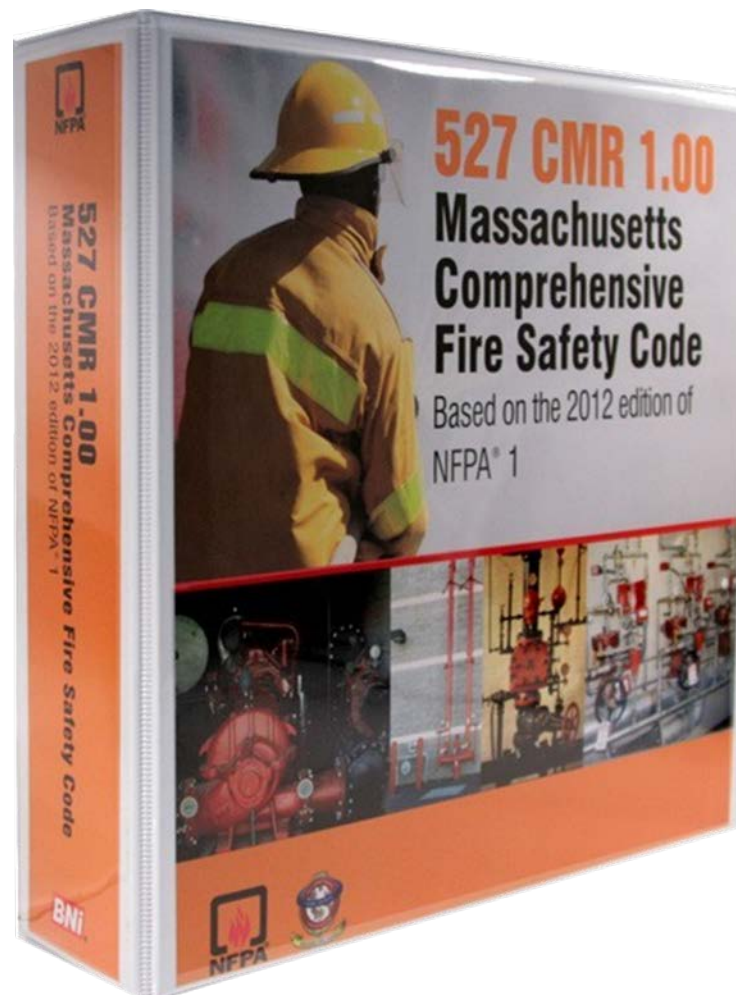


Concord Fire Department



Fire Prevention Staffing

CFD Needs Assessment November 2016



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Message from Chief of Department Mark Cotreau

In the summer of 2014 Deputy Fire Chief Chris Kelley retired after nearly 14 years of dedicated service as head of fire prevention. What followed was a year of transition for the Concord Fire Department. An interim Deputy Fire Chief was brought on board to help with fire prevention duties and spearhead a Deputy Chief job analysis. The data gained from the job analysis revealed a substantial gap between important duties we needed to accomplish in fire prevention and what we were able to accomplish with the resources we had. During this time Massachusetts adopted a new national fire code with many state amendments. This new fire code increased the mandates required of our fire prevention division, further compounding our situation. As a result of this data driven job analysis several steps were taken:

- The position of Deputy Fire Chief was rebranded in favor of an Assistant Fire Chief. After an in-depth open competitive process Tom Judge assumed the role of Assistant Fire Chief in July 2015.
- We transferred some of the more basic inspections to the on-duty fire companies. Although some inspections continue to be done at that level, due to the high volume of emergency responses they attend to and the supporting activities needed to maintain operational readiness their availability for this purpose is limited.
- To the extent possible we have brought in off-duty personnel to help with the fire prevention workload however budgetary constraints prohibit doing this on a large scale.

The challenge remaining is that even after these adjustments there is still a substantial gap between what we are accomplishing in fire prevention and what important tasks we must accomplish as part of our responsibilities. Analysis of the current gap indicates that one full-time fire prevention officer is required to cover the fire prevention workload. This is reflected in the report findings and recommendations of which I fully concur.

This fire prevention report is intended to provide an objective, comprehensive, data-driven document that all can be proud of. I believe we have done that. The report is the result of many hours of labor and analysis. I would like to thank the following individuals for their valuable efforts:

Tom Judge, Concord Assistant Fire Chief

Brian Whitney, Concord Fire Captain

Heather Vaughn, Fire Prevention Clerk

Wanda Rupelt, Senior Administrative Assistant

Mike Wallace, Concord Interim Deputy Fire Chief (October 2014-June 2015)

I would also like to thank the following subject matter experts for their independent review and feedback:

David Grunes, Bedford Fire Chief

Anthony Stower, Maynard Fire Chief

Jon Harris, Concord Budget and Purchasing Administrator

Kerry LaFleur, Concord Finance Director

Respectfully,

Concord Fire Department: Mission, Vision, And Values

Concord Fire Department Mission

The mission of the Concord Fire Department is to provide rapid and effective fire, rescue, and emergency medical services to the community, and strive to make Concord a safer place for all to live, work, and visit.

Concord Fire Department Vision

The vision of the Concord Fire Department is to meet or exceed the expectations of our community by setting a high standard of excellence: guided by the principles of trust, integrity, honesty, loyalty, and respect for all.

Concord Fire Department Guiding Values

As an organization, we value:

Safety

We will strive to protect the lives and well-being of our community and our co-workers.

Professional Excellence

We believe the pursuit of excellence and demonstrating high professional standards are critical to our work. To ensure the best possible service for our community, we will support continuous training and encourage professional development. We will be dedicated, compassionate, trustworthy, and act with honesty and integrity.

Respect

We will respect our community and ourselves, while consistently exhibiting courtesy and compassion for those in need.

Innovation

We will foster an environment that allows new ideas and positive change to better serve our community.

Scope of Project

Primary Research Questions

We identified the need to develop an objective data-driven approach to confirm the status of our fire prevention delivery and answer the following research questions:

1. What are the expectations of a fire departments fire prevention division in Massachusetts?
2. Are we performing all the fire prevention activities that are expected of a fire department in Massachusetts?
3. Are we performing all the Fire Prevention activities that are mandated for a Fire Department in Massachusetts?
4. How do we compare to Fire Prevention Divisions in similar Fire Departments?
5. How many Fire Prevention personnel are needed to effectively service Concord?
6. How should a Fire Prevention Officer fit into the CFD rank structure?

We used several methods to ensure an accurate, data-based approach to develop this assessment. We reviewed our CFD records regarding Fire Prevention activities. We determined what Fire Prevention activities are mandated; those mandates can come in the form of a state law, or a state code. We reviewed what Fire Prevention activities are conducted by a prudent Fire Department where there is no mandate.

In addition to Concord, twelve comparable communities were surveyed to determine what number of personnel they had assigned entirely to Fire Prevention. We also polled those same communities regarding the number of inspectors in their respective building departments.

