

EMERGENCY SERVICES ANALYSIS REPORT

Town of Darien, Connecticut

Final Report-January 2023



CPSM[®]

CENTER FOR PUBLIC SAFETY MANAGEMENT, LLC
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THE ASSOCIATION & THE COMPANY

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Since its inception in 1914, ICMA has been dedicated to assisting local governments and their managers in providing services to its citizens in an efficient and effective manner. ICMA advances the knowledge of local government best practices with its website (www.icma.org), publications, research, professional development, and membership. The ICMA Center for Public Safety Management (ICMA/CPSM) was launched by ICMA to provide support to local governments in the areas of police, fire, and emergency medical services.

ICMA also represents local governments at the federal level and has been involved in numerous projects with the Department of Justice and the Department of Homeland Security.

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The Center for Public Safety Management, LLC, maintains the same team of individuals performing the same level of service as when it was a component of ICMA. CPSM's local government technical assistance experience includes workload and deployment analysis using our unique methodology and subject matter experts to examine department organizational structure and culture, identify workload and staffing needs, and align department operations with industry best practices. We have conducted over 400 such studies in 46 states and provinces and over 300 communities ranging in population from 8,000 (Boone, Iowa) to 800,000 (Indianapolis, Ind.).

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SECTION 1. INTRODUCTION

The Center for Public Safety Management LLC (CPSM) contracted with the Town of Darien to complete an analysis of the town's emergency services, which are delivered by three volunteer fire departments (Darien, Noroton, Noroton Heights), the Fire Marshal's Office, Emergency Management, and 911-dispatch services.

Emergency services demands and challenges for the town are numerous and include fire, technical rescue, hazardous materials, coastal and seasonal storms and flooding, transportation emergencies to include vehicle traffic, a mass transit system utilizing bus transportation and commuter rail, fire prevention code enforcement and permitting, and other non-emergency responses typical of urban and suburban communities.

A significant component of this report is the completion of an All-Hazards Risk Assessment of the Community. The All-Hazards Risk Assessment of the Community contemplates many factors that cause, create, facilitate, extend, and enhance risk in and to a community. The All-Hazards Risk Assessment of the Community is an important component of this report as it links directly to deploying fire, EMS, and emergency management assets in the community.

This report and analysis are intended as an examination of the level of service provided by emergency services agencies in Darien as compared to national best practices and standards. Also, this analysis provides data and relevant information to be utilized for future planning and self-review of service levels for continued improvement. This will ensure that the agencies can meet community expectations and mitigate emergencies effectively and efficiently.

Other significant components of this report are an analysis of the current deployment of resources and the performance of these resources in terms of response times and the three fire department fire management zones; a comprehensive review of the current ISO Public Protection Classification report; current volunteer membership response levels and patterns; fire department resiliency (ability to handle more than one incident); fire department critical tasking elements for specific incident responses and assembling an effective response force; fire prevention and training; emergency management preparedness, staffing, and coordination; and analysis of the Fire Marshal's office workload and delivery of service.

Included in this analysis is a review of emergency services budgets. The Town provides substantial capital and operating funding to the three volunteer fire departments. Additionally, the Town provides funding for fire and EMS 911-dispatch services to an external agency, which CPSM is recommending the Town continue.

Based upon CPSM's detailed assessment of the Town's emergency services, it is our conclusion that overall, these agencies provide outstanding services. The Town Administrator and First Selectman are dedicated to the mission of these agencies, and all staff we encountered were transparent during our discussions and were quite focused on creating a positive future for emergency services in the town.

This report also contains a series of observations, planning objectives, and recommendations provided by CPSM which are intended to help the Town deliver services more efficiently and effectively. Recommendations and considerations for continuous improvement of services are presented here. CPSM recognizes there may be recommendations and considerations offered that first must be budgeted and/or discussed with the various agencies, or for which processes must be developed prior to implementation.

RECOMMENDATIONS

Governance and Administration

(See pp. 9-11.)

1. As the Town provides substantial annual financial support to the three volunteer fire departments, and as the Board of Fire Commissioners considers and approves each fire department budget where town funding is requested, emergency appropriations, or any other request for Town funds are made, and as the need for full transparency and oversight of Town funds is of utmost importance, CPSM recommends the Town consider dissolving the current Board of Fire Commissioners and create a Town Fire Commission made up of Town residents, who are appointed by the Board of Selectmen to terms as established by the Board, and who have the powers and duties as established by the Board to provide fiscal and other administrative oversight of the volunteer fire departments. CPSM further recommends the composition of the Town Fire Commission consist of a minimum of three and no more than five Town members who may have a financial, operational, or public safety background, as well as three ex-officio members who may be either the Fire Chief or President of each volunteer fire department.

Training

(See pp. 42-45.)

2. CPSM recommends that each department establish and ensure compliance whereby each combat firefighter receives initial and continuous training for all types of firefighting, with training specific to interior firefighting. CPSM recommends this training be of high level, documented, and that it complies with the State of Connecticut Firefighter 1 curriculum as outlined in Appendix A. CPSM further recommends the three departments jointly establish and deliver officer training courses and training opportunities for incumbent members who are or aspire to be officers in their respective departments. CPSM recommends this training be of high level, documented and that it complies with the State of Connecticut Officer 1 curriculum as outlined in Appendix A. CPSM also recommends that annually, on or about January 15, each Fire Chief provide the Town Fire Commission an updated list of combat personnel (firefighter and officer) who have completed firefighter training compliant with State of Connecticut Firefighter 1 curriculum, and officer level training compliant with the State of Connecticut Officer 1 curriculum. Each report should also list those who do not have this training and a schedule for completion.

Fleet

(See pp. 45-49.)

3. Based on CPSM's operational analysis, and considering the risk in the Town as outlined previously in this report, and through discussion with the three Fire Chiefs, our conclusion and recommendation is the Town should maintain three ladder trucks (one at each department) and these ladder trucks should continue to be diverse in size and aerial device type; two heavy rescue apparatus (one at Darien Fire Department and one at Noroton Heights Fire Department); one fire boat to be staffed and operated by the Noroton Fire Department; two tankers (tenders) (one at Darien Fire Department and one at Noroton Heights Fire Department); and two engine apparatus at each station that remain diverse in pump and tank capacity and equipment carried, but specific to the fire district they serve. CPSM further recommends the Noroton Fire Department maintain a light utility type vehicle to support their marine and/or other light rescue operations. For motor vehicle accidents that require heavy rescue apparatus in the Noroton Heights district, CPSM recommends these services be provided by either the Darien Fire Department or Noroton Heights Fire Department heavy rescue apparatus based on location and availability of these units.

4. The Town should continue with the current replacement plan for apparatus, which is at 17 to 20 years in service. CPSM further recommends that when appropriate, and when an apparatus meets the mechanical feasibility and NFPA 1901 and 1912 criterion for refurbishment, the Town consider the refurbishment alternative when scheduling replacement.

Protective Equipment

(See pp. 49-50.)

5. As there is not consistency between the three fire departments regarding the purchase and implementation of structural firefighting ensemble components, CPSM recommends the three volunteer fire departments collectively participate in a testing and selection process for structural firefighting ensemble components and then establish common ensemble components for future purchases. The common testing and selection will offer economy of scale procurement (a single vendor contract) and will also result in a cache of structural firefighting ensemble components that is interchangeable between departments when needed for new and incumbent members.
6. CPSM further recommends the Town participate in the FY22 FEMA Assistance to Firefighters Grant process for the replacement of self-contained breathing apparatus (SCBA) frame & harness components and cylinders (replacement of those needed to reach the most contemporary model at the time). The purposes of this upgrade/replacement effort are to establish a procurement cycle for all SCBA frame & harness components and cylinders, to establish frame & harness model consistency between all three departments, and to establish economy of scale procurement (a single vendor contract) for these components. The grant should also include upgrade/replacement of SCBA masks as applicable and should ensure there are adequate numbers of each size of mask to issue to all incumbent and new members.

Health and Safety

(See pp. 51-52.)

7. CPSM recommends the three volunteer fire departments continue to document annual mask fit testing and annual medical physicals of members to ensure 100 percent compliance. CPSM further recommends each volunteer Fire Chief have available a report to share with the Town Fire Commission annually, on or about January 15, that outlines member compliance with these two important health and safety programs that are funded by the Town.

ISO-PPC Community Rating

(See pp. 52-57.)

8. CPSM recommends the three departments review and address, to the extent possible, deficiencies in the Fire Department section of the current ISO-Public Protection Classification report as outlined in this analysis. Special attention should be given to developing methods and opportunities for members to achieve the training as required in the ISO analysis, as it is focused on firefighter safety, improved competencies, and overall improved fireground effectiveness and functionality. This includes, given the identified building risks in the town, ensuring company personnel conduct (and document for future ISO reviews) some level of commercial, industrial, institutional, and other similar type buildings familiarization and pre-plan information gathering; and developing an officer training program targeted at ensuring officers have opportunities for the various levels of officer certification and that they receive structured annualized officer training.

9. CPSM further recommends the Town work with Aquarion Water Company to ensure the fire hydrants are inspected annually. CPSM further recommends Town fire hydrants be flow-tested every five years in accordance with NFPA 291 *Recommended Practice for Fire Flow Testing and Marking of Hydrants*.

NFPA 1720/ERF

(See pp. 57-64.)

10. CPSM recommends the three departments meet and confer regarding the district response to building structural fires beyond that of a low risk (one, two, or three-family dwellings and scattered small business and industrial occupancies), and consider adding resources on the initial alarm from the other two fire departments, regardless of the hour of the day, for medium- and high-risk occupancies (buildings) to ensure adequate resources and staffing are available to fill all the critical tasking necessary to mitigate the incident.

