

Framingham Fire Department GIS Staffing Study

PRESENTED BY

FIRE CHIEF MICHAEL DUTCHER

LOCAL 1652 PRESIDENT ANDREW ROKES



Facts about the study

60,538	incidents analyzed	WHO	Prepared by the IAFF's Fire & EMS Operations division at the request of Framingham Fire Fighters, Local 1652, for city decision makers and fire administrators.
93,945	unit responses	DATA	Computer-aided dispatch (CAD) records for every Framingham Fire response, January 2019 through December 2023.
5 years	of dispatch data, 2019–2023	METHOD	GIS mapping models how far apparatus can drive from each station in 4, 6, 8 and 10 minutes 10 seconds, using road speeds from historic traffic.
5	stations mapped	BENCHMARK	Results are measured against NFPA 1710 and NFPA 1500, the national standards for career fire department deployment and safety, and OSHA's 2-in/2-out rule.
		SCENARIOS	Coverage is modeled for current staffing and three phased staffing options.

Key Findings From the Study

Key Findings

Staffing and Deployment

- FFD suppression companies are not all staffed with 4 fire fighters. Companies not staffed with a minimum of 4 fire fighters do not meet the company staffing objectives outlined in NFPA 1500 and 1710.
- The deputy chief car is staffed with 1 deputy chief. A deputy chief car staffed with only 1 deputy chief without an aide does not meet the company staffing objectives in NFPA 1710.³
- FFD stations meet NFPA 1710's criteria for dense urban (+3,000 persons per square mile) and urban (1,000 - 2,999 persons per square mile). Suppression apparatus located in dense urban areas should be staffed with 6 fire fighters and in urban areas staffed with 5 fire fighters.

Incident Data Analysis

Call Volume

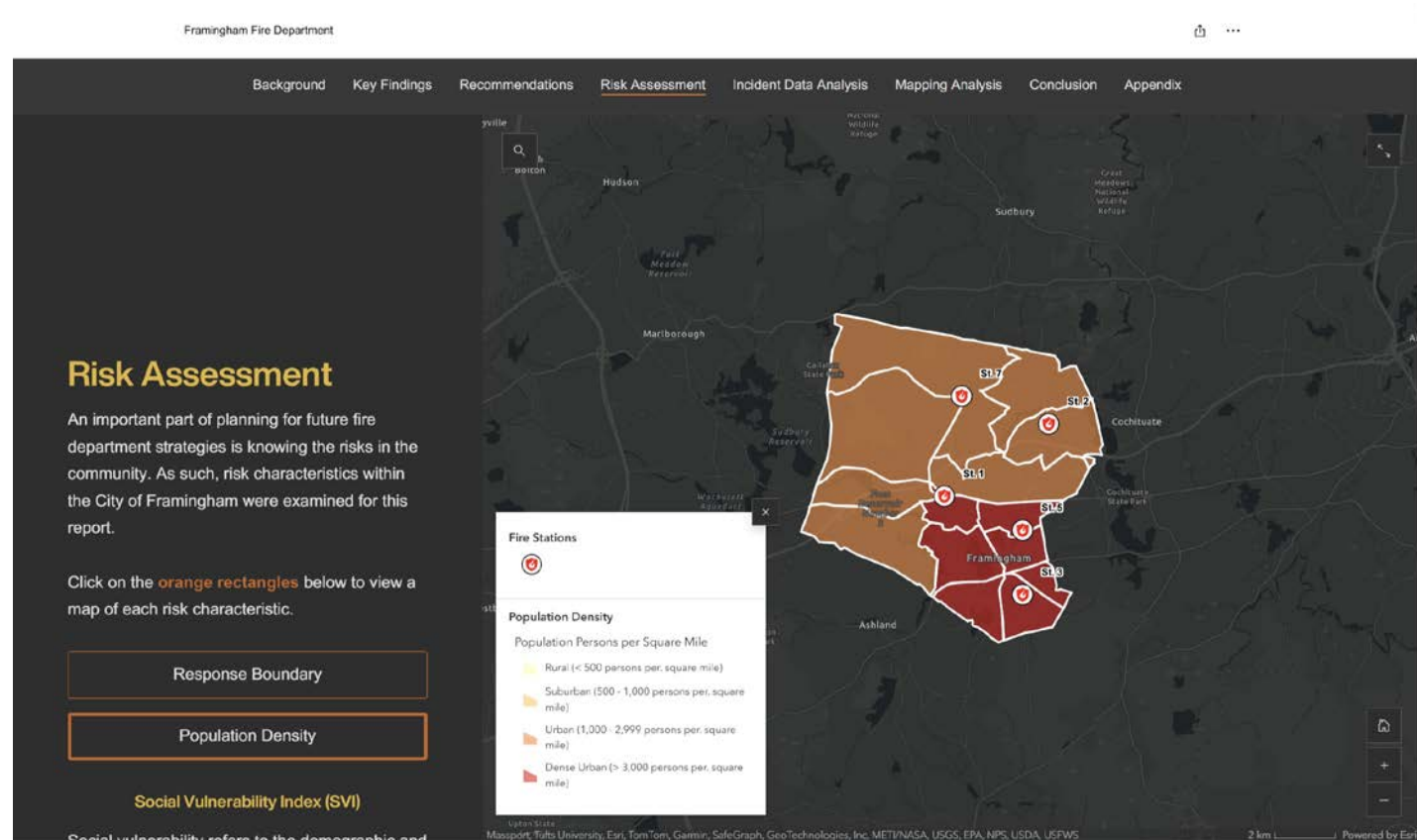
- Between January 1, 2019 to December 31, 2023, FFD frontline units responded to 60,538 incidents and performed 93,945 unit responses. There was a 13% increase in incidents and 17% increase in unit responses in 2023 compared to 2019.