Concord: Community Profile

As identified in the 2012 Concord Fire Department EMS Strategic Plan (CFDEMS) Concord has nearly 18,000 residents (2010 Federal Census). In addition, Concord also has a substantial service population and infrastructure which contribute to the demands on Fire Prevention, the following are examples:

- A major limited access highway (Route 2)
- Three hotels
- A community hospital (174 beds/1600 employees)
- Five medical office buildings
- Adult family care centers (both residential and daycare)
- Various office buildings and office parks
- A commuter rail line (10,000 daily)
- Various tourist attractions including Walden Pond (600,000 annually), Minuteman National Park (excess of 1,000,000 annually), a multitude of historically significant properties.
- A substantial river system
- A portion of Hanscom Air Force Base is located on the eastern border of town.

Concord also contains a number of facilities that account for an additional 1,698 beds, increasing our base population by another 9.61%, these are listed as follows:

- Four elderly residential care facilities
- Five private schools (two have dormitories)
- Adult Family Care centers (both residential and day)
- A large medium-security prison, a large minimum-security prison and a girl's alternative school

Department Background

The Concord Fire Department is staffed by forty-two uniformed members: Forty members are assigned to four groups, while the Chief and Assistant Chief work Monday through Friday. Thirty-six of the shift personnel work a twenty-four hour shift and four shift personnel work a 12 hour shift. Because the department staffs the West Concord Ambulance from 8:00 a.m. to 8:00 p.m., each group has up to 11 members during the day and 9 members at night.

The CFD operates from two fire stations: Headquarters Station at 209 Walden Street and the West Concord Station at 1201 Main Street. Front-line apparatus responding from this station includes one engine company, one Ladder Company, and one ambulance. The ambulance at Headquarters and the Ladder Company are cross-staffed.

At Headquarters, one Captain serves as the Shift Commander, and five firefighters are assigned to this station on each shift. Also, located at this facility are the administrative offices, Emergency Operation Center (EOC), and training room.

Strategically located at 1201 Main Street in West Concord is Station 2. Front-line apparatus responding from this station consists of one Engine Company, which is staffed with one Lieutenant and two firefighters, and one ambulance which is staffed with two Firefighters from 8:00 am – 8:00 pm.

The Town is divided into two response districts. District 1 encompasses most of Concord located east of Route 2. District 2 encompasses most of West Concord with areas located west of Route 2 (except for the streets west of Route 2 off Sudbury Road and the Nine Acre Corner area). (CFDEMS, 2012)

Organizational History and Background

The Town of Concord is a community filled with history. Concord was settled in 1635 by a dozen families, most coming from England especially for that purpose. On April 19, 1775, Concord and Lexington fought and won the first battle of the American Revolution.

Early History of the Concord Fire Department

Organized fire protection in Concord dates as far back as 1794 when a Fire Society was formed and owned one small hand engine with a bucket filled tub. "Each member of the Fire Society was required to keep in readiness for use, two leather buckets, a ladder and a large canvas bag. It was expected that each member at the alarm of a fire, would seize his buckets and bag and go to the scene and help save the property from destruction."

This Fire Society continued until a municipal fire department was established in 1855. During that year, the department was called out three times, all to the Pail Factory, for building fires, and had a total appropriation of \$288.90.

In 1874 the beginning of the public water system was introduced into Concord Center, and continued to grow throughout the years. In 1899 Town Meeting voted for the installation of a fire alarm system to be installed and maintained by the municipal light plant. (CFDEMS, 2012)

The Department Expands

The Fire Department saw its first permanent member in 1915, a man by the name of Royden A. Bass was assigned to the Central Station. By 1935 the full-time firefighters had increased by five, including the appointment of the first permanent Fire Chief, Harry Tuttle. In these early days, the permanent men were assigned to "...be on duty at all times..." and in addition to an annual vacation, were allowed "one day off (twenty-four hours) in every seven days".

On January 1, 1951, the ambulance was transferred from the Police Department to the Fire Department and housed in the West Concord Fire Station. During that year, the department responded to one hundred forty-one medical calls, including service to many area towns.

In 1954, the department consisted of nineteen permanent men, which included the appointment of the first permanent Deputy Chief/Deputy Forest Warden, Harry A. Patterson.

In 1956, three additional men were hired to increase the shift strength to eight, one captain and seven privates. Each was assigned to one of three platoons and worked an average of fifty-six hours per week. (CFDEMS, 2012)

New Headquarters and Further Expansion

On October 1, 1960, the fire department moved into its new headquarters at 209 Walden Street, where it remains today. The former headquarters station at 16 Walden Street was closed and later became the Walden Station Sandwich Shop.

At the 1968 Annual Town Meeting, approval was given to hire four additional men. This would provide the same shift coverage, while reducing the workweek to forty-eight hours. It wasn't until 1977 that the Department staffing was increased to thirty-two permanent members plus the Fire Chief.

In 1982 the department established the position of the Lieutenant to serve as the company officer of the West Concord Engine Company. The first four members to be promoted to Lieutenant were Paul Denaro, Walter Macone, Robert Robinson and Earl Stone. At that time, the department also established the position of a fifth Captain. That Captain was assigned to a fulltime day position working in Fire Prevention. Later that position was changed to Deputy Chief. After Deputy Chief Chris Kelley retired in 2014 the position of Assistant Fire Chief was created. The Assistant Chief role includes Fire Prevention in addition to numerous other duties.

In 2007, the department added four firefighters (one per shift) to the ranks using funds provided by the 'Safer Grant' which pays a decreasing percentage of the firefighter's salary over a four-year period. In the fifth year, the salaries were fully funded by the Concord Fire Department budget. In 2014 the department added four firefighters to expand our 24-hour ambulance coverage to include a second ambulance staffed from 8:00am until 8:00pm. This is part of a five-year plan to expand the coverage to two ambulances 24/7. (CFDEMS, 2012)

Current Organization

Today we operate with four shifts of up to eleven during the day and nine at night, including one Captain, one Lieutenant and nine Firefighters. The Lieutenant and four Firefighters are assigned to the West Concord Engine and West Concord Ambulance; the Captain (shift commander) is assigned to a Command Vehicle, three Firefighters are assigned to the Concord Engine, and two Firefighters are assigned to cross-staff the ambulance and the Ladder Company. The shift strength of members will drop by one member when anyone is out sick, injured, or on vacation.

Overview of Fire Prevention

Fire Prevention in the Concord Fire Department is comprised of many parts. Fire Prevention is involved in the following:

- Conducting Inspections
- Fire Code Enforcement
- Reviewing construction plans for compliance with the Fire Code
- Site Plan Review for Fire Department apparatus access and hydrant placement
- Reviewing plans for fire sprinkler systems
- Reviewing plans for fire alarm systems
- Issuing Permits
- Fire Prevention Education Programs
- Community Risk Reduction
- Preplanning

Fire Prevention is a specialty all its own. The complexity of fire codes and building codes that a Fire Prevention Officer is required to be familiar with can be daunting. As technology has advanced and codes have changed, the training and education required to keep up with current law has also increased. At one time Fire Departments could assign anyone with any skill level to Fire Prevention. The Fire Service recognized that as with any specialty in the Fire Service, training and professionalism were required. Over the past several years the Massachusetts Firefighting Academy has been offering a series of courses that lead to credentialing in the specialty of Fire Prevention. The credentials are based on National Standards and require continuing education to maintain.

