protection efforts in communities throughout the United States. In each of those communities, ISO analyzes the relevant data using our Fire Suppression Rating Schedule (FSRS). ISO then assigns a Public Protection Classification from 1 to 10. Class 1 represents exemplary public protection, and Class 10 indicates that the area’s fire-suppression program doesn’t meet ISO’s minimum criteria.

- **Insurance Service Organization:**

  ISO evaluates municipal fire-protection efforts in communities throughout the United States. A community’s investment in fire mitigation is a proven and reliable predictor of future fire losses.

- **Metro Fire Department:**

  A fire department consisting of a firefighting force of over 400 career
• NFPA:

National Fire Protection Association

• NFPA Standards:

NFPA standards are consensus standards are developed by specific industries to set forth widely accepted standards of care and operations for certain practice. Standards are an attempt by the industry or profession to self-regulate by establishing minimal operating, performance, or safety standards, and they establish a recognized standard of care. Consensus committees composed of industry representatives and other affected parties write them. The NFPA has many standards, which affect fire departments. The standards should be followed to protect fire and rescue personnel from unnecessary workplace hazards and because they establish the standard of care that may be used in civil lawsuits against fire and rescue departments.

RESULTS

1. What standards exist that aid in the determination of staffing levels?

Of the numerous standards that exist, the most prevalent is the National Fire Protection Agency (NFPA) 1710, Standard for the Organization and Deployment of Fire
Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments, 2004 Edition. NFPA 1710 requires that fire apparatus be staffed with a minimum of four firefighters (NFPA 1710). In 1998, the Occupational Safety and Health Administration amended its Respirator Standard for employees engaged in dangerous occupations that require use of breathing apparatus. The revised standard formally endorsed a safe staffing rule known as “2-in/2-out” left no doubt about the vital link between sufficient staffing and fire fighter safety.

The National Fire Protection Association 1410 Training Standard on Initial Fire Attack prescribes a minimum performance and staffing level of four firefighters. Two firefighters to affect an interior attack upon the fire and two firefighters remaining on the exterior of the building to provide.

2. Can apparatus staffing levels affect Littleton Fire Department emergency response efficiency and safety?

The International Association of Fire Fighters (IAFF) produced the video “Staffing For Survival,” which touched on some very important statistics and studies. In this video, several key statistics from an independent staffing study done by the International City Management Association (ICMA) were highlighted. This study concluded that a 5 person fire engine crew is 100% effective, a 4 person crew is 65% effective, and a 3 person crew is only 38% effective. Using a linear graph and the data calculated by the ICMA, it was determined that the current Littleton Fire Rescue staffing levels of two firefighters per shift is 17% efficient in performing an interior structural fire attack. Graph 1 in Appendix
“A” shows the relationship between firefighter staffing and efficiency of a crew to perform an interior structural attack. Littleton Fire Rescue apparatus staffing is at two firefighters. Using the graph found in Appendix “A”, the current efficiency rating of the two person staffing level is twenty-percent. That is eighty percent lower than a fire apparatus manned with four firefighters.

A study conducted by the Seattle Fire Department found that the severity of firefighter injuries declined 35% when staffing per apparatus was increased from 3-person crews to 4-person crews (Cushman, 1981). A study by the Dallas Fire Department found a direct correlation between staffing levels and both the safety and effectiveness of emergency response operations. Specifically, the Dallas study found that inadequate staffing delays or prevents the performance of critical tasks, increases the physiological stress on firefighters, and increases the risk to both civilians and firefighters. After analyzing their data, the authors of the Dallas study concluded, “staffing below a crew size of four can overtax the operating force and lead to higher losses (McManis, 1984). NIOSH has been especially critical of the failure of fire departments to assure that there are an adequate number of people stationed outside a dangerous environment during an interior fire suppression attack. In explaining the need for outside personnel who are prepared and equipped to perform rescues, one recent NIOSH report explained, Many firefighters who die from smoke inhalation, from a flashover, or from being caught or trapped by fire actually become disoriented first. They are lost in smoke and their SCBA runs out of air, or they cannot find their way out through the smoke, become trapped, and then fire or smoke kills them (NIOSH, 1989). These tragic fatalities occur for only one reason: there are insufficient numbers of firefighters on the scene.
3. How do similar sized combination departments staff their fire apparatus as compared to Littleton Fire Rescue to meet National standards?