Performance Objectives

(See pp. 65-71.)

11. CPSM recommends the following baseline performance objectives for the DFD, NFD, and NHFD:
 - Meet department and NFPA 1720 staffing parameters for an on-scene Effective Response Force for structure fires in the urban response areas in 9 minutes, 90 percent of the time.
 - Meet department and NFPA 1720 staffing parameters for an on-scene Effective Response Force for structure fires in the suburban response areas in 10 minutes, 80 percent of the time.
 - Meet department staffing parameters for an on-scene Effective Response Force for MVA incidents in all response areas (urban and suburban) in 10 minutes, 80 percent of the time.
 - Meet department staffing parameters for an on-scene Effective Response Force for all non-structural fire, fire-related incidents (fire alarms, outside fires, public assist, good intent, hazards, technical rescue) in all response areas (urban and suburban) in 12 minutes, 80 percent of the time.

Volunteer Fire Departments

(See pp. 42-72)

12. CPSM recommends the Town consider appointing a Fire Services Administrator to oversee certain administrative functions for all three volunteer fire departments such as budget development and implementation; volunteer department liaison with the Town Administrator and Board of Selectmen; ensuring the training and education of all members; monitoring department turnout and emergency response force; apparatus replacement; understanding the ISO report and devising a plan to correct deficiencies; personnel guidance to include recruitment and retention of volunteer membership; and grant development and implementation if awarded. CPSM further recommends this position report directly to the Town Administrator and also have reporting responsibilities to the Town Fire Commission as established, and act as a liaison between the volunteer fire departments, the Town, and the Town Fire Commission.
 - As the Town already has a Fire Marshal, it may be prudent to consider combining the function of Fire Services Administrator with the Fire Marshal position to create a Fire Protection Services Director. This combined position would have the responsibility of oversight of the Town's fire protective services as outlined in this recommendation (and which can be expanded), and direction of the Town's Community Risk Reduction

program (fire prevention, fire investigation, public fire education). Alternatively, the duties of fire service administration could be included in the duties of the newly created Emergency Manager position.

Emergency Management

(See pp. 73-79.)

13. CPSM recommends the Town create a full-time Emergency Manager position. This action is recommended and necessary as the current Emergency Management Director is assigned other roles as the Assistant Fire Marshal, and there is a critical need for continuous planning and preparation, project management, collaboration with town and state officials, and development and sustainment of required and ancillary written plans required in the emergency management discipline. Darien can be subject to environmental and other emergencies that evolve into federally declared emergencies and thus should put more resources into the position.
14. CPSM recommends the Emergency Management office begin the process of implementing the National Incident Management System (NIMS) to include developing and implementing a plan and training town officials and staff to the appropriate NIMS levels.
15. CPSM recognizes the Town has an existing Severe Weather Plan and Playbook, which should be used as the basis to formulate an overarching and formal Continuity of Operations Plan (COOP) that is all-hazards and that has the ability to ensure the effects of any interruption in a Town office, system, operation, and staffing before or during an event are successfully managed and the Town is able to perform all essential functions.
16. CPSM recommends the Town maintain an Emergency Operations Center or Emergency Management Operations area that can quickly become operational, with minimal set-up, and is capable of supporting necessary emergency support functions to handle a multi-agency emergency 24-hours/day if necessary. The location of such Emergency Operations Center or Emergency Management Operations area(s) should be in an established facility or area of a facility designated as an EOC. The EOC should have the ability to be quickly relocated if compromised, and should contain, at a minimum, equipment, materials, and infrastructure as outlined in the Emergency Operations Center section of this report.

Dispatch Service

(See pp. 80-82.)

17. CPSM recommends the Town continue contractual services with the Southwest Regional Communications Center for fire services secondary PSAP and dispatch services as the current fire dispatch system works well and has a cost-effective contractual cost.
18. CPSM recommends the Town explore through discussion with the SWRCC the practicality and efficiencies of the SWRCC taking on law enforcement dispatch services for the DPD, which potentially could cost less than the amount currently budgeted for the DPD 911 center (which includes staffing).

SECTION 2. ANALYSIS METHODOLOGY

Data Analysis

The CPSM emergency services team used numerous sources of data to support our conclusions and recommendations for this *Emergency Services Analysis*. Information was obtained from the ISO, regional and state reports, along with numerous sources of internal information garnered from a CPSM document/information request. Internal sources included data from the computer-aided dispatch (CAD) system for response time and workload information, the three fire department's National Incident Reporting System (NFIRS) records management system for calls for service, and workload provided by the Fire Marshal.

Interviews

This study relied extensively on intensive interviews and interaction with town staff, volunteer fire services, the SWRCC, and Darien 911 center personnel. On-site and in-person interviews to include virtual meetings were conducted with all senior fire department staff regarding the administration and operations of their respective departments.

Document Review

The CPSM emergency services team consultants were furnished with numerous reports and summary documents by the Town and volunteer fire departments. Information included fire department planning; staffing and deployment of resources; policies and procedures; community risk, fire code enforcement, public education; investigation records; fleet and facilities; training; emergency management; a review of dispatch services; and additional performance information. Follow-up phone calls, emails, and virtual meetings were used to clarify information as needed.

Operational/Administrative Observations

We conducted numerous observations over the course of the evaluation period. These included observations of fire, emergency management, Fire Marshal, and dispatch operations; community risk reduction; fleet schedules and overall facility usefulness; administrative functions; deployment of apparatus from a coverage perspective as benchmarked against national standards; and operational staffing benchmarked against national standards as it relates to assembling an effective response force. The CPSM team engaged all facets of department operations from both a ground-floor and management perspective.

Staffing and Program Analysis

In virtually all of our studies we are asked to identify appropriate staffing and program levels. This is the case in this study as well. In this report we discuss operational and programmatic workload; fireground critical tasking; assembling an effective response force; operational deployment; dispatch services; Fire Marshal activities; emergency management program activities and needs; and other factors to be considered in establishing appropriate staffing and service delivery levels. Staffing and program recommendations are based upon our comprehensive evaluation of all relevant factors and are benchmarked against national standards such as the National Fire Protection Association (NFPA); ISO Public Protection Classification rating system; the Center for Public Safety Excellence, Standards of Cover; FEMA; and related national standards.

SECTION 3. EMERGENCY SERVICES CHARACTERISTICS

Emergency Services Overview

Emergency services in the Town of Darien include law enforcement services provided by the Darien Police Department (DPD) led by an appointed Police Chief; fire services provided by three separate, volunteer fire departments each led by an elected Fire Chief; emergency medical services (EMS) provided by Post 53 and the Town of Stamford; fire prevention, investigation, and fire plans review services provided by the Town through a full-time Fire Marshal's office led by an appointed Fire Marshal; emergency management services provided by the Town through a part-time Emergency Manager who also serves as the Assistant Fire Marshal; and 911-dispatch services provided by the DPD and through a regional communications center (SWRCC) for fire and EMS.

The purpose of this study is to provide analysis of the three volunteer fire departments, emergency management, and the fire and EMS 911-dispatch services.

Fire Services

Fire services in the Town are provided by the Darien Fire Department, the Noroton Heights Fire Department, and the Noroton Fire Department.

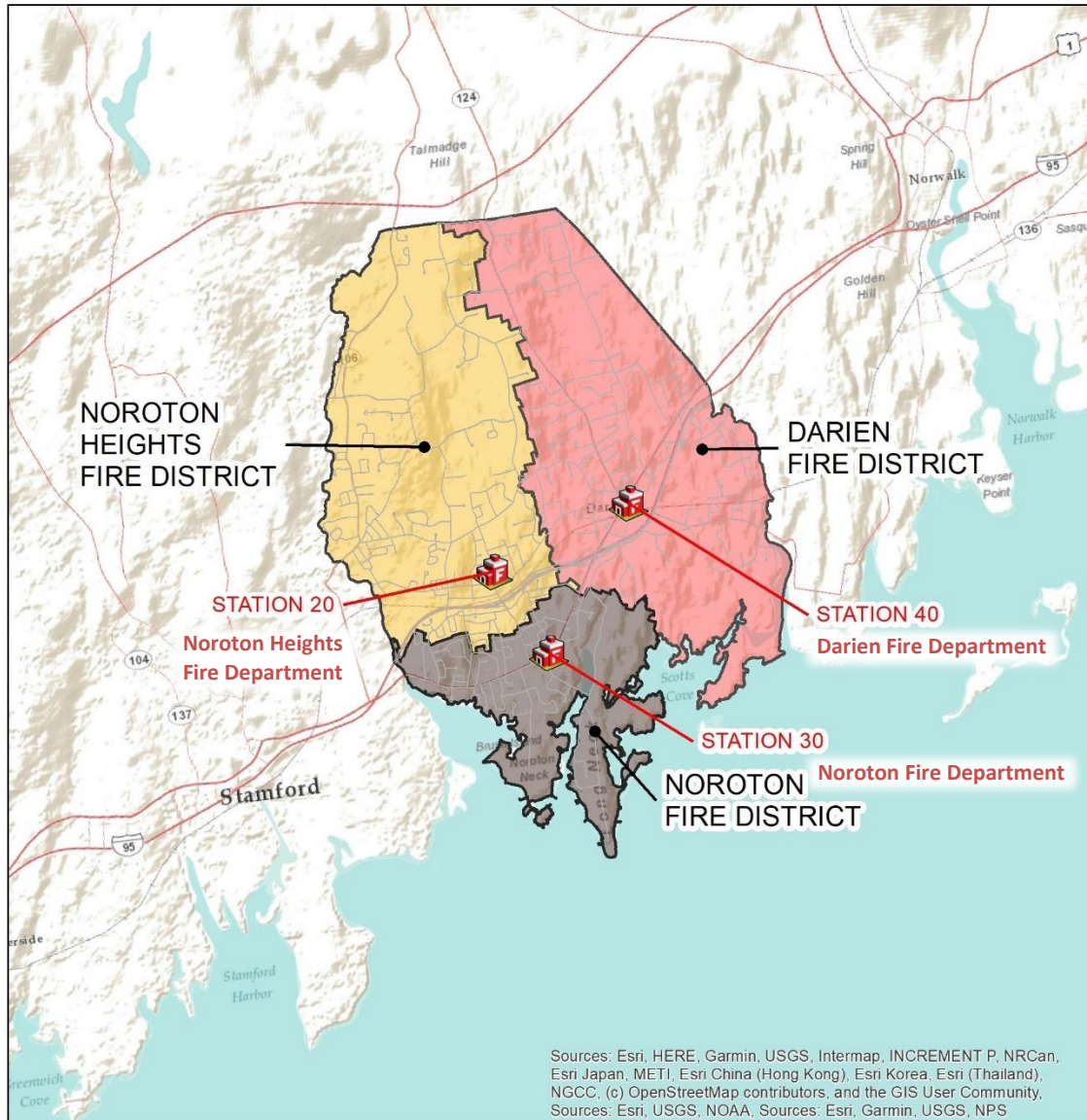
The **Darien Fire Department** (DFD) was established in 1895 and is the Town's first established fire department. The DFD is 100-percent volunteer, including operational and administrative members and a Board of Trustees. It responds out of one fire station located at 848 Boston Post Road. The DFD has an established first-due fire management zone (district) which it services with two engines, one tower ladder, one rescue truck, one tanker, and various other command, light utility, and response equipment.