Fire Prevention Staff

Currently, in The Concord Fire Department, the Assistant Fire Chief is the only member of the department who is “assigned” to fire prevention, and this role represents only forty percent of the Assistant Chief Job description (Appendix A).

The chart below illustrates the areas of responsibility that are part of the Assistant Fire Chiefs Position:

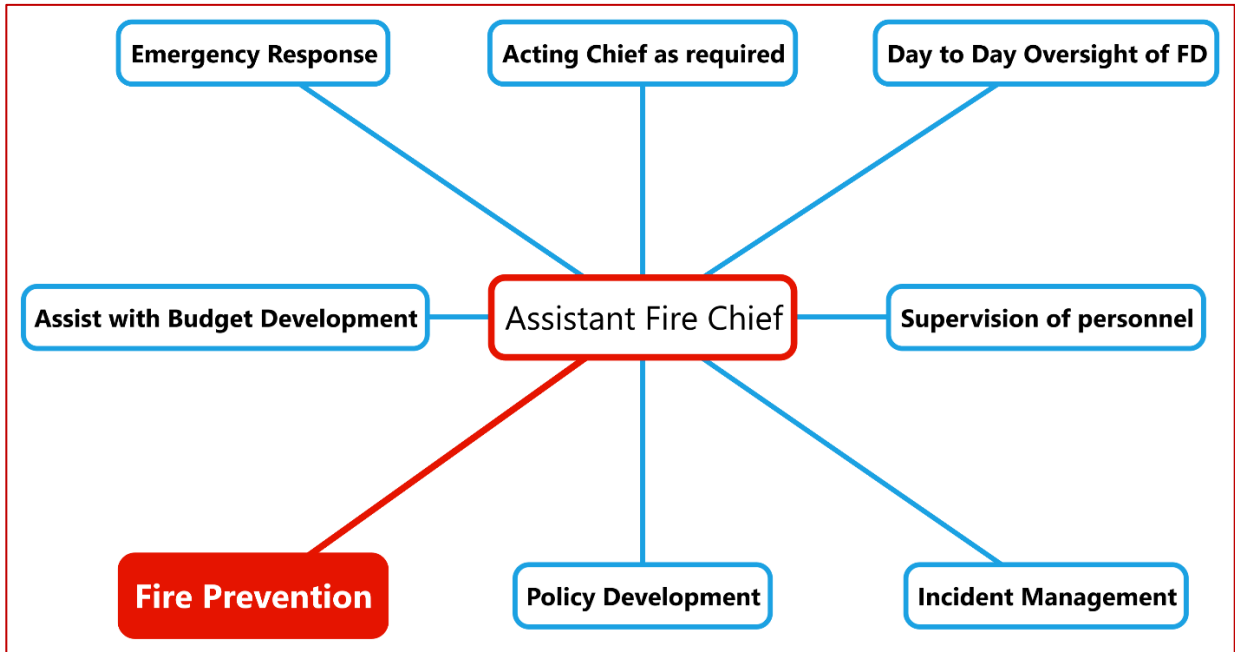


Chart 1

The next chart illustrates the areas of responsibility that fall under the single category of Fire Prevention:



Chart 2

To help fill voids, Fire Prevention is augmented by Captains/Shift Commanders, and on-duty fire companies are assisting to the extent that they are available from other response responsibilities and shift duties. Available is the key word here as the department approaches 3,700 runs per year which is a dramatic increase of 20% since 2011.

Overtime is used to fill in gaps as needed, for example:

- Captain Redmond when Assistant Chief is unavailable.

Captain Redmond conducts inspections, assisting with plan review, attending meetings and serving as a fire department liaison with other town departments on fire department prevention and risk reduction issues.

- FF Vickery conducts final fire alarm acceptance testing.

FF Vickery is the department fire alarm specialist and has become more and more involved in the inspection and acceptance testing of new fire alarm systems.

- FF Geanisis conducts oil burner and oil storage inspections as needed.

FF Geanisis has experience with these inspections and is starting to help clear up a backlog.

- Lieutenant Whalen conducts school inspections, school fire drills, and Emerson Hospital Inspections. *

Lt. Whalen does annual inspections at the public schools, school fire drills, and quarterly hospital inspections.

- FF Lefebvre conducts nursing home inspections. *

- FF Lefebvre conducts the mandatory inspections at the nursing homes.

* Hospital and Nursing Home inspections are currently done using overtime. That overtime is, however, reimbursed. The department will continue to bill for these inspections, but the receipts will now be revenue as opposed to reimbursement.

Allocation of Fire Prevention Hours for Assistant Fire Chief

Fire Prevention Administration 5 hours

- *Reviewing inspection reports & following up on violations.*
- *Processing fire prevention fees*
- *Producing fire prevention related updates for training purposes*

Plan Review 2 hours

Preplanning	2 hours
<ul style="list-style-type: none"> • <i>Working with line officers on the creation of preplans.</i> 	
Follow-up inspections	2 hours
<ul style="list-style-type: none"> • <i>Reinspecting failed inspections</i> 	
Construction Site Visits	2 hours
<ul style="list-style-type: none"> • <i>Maintaining a visible presence with contractors.</i> • <i>Firefighter Safety</i> 	
Meeting with customers	2 hours
<ul style="list-style-type: none"> • <i>Architects</i> • <i>Contractors</i> 	
Meeting with Town Departments	2 hours
<ul style="list-style-type: none"> • <i>Planning</i> • <i>Building</i> 	
New system acceptance testing	2 hours
Fire Prevention Continuing Ed.	1 hour
	19 Total Hours

Inspections, Plans Review, Code Enforcement

The Concord Fire Department currently only reviews commercial plans. Several years ago, because Fire Prevention could not keep up with the workload, the building department generously took over all aspects of residential plan review and inspection. That was by necessity at the time, but the building code in Massachusetts requires residential plans that include a fire protection system to be submitted to the fire department for review. In cooperation with the building department, we should once again become involved in plans review and inspection of residential construction. Fulfilling the fire department obligation under the building code would enhance service.

For example, there are two codes at odds regarding residential fire alarm systems:

- The Massachusetts Building Code has jurisdiction over a fire alarm system in a new home.

- Massachusetts General Law C148 Section S26f1/2 has jurisdiction over any home being sold in the Commonwealth.

There are challenges in attempting to work with the two codes; there are subtle differences in location of smoke and carbon monoxide detectors. Thus, a brand-new home that is 100% compliant with the building code and eligible for a certificate of occupancy, may not meet the fire code. When the first and any subsequent owner sells the home, it will be required to comply with MGL 148, and frequently they learn from the Fire Department that it does not. This causes the owner of a relatively new home that complied with the building code to hire a contractor to update a new system to comply with the MGL required for a real estate transaction. Understandably, we end up with very upset and frustrated customers.