Building Hazards

Building Hazard	Description/Type	Area (sq. ft.)	Initial Alarm
Low-Hazard	Single-family dwellings with no basements and no exposures.	< 2,000 sq. ft.	17 personnel in 8 minutes
Medium-Hazard	Townhomes, rowhomes, garden-style apartments, open-air strip shopping centers, and commercial and office buildings.	2,000 - 196,000 sq. ft.	26 personnel in 8 minutes
High-Hazard	High-rise buildings (taller than 75 ft.), high-hazard occupancies, schools, hospitals, nursing homes, industrial facilities.	> 196,000 sq. ft. or 75 ft. or taller	39 personnel in 10 minutes and 10 seconds

This table identifies the hazard levels of structures based on NFPA 1710.

Population Density



Staffing Phases

Staffing Phases

For this portion of the study, response capabilities were examined based on 4 staffing scenarios :

1. Current staffing and deployment
2. Current staffing and deployment with units staffed at NFPA 1710 minimum staffing.
3. Phase 2 and a ladder company added to Station 2
4. Phase 3 and an engine and deputy chief car added to Station 1

Staffing Recommendations

Station	Address	Apparatus	Current	Phase 1	Phase 2	Phase 3
Station 1	1055 Worcester Rd.	Engine 1 Tower 1 Car 1 Engine 6	4 FF 3 FF N/A N/A	4 FF 4 FF N/A N/A	4 FF 4 FF N/A N/A	4 FF 4 FF 1 DC & 1 FF Aide 4 FF
Station 2	75 A St.	Engine 2 Ladder 2	4 FF N/A	4 FF N/A	4 FF 4 FF	4 FF 4 FF
Station 3	10 Loring Dr.	Engine 3 Ladder 3	4 FF 3 FF	4 FF 4 FF	4 FF 4 FF	4 FF 4 FF
Station 5	520 Concord St.	Engine 5 Rescue 1 Car 2	4 FF 3 FF 1 DC	4 FF 4 FF 1 DC & 1 FF Aide	4 FF 4 FF 1 DC & 1 FF Aide	4 FF 4 FF 1 DC & 1 FF Aide
Station 7	791 Water St.	Engine 7	4 FF	4 FF	4 FF	4 FF

This table displays where units are housed and the current and the alternative staffing configuration considered in this report. Changes to the staffing and deployment from the current staffing are in **bold**. Improvements in staffing are highlighted in **yellow**.