The **Noroton Heights Fire Department** (NHFD) was established in 1903. The NFD is 100-percent volunteer, including operational and administrative members and an administrative oversight board. It responds out of one fire station located at 209 Noroton Ave. The NHFD has an established first-due fire management zone (district) which it services with two engines (one is identified as a squad), one aerial ladder, one rescue truck, one brush vehicle, and various other command, light utility, and response equipment.

The **Noroton Fire Department** (NFD) was established in 1903. The NFD is 100-percent volunteer, including operational and administrative members and an administrative oversight board. It responds out of one fire station located at 1873 Post Road. The NHFD has an established first-due fire management zone (district) which it services with two engines, one aerial ladder, one rescue truck, one marine unit (fire boat), and various other command, light utility, marine, and response equipment.

The following figure illustrates the three fire management zones (districts) for the Town's fire services.

FIGURE 3-1: Town of Darien Fire Management Zones



Emergency Medical Services



Darien EMS-Post 53 was established in 1970 and remains today one of the most unique EMS units in the nation. Post 53 delivers EMS services to the Town through a volunteer corps made up largely of high school-age volunteers who are trained as Emergency Medical Technicians (EMTs). Supervision is provided by adult advisors who themselves are also trained to the EMT level. Post 53 responds to more than 1,600 calls per year with three fully equipped ambulances along with supervisor fly cars. When Advanced Life Support (ALS) is needed, the Town provides this higher level of care

through an agreement with Stamford Emergency Medical Services, Inc. (SEMS), which provides staffing of one ALS fly car in the Town of Darien.

Fire Marshal Services

The Fire Marshal is a function of the Town of Darien. The office provides fire code enforcement, building and site plan review as it relates to fire and life safety, fire origin and cause investigation, permitting as required under the state fire safety and prevention codes, and related fire prevention activities and life safety education programs. Services are provided through the staff of one Fire Marshal, one Assistant Fire Marshal who also serves as the town's Emergency Manager, one full-time Deputy Fire Marshal, three part-time inspectors, and one administrative support position.

Emergency Management Services

Emergency management is a function of the Town of Darien. Day-to-day emergency management functions that include prevention, mitigation, preparation, response, and recovery segments of a comprehensive emergency management program is managed on a part-time basis by the Assistant Fire Marshal, who also serves as the Emergency Management Director. The First Selectman, as the Chief Elected Official of the Town, serves as the lead official during an emergency, and thus has the authority to issue a proclamation declaring a state of emergency when needed and required. Pursuant to Section 28-8a of the General Statutes of Connecticut, the First Selectman also *may take such action as he deems necessary to mitigate the major disaster or emergency and to secure and preserve any documents and evidence pertinent to and necessary for a future investigation.*

911-Dispatch Services

Fire and EMS 911-dispatch services include the DPD 911-dispatch center and the Southwest Regional Communication Center (SWRCC). The DPD 911-dispatch center is the primary Public Safety Answering Point (PSAP) for the Town, and also provides DPD law enforcement dispatch services. The SWRCC serves as the secondary PSAP for fire and EMS services (calls transferred in from the DPD 911-dispatch center) and dispatches Town fire departments and Post 53 EMS.

Governance and Administration

Town of Darien

The Town of Darien operates under the Representative Town Meeting form of government. Under this form of government, the legislative powers of the Town are vested in 100 members who represent the Town's six districts.

The elected body of the Town is the Board of Selectmen who manage and oversee the internal operations of the Town. In Darien, the Board of Selectmen includes a First Selectman and four additional selectmen.

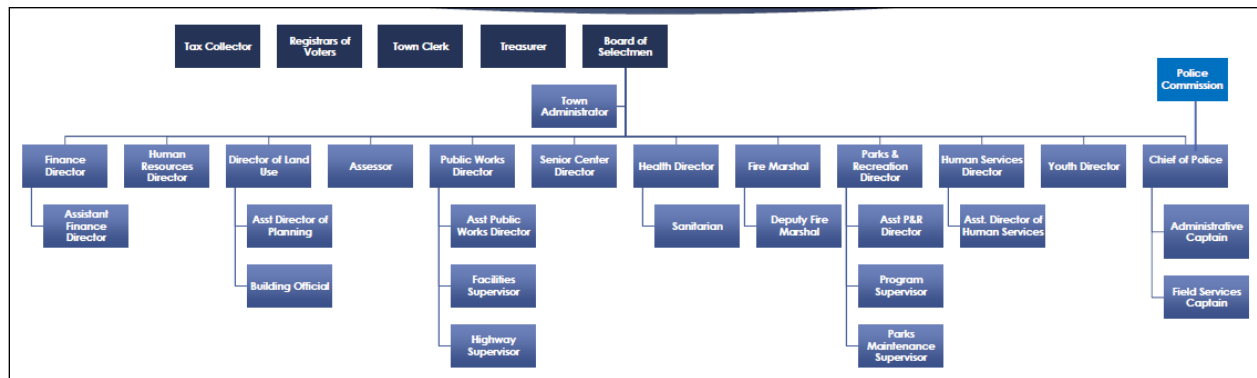
Pursuant to Section 15 of the Darien Code of Ordinances, the First Selectman *shall supervise and direct the administration of all departments, agencies, and offices in charge of persons, boards, or commissions appointed by the Board of Selectmen, except the Police Commission.*

In accordance with Section 16 of the Darien Code of Ordinances, a Town Administrator is appointed by the Board of Selectmen and *acts as the chief administrative officer of the town.* The Town Administrator administers the day-to-day operations of the Town through the various

department heads and program directors, develops and implements the annual budget, and carries out others duties as outlined by the Board.

The following figure illustrates the organizational chart for the Town.

FIGURE 3-2: Town of Darien Organizational Chart



Fire Commission

Within the Town of Darien there is a Board of Fire Commissioners (BFC). Unlike the Darien Police Commission, who pursuant to Section 34 of the Darien Code of Ordinances has regulatory powers and duties, the BFC does not have authority or regulatory powers over the three fire departments, who act independently under their own bylaws and standard operating procedures.

According to Article II of the BFC bylaws, the object of the commission is to:

- (1) Represent the volunteer fire departments of the Town of Darien to the Town Government of Darien or to any boards, committees, commissions, or any other groups acting on behalf of the Town of Darien.
- (2) Act on any question that may be of any improvement or benefit and for the welfare of one or all of the volunteer fire departments of Darien.
- (3) Act on any question that may affect the fire protection of Darien and to protect the legal and moral rights of each volunteer fire department and its members while performing their duties.
- (4) Promote amiable relationships and goodwill among the volunteer fire departments of Darien and to protect the rights of each department with reflection to personal and/or private property, membership and/or any other phase of the organization of the private corporation when requested.

The BFC is made up of members from the three Town fire departments. Each department elects three members to serve on this nine-member commission. There are no term limits for members once elected from their department. The bylaws specify officers, duties, and term limits for the chair position; the chair must rotate among the three departments. There are no civilian community members on the commission.

Of significance is Article X, Section 3a and 3b, which relate to fire department's Town budget requests and is stated as:

3a: All member departments' budgets for town funds, emergency appropriations, or any other request for town money must be approved by the B.F.C. before it is presented to the Board of Selectmen by the Chairman. Then a representative of the department requesting budget item may present his department's views to any town government body.

3b: No further changes are to be made unless approved by the B.F.C.