A home that is compliant with the Fire Code will be compliant with the Building Code, but the opposite is not always true. Earlier Fire Prevention involvement will prevent this gap from occurring.

Other Fire Code requirements that are being missed because of the lack of fire prevention involvement include site access requirements for fire apparatus and the permitting of the installation of oil burning equipment and related oil storage.

Many inspections are mandated by Massachusetts General Law or a CMR, while other inspections are what a prudent fire department does even where there is no mandate. As discussed earlier, shift personnel are assisting to the extent possible, that assistance is focused on the required inspections for real estate transactions. Given the department's run volume and other demands on shift personnel, adding more fire prevention duties is not viable. The chart on the next page illustrates inspections that are getting done versus those that are not; those with a green check are getting done, some requiring overtime to accomplish. Those with a red X are not getting done at all.

Service Gaps

What we are getting done vs. what we are not

There are two categories of inspection shown here. Those in the *Mandated* column are those that there is an existing CMR or Massachusetts General Law that requires Fire Department inspections. Those in the *No Mandate* column are those that while there is no legal requirement, a prudent Fire Department routinely inspects.

Required by Code or State Law

Not required by law, but considered a critical best practice

-
- ✓ **Hospital**
 - ✓ **Nursing Homes**
 - ✓ **Schools (public)**
 - ✓ Residential Smoke Detector (real estate)
 - ✓ Day Cares
child/adult
 - ✓ Prisons
 - ✓ Liquor establishments
 - ✓ Summer Camps
 - ✗ Schools (private)
 - ✗ Dormitories
 - ✗ Assisted Livings
 - ✗ Hotels / Inns

-
- ✗ Assemblies
 - ✗ Mercantile
 - ✗ Town buildings
 - ✗ Historic / Museums
 - ✗ Preplanning
 - ✗ Medical offices
 - ✗ Business offices

✓ CFD getting these done
 ✗ Not getting these done
Bold indicates being done with reimbursed overtime

What Have We Been Missing?

These examples are those that we have found. It is safe to say that there are more like these that need to be corrected.



The arrow is pointing to the exterior of a fire exit from a Thoreau Street business. Fire and Building Code violations



Residential construction site on Lexington Road. Violations of required construction site safety standards and Massachusetts Fire Code.



Rear of 40 Beharrell Street. Arrow is pointing to the hot and neutral electrical wires which are exposed. The electrical box is hanging from its ground wire. The wires were tested with a meter and they were live.



Front of 40 Beharrell Street. Exterior outlet pulled away from wall and hanging from conduit by its wires.



This smoke detector, hanging by its wires, is in the former Main Street Toy Shop. This space is being demolished for a new tenant. Much of the rest of the building was occupied at this time.



Another photo of a different detector in the former Toy Shop.



Discovered during an October 2016 annual liquor license inspection, this image is the cleaning and maintenance tag required by the Massachusetts Fire Code for a commercial kitchen hood. This was on a hood in a Concord Center business. It was three cleanings behind schedule and the grease buildup was a tremendous fire hazard. This hood requires cleaning every 60 days. Evidence that one annual inspection is not enough. They were ordered to correct this within 24 hours and they very willingly complied.



A local venue violating Mass. fire codes regarding the use of candles in a place of assembly. Candles are allowed only with FD permission and under very strict guidelines.

Prevention and Building Department Code Enforcement Staff: How Do We Compare?

Fire Prevention divisions are involved in construction projects from conceptual plans being proposed, to ongoing inspections during construction, to completion and occupancy. Included are site plan review, construction plan review, construction site safety inspection, and all the follow-up inspections of required fire protection systems during the construction process are among the responsibilities of a fire prevention division. There is a correlation between the volume of work performed by a building department and a fire prevention division, so we looked at how the Concord Fire Department compares to other Fire Departments regarding the number of fire prevention personnel, we also looked at other communities building departments. Of all communities surveyed, Concord has the lowest ratio of fire prevention inspectors and is below the group average. The Concord building department inspectors are just under the average for the survey communities. For this survey, all building department inspectors were counted including wiring and plumbing inspectors

