



# TOWN COUNCIL – AGENDA REQUEST FORM

THIS FORM WILL BECOME PART OF THE BACKGROUND INFORMATION USED BY THE COUNCIL AND PUBLIC

Please submit Agenda Request Form, **including back up information**, 8 days prior to the requested meeting date. **Public Hearing requests must be submitted 20 days prior to requested meeting date to meet publication deadlines** (exceptions may be authorized by the Town Manager, Chairman/Vice Chair).

## MEETING INFORMATION

Date Submitted: November 21, 2022  
Submitted by: Fire Chief Mark DiFronzo  
Department: Fire

Date of Meeting: December 1, 2022

Time Required: 15 minutes

Speakers:

Background Info. Supplied: Yes:  No:

## CATEGORY OF BUSINESS (PLEASE PLACE AN "X" IN THE APPROPRIATE BOX)

Appointment:	<input checked="" type="checkbox"/>	Recognition/Resignation/Retirement:	<input type="checkbox"/>
<b>Public Hearing:</b>	<input type="checkbox"/>	Old Business:	<input type="checkbox"/>
New Business:	<input type="checkbox"/>	Consent Agenda:	<input type="checkbox"/>
Nonpublic:	<input type="checkbox"/>	Other:	<input type="checkbox"/>

## TITLE OF ITEM

Fire Station Feasibility Study Update

## DESCRIPTION OF ITEM

The Town Council will receive an update on the Fire Station Feasibility Study.

## REFERENCE (IF KNOWN)

RSA:	Warrant Article:	_____
Charter Article:	Town Meeting:	_____
Other:	N/A	

## EQUIPMENT REQUIRED (PLEASE PLACE AN "X" IN THE APPROPRIATE BOX)

Projector:	<input type="checkbox"/>	Grant Requirements:	<input type="checkbox"/>
Easel:	<input type="checkbox"/>	Joint Meeting:	<input type="checkbox"/>
Special Seating:	<input type="checkbox"/>	Other:	<input type="checkbox"/>
Laptop:	<input type="checkbox"/>	None:	<input type="checkbox"/>

## CONTACT INFORMATION

Name:	<u>Mark DiFronzo</u>	Address:	<u>432 Daniel Webster Highway</u>
Phone Number:	<u>603-424-3690</u>	Email Address:	<u>mdifronzo@merrimacknh.gov</u>

## APPROVAL

Town Manager:	Yes <input checked="" type="checkbox"/> No: <input type="checkbox"/>	Chair/Vice Chair:	Yes <input type="checkbox"/> No: <input type="checkbox"/>
Hold for Meeting Date: _____			



## MERRIMACK FIRE RESCUE

432 Daniel Webster Highway  
Merrimack New Hampshire 03054  
603.424.3690 ♣ Fax 603.424.0603

**Fire Chief**  
Mark W. DiFronzo  
**Assistant Fire Chief**  
Richard N. Harris  
**Assistant Fire Chief**  
Daniel L. Newman

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# Memo

**To:** Paul Micali, Town Manager  
**From:** Chief DiFronzo  
**CC:**  
**Re:** Fire Station Feasibility Study  
**Date:** November 23, 2022

Mr. Micali,

In March of 2022, the Town of Merrimack released a Request for Proposals (RFP) for a Fire Station Feasibility Study to review the current fire station locations, facilities, and deployment of equipment in order to provide long-term recommendations for fire station locations and infrastructure, also taking into consideration future planned town growth. Beacon GIS was the successful bidder and commenced work in June 2022.

Information was requested by Beacon GIS and obtained from several sources, including staff of the Town of Merrimack, the Fire Department, and the Regional Planning Commission. A site visit by Beacon GIS was conducted over four days in July of 2022, during which stakeholder meetings were held, along with fire station inspections and a community tour to understand the unique challenges and dynamics of the Town.

A current fire service conditions analysis and jurisdictional risk assessment were conducted, along with a thorough review of future development, expected population, and fire service workload growth. After understanding the fire department operations and after the station inspections, it was determined that if the siting methodology selected the current locations, significant renovations would need to be conducted due to the need for space and the potential increase in fire services due to town growth.

The fire station siting selection methodology uses a weighted index that combines the geographic future population, planned future land use, and resulting future fire service demand into a vulnerability risk score matrix. The geographic technology selects sites based on the requested number of facilities and the ability to reach the most total score using a travel model based on street connectivity and actual speed limit data. Multiple scenarios were conducted, both ignoring the current fire station locations and others using them individually to site other stations.

Beginning with a single location scenario, such as a combined police and fire facility increasing to four station scenario, several new locations provided better scores in a reduced response time than the current stations. Using the current station locations in any scenario produced inferior comparable results. In other words, the current locations are not in the most optimal locations. Other locations provide more coverage of the Town with better performance.

Given the need for significant renovations or expansions (if possible, given the current structures and lot size), the better use of funds may be to investigate new locations as suggested in the report. Suggested fire station size, apparatus, and amenities are detailed with an eye toward the future needs of the fire service in the Town. The locations chosen by the technology appear precise; however, any feasible lot nearby will not significantly reduce the resulting scores, as some examples are noted in the report.

The Town of Merrimack has growing residential and commercial sectors that have changed the community of the past and will into the future, challenging the fire service to be as effective as expected. Investment into community protection needs to begin sooner rather than later when land, design, and construction become costlier.

The report provides options to be phased in when a strategy for the future of the fire and rescue services is adopted.

If there are any questions, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Mark W. DiFronzo". The signature is fluid and cursive, with the first name "Mark" being the most prominent.

Mark W. DiFronzo  
Fire Chief



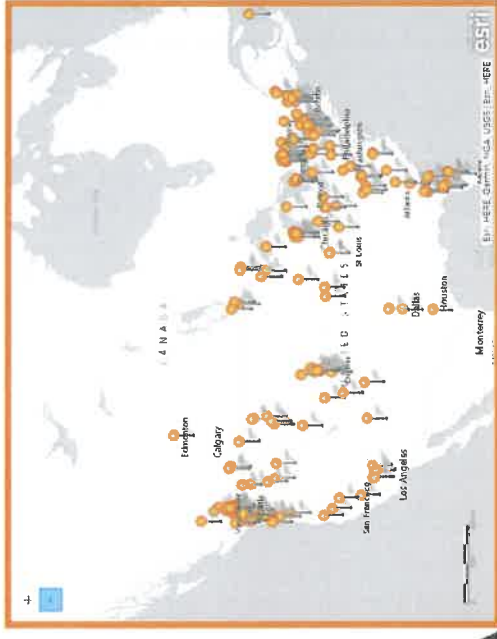
December 2022

# Fire Station Feasibility Study



# Robert McNally

- Since 2005 (17 years)
- Over 200 emergency service project experience across US & Canada
- Adjunct Instructor in Geographic Intelligent Sciences at National Emergency Training Center (EMI & NFA).
- Fire Rescue Analyst National Standards Committee
- Master's Degree in Urban & Regional Planning
- Bachelor's Degree in Public Administration
- 20 years Firefighter & Paramedic





# Scope

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1. Gather pertinent data and information. The consultant is responsible for obtaining GIS data.
2. Conduct an operational efficiency evaluation and analysis of the existing fire stations. To include a review of the effectiveness of our current facilities and emergency response deployment model to meet the response needs of our community and benchmarks for the organization to respond to future demands.
3. An analysis and recommendations for determining performance standards based on current and future workloads that encompasses emergency response as well as community demands to include the recommendations of benchmarks to guide future adjustments in response to community need
4. If able, form general recommendations for a remodel or construction of a new facility.
5. Identify recommended future fire station locations and a phasing plan for station development/construction based on but not limited to:
  - a. Land use
  - b. Population
  - c. Density
  - d. Physical or other barriers
  - e. Future residential and commercial development
  - f. Transportation infrastructure
  - g. Apparatus and equipment deployment

# Introductory elements



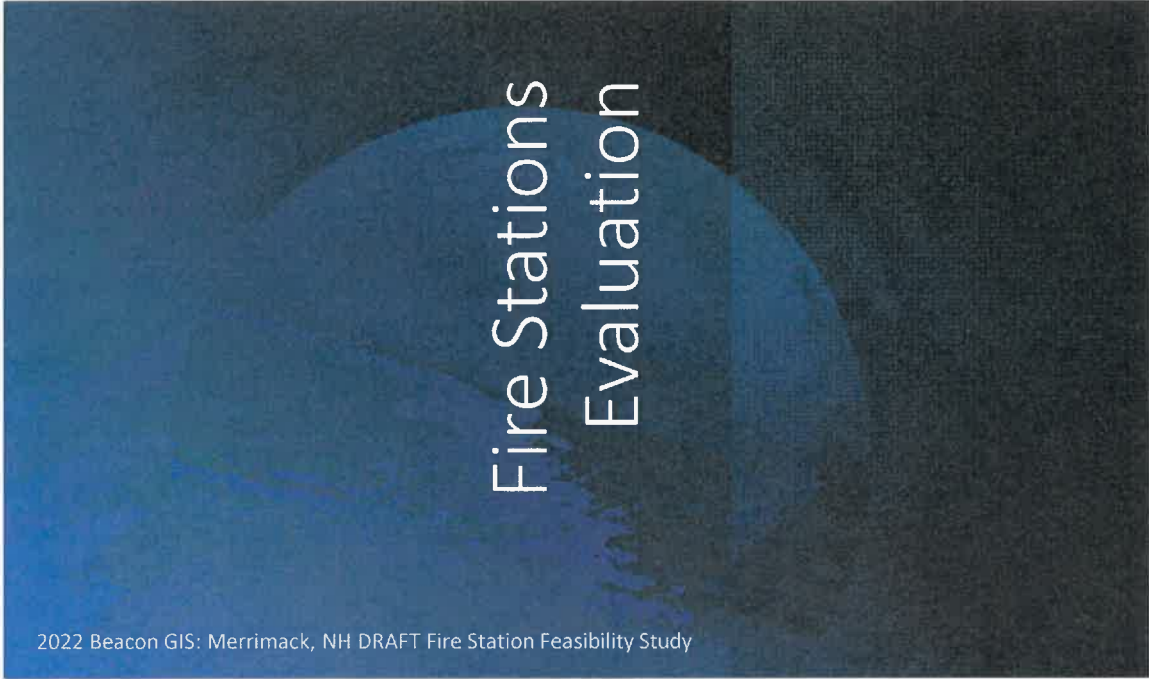
Town History



Current Fire Operations



Fire Department History



- Observations from July site visit
- SWOT analysis with firefighter shifts

Findings:

Station 1 & 2 are beyond capacity, inefficient, not conducive to growth

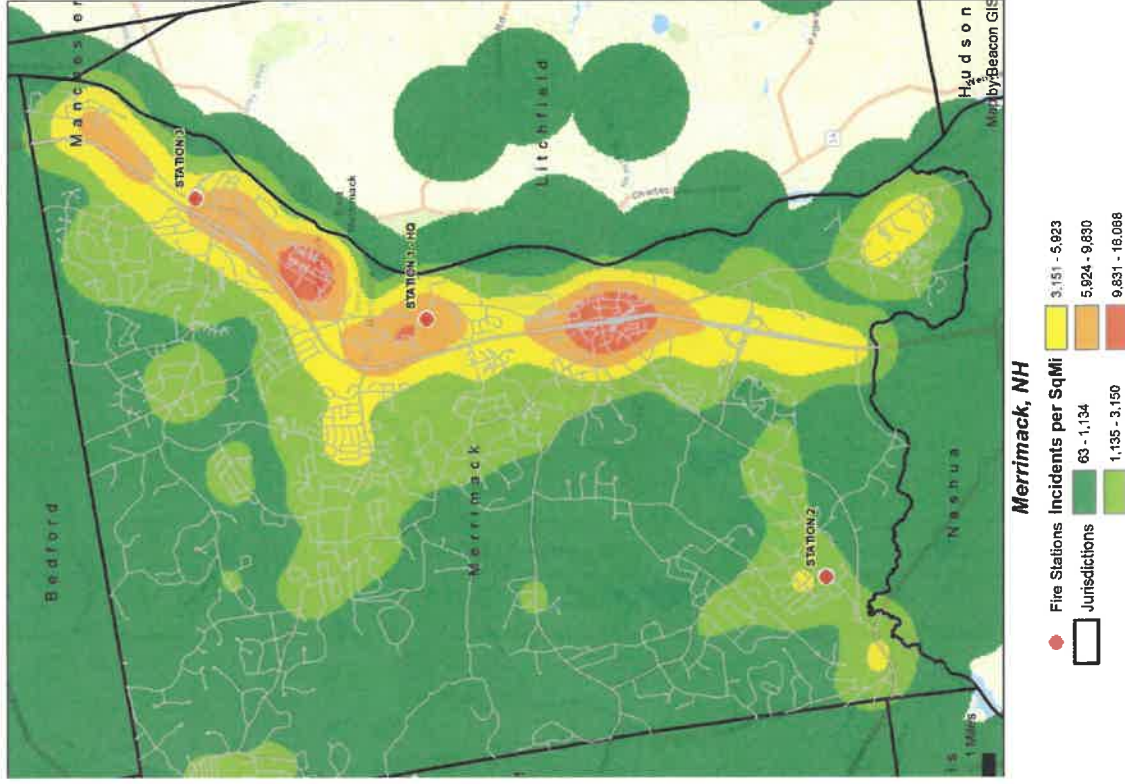
Station 3 is currently unusable except for storage.





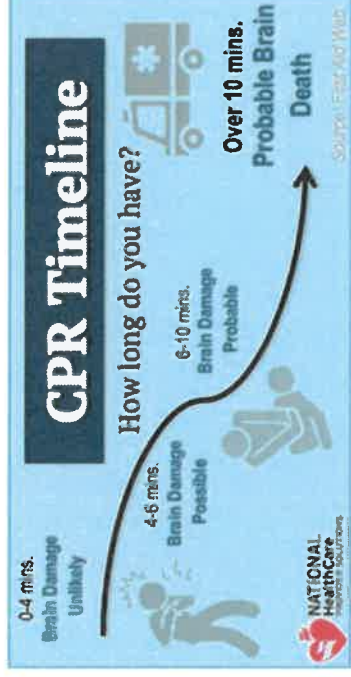
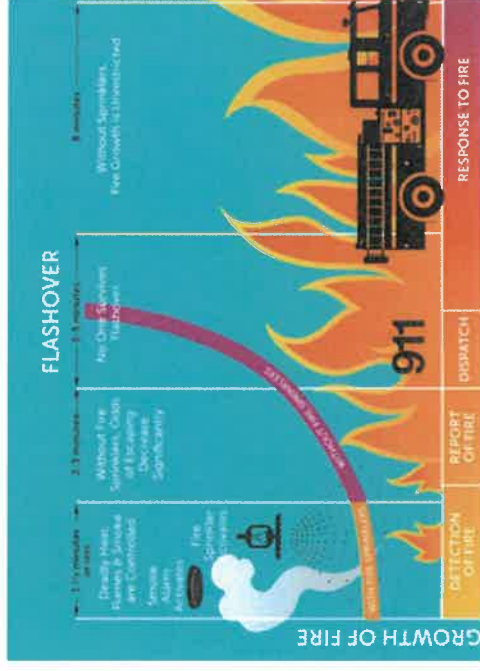
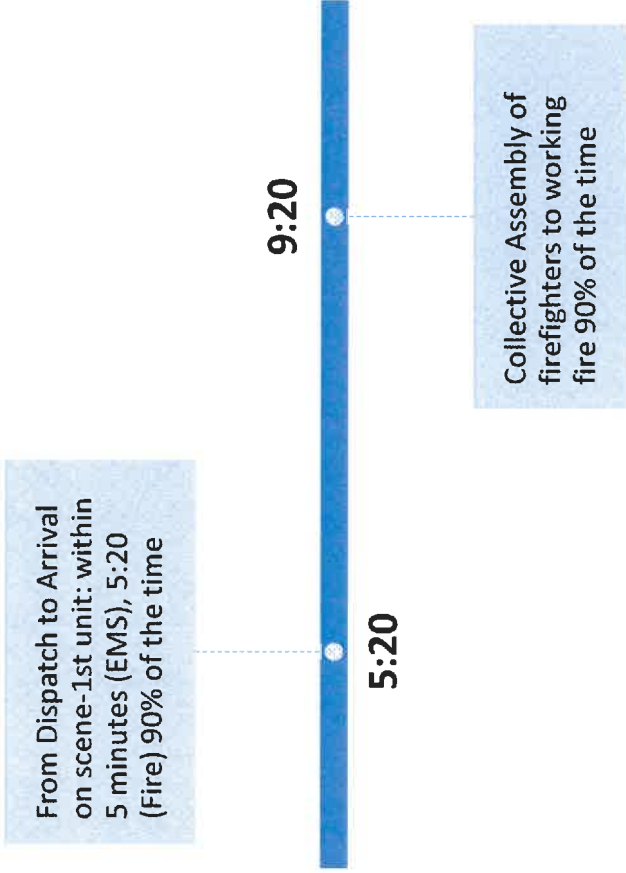
# Demand Pattern

- Demand for service has risen since 2002 (47%).
- 62% are emergency medical incidents. Hospitals are out of town.
- Seasonal highs in Dec/Jan & summer months. Daily higher during the weekdays
- Hourly demand highest during the day, Fires highest late afternoon
- Frequent addresses include turnpike, medical facilities, followed by industry.
- Mutual aid given dropped significantly since 2006. Still net giver of aid.



# National Response Time Standard Consensus

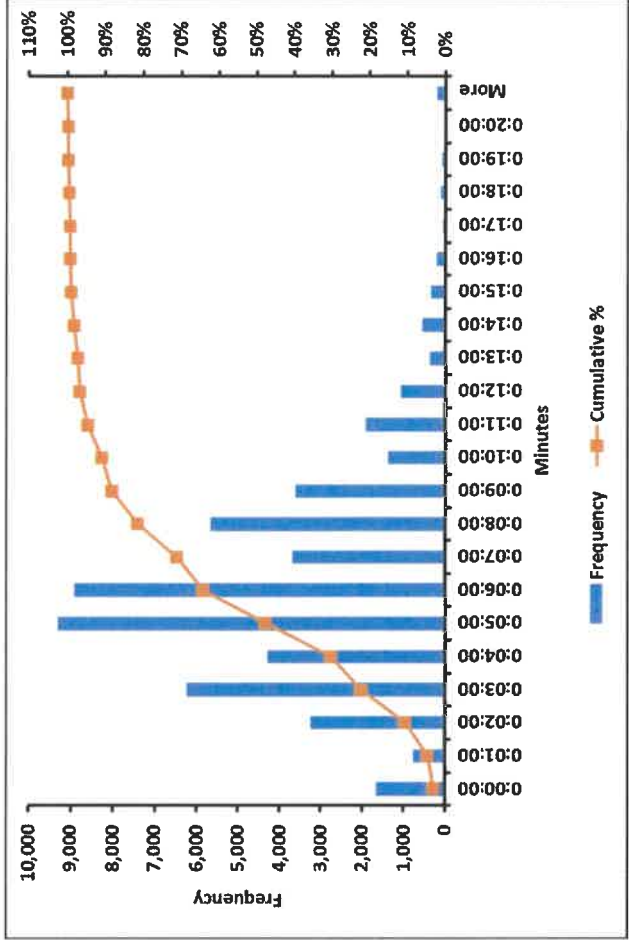
National Fire Protection Association (NFPA) 1710