The BFC, according to stakeholder interviews conducted by CPSM, does provide a purpose in that it does ensure the three departments continue to serve in unison; that operational discussions occur and no one department is operating out of sync with the others; that the training grounds are funded, maintained, and operative; that annualized firefighter training is funded, scheduled, and conducted; and that Town budget requests are discussed and approved. Stakeholder discussion also included the potential addition of non-fire department members (civilians), and a more focused objective of the commission in terms of service deliverables, equipment, recruitment, and retention.

Governance and Administration Recommendation:

- As the Town provides substantial annual financial support to the three volunteer fire departments, and as the Board of Fire Commissioners considers and approves each fire department budget where town funding is requested, emergency appropriations, or any other request for Town funds are made, and as the need for full transparency and oversight of Town funds is of utmost importance, CPSM recommends the Town consider dissolving the current Board of Fire Commissioners and create a Town Fire Commission made up of Town residents, who are appointed by the Board of Selectmen to terms as established by the Board, and who have the powers and duties as established by the Board to provide fiscal and other administrative oversight of the volunteer fire departments. CPSM further recommends the composition of the Town Fire Commission consist of a minimum of three and no more than five Town members who may have a financial, operational, or public safety background, as well as three ex-officio members who may be either the Fire Chief or President of each volunteer fire department. (Recommendation No. 1.)

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Fiscal Resources for Emergency Services

In this section CPSM reviews fiscal resources for the three fire departments, emergency management, the Fire Marshal's Office, and 911-dispatch services. These services are funded out of the Town's general fund budget. In Darien, property taxes are the main source of funding for the general fund, making up more than 90 percent of revenues for this fund.

Fire Departments

Supporting active and responsive volunteer fire departments is essential in communities that receive the benefit of a professional service without the cost of full-time salaries. A volunteer force not only reduces property loss and saves lives, but it also can save a community a considerable amount of tax dollars. Salaries, benefits, and operational staffing maintenance for the Town would reach several million dollars annually to staff three to five apparatus on a 24/7/365 basis along with support staff to manage the operation and provide ongoing training. Recognizing this, the Town provides substantial financial support to the three volunteer fire departments. This includes operating expenses, capital improvements (facility), and heavy fire apparatus.

The following table outlines operational budgets for the three volunteer fire departments. The budgeted amounts cover funding for training; facility utilities; fleet and facility repairs; uniforms and protective clothing; fire, rescue, and medical equipment; and breathing apparatus.

TABLE 3-1: Fire Department Operating Budgets: FYs 2020, 2021, 2022, 2023

Fire Department	FY 2020	FY 2021	FY 2022	FY 2023
Darien Fire Department	\$165,979	\$174,305	\$172,199	\$170,835
Noroton Heights Fire Department	\$186,897	\$193,144	\$218,011	\$222,161
Noroton Fire Department	\$191,649	\$188,145	\$196,789	\$202,495
Total	\$544,525	\$555,594	\$586,999	\$595,491

Note: FY 2020, 2021 are actual expenditures. FY 2022 are revised budgets. FY 2023 are approved budgets.

The next table outlines budgeted capital costs for FYs 2020, 2021, 2022, and 2023. Funding in this category includes facility capital improvements; radios and radio equipment; fleet upgrades; and certain fire and rescue equipment considered capital expenditures by the Town.

TABLE 3-2: Fire Department Adopted Capital Budgets: FYs 2020, 2021, 2022, 2023

Fire Department	FY 2020	FY 2021	FY 2022	FY 2023
Darien Fire Department	\$92,900	\$80,125	\$80,000	\$78,239
Noroton Heights Fire Department	\$65,900	\$89,950	\$88,000	\$127,565
Noroton Fire Department	\$39,500	\$208,000	\$97,000	\$87,900
Total	\$198,300	\$378,075	\$265,000	\$293,704

Fire Commission

The BFC receives both operating and capital funding as well from the Town. The primary purpose of this funding is to maintain the fire training grounds; and to provide professional and technical training and certification courses. Funding is allocated here for the regional emergency communications dispatch services for fire services. Additional capital funding is assigned to the BFC budget for replacement of heavy fire apparatus, as this body through its bylaws grants approval for these budget requests to move forward to the Town for consideration.

TABLE 3-3: Board of Fire Commissioners Adopted Operating & Capital Budgets: FYs 2020, 2021, 2022, 2023

	FY 2020	FY 2021	FY 2022	FY 2023
Operating Budget	\$196,586	\$224,712	\$252,143	\$251,905
Capital Budget	-	-	\$330,000	\$60,000
Capital Budget – Fleet Replacement Reserve	\$500,000	-	-	\$2,642,000
Capital Total	\$500,000	-	\$330,000	\$2,702,000

Notes: FY 2020, 2021 are actual expenditures. FY 2022 figures are revised budgets. FY 2023 figures are approved budgets. FY 2022 Capital Budget includes \$300,000 to upgrade traffic pre-emption system. FY 2023 Capital Budget includes replacement of Engine 23 (NHFD); Engine 32 (NFD); and Rescue 44 (DFD).

Fire Marshal's Office

The Fire Marshal's Office budget funds salary for assigned staff to this unit, as well as typical operating, maintenance, and support costs associated with a work unit such as this. Recognizing the increased workload for this unit, the Town did approve in the FY 2023 budget an upgrade of

one part-time fire inspector to one full-time Deputy Fire Marshal. The Assistant Fire Marshal is funded as a half position in this budget; the additional half salary is budgeted in the Emergency Management budget. As with any budget that includes full-time staff, 93 percent of the Fire Marshal's Office budget is allocated to staff salary.

The next table outlines the Fire Marshal's Office operating and capital budgets for FYs 2020, 2021, 2022, and 2023.

TABLE 3-4: Fire Marshal's Office Adopted Operating & Capital Budgets: FYs 2020, 2021, 2022, 2023

	FY 2020	FY 2021	FY 2022	FY 2023
Licenses & Permits Revenues	\$228,461	\$146,656	\$167,200	\$167,200
Operating Budget	\$460,803	\$548,767	\$500,000	\$527,000
Capital Budget	\$21,000	\$9,000	\$39,500	\$84,800

Note: FY 2020, 2021 are actual expenditures. FY 2022 figures are revised budgets. FY 2023 figures are approved budgets.

Emergency Management

The Emergency Management function is funded for the preparation, response, and recovery of natural and manufactured emergencies in the Town. Emergency Management funding is designated for one half-time position (Assistant Fire Marshal) who serves as the Emergency Management Director as well as for materials and supplies and contractual services tied to this unit. The largest non-salary contractual cost is for radio repair and maintenance since funding is allocated to this unit for the Town's public safety two-way radio system.

The next table outlines the Emergency Management budgets for FYs 2020, 2021, 2022, and 2023.

TABLE 3-5: Emergency Management Adopted Operating & Capital Budgets: FYs 2020, 2021, 2022, 2023

	FY 2020	FY 2021	FY 2022	FY 2023
Operating Budget	\$222,457	\$238,720	\$231,674	\$231,610
Capital Budget	-	-	-	\$120,000

Note: FY 2020, 2021 are actual expenditures. FY 2022 figure is the revised budget. FY 2023 figures are approved budgets.

911-Dispatch Services

The cost for 911-dispatch services for fire and EMS is broken out in three budgets. The primary PSAP (initial public safety 911 phone call) costs are included in the DPD Communications Unit budget, which includes personnel (telecommunicators) and contractual services for the hardware and software associated with the phone system, computer-aided dispatch (CAD) system, and associated equipment. The DPD Communications Unit is budgeted for nine telecommunicators positions at a FY 2023 cost of \$724,142 (base salary, overtime, holiday pay). The contractual services lines total \$53,552; thus, the total budget is \$777,694.

Fire and EMS services are dispatched through a contractual agreement with the Southwest Regional Communications Center (SWRCC). Contractual costs for these arrangements are as follows:

- **SWCC** Fire Contractual Cost: \$59,965
- **SWCC** EMS Contractual Costs: \$60,485