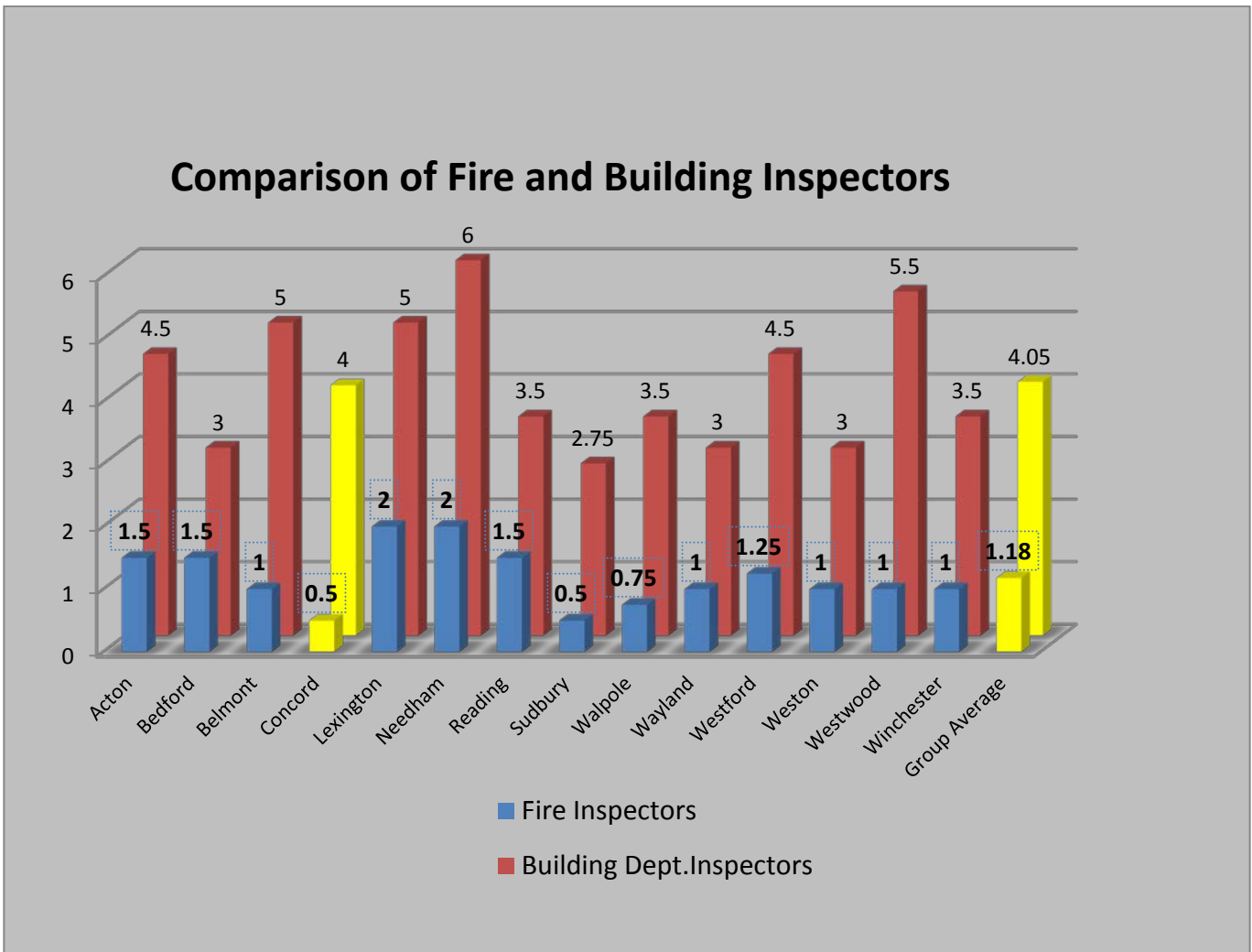


Chart 3

Fire Inspector vs Comparison

To make a comparison between communities we assigned values as follows:

- 1 Full time = 1
- 1 Part time with office hours = .5
- 1 Part time inspections only = .25

This method allows us to make an accurate comparison between communities with different staffing approaches.

Community	Fire Inspectors	Building Dept. Inspectors	Ratio Building:Fire
Concord	0.5	4	8 : 1
Sudbury	0.5	2.75	5:1
Walpole	0.75	3.5	4 ½ : 1
Belmont	1	5	5:1
Westwood	1	5.5	5 ½ : 1
Winchester	1	3.5	4 ½ : 1
Wayland	1	3	3:1
Weston	1	3	3:1
Westford	1.25	4.5	4:1
Reading	1.5	3.5	2:1
Acton	1.5	4.5	3:1
Bedford	1.5	3	2:1
Needham	2	6	3:1
Lexington	2	5	2 ½ : 1
Group Avg.	1.18	4.05	4 : 1

Chart 4

Fire Inspector Rank Structures

We looked at the Fire Prevention Division rank structure of our comparable communities. The results are found in the chart below. None of the comparable communities have more than two FTEs in fire prevention, therefore there are two columns for the possible ranks in each community.

Community	# of Fire Inspectors	Rank	Rank
Concord	0.5	Assistant Chief	
Sudbury	0.5	Assistant Chief	
Walpole	0.75	Deputy Chief	
Belmont	1	Captain	
Westwood	1	Deputy Chief	
Winchester	1	Captain	
Wayland	1	Firefighter	
Weston	1	Captain	
Westford	1.25	Lieutenant	Deputy Chief
Reading	1.5	Captain	Shift Officer
Acton	1.5	Deputy Chief	Captain
Bedford	1.5	Captain	Captain
Needham	2	(2) Firefighters	Fire Chief (plans)
Lexington	2	Assistant Chief	Firefighter
Group Avg.	1.18		

Chart 5

Our research indicates that few of our comparable communities have a Fire Prevention Inspector at the rank of Firefighter. Where there are FFs, the majority of the divisions have an Officer as well.

According to the Office of the Massachusetts State Fire Marshal “The requirements for a fire prevention officer are ever expanding and more complicated than ever before. In today’s world, the fire prevention officer needs to be thoroughly familiar with the fundamentals of firefighting, hazardous materials, fire protection systems, fire inspection principles, Mass General Laws (MGL), Massachusetts Fire and Building Codes, and national standards” (Office of the Massachusetts State Fire Marshal, 2015).

With that in mind, NFPA Standard 1037, Standard on Fire Marshal Professional Qualifications was the basis for the job assignment requirements described in the proposed job assignment found in Appendix C. The duties outlined and the level of responsibility are in line with those of a Fire Officer, and certainly commensurate with the expectations of a Concord Fire Officer.

Fire Prevention Workload Drivers Are Trending Upward

The infrastructure of the Town of Concord vs. our comparable towns is more substantial to begin with as illustrated in Chart 6:

SERVICE POPULATION / INFRASTRUCTURE															
CITY	Highway	Commuter Rail	Hospital	Nursing Home	independent assisted living	Dialysis Clinic	Medical Office Building	State/ County Prison	CITY	Private Schools	Private School Dormitory	Hotel	Airport	Tourist attractions	Other notable infrastructure
Concord	1	1	1	3	2	1	5	2	Concord	5	2	2	1	yes	Walden Pond 600,000 annually National Park 1,000,000+
Acton	1	1	0	1	1	0	1	0	Acton	0	0	1		no	
Bedford	1	0	1	1	1	0	2	0	Bedford	0	0	3	1	no	Middlesex Community College
Belmont	1	1	1	1	0	0	3	0	Belmont	2	1	0	0	no	
Hudson NH	1	0	0	1	0	0	2	0	Hudson NH	1	0	0	0	no	2 urgent care clinics
Lexington	2	0	0	4	1	0	4	0	Lexington	3	1	3	1	yes	2 day surgery centers
Lincoln	1	1	0	0	1	0	1	0	Lincoln	1	0	0	1	yes	National Park
Needham	1	1	1	3	3	0	2	0	Needham	4	0	2	0	no	
Reading	2	1	0	2	2	0	2	0	Reading	1	0	0	0	no	
Scituate	0	1	0	2	0	0	3	0	Scituate	1	0	1	0	yes	Scituate harbor 10,000 seasonal
Sudbury	0	0	0	2	1	0	1	0	Sudbury	1	0	1	0	no	
Walpole	2	1	0	0	1	0	3	1	Walpole	2	1	1	0	no	Gillette Stadium
Wayland	0	0	0	1	2	0	0	0	Wayland	0	0	0	0	no	
Westford	2	1	0	1	1	0	2	0	Westford	0	0	3	0	no	
Weston	2	1	0	1	2	0	2	0	Weston	4	1	0	0	no	
Westwood	1	1	1	1	1	1	3	0	Westwood	1	0	2	0	no	
Winchester	1	1	1	2	1	0	5	0	Winchester	1	0	0	0	no	
Group Avg.	1.12	0.71	0.35	1.53	1.18	0.12	2.41	0.18		1.59	0.35	1.12	0.25		

Chart 6

Source: CFD EMS Plan, 2012

In addition to the existing service population that drives our volume of activity, development throughout town continues:

- Two new planned residential developments are creating a variety of inspections and permit requirements: Site plan review, permitting for LP gas storage for heat (39 LP gas storage permits for Black Birch). Black Horse Drive will have similar requirements.
 - Black Birch, nearing completion, planning on more across the street.
 - Black Horse Drive, construction underway.
- Marriott Extended Stay – (120) room hotel
 - Construction complete – now a Fire Prevention inspection requirement
- Proposed new market at Millbrook Tarry has already been through several iterations of proposed plans to review. If the project starts it will entail construction plan review and many follow up inspections through completion. Then it will be added to the list of commercial property requiring annual inspection.