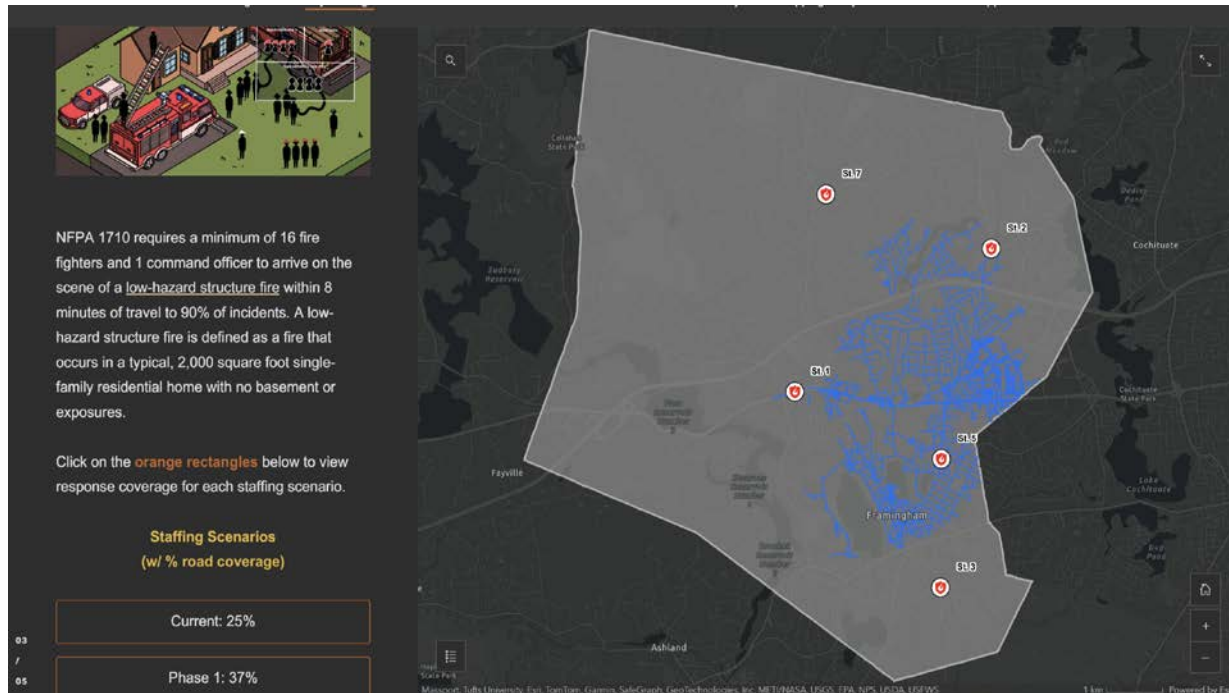
Response Metrics

Response Metric <i>(Click on metric to view maps)</i>	Current	Phase 1	Phase 2	Phase 3
4-Minute⁴ 2-In/2-Out Operations⁵	52%	52%	52%	52%
6-Minute Ladder/Tower⁶	48%	48%	68%	68%
Low-Hazard Initial Alarm (17 FF) ⁷	25%	37%	46%	57%
Medium-Hazard Initial Alarm (26 FF) ⁸	1%	16%	24%	30%
High-Hazard Initial Alarm (39 FF) ⁹	0%	0%	0%	7%