Total Fire and EMS Contracted 911-Dispatch Costs **\$120,450**

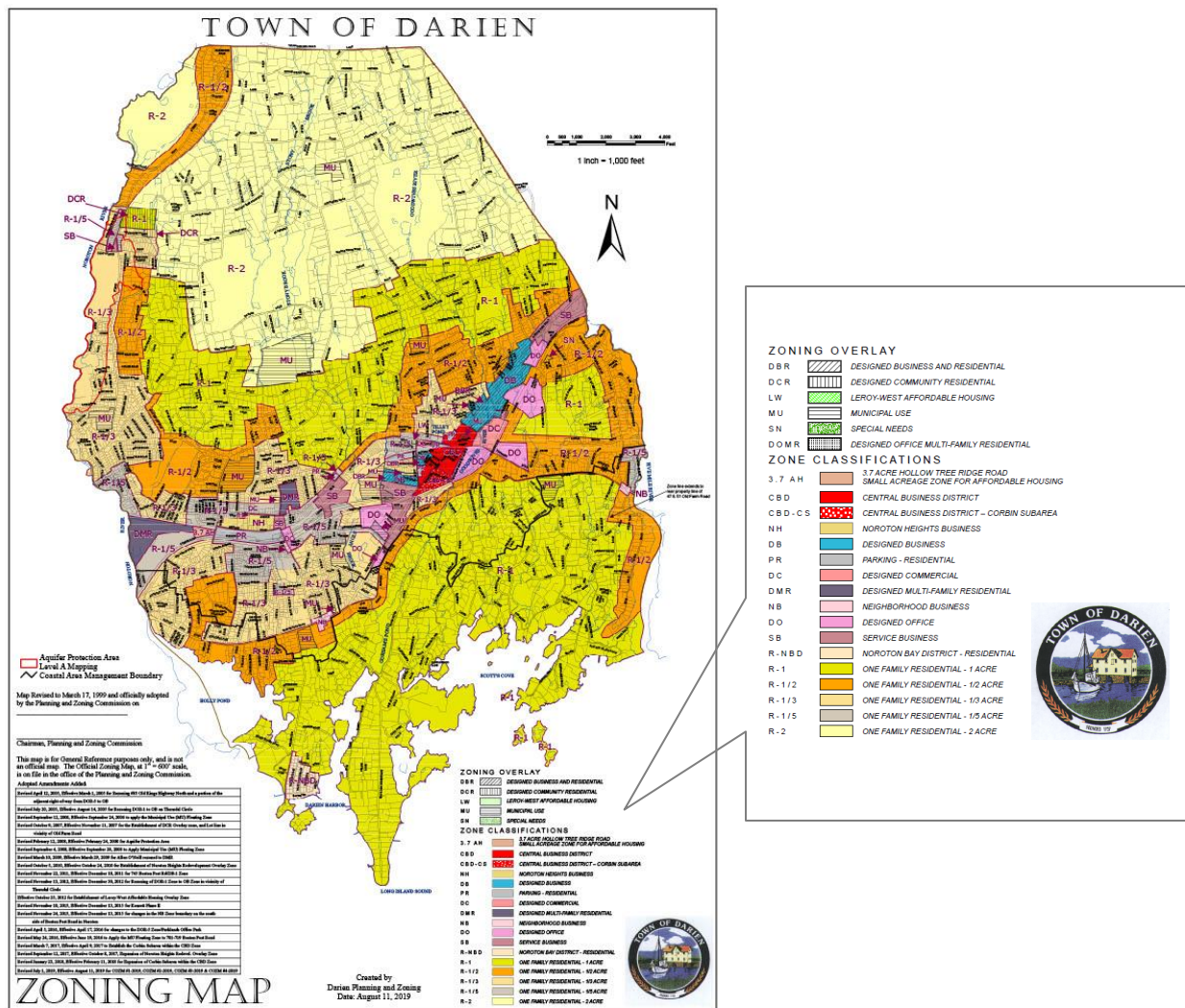
SECTION 4. DARIEN COMMUNITY RISK

Population and Community Growth

The U.S. Census Bureau indicates the population of Darien in 2020 was 21,500. This is just under a 4 percent increase in population since the 2010 Census population of 20,732. The Town is 12.65 square miles in area and has a population density of 1,699 people per square mile. This is an increase of 61 people per square mile over the 2010 Census numbers.

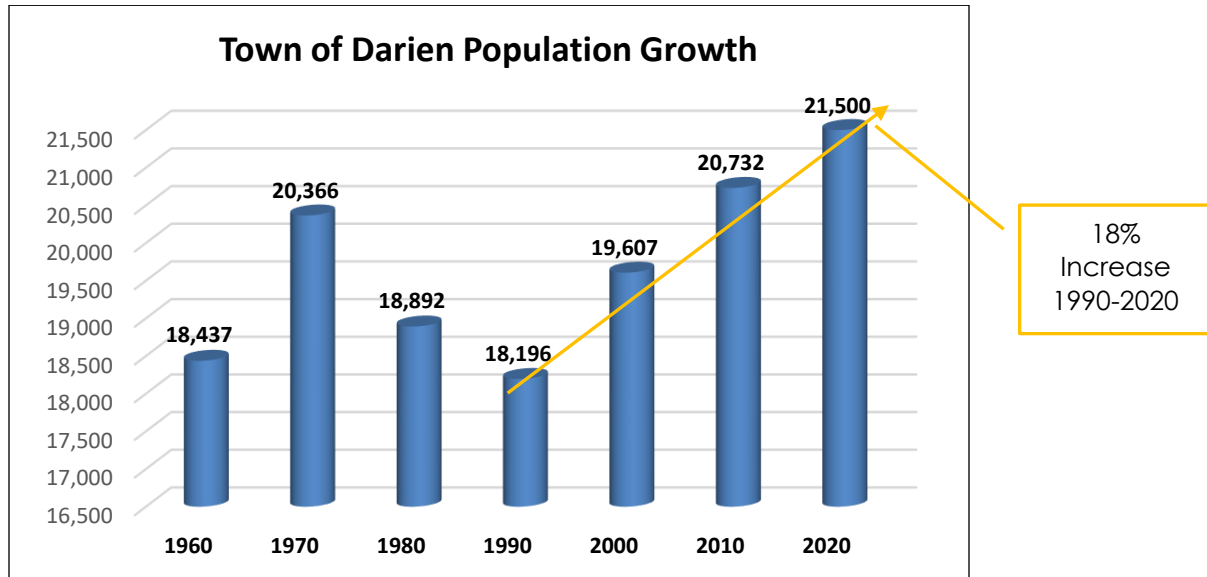
The next figure illustrates the most current land use map for Darien, which is linked to current and future population density.

FIGURE 4-1: Town of Darien Land Use Map



The population in Darien has grown modestly since 1960. This is after substantial growth in population from 1950 to 1960 (6,670 or 57-percent). The next figure illustrates population totals in the Town since 1960.

FIGURE 4-2: Town of Darien Population Growth, 1960-2020



In terms of fire and EMS risk, the age and socio-economic profiles of a population can have an impact on the number of requests for fire and EMS services. Evaluation of the number of seniors and children by fire management zones can provide insight into trends in service delivery and quantitate the probability of future service requests. In a 2021 National Fire Protection Association (NFPA) report on residential fires, the following key findings were identified for the period 2015–2019:¹

- Males were more likely to be killed or injured in home fires than females and accounted for larger percentages of victims (57 percent of the deaths and 55 percent of the injuries).
- The largest number of deaths (19 percent) in a single age group was among people ages 55 to 65.
- 59 percent of the victims of fatal home fires were between the ages of 39 and 74, and three of every five (62 percent) of the non-fatally injured were between the ages of 25 and 64.
- Slightly over one-third (36 percent) of the fatalities were aged 65 or older; only 17 percent of the non-fatally injured were in that age group.
- Children under the age of 15 accounted for 11 percent of the home fire fatalities and 10 percent of the injuries. Children under the age of 5 accounted for 5 percent of the deaths and 4 percent of the injuries.
- Adults of all ages had higher rates of non-fatal fire injuries than children.
- Smoking materials were the leading cause of home fire deaths overall (23 percent) with cooking ranking a close second (20 percent).
- The highest percentage of fire fatalities occurred while the person was asleep or physically disabled and not in the area of fire origin, key factors to vulnerable populations.

1. M. Ahrens, R. Maheshwari "Home Fire Victims by Age and Gender," Quincy, MA: NFPA, 2021.

In Darien, the following age and socioeconomic factors are considered herein when assessing and determining risk for fire and EMS preparedness and response:²

- Children under the age of five represent 6.4 percent of the population.
- Persons under the age of 18 represent 32.0 percent of the population.
- Persons over the age of 65 represent 13.6 percent of the population.
- Male persons represent 49.2 percent of the population.
- There are 3.13 persons per household in Darien.
- The median household income in 2020 dollars was \$243,750.
- Persons living in poverty make up 3.4 percent of the population.

Black or African American alone represents 1.0 percent of the population. The remaining percentage of population by race includes White alone at 89.0 percent, American Indian or Alaska Native alone at 0.0 percent, Asian alone at 6.0 percent, two or more races at 3.4 percent, and Hispanic or Latino at 4.0 percent.

The demographics in Darien overall do not pose a high risk in totality; however, a single call involving vulnerable population (fire or EMS) poses a higher risk on that particular response. Through pre-fire planning and response district knowledge of residential and other structures housing vulnerable population as identified above, the Darien emergency services departments will have the necessary situational awareness and be better prepared on arrival at the incident.

Environmental Factors

The Town of Darien is prone to and will continue to be exposed to certain environmental hazards that will have an impact on the community. The most common natural hazards prevalent to the region, according to the Western Connecticut Council of Governments Multijurisdictional Hazard Mitigation Plan Update 2021-2026, Municipal Annex for Darien, are:³

Flooding (Coastal and Inland)