Appendix B contains the questionnaire that was forwarded to 21 combination fire departments. Similarities between these departments and Littleton Fire Rescue were population protected, equalized assessed valuation, departmental budget and demographics, meaning that the departments polled are from rural areas of Maine, Vermont and New Hampshire. Eleven out of 21 departments, or 52% of the departments polled returned the questionnaire. Out of the eleven departments only four fire departments indicated that they meet the NFPA1710: *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*. One combination fire department considered themselves a volunteer department and indicated that they meet NFPA 1720: *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations and Special Operations to the Public by Volunteer Fire Departments*. Two of the eleven fire departments utilized a maximum of two part-time firefighters to increase shift strength and apparatus manning. The minimum staffing level found was one firefighter on duty during the day. The maximum staffing level was eight firefighters on each shift providing coverage twenty-four hours per day, seven days per week. Weekday shift strength was higher than weeknight and weekend strength. Many departments dropped their week night shift strength by 50%. One department chose to only cover weekend day shifts.
and leave the firehouse unmanned for the remainder of the week.

The average manning level for the eleven responding department was three firefighters on the primary response apparatus. This is thirty-percent higher than the current Littleton Fire Rescue manning level. However, in calculating the ratio of firefighters to population density, the data showed that there were 3256 residents for each firefighter or a ration of 1:3256. The 2000 US Census determined the population of Littleton New Hampshire to be 5881. Using the average ratio of 1:3256 the apparatus manning level should be set at 1.8 or 2 firefighters. Further review of the data collected determined that only 4 or 36% of the departments had met the minimum staffing level of 4 firefighters per apparatus.

4. What staffing methods can be adopted from the private sector to enhance apparatus staffing and firefighter safety?

Private sector staffing methods range from hiring permanent full-time employees to part-time and temporary employees. Of interest was the part-time / temporary employment method used by the private sector. In early 2006, I conducted an experiment in an attempt to increase apparatus manning. The experiment was simple, in that I opened the entire shift schedule to the Call firefighters. Call firefighters were able to sign up for any shift as long as they did not exceed 24 hours of shift coverage in a pay period. The experiment was extremely successful and raised the manning levels from two to three firefighters per apparatus. The concept used mimics the use of part-time / temporary
employees to staff open positions.

Another private sector staffing method is hiring qualified part-time employees. Similar to the use of Call firefighters to cover shifts, part-time employees come from outside the fire department seeking employment as a part-time firefighter. Based on the job description and task analysis, employers can require that part-time employees be pre-certified and possess the required training and physical ability to perform the job.

5. Would additional staffing affect the department’s budget?

The 2007 Littleton Fire Department budget is $680,844. The first year cost associated with the hiring of one full-time entry-level firefighter is $63,375 as compared to the hiring of one part-time firefighter at $17,925, a difference of $45,450. First year costs for the full-time entry-level firefighter include wages, benefits, uniforms, protective gear, medical evaluation, training costs and recruitment costs. Appendix “C” contains a spreadsheet comparing the cost of a full-time firefighter and a part-time firefighter. In order to meet the minimum apparatus staffing level of 4 firefighters per first response apparatus an additional 8 full-time firefighters must be hired. Eight additional full-time firefighters shall increase the department budget by $503,850 or 74% in the first year of hire. Hiring part-time firefighters would require hiring 16 part-time personnel. This number is based on a 24 hour workweek per person. The cost to hire 16 part-time firefighters is $280,050, which is an increase of 41% of the current department budget.
DISSCUSSION / IMPLICATIONS