2022 Beacon GIS: Merrimack, NH DRAFT Fire Station Feasibility Study

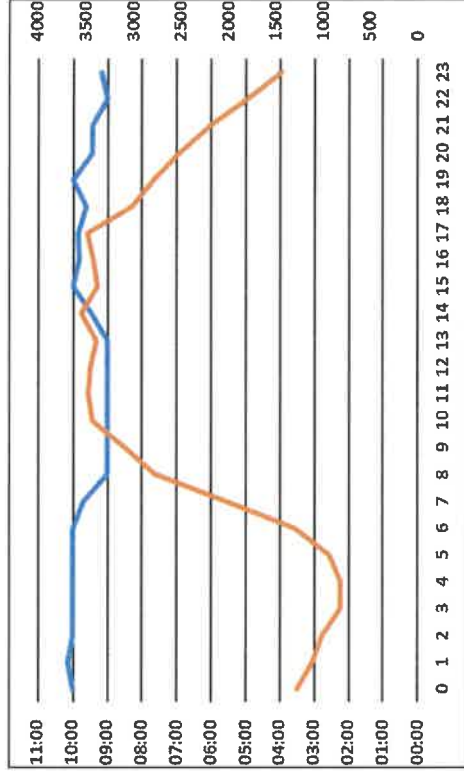
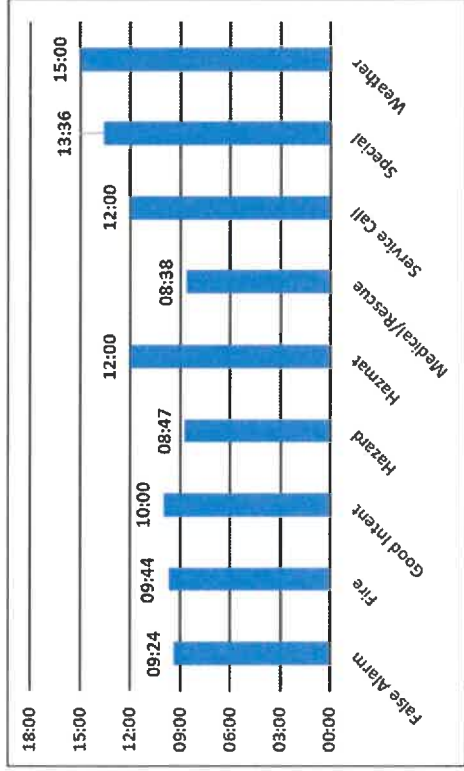
# Response Time Performance

1<sup>st</sup> arriving within 9:33-90% of the time



# Response Performance

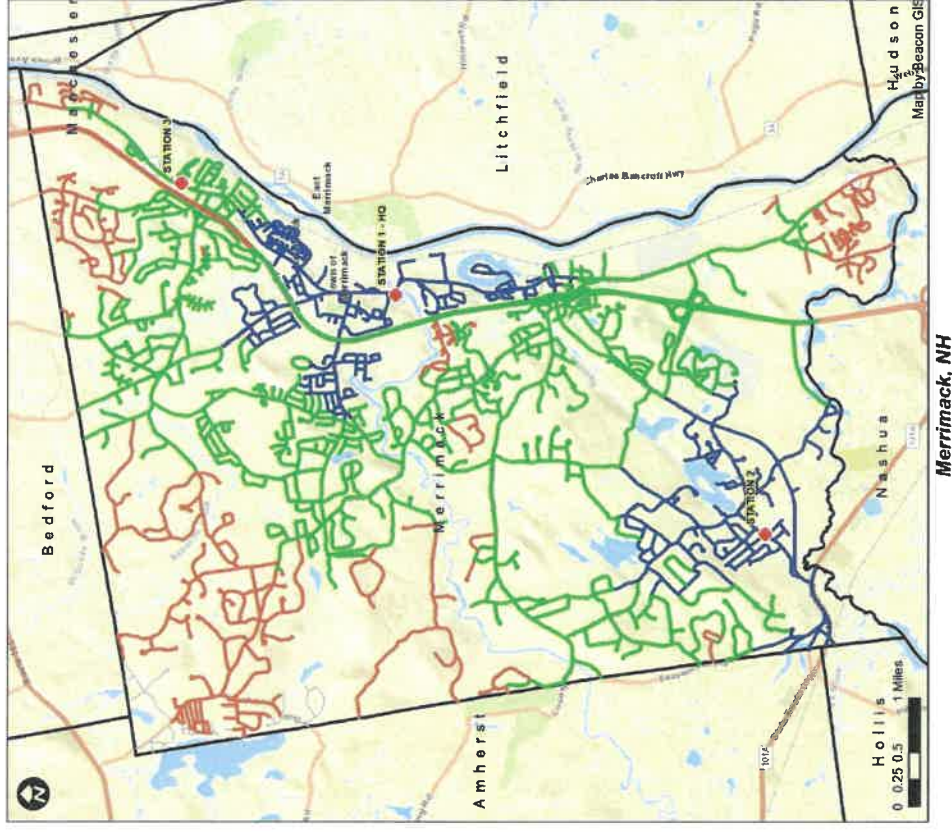
- Response time by Call Type
- Response time by Hour of day vs. Workload



# Response Capability

Travel Minutes	% Coverage
Less or equal to 4	31%
4 to 8	76%
8 to 12	93%

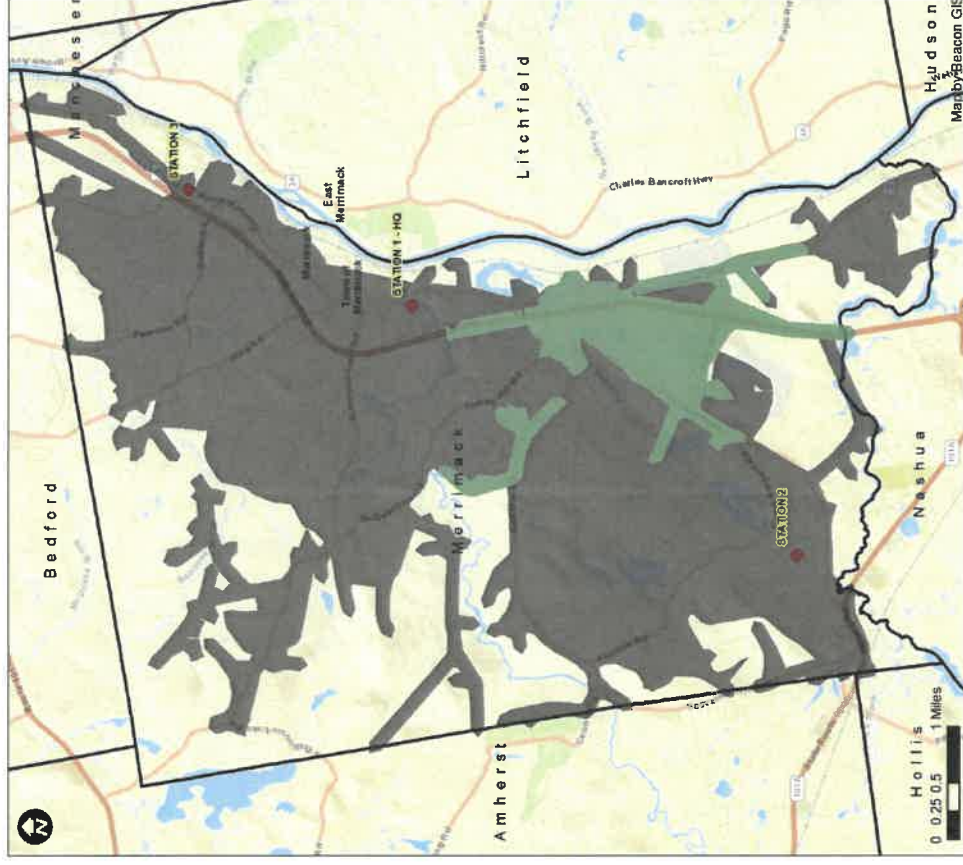
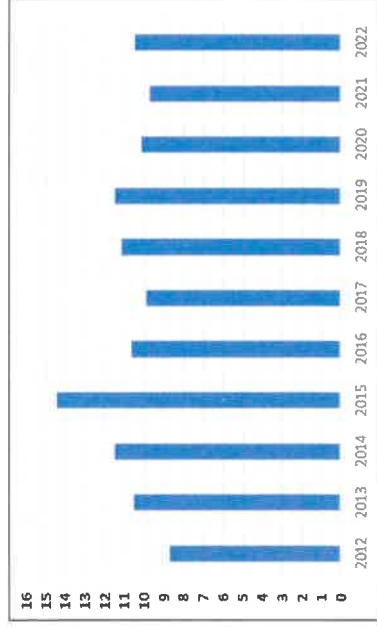
Incident Coverage %  
1st arriving within 9:33-90% of the time



2022 Beacon GIS: Merrimack, NH DRAFT Fire Station Feasibility Study

# Response Capability

- NFPA 1710
  - House fire: 17 firefighters
  - Apartment/Commercial fire: 27 firefighters
- MFD Performance
  - On-duty: 11
  - Average Staff at Structure Fires:

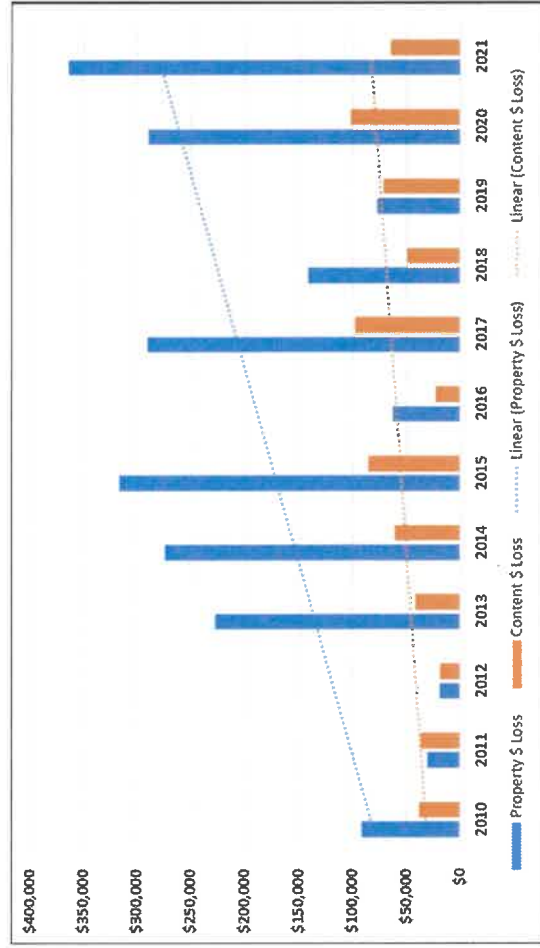


**Merrimack, NH**  
**First Alarm Assembly** ● Fire Stations  
 8 minutes Jurisdictions  
 16 minutes

2022 Beacon GIS: Merrimack, NH DRAFT Fire Station Feasibility Study

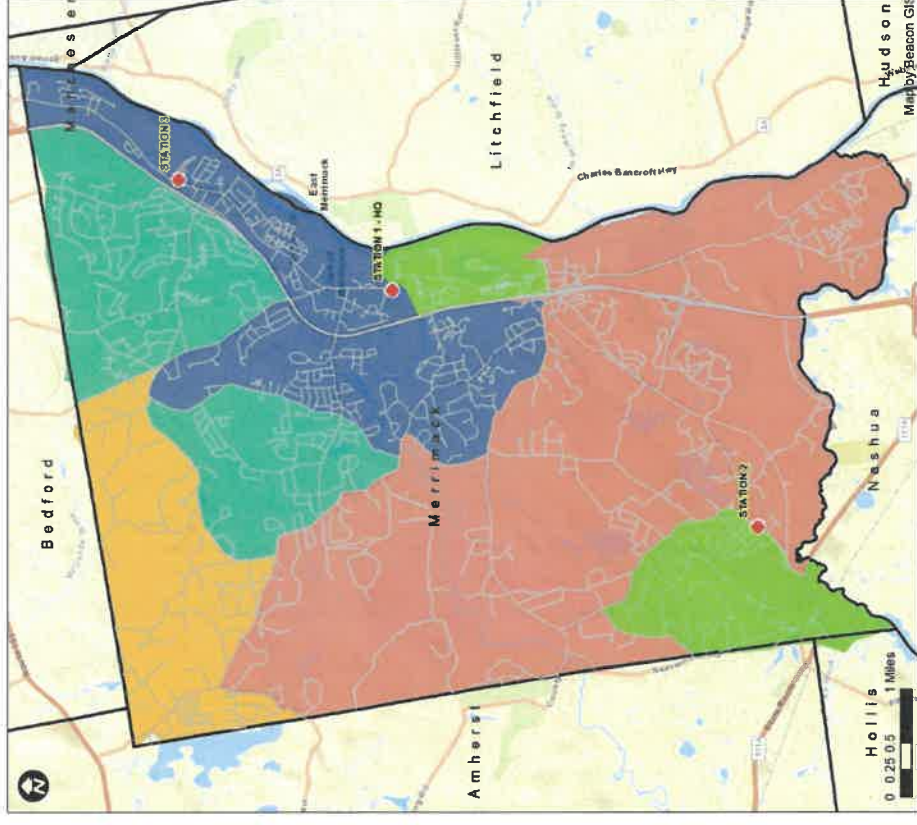
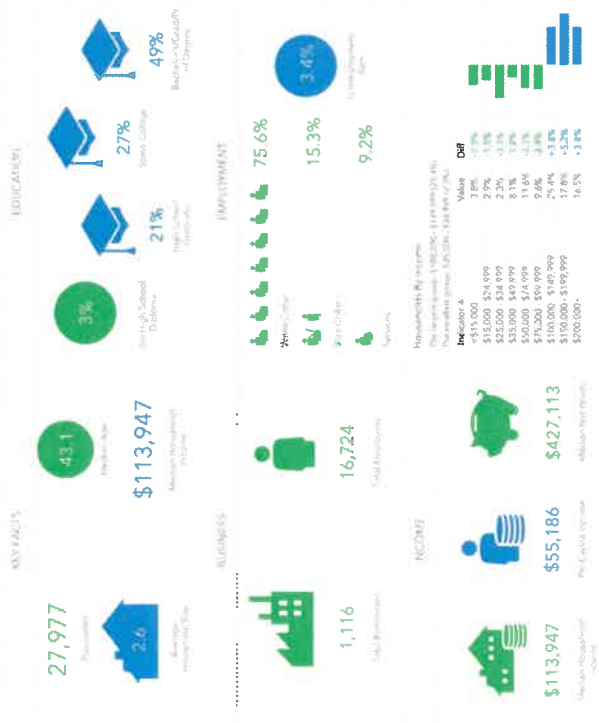
# Response Capability