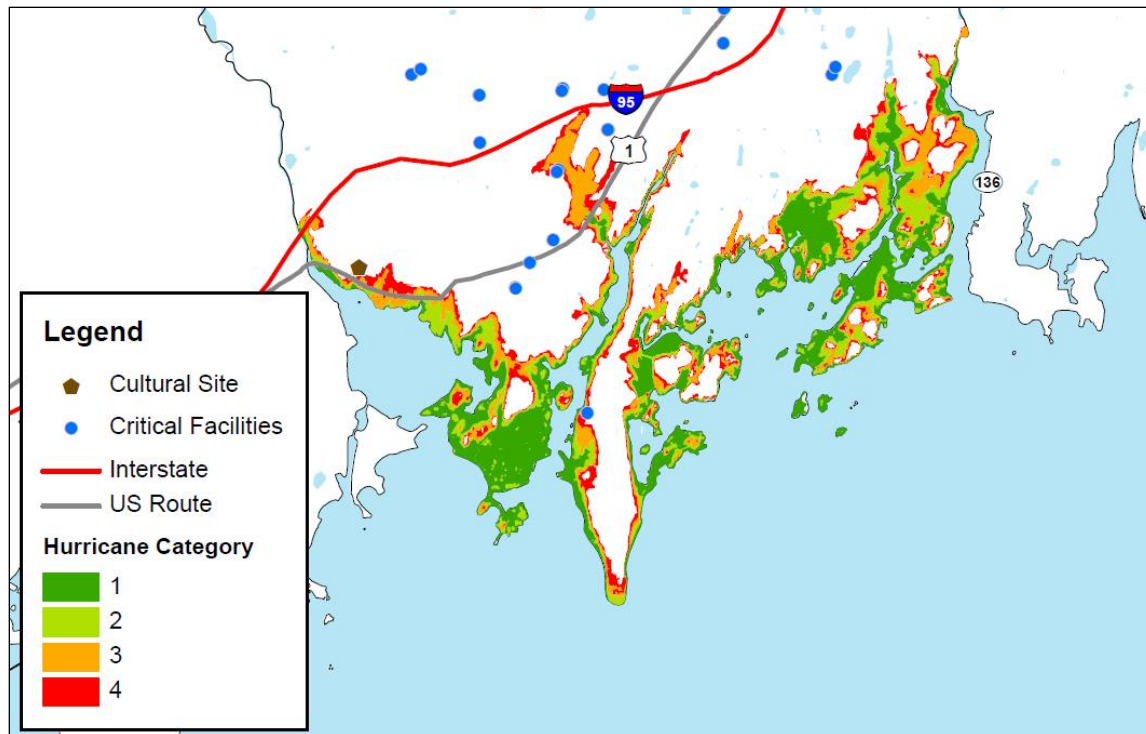
- Potential flooding includes urban/nuisance flooding during heavy rain downpours or prolonged rain events, as well as flooding from storm surge in conjunction with high tide events. Flooding in Darien occurs along rivers and tributaries that cross the Town as well as the coastline, where storm surge from the Long Island Sound can cause the greatest impact. Riverine flooding occurs from the Noroton, Five Mile, Stonybrook, and Goodwives rivers. Urban/nuisance flooding frequently occurs in areas of the Town that have poor drainage, and along privately owned and maintained roads that may not be properly maintained and/or may not have contemporary upgrades to mitigate flooding.
- There are 1,345 properties in Darien that have greater than a 26 percent chance of being severely affected by flooding over the next 30 years (approximately 4 percent of properties). In addition to damage to properties, flooding can also cut off access to utilities, emergency services, transportation, and may impact the overall economic well-being of the affected

2. U.S. Census Bureau QuickFacts: Darien, CT

3. Western Connecticut Council of Governments Multi-Jurisdictional Hazard Mitigation Plan Update 2021-2026, Municipal Annex for Darien, CT Plan.

area. Overall, Darien has a moderate risk of flooding over the next 30 years, which means flooding is likely to impact day-to-day life within the community.

FIGURE 4-3: Storm Surge Flooding



Map source: Milone & Macbroom 2021-2026 Darien Hazard Mitigation Plan Update

Dam Failure

- There are two dams that have the potential to affect the Town. Should a failure occur, water inundation would result in property damage and possible effects on human life. The two dams are the Chasmars Pond Dam on the Five Mile River in Norwalk, and the Streets Pond Dam on Tokeneke Brook in Darien.

Tropical Systems

- Tropical systems (hurricane, tropical storm, tropical system remnants) are likely weather events in Darien. Tropical systems produce heavy rain, high winds and high wind gusts, lightning, and also may spawn tornados. Darien is particularly vulnerable to storm surge along the Long Island Sound coastline, as well as significant urban flooding from the heavy rainfall. Structural damage from high winds is likely, as well as power outages that will affect the vulnerable population.

Summer Storms and Tornados

- Summer storms include heavy rain, lightning, hail, and strong winds and wind gusts. Tornados are included in this category. Summer storms are very likely to occur in Darien and may include heavy rain, flooding, lightning, strong winds, hail, and may include a tornado. It is possible some areas of the Town may be more heavily impacted than others or impacted with certain conditions such as hail or tornadic activity. Having three fire departments located in different geographic areas of the town improves response capabilities when these events occur.

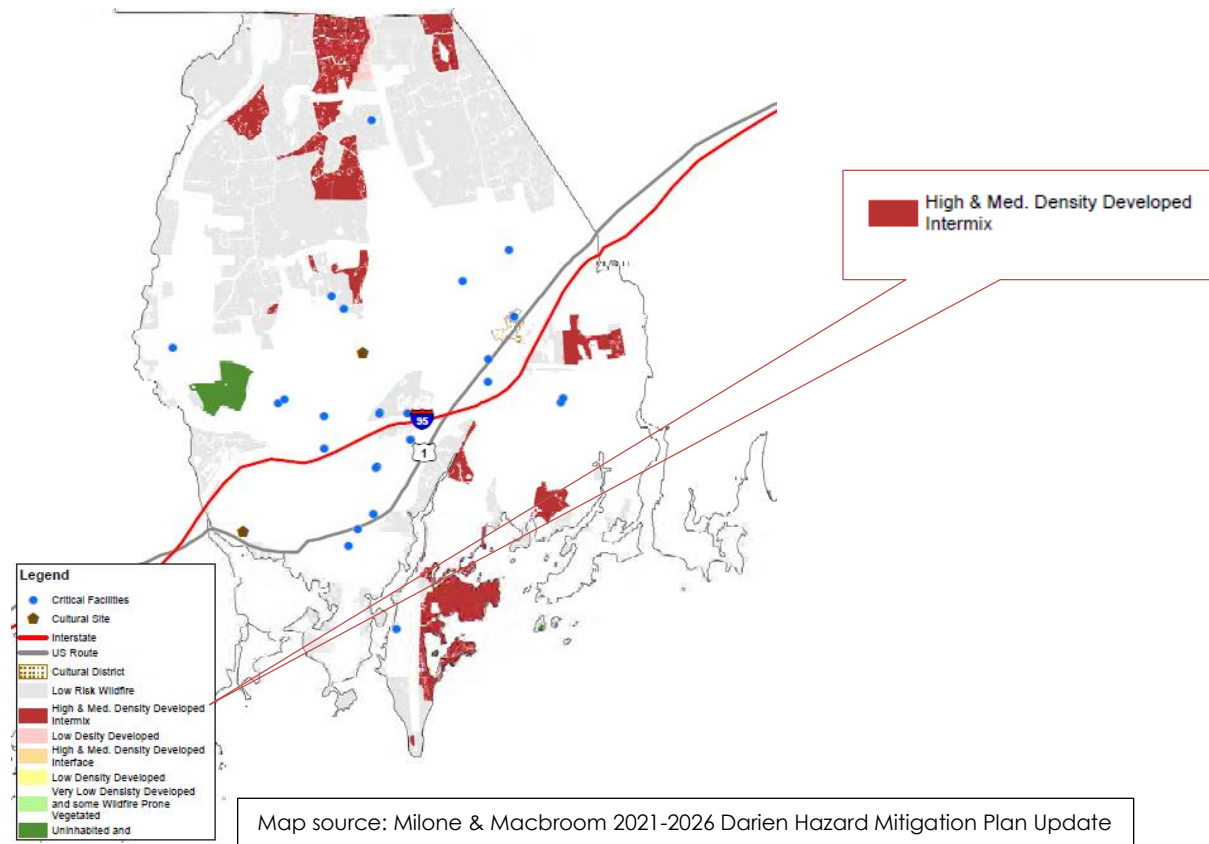
Winter Storms and Nor'Easters

- Winter storms include ice, snow, strong winds, the potential for storm surge, and extreme low temperatures. These storms create transportation hazards, increase the risk of carbon monoxide exposure and illness, frostbite and hypothermia, property damage, and increase in fire risk as there is an increase in use of alternative heating devices. There is a potential for higher accumulation of snow in northern neighborhoods. Winter storms and nor'easters are likely to occur in Darien.

Wildfires and Drought

- Prolonged drought has an effect on vegetation (increase in brush and wildfires) and potentially the potable water supply. Any area of the Town where structures meet or intermingle with undeveloped wildland creates the potential for structural endangerment and property damage. In addition to damaging properties, wildfire can also cut off access to utilities, emergency services, impact evacuation routes, and may impact the overall economic well-being of an area. Overall, Darien does have risk of wildfire and wildland-urban intermix incidents. However, the existing ground cover lacks continuity and consistent ladder fuels to reach the canopy to have a campaign type fire. Any event is more likely to have an incident confined to a concentrated area.

FIGURE 4-4: Darien Wildland-Urban Intermix Areas



Building and Target Hazards

A community risk and vulnerability assessment will evaluate the community, and regarding buildings, it will review all buildings and the risks associated with each property and then classify the property as either a high, medium, or low hazard depending on factors such as the life and building content hazard, and the potential fire flow and staffing required to mitigate an emergency in the specific property. According to the NFPA *Fire Protection Handbook*, these hazards are defined as:

High-hazard occupancies: Schools, hospitals, nursing homes, explosives plants, refineries, certain storage buildings, high-rise buildings (with higher hazard when occupied or used as residential), and other high life-hazard (vulnerable population) or large fire-potential occupancies.

Medium-hazard occupancies: Apartments (including townhomes, condos, residential over commercial), offices, and mercantile and industrial occupancies not normally requiring extensive rescue by firefighting forces.

Low-hazard occupancies: One, two, or three-family dwellings and scattered small business and industrial occupancies.