Littleton Fire Rescue apparatus manning levels fall well below the National Fire Protection Association standard. NFPA1710: Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments calls for a four person staffing (NFPA). The International City Management Association (ICMA) manning study concluded that the optimum number of firefighters required to achieve a 100% efficiency rating is four per apparatus (ICMA). The Occupational Safety and Health Association implemented a federal mandate that when two firefighters enter an atmosphere that is hazardous to life or health, two additional firefighters must remain in a standby or rescue posture (OSHA). Although these standards and laws exist, the results of the questionnaire found that out of eleven fire departments, only two indicated that they meet the NFPA requirements. In fact, one department indicated that their manning level was only one firefighter on duty per shift. Two fire departments indicated that they use part-time firefighters to increase manning levels. In comparing the costs associated between the hiring of full-time firefighter versus part-time personnel, it was found that there is a 33% reduction in costs when hiring part-time personnel. The research also concluded that there is a relationship between firefighter apparatus manning and firefighter safety. A study conducted by the Seattle Fire Department found that the severity of fire fighter injuries declined 35% when staffing per apparatus was increased from 3-person crews to 4-person crews (Cushman, 1981). A study by the Dallas Fire
Department found a direct correlation between staffing levels and both the safety and
effectiveness of emergency response operations. Specifically, the Dallas study found that
inadequate staffing delays or prevents the performance of critical tasks, increases the
physiological stress on firefighters, and increases the risk to both civilians and
firefighters. After analyzing their data, the authors of the Dallas study concluded, staffing
below a crew size of four can overtax the operating force and lead to higher losses
(McManis, 1984). The National Institute of Occupational Safety and Health study
concluded that the foremost indicator of firefighter injuries was the lack of adequate
personnel on scene during an incident (NIOSH, 1989). The implications of not increasing
staffing levels are staggering. First and foremost is the safety and welfare of fire
personnel. It is imperative that the firefighters be provided with a safety and secure work
environment. Additionally, there is always the threat of liability in the event that a
firefighter is seriously injured or dies from injuries sustained during their course of work
especially if it is found that one of the contributors to the accident is the lack of adequate
manning. However, department heads and elected officials are also expected to be
fiscally aware of expenditures and must find methods to reduce costs and improve
services. The fiscal analysis has concluded that it is less expensive to hire part-time
personnel that full-time personnel. This practice has been enacted in two New Hampshire
communities and has proven to work efficiently.

RECOMMENDATIONS

The author recommends that the Town of Littleton perform the following to
increase fire apparatus manning, improve efficiency and enhance firefighter safety and survivability:

1. Hire 16 pre-certified part-time firefighters to increase the current apparatus manning levels to four firefighters per shift.
2. Allow the current Call company personnel to be scheduled for shift work. This shall increase manning levels and improve safety as well as enhance Call member skills.
3. Continue to monitor the safety and efficiency of department service delivery in order to maintain an optimum and safe work environment.
4. Establish a recruit program to attract part-time employees in order to maintain a viable list of part-time employees to enhance retention efforts.
REFERENCES


http://factfinder.census.gov/servlet/SAFFPopulation?_event=Search&_name=03561&_state=&Submit.x=13&Submit.y=6&_cityTown=&_zip=03561&_sse=on&_lang=en&_pctxt=fph

Littleton Fire Rescue current Day Shift manning is 2 firefighters.

Littleton Fire Rescue current Night Shift manning is 1 firefighter.
APPENDIX B

Survey Instrument Materials

May 1, 2007

Dear Chief

I am currently enrolled in the Executive Fire Officer Program at the National Fire Academy. I just completed the first-year course, Executive Development. Part of the requirement for entering the second year of the program is the successful completion of an applied research project, which must examine a topic that is of importance to my department. My town, Littleton New Hampshire, is a rapidly growing community. As with all growth, the public safety aspects of the community have changed, become more diverse and complicated. Currently I am seeking to improve our current apparatus manning to improve firefighter safety and effectiveness. To facilitate this work I have developed a survey for combination fire departments. I ask that you take the time out of your busy day to anonymously answer the questions and return the completed form in the enclosed stamped, self-addressed envelope. For the purposes of this project Paid on Call firefighters are defined as members of your department who are compensated for activities related to the operations of the department but are not full time employees. Part-time firefighters are defined as firefighters who are assigned shift duties for less than thirty hours per week. Please feel free to write any additional comments you may have on the questionnaire. You may also call me at (603) 444-2137.

Thank You
Joseph Mercieri
Fire Chief
Littleton Fire Rescue
COMBINATION FIRE DEPARTMENT SURVEY

SECTION 1 DEPARTMENT INFORMATION

Population served: _____________________

Equalized Assessed Valuation in millions of dollars: __________

Fire Department 2006 Budget:

☐ Capital:  __________

☐ Operations:  __________

☐ EMS:  __________

☐ Total:  __________

Number of Personnel:  

Career  # _________

Paid-on-Call  # _________

Part-time  # _________

Is your department currently meeting NFPA manning recommendations?