Fire loss has increased



# Community Risks

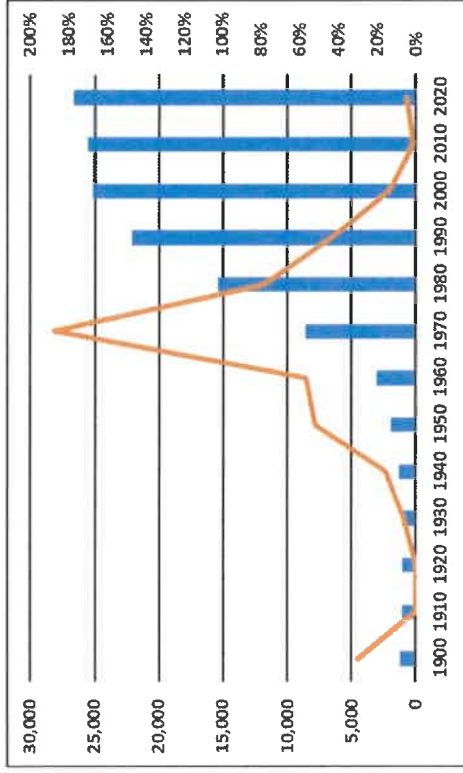
## Key Facts



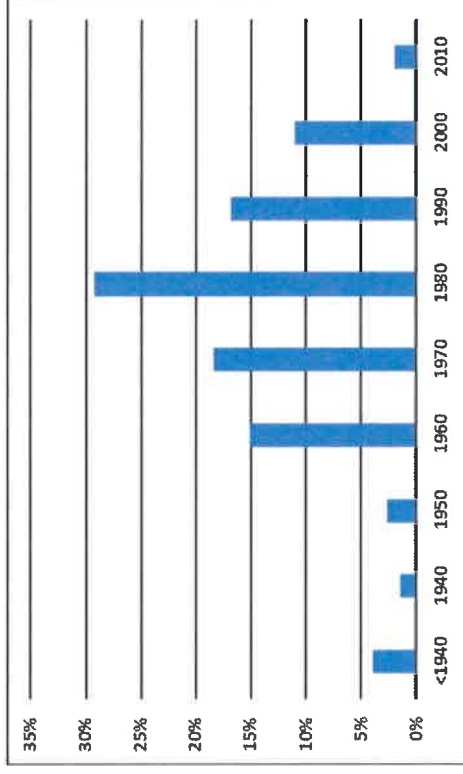


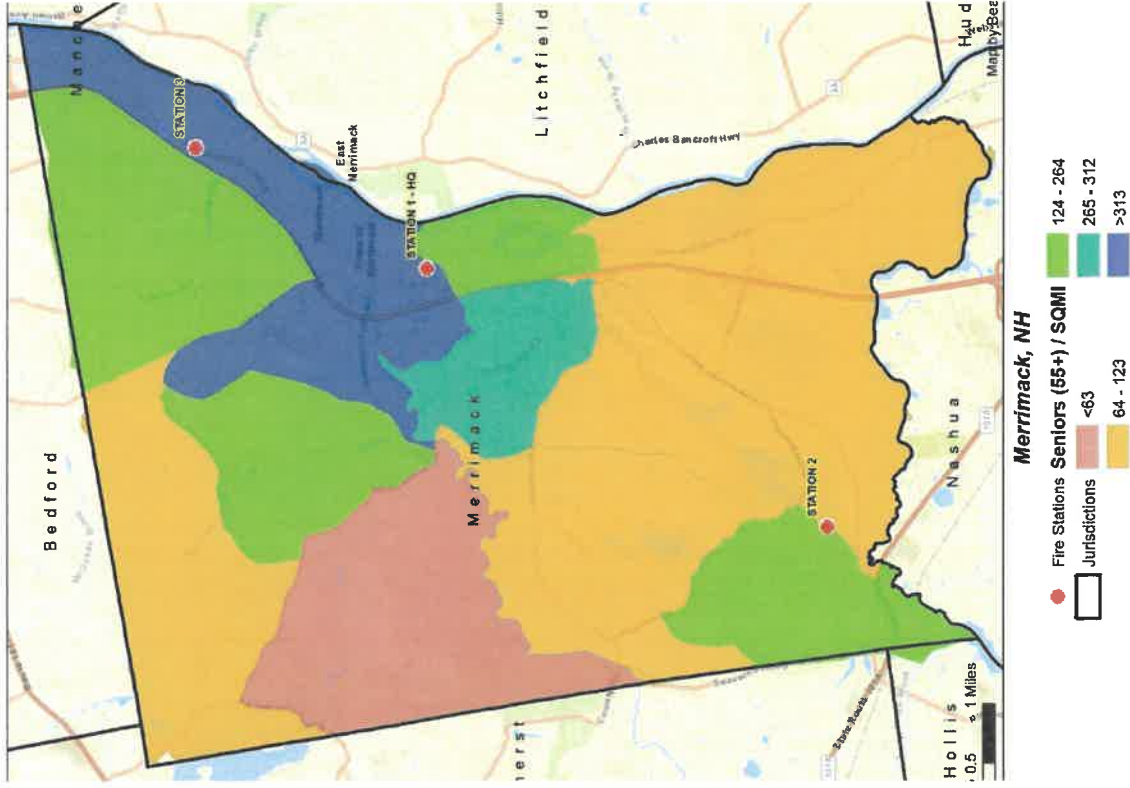
# Community Risks

- Population growth



- Age of Housing



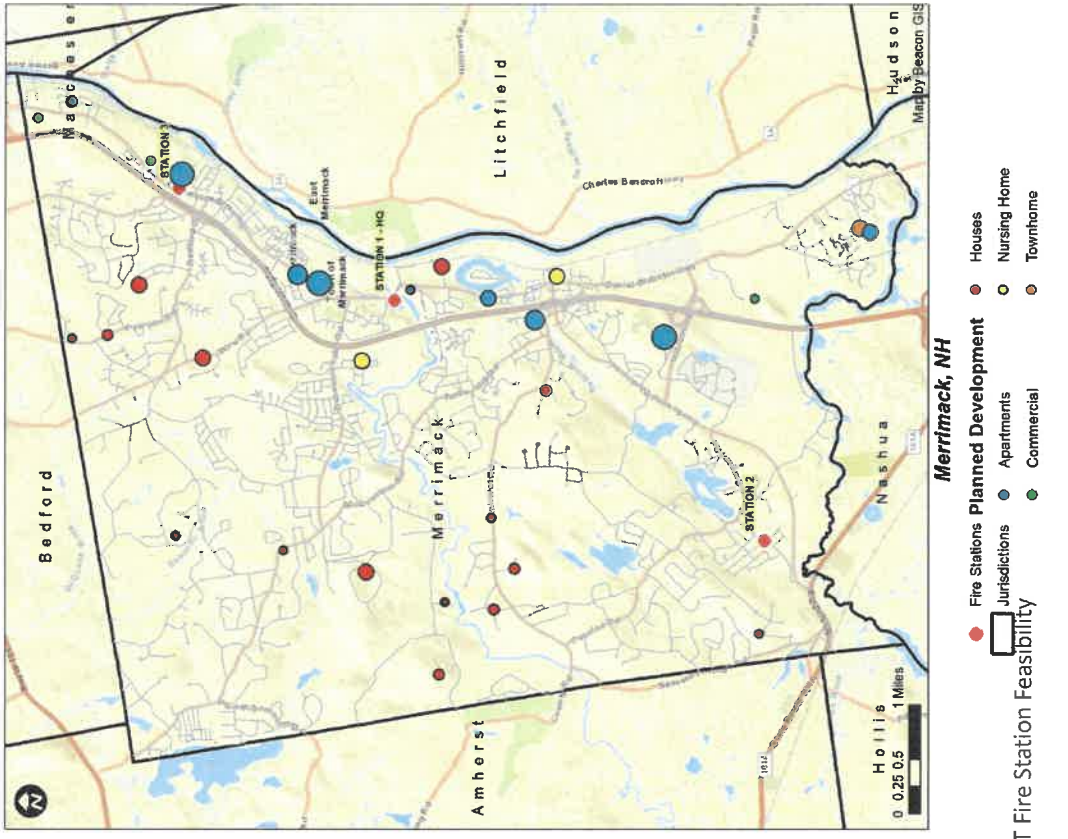


# Community Risk

- 15% aged 65+
- 5.9% <65yo disabled
- 2.8% without Health Insurance
- 3.5% below poverty
- Metrics are lower than county, state, & nation

# Community Risk

- Flooding
- Major Arterial Routes
- Hazardous Materials
- Potential Passenger Rail
- Over 4,000 employers with over 3.2 million in payroll
- Development
  - >2000 units planned
  - >5000 new residents (20% increase)



# Community Risk

- Land use categorized by risk level

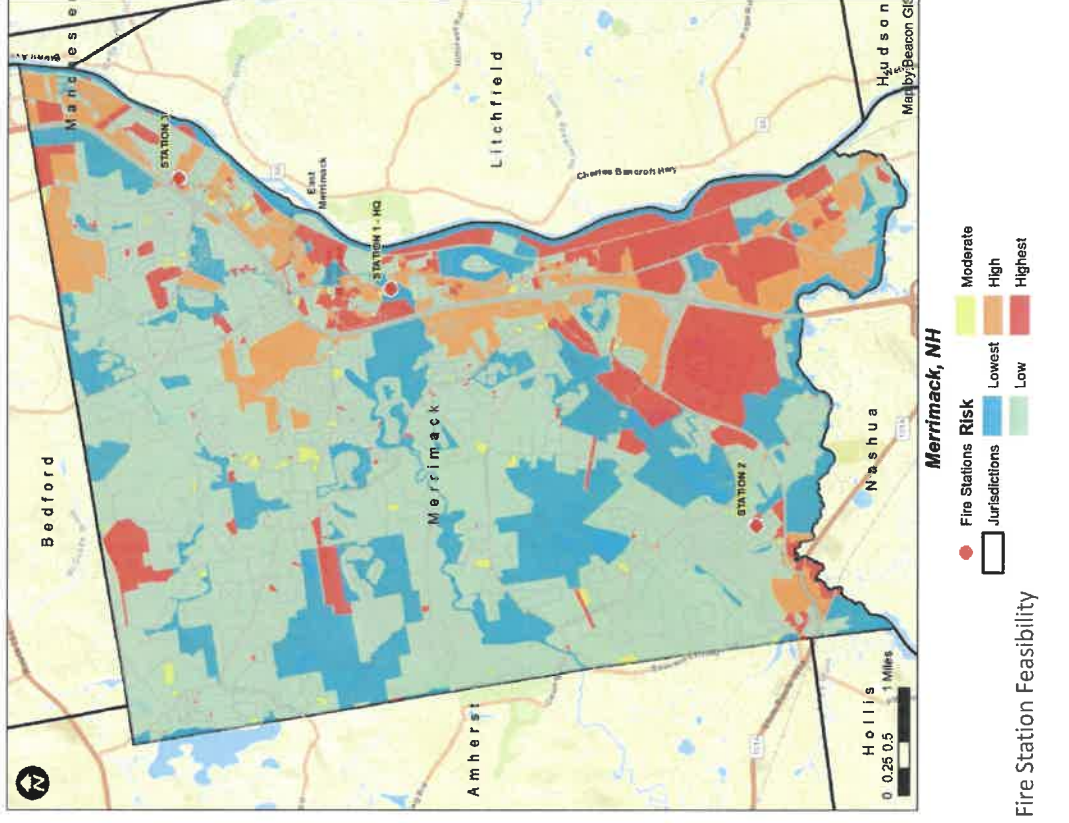
Lowest – Parks and farmland.

Low - Single-family dwellings suburban style development.

Moderate - Commercial facilities, small shopping centers, and high-density, low-rise residential buildings.

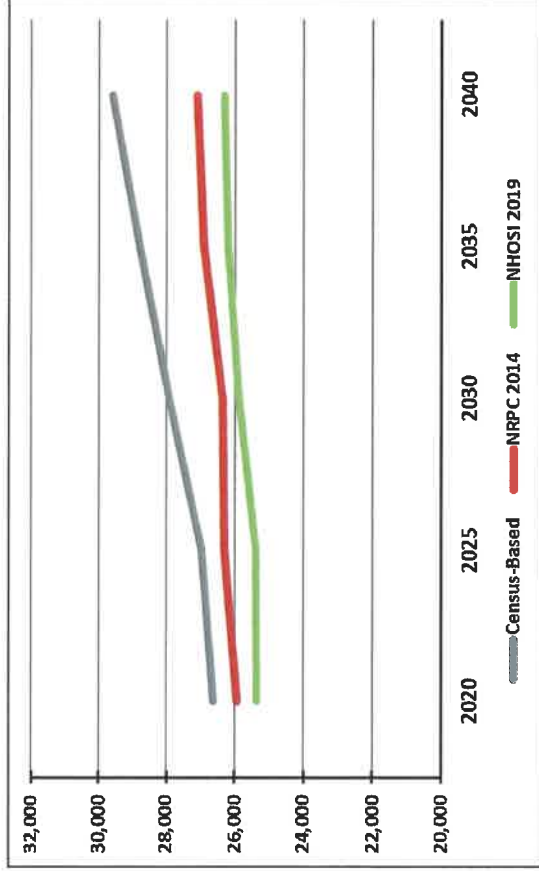
High - High-rise hotels and residential buildings, large shopping centers, and industrial complexes.

Highest - Refineries, large industry, hospitals, schools, lumber yards, and propane storage facilities.

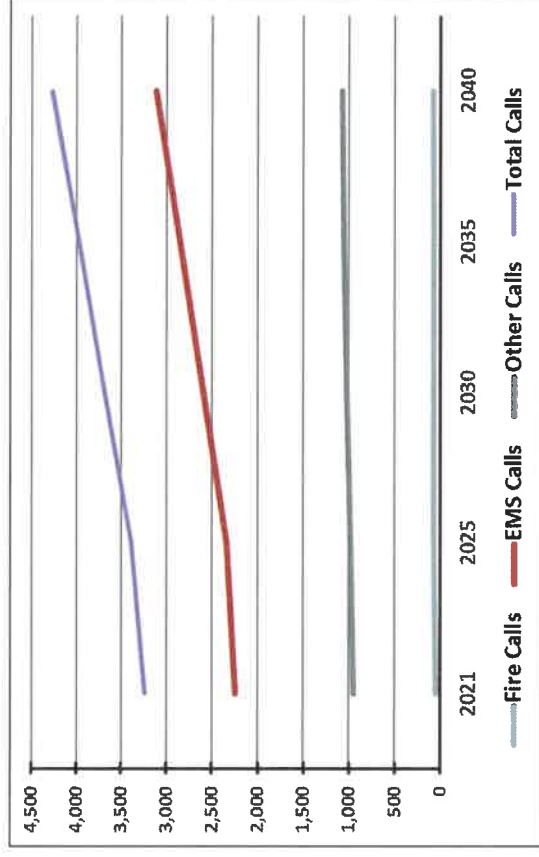


# Projections

- Population



- Workload



# Methodology

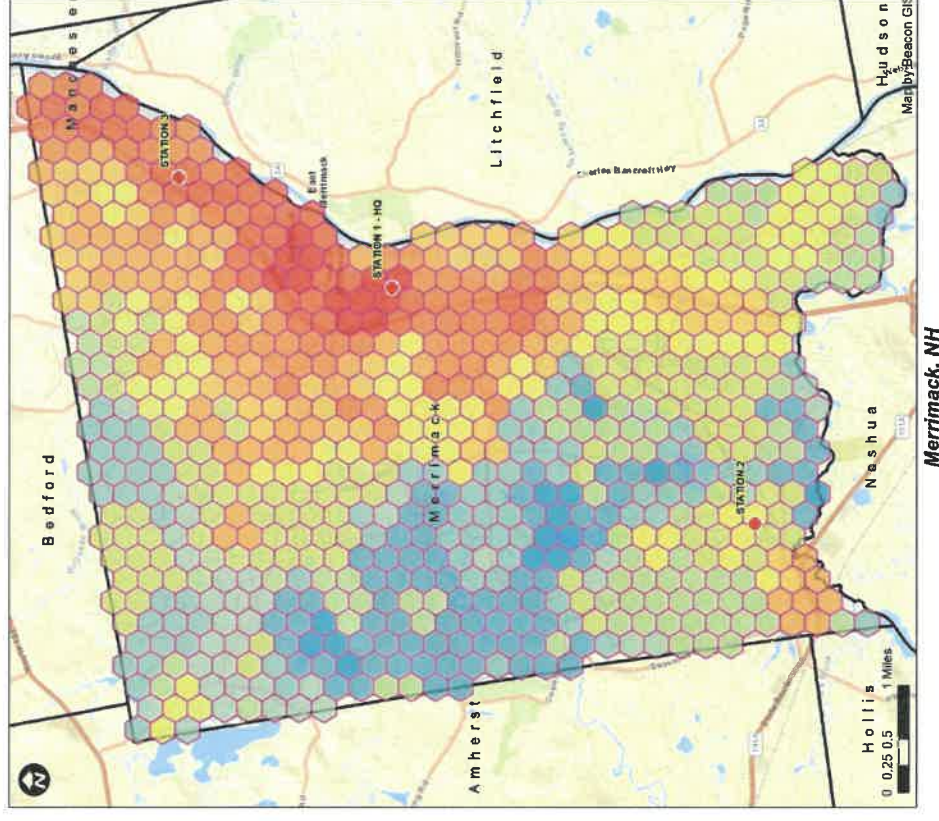
## Vulnerable Risk Index (VRI)