- 50 – 80 Beharrell Street – (72) residential apartments above retail space. The commercial spaces are still filling in and with each new tenant come an additional set of plans and inspection requirements. This property has also been a site for several code enforcement issues.
- 300 Baker Ave at < 75% occupancy. As the building occupancy continues to grow, the tenant spaces are renovated prompting plan review and inspection requirements.
- 330 Baker Ave – Medical building. Newly added to the list of annual inspections that are required.
- Nathan Pratt – fully occupied and now just old enough that we are starting to see the first generation of fire alarm devices such as smoke detectors and carbon monoxide detectors beginning to have problems.
- Winthrop Street – Likely site of a new assisted living. This project will consume a great deal of time from the planning stage through completion with plan reviews and many inspections.
- Virginia Road Office buildings under new ownership and being re-vitalized. This resurgence of activity creates plan review and inspection requirements for fire prevention.
- 521 Virginia Rd recently opened as a The Guild School, a school for students with special needs focusing on autism. This school will add mandatory inspectional requirements.
- Increasing emergency response volume. Relying on in service companies to support Fire Prevention is less and less viable as the department’s run volume continues to increase. Since 2011, we have seen nearly a 20% increase in responses from 3,054 to a projected 3,700 in 2016.
- Growing population. The 2010 Federal Census listed Concord at 17,669. Since that census there has been substantial development in town including:
 - An apartment complex that is comprised of eleven 3 story buildings, and seven townhouse style buildings.
 - A new residential development nearing completion with thirty-nine new homes.
 - Per factfinder.census.gov the December 31, 2015 population of Concord was estimated at 18,834 or a 6.5% increase since the 2010 Census.

Findings Summarized

1. *What are the expectations of a fire prevention division in Massachusetts?*

Fire Departments in Massachusetts are expected to provide a wide array of fire prevention services that include: construction plan review for compliance with codes related to fire protection systems and fire apparatus access; inspection services for a variety of occupancy types – some are mandated. Others, while not mandated are considered a best practice that any prudent fire department must accomplish; Public Fire Prevention education; Code Enforcement; Permit issuance and follow up inspections; Customer service dealing with residents, architects, builders, and realtors.

2. *Are we performing all the fire prevention activities that are expected of a fire department in Massachusetts?*

No, we are not able to perform all the fire prevention functions that are expected of a prudent fire department. We are unable to get to many of the inspections that we should be doing. For example: Assembly occupancies, mercantile, business occupancies, hotels and Inns, medical offices, town property, and historic properties.

3. *Are we performing all the Fire Prevention activities that are mandated for a Fire Department in Massachusetts?*

No, we are not able to perform all the fire prevention functions that are mandated for a fire department. While we do get many of the mandated inspections completed, there are some that we are unable to get done with any regularity. For example: Hotels and Inns; Assisted Living; and private school properties.

4. *How do we compare to fire and building inspectional services in similar comparable towns?*

Most of our comparable departments have full-time fire prevention staff, the group average of fire prevention staff are 1.18 FTEs, Concord is at the bottom with .50 FTEs. The average staff for building department inspectional services in our comparable towns is 4.05, Concord is slightly below the average at 4.00. The average ratio of building department inspectors to fire prevention inspectors in comparable towns is 4:1, the ratio in Concord is 8:1.

5. *How many Fire Prevention personnel are needed to effectively service Concord?*

To accomplish all the inspections, plan reviews, permit services, code enforcement activities, related customer service we have identified 2,290 additional hours that will be required for one full-time employee.

6. *How should a Fire Prevention Officer fit into the CFD rank structure?*

The job assignment description in Appendix C is largely derived from NFPA Standard 1037, Standard on Fire Marshal Professional Qualifications. That standard is commensurate with a Fire Officer position. Further, our review of comparable communities indicates that all communities that have FTEs in fire prevention have Fire Officers in that role. A minority of our comparable towns has a Fire Prevention FTE at the Firefighter rank, and except for Westford each Fire Prevention Division is also staffed by at least one Fire Officer.

Recommendations

1. Our review of the Fire Prevention Division identified that our mission statement does not reflect our commitment to fire prevention. Therefore, our recommendation is to amend our mission statement as follows:

The mission of the Concord Fire Department is to make Concord a safer place to for all to live work and visit. We will accomplish this through prevention efforts and by providing rapid and effective fire, rescue, and emergency medical services to the community.

2. The findings of this study clearly indicate the need for one additional full-time Fire Prevention Officer. There are two options to consider in achieving this recommendation:

Option 1:

Create an additional position within the collective bargaining unit. The rank for this position would be Fire Lieutenant. The position would have an administrative schedule and a specific job assignment that differs from Fire Lieutenants assigned to shifts.

Option 2:

Create the position of Deputy Fire Chief. This position would be a full-time employee assigned to fire prevention duties. The position would be an MP level employee, classification to be determined with the assistance of the Human Resources Department.

Of course, the last option is to do nothing and continue with the current staffing model. This is the least favorable option because we are at a point where we cannot provide services for which we have a mandate.

Details about the Position

The Fire Prevention Officer will work an administrative schedule as determined by the Fire Chief. He/She will obtain and maintain the appropriate Fire Prevention Credentials available through the Massachusetts Fire Academy. Typical duties and responsibilities for this position will include:

- Conducting inspections.
- Reviewing Plans.
- Code enforcement.
- Working closely with other town departments, especially with the building and planning departments.
- Occasionally working an evening schedule. Concord looks very different at night.

Fire Prevention will be the primary responsibility of this position and consume virtually all the Fire Prevention Officers workweek. This Officer will be available for the occasional serious emergency incident by helping as needed or taking part in station coverage.

Miscellaneous department budgetary benefits include the following:

- The Fire Prevention Officer may be eligible for overtime, reducing the burden on current Officers who frequently are required to work extra shifts.
- The position will have no additional overtime expense – there is no need to cover for vacation, sick, personal, etc.

Financial Factors

Concord Fire Department Fee Schedule

Last year as we prepared for the FY17 budget CFD evaluated where we were with our Fee Schedule. We adjusted to maximize our ability to capture revenue to help offset the cost of the requested new position. What we learned was that in addition to permit fees, the Town is entitled to charge for other services such as inspections and plan reviews.

- Authority to charge fees: MGL C40 S22F
- Authority to issue permits and conduct inspections: MGL 148, 527CMR1
- Hourly rate is based on cost to Town plus 10% for administrative fee.
- Permit fees are the maximum allowed by MGL.