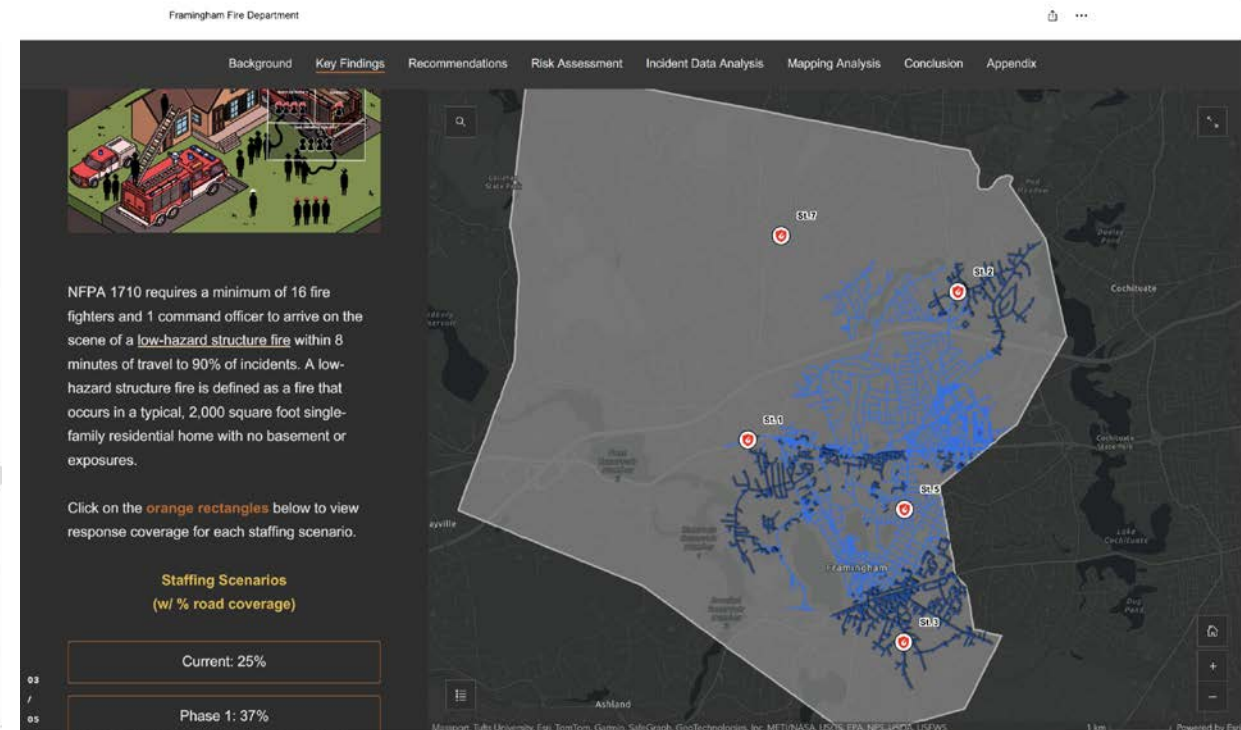
This table represents FFD's ability to meet NFPA 1710 response metrics under current, NFPA 1710 minimum staffing, and NFPA 1710 minimum staffing with additional apparatus. Percentages in green represent increases in response coverage compared to current staffing.