- Population Density-More people/More taxpayers
- Land Use Risk-Commercial risk but no residents
- Demand Pattern Reflects use of resources, including visitors

Population per Sqmi	Score	Land Use Risk	Score	Incidents per Sqmi	Score	Total Score
1253-1641	5	Highest	5	9831-16068	5	15
1001-1252	4	High	4	5924-9830	4	12
751-1000	3	Moderate	3	3151-5923	3	9
501-750	2	Low	2	1135-3150	2	6
< 500	1	Lowest	1	63-1134	1	3

**Locations are selected based upon optimized score total given the travel time model capability**

717 ¼ mile hexagonal cells with a total VRI score of 5,961.



2022 Beacon GIS: Merrimack, NH DRAFT Fire Station Feasibility Study

# Benchmark

Scenario	Stations	4:00	6:00	8:00
Current Stations	2	24%	48%	77%

NFPA 1710: 4 minutes travel 90% of the time



Merrimack, NH

- Fire Stations
- Jurisdictions

# One Station Scenarios

Scenario	Stations	4:00	6:00	8:00
Current Stations	2	24%	48%	77%
1 Station	1	20%	38%	63%

Stations	Travel minutes	Station 1
1	4	Industrial Dr. and the Everett Turnpike
	6	Continental Blvd between Daniel Webster Highway and the Everett Turnpike interchange
	8	Continental Blvd between Daniel Webster Highway and the Everett Turnpike interchange



Merrimack, NH

- 8 minutes
- Fire Stations
- 6 minutes
- Jurisdictions
- 4 minutes

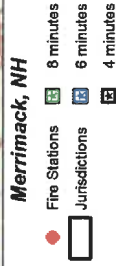
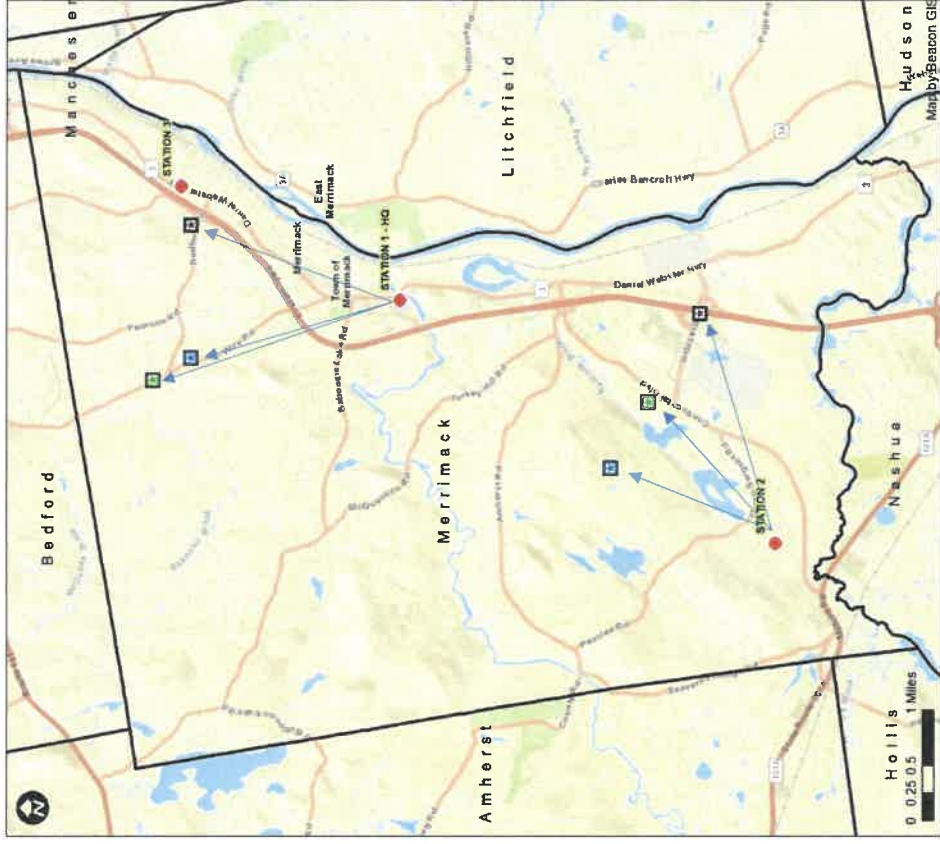


# Two Station Scenarios

- Note that none selected current station locations

Scenario	Stations	4:00	6:00	8:00
Current Stations	2	24%	48%	77%
2 Stations	2	37%	66%	91%
2 Stations (1@Continental/Industrial)	2	36%	65%	89%

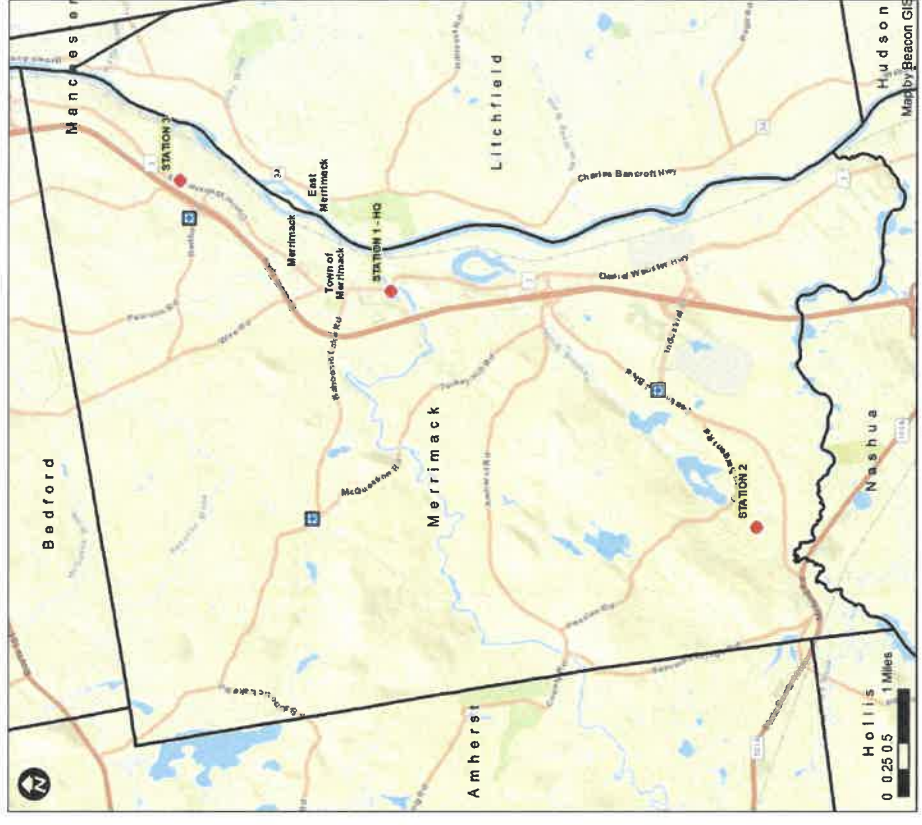
Stations	Travel minutes	Station 1	Station 2
2	4	Turnpike interchange with Bedford Road	Everett Turnpike and Industrial Dr
	6	Wire Rd. and Catskill Dr.	Green Pond Rd on Naticook Road
	8	Bedford Rd and Wire Road	Green Pond Rd and Continental Blvd



# Three Station Scenarios

Scenario	Stations	4:00	6:00	8:00
Current Stations	2	24%	48%	77%
3 Stations	3	54%	86%	99%

Stations	Travel minutes	Station 1	Station 2	Station 3
<b>3</b>	4	Turnpike interchange with Bedford Rd	Industrial Dr. and the Everett Turnpike	McQuestion Road west of the Souhegan River
	6	Turnpike interchange with Bedford Rd	Continental Blvd & Industrial Dr.	Baboosic Lake Rd and McQuestion Rd
	8	Baboosic Lake Rd and the turnpike overpass	Naticook Rd and Lamson Dr	Baboosic Lake Rd and McQuestion Rd