	Hourly Fee	
<i>Liquor establishments</i>	\$55.00	<p>This hourly rate represents what the CFD currently charges for a detail rate, and also represents the cost to the Town plus admin fee for the Fire Prevention Officer being proposed. This rate includes travel, inspection, review of required NFPA 25 & 72 inspection reports, and associated inspection reports produced by the Concord Fire Department.</p>
<i>Healthcare facilities</i>	\$55.00	
<i>Hotels / Inns</i>	\$55.00	
<i>School Inspections</i>	\$55.00	
<i>Camp Inspections</i>	\$55.00	
<i>Daycare facilities</i>	\$55.00	
<i>Inspections required for licensing</i>	\$55.00	
<i>Re-inspection fee</i>	\$55.00	

Permits & Other Services

21E Review	\$55.00	Hourly
AGST Installation	\$50.00	
AGST Removal	\$50.00	
Blasting	\$50.00	Per job
Dumpster - construction or intermittent > 6yds	\$50.00	1 permit for each dumpster on site
Fire Protection System Impairment	\$50.00	Per job
Fire Protection System Repair or alteration	\$50.00	Per job
Flammable/Combustible Liquid Storage	\$50.00	Annual

Fuel Oil Burning Equipment Permits	\$50.00	Per job
Fuel Storage - Parking Garages	\$50.00	Annual
Black Powder Storage > 50 pounds	\$50.00	
<i>Fee Schedule continued:</i>		
LP Gas Installation	\$50.00	
LP Gas Storage	\$50.00	Annual
Open Burning Permits	\$20.00	Annual
		Minimum/ .01 per square
Plan Review	\$100.00	foot
Residential Smoke & CO detector inspection	\$50.00	Single family
Residential Smoke & CO detector inspection	\$100.00	Two-family
Residential Smoke & CO detector inspection	\$150.00	More than two, up to 6 units
Residential Smoke & CO detector inspection	\$500.00	More than 6 units
Salamander	\$50.00	Per site
Tent Installation	\$50.00	Per installation
UGST Installation	\$50.00	Per Tank
UGST Removal	\$50.00	Per Tank
Welding / Cutting/ Hot work	\$50.00	Per welder on job
Dumpster year-round > 6yds	\$50.00	Annual
All other permits required	\$50.00	

Mandated Inspections, Permits And Other Services

<i>Inspection or Service Type</i>	<i>Total Inspections</i>		<i>Total Hours</i>	<i>Revenue</i>
<i>Liquor establishments</i>	19		19	\$1045
<i>Healthcare facilities</i>	24		84	\$4620
<i>Hotels / Inns</i>	24		52	\$2860
<i>Schools</i>	12		43	\$2365
<i>Camps</i>	9		19	\$1045
<i>Daycare facilities</i>	9		18	\$990
<i>Inspections required for licensing</i>	8		19	\$1045
<i>Permits & Other Services</i>	<i>Cost per</i>		<i>Volume</i>	
<i>Dumpster</i>	\$50.00		200	\$10,000
<i>Commercial Plan Review</i>	\$100.00		100	\$10,000
<i>Residential Plan Review</i>	\$100.00		65	\$6,500
<i>Open Burning Permits</i>	\$20.00		500	\$10,000
<i>Fuel Storage - Parking Garages</i>				
				\$50,470

Chart 7

Fee Improvements: A Comparison of Concord & Bedford FDs

Until last year Concord was charging a base fee of \$75.00 for a commercial plan review. That fee was for any plan up to 1000 square feet. An additional charge of \$2.50 was charged for each additional 1000 square feet over the base fee.

In comparing to other Fire Departments, we found that we were on the low side in terms of what we charged for this service. We evaluated the way the Bedford Fire Department handles plan review and associated fees and adopted a similar model. Our new and current rate for a plan review is .01/square foot with a minimum charge of \$100.00. In the past CFD would have looked at one set of plans for a construction project; CFD now reviews at least three sets of plans for new construction: A Permit Set submitted for a building permit, shop drawings submitted for a fire alarm system, and shop drawings submitted for a sprinkler system.

The rationale for the rates and a per square foot charge is the volume of inspections that will follow as the job progresses. Once the plan review is conducted we do not charge for related inspections, except for reserving the right to charge for re-inspection for a failure.

The chart below is an actual example: The Marriott Residence Inn, 320 Baker Ave, was submitted under the old fee schedule. The total plan review fee was \$275. Under the new fee schedule the plan review fees would have been \$2,700. During the construction process the Fire Department conducted fourteen inspections that were logged. There were also many calls and quick visits to resolve problems or questions.

Previous		Current	
Permit Set	\$ 275.00	Permit Set	\$ 900.00
Fire Alarm Set	\$0	Fire Alarm Set	\$ 900.00
Sprinkler Set	\$0	Sprinkler Set	\$ 900.00
Total Fee	\$ 275.00	Total Fee	\$ 2,700.00

Chart 8

Another example of a project that was a significant drain on Fire Prevention services during the planning and construction phase is the Mews project on Nathan Pratt Drive. This project required many inspections and many hours of overtime to get their fire alarm systems online and connected to the municipal system. If this project came in today the plan review fees would be between \$13,000 and \$14,000.

Appendix A - Cost for a Fire Prevention Officer

	Salary	\$105,240	<i>Gross for Town</i>
	Less Benefits	(\$19,854)	
		\$85,386	<i>Gross for FD</i>
	Overtime reduction	(\$6,800)	*
	New revenue	(\$50,410)	
		\$28,176	<i>New FD Funding needed</i>
	<i>Hours from mandated</i>	1306	
	<i>Hours from required</i>	604	
	<i>Construction Site Visits</i>	156	<i>at 3 hours per week</i>
	<i>Vacation</i>	200	
	<i>Personal Leave</i>	24	
		2290	<i>dedicated hours</i>
	 <i>Percentage of FTE</i>	 100%	

* *Overtime reduction is more accurately a reallocation of the overtime funds back to the original purpose. The use for Fire Prevention was out of necessity.*

Appendix B - Assistant Chief Job Description

The Assistant Chief Job description is included here to illustrate the current volume of work in addition to being the only member assigned to Fire Prevention.

GENERAL SUMMARY:

Under the general direction of the Fire Chief, assists with managing the delivery of Fire and EMS services for the Town of Concord; serves as the head of the Fire Department in the absence of the Fire Chief, and as such commands, controls, and manages the entire Department. Performs highly responsible work assisting the Fire Chief in leading and managing the delivery of Fire Suppression, Fire Prevention, Rescue, EMS, Hazardous Materials, Emergency and Disaster management services. The Assistant Fire Chief is a member of the Department's executive management team exhibiting a strong, continuing commitment to the community of Concord and the Fire Department's mission, philosophy, goals, and objectives. Assists the Fire Chief in keeping all losses of life and property due to fire to a minimum through fire prevention and fire suppression programs and activities. Assists the Fire Chief in managing Emergency Management operations and programs. Responsible for maintaining and improving upon the efficiency and effectiveness of all areas under his/her direction and control. Performs varied and responsible duties requiring a thorough knowledge of departmental operations and the exercise of judgment and initiative in completing tasks, particularly in situations not clearly defined by precedent or established procedures. Incumbent is called upon to handle a significant amount of detail, each varying from the other in substance and content, requiring incumbent to approach workload with flexibility.