Darien has the following building types:

- Single-family housing units (predominate building risk).
 - 6,124 single-family dwellings. Type V-B construction (wood and wood frame).
- Multifamily housing units.
 - 40 (2 to 3 family units). Type V-B construction (wood and wood frame).
 - 1 (4-family units). Type V-B construction (wood and wood frame).
 - 1 (2-family units). Type V-B construction (wood and wood frame).
- Apartment building units (5 complexes, multiple units per building).
 - #1: 1 building Type V-B construction (wood and wood frame).
 - #2: 1 building Type II-B construction (walls and roof non-combustible; weight bearing steel beams).
 - #3: 24 buildings Type V-B construction (wood and wood frame).
 - #4: 23 buildings Type V-B construction (wood and wood frame).
 - #5: 2 buildings, 6 units/building. Type V-B construction (wood and wood frame).
- Assisted Living/Nursing Homes.
 - 3 assisted living facilities; Type V-B construction (wood and wood frame) and Type II-A construction (protected non-combustible construction).
- Commercial/industrial structures: 388 total.
 - Type III-B construction (brick or block walls with wood roof and floor assembly).
- Strip malls: 2 locations.

- 25 Old Kings Hwy. N. (Goodwives Shopping Plaza). Type II-A (protected non-combustible construction) and Type III-B (brick or block walls with wood roof and floor assembly).
- 430 Boston Post Road (Trader Joe's). Type III-B (brick or block walls with wood roof and floor assembly).
- High-Rise: there are no current high-rise structures.

In terms of identifying target hazards, consideration must be given to the activities that take place (public assembly, life-safety vulnerability, manufacturing, processing, etc.), the number and types of occupants (elderly, youth, handicapped etc.), and other specific aspects related to the construction of the structure.

Darien has a variety of target hazards that include:

High Hazard

- Assisted living/nursing facilities.
- Educational facilities.
- Boat storage and assembly facilities.
- Other residential buildings with vulnerable population.
- Public assembly buildings when occupied.

Medium Hazard

- Multifamily dwelling buildings (multistory townhomes and apartment buildings, multistory condominiums).
- Residential over commercial buildings of multistory.
- Commercial and industrial facilities and sites.
- Large square footage single-family homes.
- Critical infrastructure due to type and storage/use of hazardous materials.

The greatest building risk by number of buildings in Darien is of a low to moderate hazard. Single-family dwellings of predominately wood frame construction are low hazard; those single-family dwellings in excess of 2,000 square feet with or without a basement and of lightweight wood construction should be considered moderate hazards. Darien does have high-risk/vulnerable population risks (nursing/assisted living facilities), schools, and multifamily, multistory residential structures (apartments/condos), as well as multi-unit residential projects under construction or planned for near- to mid-term construction. All of these building risks present the three fire departments with life-safety concerns and challenges of direct access. The industrial and mercantile building risk, while a lower life safety risk, is generally a moderate- to higher-hazard risk based on processes, storage, and overall occupancy type.

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










Transportation Factors


Darien has several transportation risks that include the Town's current road network, an Interstate highway, a major U.S. road, passenger rail with two stops in the Town, and a bus-mass transit system that also has stops in the Town.


The current road network in Darien includes expressways/interstate, which are high-speed, high capacity, and of limited access; arterial streets, which carry high volumes of traffic with synchronized signals; collector streets, which provide connection to arterial roads and public local street networks as well as residential and commercial land uses; and public and private local streets, which provide a direct road network to property and move traffic through neighborhoods.


According to the 2016 Darien Plan of Conservation and Development, the main challenge to overall circulation on the Town is the limited number of crossings and limited functionality over/under rail tracks and Interstate 95. The next figure outlines these challenges, which have an effect on fire and EMS travel-time response.

FIGURE 4-5: Darien Road Challenges: Over/Under Rail and I-95

Crossing Location	Railroad Crossing	I-95 Crossing
1. Brookside Drive – a <u>dead-end</u> street with I-95 underpass (at the Stamford Line) providing emergency access to the I-95 rest area		 Underpass
2. Hollow Tree Ridge Road – high traffic <u>volume</u> with <u>narrow</u> overpass of railroad tracks in close proximity to I-95 overpass, driveway to Avalon development, access to station parking, and Heights Road	 Overpass	 Overpass
3. Noroton Avenue – high traffic <u>volume</u> with <u>narrow</u> of railroad tracks and I-95 in close proximity to Ledge Road, Heights Road, and access to station parking and Post 53 ambulance station	 Overpass	 Overpass
4. Leroy Avenue – Opening under railroad overpass is <u>narrow</u> and very <u>low clearance</u> with multiple turning movements	 Underpass	
5. Boston Post Road – Route 1 travels beneath I-95 overpass.		 Underpass
6. Boston Post Road – Route 1 underpass dips below railroad with <u>low clearance</u> and cannot accommodate some long vehicles. <u>Floods</u> in storm events. High <u>volume</u> with multiple <u>turning</u> movements	 Underpass	
7. Old Kings Highway South – Roadway travels beneath I-95 overpass.		 Underpass
8. Tokeneke Road – Roadway travels beneath I-95 overpass.		 Underpass
9. I-95 – Interstate 95 crosses over railroad tracks.	 Overpass	
10. Old Kings Highway North – Roadway travels over I-95.		 Overpass
11. Raymond Street / Cliff Avenue – Opening under railroad overpass is <u>narrow</u> with <u>low clearance</u>	 Underpass	

 Crossing functions well

 Crossing has some functional issues (height, width, flooding, etc.)

 Crossing does not provide an overall circulation function

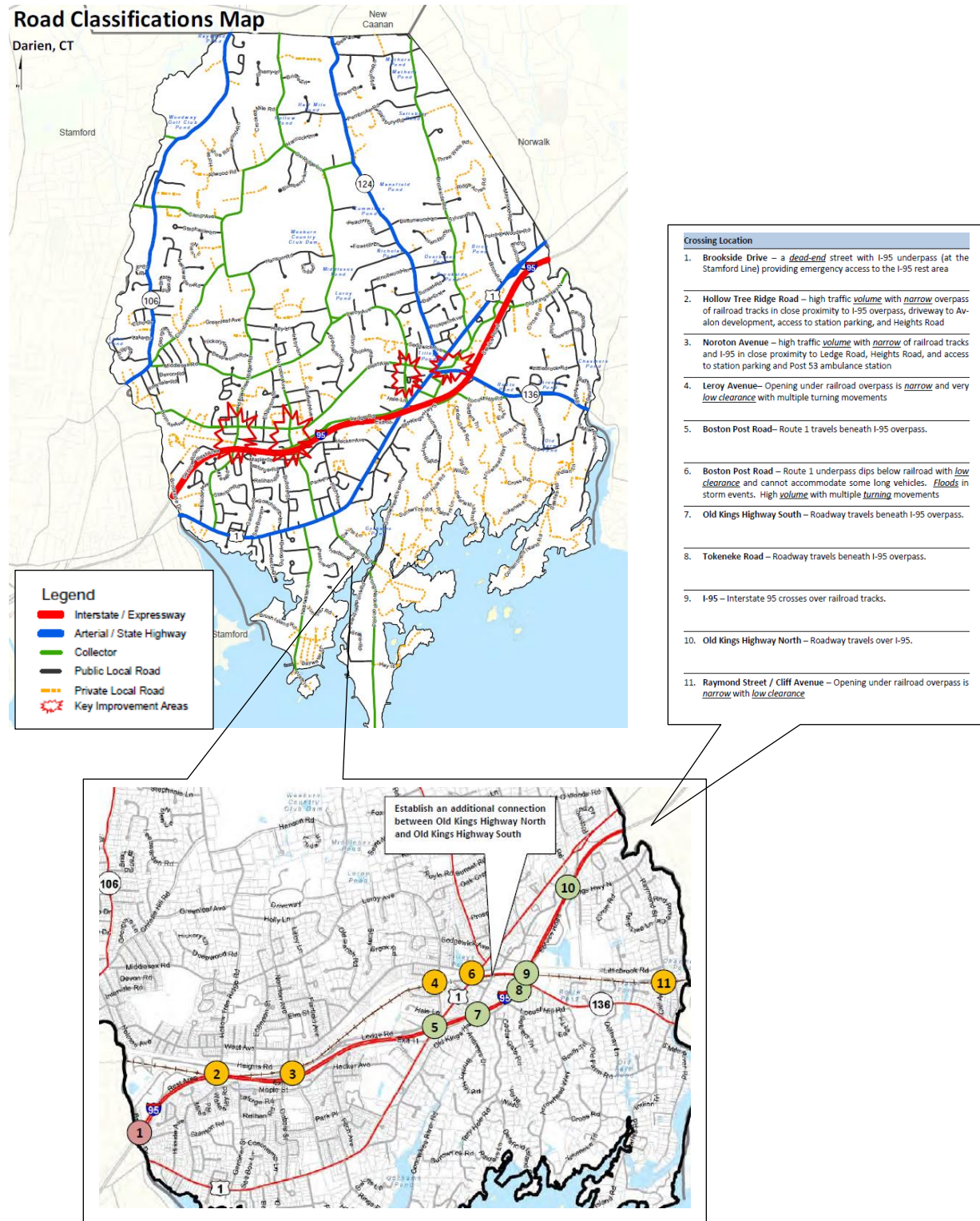
At the time of the 2016 Conservation and Development Plan, the most significant traffic constraints occur at:

- Hollow Tree Bridge Road
- Noroton Avenue
- Leroy Avenue
- Post Road at the RR Overpass
- Raymond Street

Chart Source: 2016 Darien Plan of Conservation and Development

The next figure illustrates the Town's road network and traffic challenges.