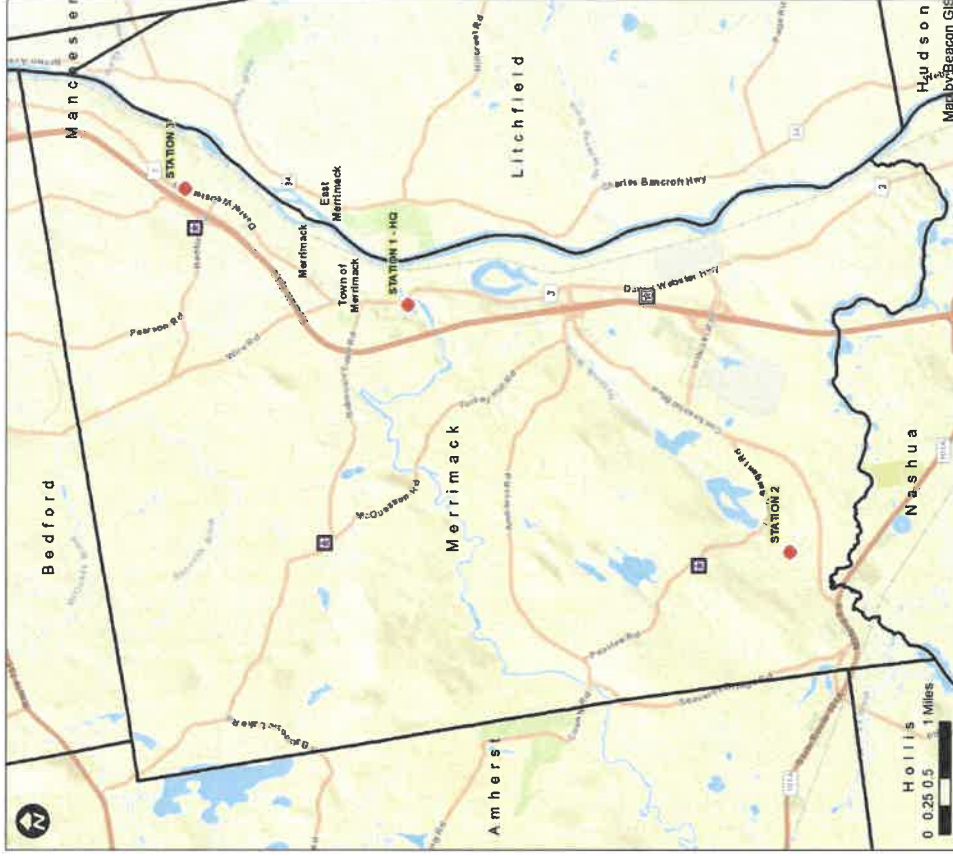


Merrimack, NH

# Four Station Scenarios

Scenario	Stations	4:00	6:00	8:00
Current Stations	2	24%	48%	77%
4 Stations	4	65%	96%	

Stations	Travel minutes	Station 1	Station 2	Station 3	Station 4
4	6	Turnpike interchange with Bedford Road	Peaslee Rd and Old Kings Rd	Baboosic Lake Rd and McQuestion Rd	Daniel Webster Near Anhuesser-Busch



**Merrimack, NH**  
 Chosen Fire Stations  
 Jurisdictions

# Using Current Stations

## Requires Current Station(s) Renovation

- 2 stations scenario

Scenario	Stations	4:00	6:00	8:00
Current Stations	2	24%	48%	77%
Current Station 1 + relocated Station 2	2	40%	55%	80%
Current Station 2 + relocated Station 1	2	29%	53%	82%

Stations	Travel minutes	Station 1	Station 2
<b>2</b>	4	Current Location	Industrial Dr. and the Everett Turnpike
	6	Current Location	Green Pond Rd on Naticook Road
	8	Current Location	Green Pond Rd and Continental Blvd
<b>2</b>	4	Continental Blvd between Daniel Webster Highway and the Everett Turnpike interchange	Current Location
	6	Bedford Rd and Wire Road	Current Location
	8	Wire Rd & Daniel Webster	Current Location

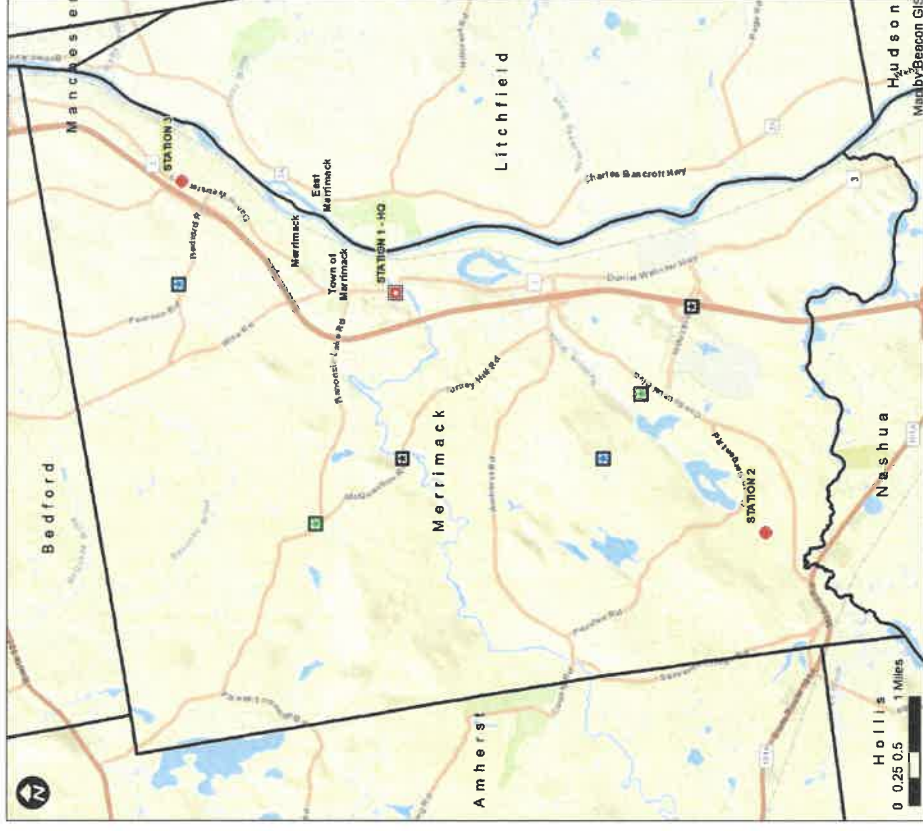
# Using Current Station(s) Renovation

## Requires Current Station(s) Renovation

- 3 stations scenario

Scenario	Stations	4:00	6:00	8:00
Current Stations	2	24%	48%	77%
Current Stations+ McQuestion/Baboosic Lake	3	38%	69%	90%
Current Stations + 3rd Station	3	40%	69%	90%
Current Station 1 + 2 New Stations	3	47%	74%	92%
Current Station 2 + 2 New Stations	3	47%	81%	99%

Stations	Travel minutes	Station 1	Station 2	Station 3
3	4	Current Location	Current Location	Turkey Hill & Amherst
	6	Current Location	Current Location	Baboosic Lake Rd and McQuestion Rd
	8	Current Location	Current Location	Baboosic Lake Rd and McQuestion Rd
3	4	Current Location	Industrial Dr. and the Everett Turnpike	McQuestion Road west of the Souhegan River
	6	Current Location	Green Pond Rd on Naticook Road	Bedford Rd Near Pearson Rd
	8	Current Location	Green Pond Rd and Continental Blvd	Baboosic Lake Rd and McQuestion Rd
3	4	Turnpike interchange with Bedford Rd	Current Location	Turkey Hill & Amherst
	6	Daniel Webster Near Shaw's/Pine St.	Current Location	Baboosic Lake near Pilgrim Ave
	8	Baboosic Lake Rd and the turnpike overpass	Current Location	Baboosic Lake Rd and McQuestion Rd



# 2 Station Scenario Summary

Scenario	Stations	4:00	6:00	8:00
Current Stations	2	24%	48%	77%
2 Stations	2	37%	66%	91%
2 Stations (1@Continental/Industrial)	2	36%	65%	89%
Current Station 1 + relocated Station 2	2	40%	55%	80%
Current Station 2 + relocated Station 1	2	29%	53%	82%

Stations	Travel minutes	Station 1	Station 2
<b>2</b>	4	Turnpike interchange with Bedford Road	Everett Turnpike and Industrial Dr
	6	Wire Rd. and Catskill Dr.	Green Pond Rd on Naticook Road
	8	Bedford Rd and Wire Road	Green Pond Rd and Continental Blvd
<b>2</b>	4	Current Location	Industrial Dr. and the Everett Turnpike
	6	Current Location	Green Pond Rd on Naticook Road
	8	Current Location	Green Pond Rd and Continental Blvd
<b>2</b>	4	Continental Blvd between Daniel Webster Highway and Bedford Rd and Wire Road	Current Location
	6	Bedford Rd and Wire Road	Current Location
	8	Wire Rd & Daniel Webster	Current Location

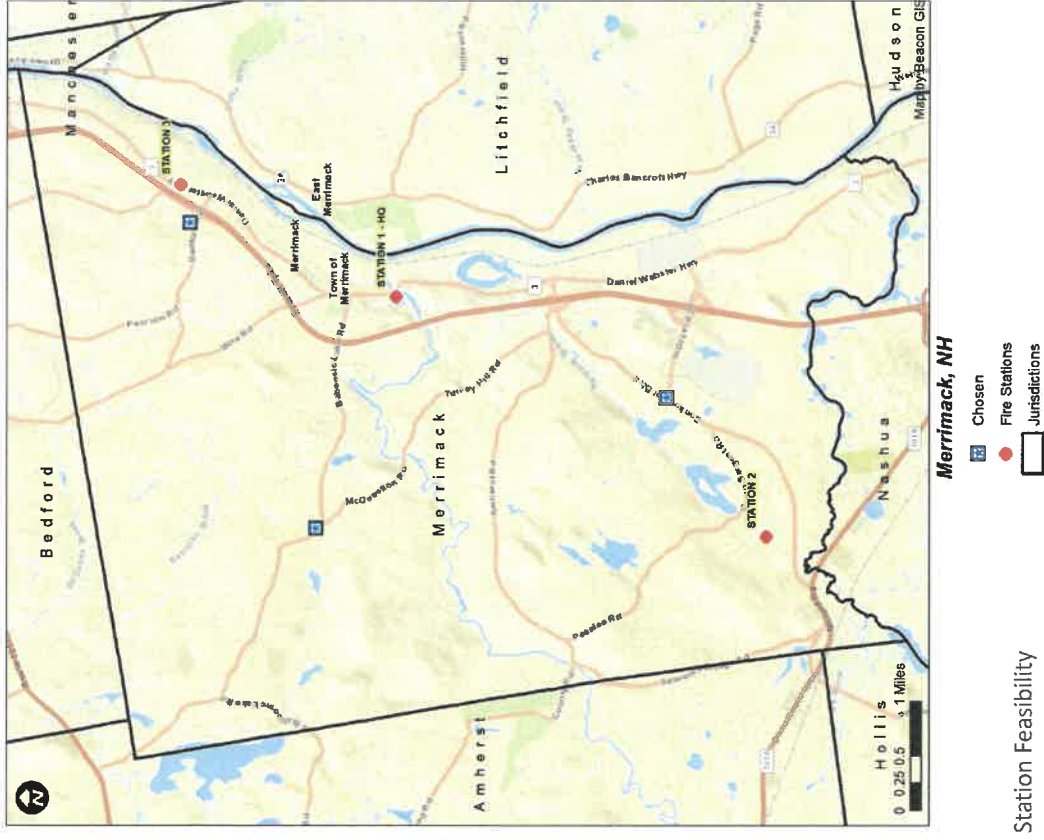
# 3 Station Summary

Scenario	Stations	4:00	6:00	8:00
Current Stations	2	24%	48%	77%
Current Stations+ McQuestion/Baboosic Lake	3	38%	69%	90%
3 Stations	3	54%	86%	99%
3 Stations (1@Continental/Industrial)	3		86%	98%
Current Stations + 3rd Station	3	40%	69%	90%
Current Station 1 + 2 New Stations	3	47%	74%	92%
Current Station 2 + 2 New Stations	3	47%	81%	99%