Low Hazard Mapping

CURRENT STAFFING MODEL

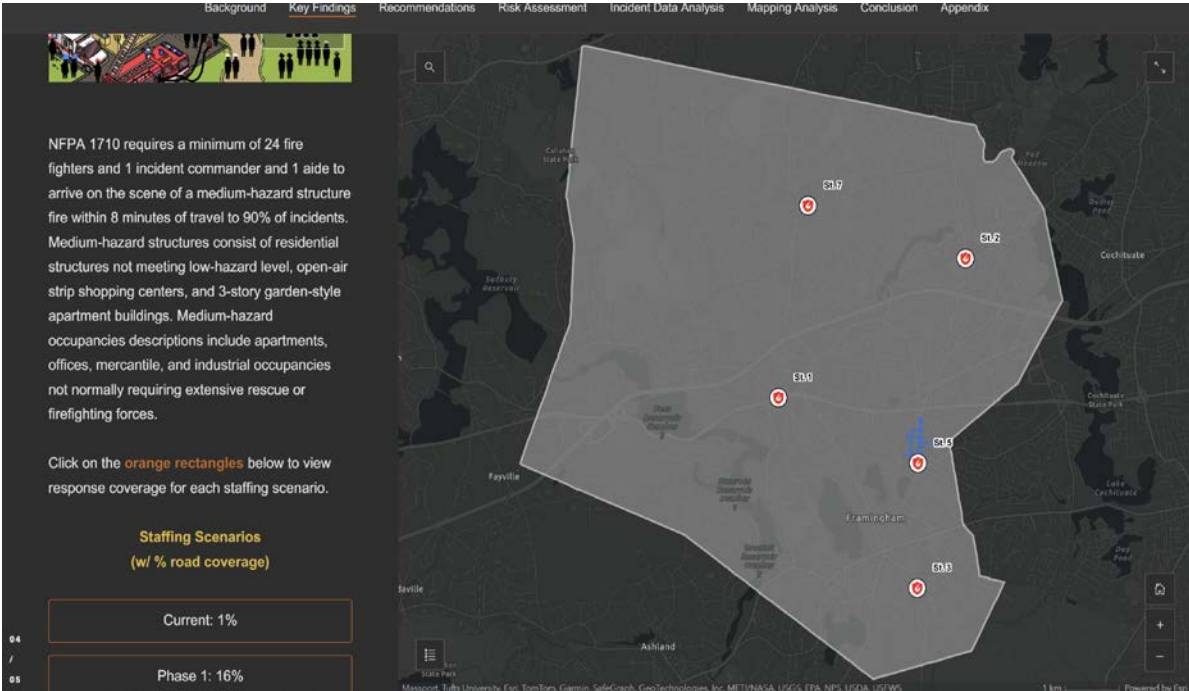


PHASE ONE MODEL

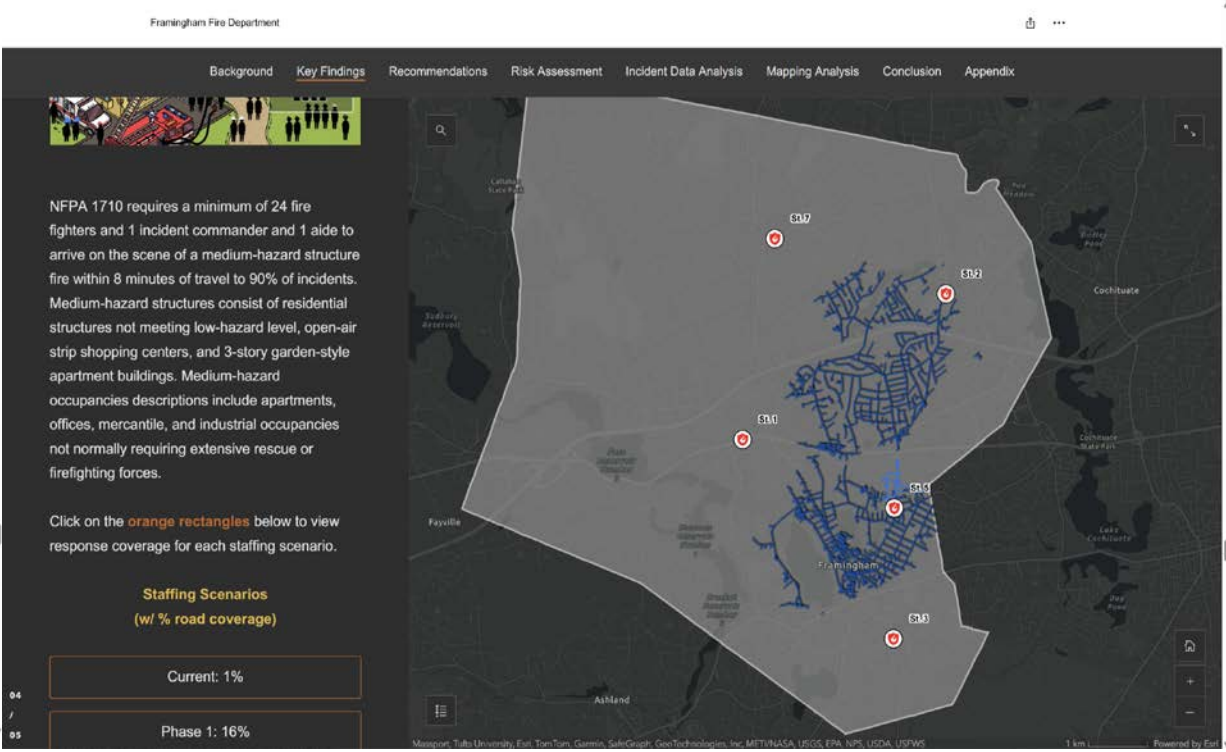


Medium Hazard Mapping

CURRENT STAFFING MODEL



PHASE ONE MODEL



4 Firefighter Efficiency

HEAVY RESCUE (RESCUE 1)