☐ YES

☐ NO

Please provide your department’s minimum apparatus staffing level (if applicable):

__________________________________________________________________________
Average Daily Staffing:

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How many alarms has your department responded to in 2006?

- [ ] EMS _________
- [ ] FIRE _________
- [ ] OTHER _________
- [ ] TOTAL _________
SECTION 2 PAID-ON-CALL FIREFIGHTERS (POC)

APPENDIX C  Do your POC Firefighters work duty / assigned shifts with career personnel?

☐ YES
☐ NO

2. Do POC Firefighters count towards minimum staffing levels?

☐ YES
☐ NO

3. Can POC Firefighters fill in for career firefighters?

☐ YES
☐ NO

If answered YES please explain:

APPENDIX C  Is the number of people annually seeking POC positions within your department increasing or decreasing in numbers?

☐ Increasing
☐ Decreasing

APPENDIX C  Does your department require the same certification levels of the POC as the career firefighters?

☐ YES
☐ NO
**APPENDIX C**  Which if any certifications below are required for POC firefighters?

- ☐ Firefighter Level 1
- ☐ Firefighter Level 2
- ☐ EMT-B
- ☐ EMT-I
- ☐ EMT-P
- ☐ Hazardous Materials
- 

**APPENDIX C**  Does your department have POC officers?

- ☐ YES
- ☐ NO

8. If answering YES to question 7 – Do they command career firefighters?

- ☐ YES
- ☐ NO

9. How are the POC personnel used in your department?

- ☐ Suppression
- ☐ EMS
- ☐ Inspections
- ☐ Special Teams
- ☐ Public Education Program
10. Does your department plan on maintaining, increasing or reducing active POC firefighters in the coming years?
   □ Maintaining
   □ Increasing
   □ Reducing

11. If you answered, “reducing” to the above question, what factors would force the elimination of POC firefighters from your department?
   □ Lack of applicants
   □ Conflicts between career and POC firefighters
   □ Inability of POC Firefighters to obtain or maintain certification levels
   □ Not available during key times of the day or week
   □ Other (please specify)

SECTION 3 CAREER FIREFIGHTERS

APPENDIX C Are the career firefighters Union organized?
   □ YES
   □ NO

13. Has your department established a maximum number of career firefighter positions it will create in the future?
   □ YES
   □ NO

14. If “YES”, how many more career positions?
15. How did your department demonstrate a need for additional career positions? Please explain.

16. Was this decision (referring to question 15):
   - Based on anticipated population growth in your jurisdiction.
   - A result of a collective bargaining agreement.
   - Influenced by the presence of active POC firefighters in your department.
   - Based on regulatory standards such as the OSHA Respiratory Standard (2 in and 2 out).

17. Has the presence or level of integration of POC firefighters into the operations of your department reduced the need for additional career positions?
   - YES
   - NO

18. If you did not have POC personnel, would your local government provide more career personnel?
   - YES
   - NO

SECTION 4  PART-TIME FIREFIGHTER

19. Does your department offer part-time firefighter positions?
   - YES
   - NO
20. If question 19 is answered YES, how many part-time firefighters do you currently employ?

21. What are the certification requirements for part-time firefighters?
   - Firefighter Level 1
   - Firefighter Level 2
   - EMT-B
   - EMT-I
   - EMT-P
   - Hazardous Materials

22. Please explain how the part-time firefighters are integrated into the shift coverage schedule.

SECTION 5 SAFETY CRITERIA

23. Please indicate the number of on-duty injuries your department experienced in 2006.

24. Please indicate the number of on-duty deaths your department experienced in 2006?

25. Of the 2006 on-duty injuries, how many occurred on the emergency scene?

26. Please provide an explanation on how your department meets or plans to meet the apparatus staffing levels as recommended by NFPA
### Cost Analysis Part Time Firefighter versus Full Time Firefighter