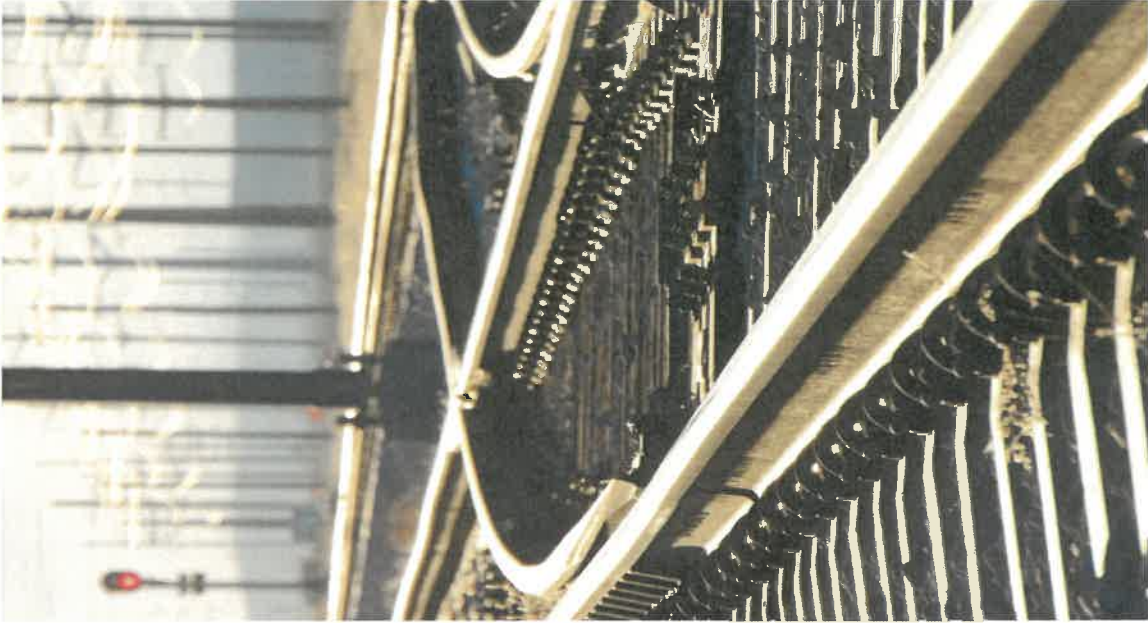
Stations	Travel minutes	Station 1	Station 2	Station 3
<b>3</b>	4	Turnpike interchange with Bedford Rd	Industrial Dr. and the Everett Turnpike	McQuestion Road west of the Souhegan River
	6	Turnpike interchange with Bedford Rd	Continental Blvd & Industrial Dr.	McQuestion Rd
	8	Baboosic Lake Rd and the turnpike overpass	Naticook Rd and Lamson Dr	Baboosic Lake Rd and McQuestion Rd
<b>3</b>	4	Current Location	Current Location	Turkey Hill & Amherst
	6	Current Location	Current Location	Baboosic Lake Rd and McQuestion Rd
	8	Current Location	Current Location	Baboosic Lake Rd and McQuestion Rd
<b>3</b>	4	Current Location	Industrial Dr. and the Everett Turnpike	McQuestion Road west of the Souhegan River
	6	Current Location	Green Pond Rd on Bedford Rd Near Pearson Rd	Baboosic Lake Rd and McQuestion Rd
	8	Current Location	Green Pond Rd and Continental Blvd	Baboosic Lake Rd and McQuestion Rd
<b>3</b>	4	Turnpike interchange with Bedford Rd	Current Location	Turkey Hill & Amherst
	6	Daniel Webster Near Shaw's/Pine St.	Current Location	Baboosic Lake near Pilgrim Ave
	8	Baboosic Lake Rd and the turnpike overpass	Current Location	Baboosic Lake Rd and McQuestion Rd

# Recommendations & Options

- Options
  - Status Quo
  - 1 Station
  - 2 Stations
  - 3 Stations
  - 4 Stations
- Choice result:
  - 3 station scenario, 6-minute travel
    - 86% coverage
      - Use Station 3?







# Best Choices

- Most Coverage
  - 4 new stations
- Improved Coverage/Best 3 Station
  - 6 minutes
  - New Stations
- Best 2 station
  - New Stations

Scenario	Stations	4:00	6:00	8:00
Current Stations	2	24%	48%	77%
4 Stations	4	65%	96%	

Scenario	Stations	4:00	6:00	8:00
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Scenario	Stations	4:00	6:00	8:00
Current Stations	2	24%	48%	77%
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# Best Choices

- Best 2 station using a current station

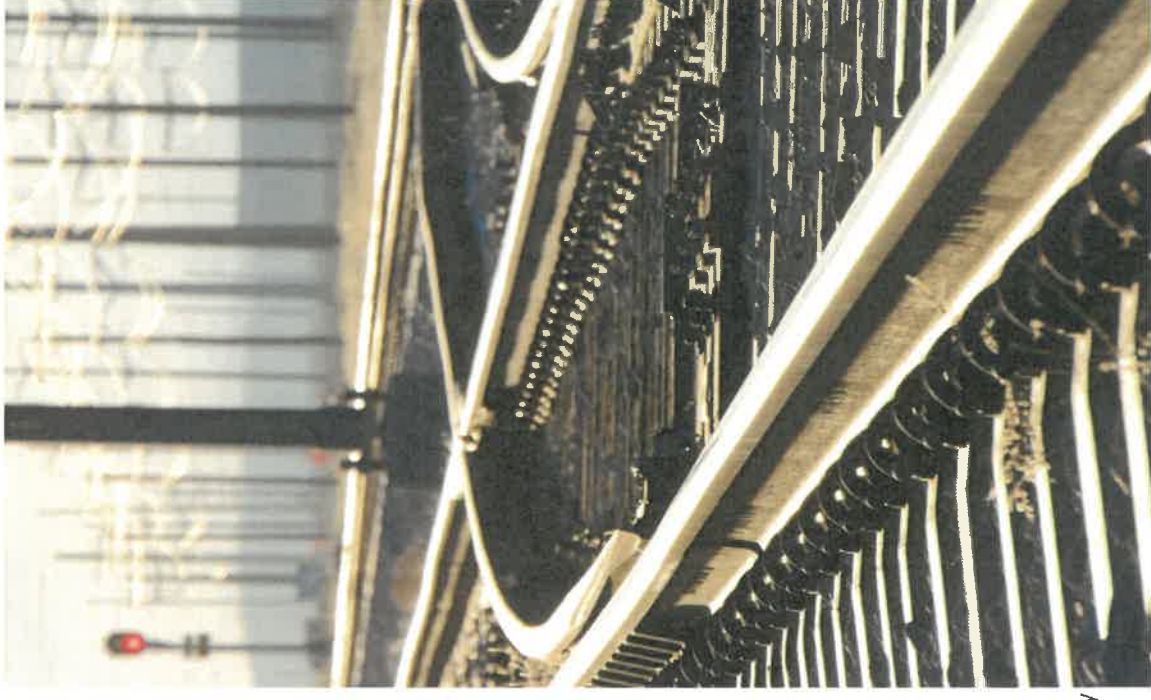
Scenario	Stations	4:00	6:00	8:00
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- Best 3 Station using a current station

Scenario	Stations	4:00	6:00	8:00
Current Stations	2	24%	48%	77%
Current Station 2 + 2 New Stations	3	47%	81%	99%

- Both Current Stations plus 1 new.

Scenario	Stations	4:00	6:00	8:00
Current Stations	2	24%	48%	77%
Current Stations + 3rd Station	3	40%	69%	90%



## Benefits

- Improved response coverage
- Potentially improved insurance ratings for property owners
- Enhanced first alarm assembly
- Reduce property loss
- Increased EMS resources
- Improved facilities and room for future growth

## Approach

- Phased in approach beginning with Station 3 because that improves the overall coverage the most.
- Move admin to that station to open room in station 1 until its move.
- Build Station 2
- Build Station 1



# Drawbacks

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- Current stations require significant renovations and lot may not accommodate growth.
- New stations require procuring land, design, and construction. A lengthy and costly process as well.
- Additional station requires staff, equipment, and apparatus.

# Other recommendations

1. Adopt a response time objective for priority and non-priority incident types. **The department should strive to improve to 7 minutes and 20 seconds to 90% of emergencies within the Town Limits.**
2. Adopt a critical tasking procedure to delineate staffing needs and refine the dispatch policy to reflect these procedures.
3. Adopt a policy to close bay doors unless personnel are present in the bay or outside.
4. Provide fencing for occupied parking areas at stations for security and safety of city and staff vehicles.
5. Improve security at stations with cameras that can be monitored by station personnel.
6. Seek professional recommendation to protect central station from traffic accident potential.
7. Seek professional recommendations regarding feasibility and cost of rebuilt stations on existing lots.



Questions?

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