ESSENTIAL JOB FUNCTIONS:

- Responsible for the daily operations of the department including supervision of Captains, Lieutenants, and Firefighters.
- Manages, administers, and leads prevention, inspection activities, and coordination of department programs.
- Formulates departmental policies, rules, regulations, general orders, and directives, subject to the final authorization of the Fire Chief or the Town Manager in conformance with Federal, State, County, Town Bylaws and ordinances when required.
- Responsible for the implementation of new and on-going policies, procedures, regulations, and practices, including ongoing training of department staff.
- Under the direction of the Fire Chief, coordinates the department's human resources activities with the Town's Human Resources Department.
- Assists the Fire Chief in managing the Fire Department; assists with planning, coordinating, supervising, and evaluating fire operations; assists with establishing policies and procedures for the Fire Department in order to implement directives from the Town Manager.
- Assists with the planning and implementation of fire programs for the Town in order to better carry out the policies and goals; assists with reviewing departmental performance and effectiveness; formulates programs or policies to alleviate deficiencies.

- Responds to alarms and may direct and participate in activities at the scene of emergencies. Manages emergency scenes as necessary.
- Assists the Fire Chief with production of annual budgets and managing budgets; assists with preparation and presentation to the Town Manager of a proposed annual budget for the department and assists with directing the implementation of the department's adopted budgets; plans and reviews specifications for new or replaced equipment.
- Acts as Fire Chief in his/her absence as needed.
- Prepares and submits periodic reports and roll call updates to the Fire Chief regarding the Department's activities and operations.
- Works with Town management on a variety of issues and items. Assists with the preparation and submission of monthly reports to the Town Manager regarding the Department's activities and prepares a variety of other reports as appropriate, including the annual report of activities.
- May supervise the inspection of buildings and other properties for fire hazards and enforces fire prevention ordinances.
- Assigns personnel to such duties as the service requires; may evaluate the need for and recommend the purchase of new equipment and supplies.
- Meets with Town officials and other fire officials, community and business representatives and the public on all aspects of the department's activities.
- Performs the duties of command personnel as needed.
- Attends trainings and meetings to keep abreast of current trends in the field; may represent the Town in a variety of local, county, State, and other meetings; serves as a member of various employee committees.
- Performs special projects and related responsibilities as initiated and requested.
- Performs other related duties as required, directed or as the situation dictates.
- Regular attendance at the workplace is required.

SUPERVISORY RESPONSIBILITY:

Supervises the activities and performance of the department operations and provides functional oversight to Captains, Lieutenants, Firefighters, EMTs, and volunteers. Carries out supervisory responsibilities in accordance with policies and applicable laws. Responsibilities include assisting in recruitment, interviewing, recommending to the Town Manager for appointment, and training employees; planning, assigning, and directing work; appraising performance; rewarding and disciplining employees; addressing complaints and resolving problems.

Appendix C - Proposed Job Assignment

FIRE PREVENTION OFFICER

The Fire Officer assigned to Fire Prevention will be an integral part of the fire prevention program of the Concord Fire Department. Under the supervision of the Assistant Fire Chief, the Officer working in Fire Prevention will participate in a wide range of Fire Prevention inspection, plan review, and enforcement activities. Additionally, as required by the immediate needs of the Concord Fire Department the Officer assigned to Fire Prevention may be tasked with suppression or other line duties.

The responsibilities of this position include, but are not limited to the following:

1. Conduct compliance inspections, given applicable codes, standards, and jurisdictional requirements and/or an identified issue, so that the applicable codes, standards, and jurisdictional requirements are identified, deficiencies are identified and documented, and compliance achieved.
 - a. **Requisite Knowledge.** All applicable codes, standards, and jurisdictional requirements; administratively implementing documents and methods; and technological tools to aid compliance inspections.
 - b. **Requisite Skills.** The ability to operate within and assist in the development of requirements for the administration of the inspection functions and programs.
2. Perform plan reviews, so that requirements for plan reviews are completed in accordance with the policies of the Concord Fire Department.
 - a. **Requisite Knowledge.** All applicable codes, standards, and jurisdictional requirements; workflow processes; and technological tools for the plan review process.
 - b. **Requisite Skills.** The ability to operate within and assist in the development of Concord Fire Department requirements for the administration of the plan review process.
3. Conduct enforcement activities as required, given codes, standards, and Concord Fire Department requirements.
 - a. **Requisite Knowledge.** All applicable codes, standards, and Concord Fire Department requirements.
 - b. **Requisite Skills.** The ability to work effectively with customers and other authorities to achieve conformance with the applicable codes, standards, and Concord Fire Department requirements.

4. Follow a process for record keeping so that there is a record of the Fire Prevention Division actions.
 - a. **Requisite Knowledge.** Record-keeping requirements of the Concord Fire Department.
 - b. **Requisite Skills.** The ability to manage records according to the applicable requirements.
5. Follow a process for administering, evaluating, and issuing permits, licenses so that applicable codes, standards, and Concord Fire Department requirements are met.
 - a. **Requisite Knowledge.** Legal process for managing permits, licenses.
 - b. **Requisite Skills.** The ability to manage permit applications to conform with applicable codes, standards, and jurisdictional requirements.
6. Successfully interpret prescriptive codes, standards, and Concord Fire Department requirements, understanding that there are complex issues related to codes, so that a resolution of the issue meets the intent of the prescriptive codes, standards, and Concord Fire Department.
 - a. **Requisite Knowledge.** Applicable codes, standards, and Concord Fire Department Requirements, administrative and legal considerations of compliance interpretations.
 - b. **Requisite Skills.** The ability to evaluate prescriptive codes, standards, and jurisdictional requirements.
 - c. **Requisite Skills.** The ability to work effectively with other code enforcement agencies.
7. Be familiar with alternative compliance measures, given the submittal of equivalencies, alternative methods, and performance-based design, so that the final design meets the intent of the codes, standards, and Concord Fire Department Requirements.
 - a. **Requisite Knowledge.** Codes, standards, and Concord Fire Department requirements; administrative and legal considerations of equivalencies, alternative methods, and performance-based design; evaluative programs for objective analysis of alternative compliance measures; and technological solutions for alternative compliance measures.
 - b. **Requisite Skills.** The ability to evaluate and verify the validity of non-prescriptive design approaches and to assist in developing

jurisdictional requirements for the administration of alternative compliance programs.

8. Ability to process complaints, so that complaints are resolved and appropriate action is taken.
 - a. **Requisite Knowledge.** Applicable codes, standards, and Concord Fire Department requirements and administrative and legal considerations for managing and resolving complaints.
 - b. **Requisite Skills.** The ability to evaluate and resolve complaints through use of the appropriate legal and administrative requirements.
9. Ability to coordinate with other agencies, given that other agencies' requirements can overlap the local jurisdictions, so that conflicts are eliminated and clear lines of responsibility are developed.
 - a. **Requisite Knowledge.** Other regulatory agencies that affect the local jurisdiction and administrative and legal authorities pertaining to the program.