<table>
<thead>
<tr>
<th></th>
<th>One Full-time</th>
<th>Note</th>
<th>Eight Full-time</th>
<th>One Part-time</th>
<th>Note</th>
<th>Sixteen Part-time</th>
<th>Note</th>
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<td><strong>Wages</strong></td>
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<td>Hourly</td>
<td>13.00</td>
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<td>9.50</td>
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<td>12.480.00</td>
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<td>Yearly</td>
<td>28,938.00</td>
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<td>231,504.00</td>
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<td>189,696.00</td>
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<td>Overtime</td>
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<td>12,480.00</td>
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<tr>
<td><strong>Benefits (yearly)</strong></td>
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<td>Health ins.</td>
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<td>163,008.00</td>
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<td>Life ins.</td>
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<td>696.00</td>
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<td>4,024.00</td>
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<td>Disability.ins.</td>
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<td>3,408.00</td>
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<td>34,024.00</td>
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<td>Social Security</td>
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<td>-</td>
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<td><strong>Uniforms</strong></td>
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<td>Pant, shirts etc.</td>
<td>400.00</td>
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<td>3,200.00</td>
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<td>2,400.00</td>
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<td>466,392.00</td>
<td>13,649.00</td>
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<td>218,384.00</td>
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<td><strong>First Year/Start up cost</strong></td>
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<tr>
<td><strong>Gear</strong></td>
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<td>PPE</td>
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<td>41,600.00</td>
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<td><strong>Medical</strong></td>
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<td>Physical</td>
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<td>4,400.00</td>
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<td>8,800.00</td>
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<td>184.00</td>
<td>23.00</td>
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<td>368.00</td>
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<td>504.00</td>
<td>63.00</td>
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<td>1,008.00</td>
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<td><strong>Training Costs</strong></td>
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<td>8hrs x $19.5/hr x 4 times</td>
<td>624.00</td>
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<td>4,992.00</td>
<td>304.00</td>
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<td>4,864.00</td>
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<td>Training mileage</td>
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<td>2,024.00</td>
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<td>4,048.00</td>
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<td>C2F2</td>
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<td>3,040.00</td>
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<td><strong>Recruitment costs</strong></td>
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<td>Advertisement</td>
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<td>(4)</td>
<td>450.00</td>
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<td>(4)</td>
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<td>23.00</td>
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<td>368.00</td>
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<td><strong>Total costs 1st year</strong></td>
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<td>$503,850.00</td>
<td>$17,925.00</td>
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Cost savings sixteen part-time versus eight full-time firefighters

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<th>Year</th>
<th>Cost Savings</th>
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<tbody>
<tr>
<td>Year 1</td>
<td>$223,800.00</td>
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<td>Year 2</td>
<td>$255,448.24</td>
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<td>Year 3</td>
<td>$263,111.69</td>
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First year cost savings hiring sixteen part-time firefighters vs. eight full-time firefighters $223,800.00

(1) based on 42 hr work week
(2) estimate only
(3) family plan estimate
(4) one-time cost
APPENDIX D

Questionnaire Instrument Data

<table>
<thead>
<tr>
<th>Department</th>
<th>Population</th>
<th>Assessed Valuation</th>
<th>Department Budget</th>
<th>Fulltime</th>
<th>Paid on (Part-time)</th>
<th>Alarms per Year</th>
<th>Apparatus manning</th>
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<td>1</td>
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<td>$520,000,000.00</td>
<td>$1,500,000.00</td>
<td>17</td>
<td>5</td>
<td>2</td>
<td>1816</td>
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<tr>
<td>2</td>
<td>3000</td>
<td>$169,000.00</td>
<td>$826,000.00</td>
<td>5</td>
<td>38</td>
<td>2</td>
<td>1365</td>
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<tr>
<td>3</td>
<td>9800</td>
<td>$881,253.00</td>
<td>$870,612.00</td>
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<td>980</td>
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<tr>
<td>4</td>
<td>17</td>
<td>$814,560,058.00</td>
<td>$1,074,749.00</td>
<td>10</td>
<td>5</td>
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<td>$881,000.00</td>
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<td>27</td>
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</table>

107456

Average Department Budget $1,284,932.09
Average Fulltime personnel 12.72727273
Average Paid on Call personnel 22.54545455
Average Part-time personnel 0.54545455
Average alarms per year 1077.909091 fire alarms
Average apparatus manning level 3 firefighters
Manning level versus Population 3256.242424 residents per firefighter

Percentage of Departments whose manning levels meet National Standard 36%