- Responsible for primary search at all structure fires
- With 3 firefighters on the Rescue truck, a primary search must be completed in 1 team of 3 firefighters
- By adding a 4th member, a search can be completed 50% faster by breaking up into 2 teams of 2 (2 story residential home).
- No priority is more important on the fireground than life safety

AERIAL LADDERS (TOWER 1/ LADDER 3)

- Responsible for forcible entry (gaining access to the structure)
- Responsible for ventilation of the building, making the interior more tenable and increasing victim survivability profile
- Ventilation must be a coordinated effort with an engine company to ensure the fire does not grow, must be simultaneous
- Rescues over aerial/ground ladders



2010 & 2013 NIST Studies

2010 STUDY- RESIDENTIAL BUILDINGS

- Landmark study concludes that 4 firefighter companies complete 22 essential fireground tasks 25% faster than 3 firefighter companies
- Study found that every single task was completed faster, but specifically search was initiated and executed 30% faster, with victims being removed from IDLH environment 27% faster.
- Ventilation was completed 30% faster.

2013 STUDY- HIGH RISE BUILDINGS

- 2010 study was expanded into high rise buildings in 2013.
- Concluded that Ladder and Rescue (laddering, ventilation, search and rescue) company tasks took 12 minutes longer to complete with a crew of 3 vs a crew of 4.

Conclusion

In conclusion, regardless of the type of response, fire suppression units are not all staffed in compliance with industry standards for safe, efficient, and effective response to fires or rescue situations. Suppression units not staffed with a minimum of 4 fire fighters do not meet the minimum company staffing objectives outlined in NFPA 1500 and NFPA 1710. Deficiencies in staffing and unit utilization contribute to delays in fire suppression, rescue, and EMS response.

The department's current insufficiencies indicate the need for additional resources. As resources become scarce as demand increases, performance will worsen. FFD should staff all suppression apparatus with a minimum of 4 fire fighters and staff the deputy chief car with 1 deputy chief and 1 fire fighter aide. Once apparatus are staffed meeting NFPA 1710 minimum staffing objectives, FFD should add a ladder company at Station 2 and then add an engine and deputy chief car at Station 1. These staffing enhancements will improve the department's 6-minute ladder/tower, and low-, medium-, high-hazard response capabilities. With call volume increasing, these staffing enhancements will reduce the workload on the current units and likely shorten travel times.

Staffing units below the minimums set by industry standards results in crews being less efficient in completing critical fireground tasks. Staffing below industry standards, increases the risk of death or injury due to fire for both citizens and fire fighters in the City of Framingham. It also increases the risk of considerable property loss for housing units and businesses in many areas with the response boundary.

What are we looking for

Local 1652 is asking the City Council to allow the Mayor and the Chief to sit down with Local 1652 leadership and increase our minimum staffing from 30 to 33 per shift.

This will allow Framingham Fire department to staff all our front-line apparatus with Four firefighters.

We would like City Council to work with The Mayor, Chief Dutcher, and Local 1652 leadership to formulate a plan to implement the rest of this study in a reasonable and responsible timeline.

Continue to work with the Mayor and City Council to identify a site in western Framingham (9/90 area) for a sixth Fire station to reduce response time to western and northwestern Framingham

View the GIS study

[Framingham Fire Department](#)

What is shown in this presentation is a small snapshot of some of the more important points highlighted in the study. We encourage everyone with any connection to the City of Framingham to read the study in its entirety.

Click on the Hyper link above or go to Local 1652 Facebook Page and you can find the full study linked there.