FIGURE 4-6: Town of Darien Road Network



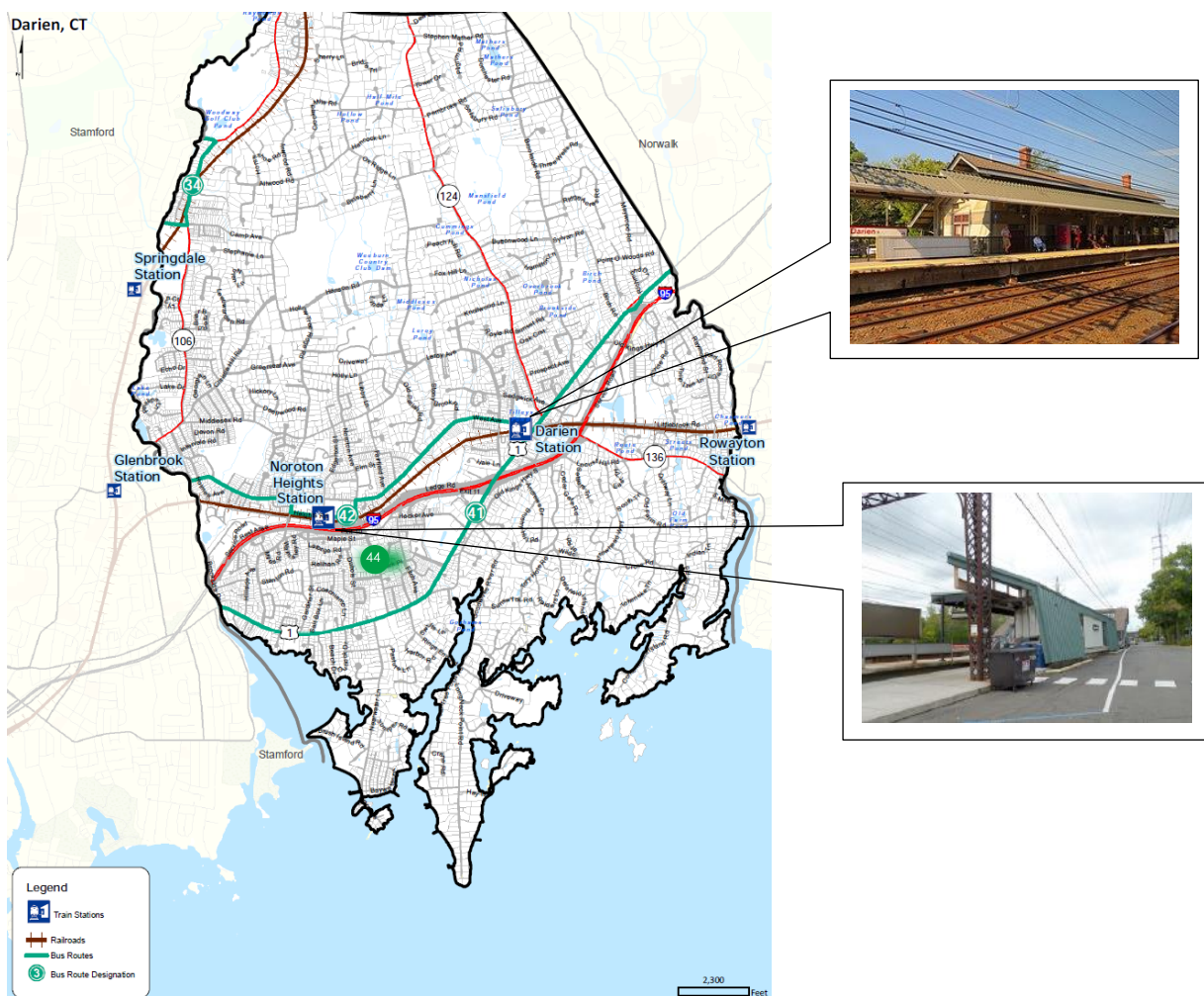
Maps and Chart Source: 2016 Darien Plan of Conservation and Development

There is also significant passenger rail traffic that passes through the Town, as well as two train stations. The Metro-North railroad provides mass transit via rail inbound and outbound seven days/week passing through and stopping in the Town at various times of the day from just before 5:00 a.m. until after 2:00 a.m. The two stations in town are located at 33 West Avenue (Darien Station) and 325 Heights Road (Noroton Heights Station). These stations are on the New Haven Line. There is also passenger rail that passes through the town in the northwest corner of the Town that is part of the Metro-North New Canaan Branch. There are no in-town stops on this line.

In addition to passenger rail mass transit, the Town also has passenger bus mass transit that crisscrosses the town. Connecticut Transit has three bus routes that pass through the Town. Two of these bus routes have stops in Darien, and one (in northwest Darien) utilizes town roads to make its route loop.

The next figure illustrates passenger rail and bus routes in Darien.

FIGURE 4-7: Metro-North Passenger Rail and CT Transit Bus Routes in Darien



Map source: Milone & Macbroom 2021-2026 Darien Hazard

The road and transportation network described herein poses risks for a vehicular accident, some at medium to high/very high speeds, as well as vehicular-versus-pedestrian-bicycle risks. There are additional transportation risks since tractor-trailer and other commercial vehicles navigate the roadways of Darien to deliver mixed commodities to business locations either in the Town or passing through to other locations. Fires or releases of product involving these products can produce vapors, smoke, and other products of combustion that may be hazardous to health. Additionally, there is risk for a mass casualty incident involving mass-transit passenger rail and buses either on specific bus routes/roads in the town or utilizing the road and rail network in the town for stops outside of Darien.

FIRE AND FIRE-RELATED RISK

An indication of the community's fire risk is the type and number of fire-related incidents the fire department responds to. CPSM conducted a data analysis for this project that analyzed the incident responses and workload of the three fire departments.

The following table details the call types and call type totals for these types of fire-related risks between March 1, 2021, and February 28, 2022.

TABLE 4-1: Fire and Fire-related Calls by Type and Fire District

Call Type	Fire District				Calls per Day
	Darien	Noroton	Noroton Heights	Total	
False alarm	278	104	184	566	1.6
Good intent	27	7	10	44	0.1
Hazard	44	19	39	102	0.3
Outside fire	17	1	15	33	0.1
Public service	42	54	100	196	0.5
Structure fire	9	2	12	23	0.1
Technical rescue	7	4	7	18	0.0
Fire Total	424	191	367	982	2.7

This table tells us that:

- The Town has a low fire risk (56 total actual fire calls or 6 percent of the total fire and fire-related type incidents). Noroton Heights FD and Darien FD districts have the highest number of aggregate actual fire type calls (27 and 26, respectively).
- False alarms (typically automatic fire alarms) represent the highest call response (58 percent of all fire and fire-related calls). The Darien FD district has the highest number of false alarm calls.
- Aggregately the next highest number of calls are good intent and public service calls (30 percent of all fire and fire-related calls). These call types typically represent low acuity responses such as lockouts, steam mistaken for smoke, smoke scare or odor of smoke, water removal, police assist, public service assist, flood assessment, and other related public or service calls.

Motor Vehicle Accident Risk

As with fire risks, an indication of the community's transportation risk is the workload of motor vehicle accident (MVA) calls to which the fire department responds. The following table outlines the MVA call totals between March 1, 2021, and February 28, 2022.

TABLE 4-2: MVA Calls by Type and Fire District

Call Type	Fire District				Calls per Day	Call Percentage
	Darien	Noroton	Noroton Heights	Total		
MVA	84	15	74	173	0.5	14.6

This table tells us that overall:

- The town does have moderate MVA transportation risks. This is due to the type of road network and challenges the Town has as described above, which includes responses to Interstate 95.
- Not surprisingly due to their location in the Town and proximity to major arterials and collector roads, Darien FD and Noroton Heights FD have the highest MVA responses (91 percent of all MVA calls).

Community Loss and Save Information

Fire loss is an estimation of the total loss from a fire to the structure and contents in terms of replacement cost. Fire loss includes contents damaged by fire, smoke, water, and overhaul. Fire loss does not include indirect loss, such as business interruption.

In a 2021 report published by the National Fire Protection Association on trends and patterns of U.S. fire losses, it was determined that home fires still cause the majority of all civilian fire deaths, civilian injuries, and property loss due to fire. Key findings from this report include:⁴

- Public fire departments responded to 1,338,500 fires in 2020, a 7.5 percent increase from the previous year.
- 490,500 fires occurred in structures (37 percent). Of these fires, 379,500 occurred in residential structures and 86,000 occurred in apartments or multifamily structures.
- 2,230 civilian fire deaths occurred in residential fires, and 350 deaths occurred in apartments or multifamily structures.
- Home fires were responsible for 11,500 civilian injuries.
- An estimated \$21.9 billion in direct property damage occurred as a result of fire in 2020 (includes fires in the California wildland-urban interface and a large-loss naval ship fire in California).

The following table shows overall fire loss in Darien in terms of dollars for the years indicated. This information should be reviewed regularly by all fire departments and discussed in accordance with response times to actual fire incidents, company level training, effectiveness on the fireground, and effectiveness of incident command. There is no indication the Town has a fire problem or that the fire departments have operational/training issues (inability to respond

4. *Fire Loss in the United States During 2020*, National Fire Protection Association.

and/or contain the fire to the room/floor/ structure of origin) based on the content and property loss information provided here. In 2020, one single-family dwelling fire that involved content and property loss involving multiple, high-value vehicles caused the amplified loss for that year, which was reported at \$12 million.

TABLE 4-3: Content and Property Loss, 2017–2021

2017	2018	2019	2020	2021
\$90,000	\$175,200	\$346,000	\$13,500,000* [\$1,500,000]	\$889,500

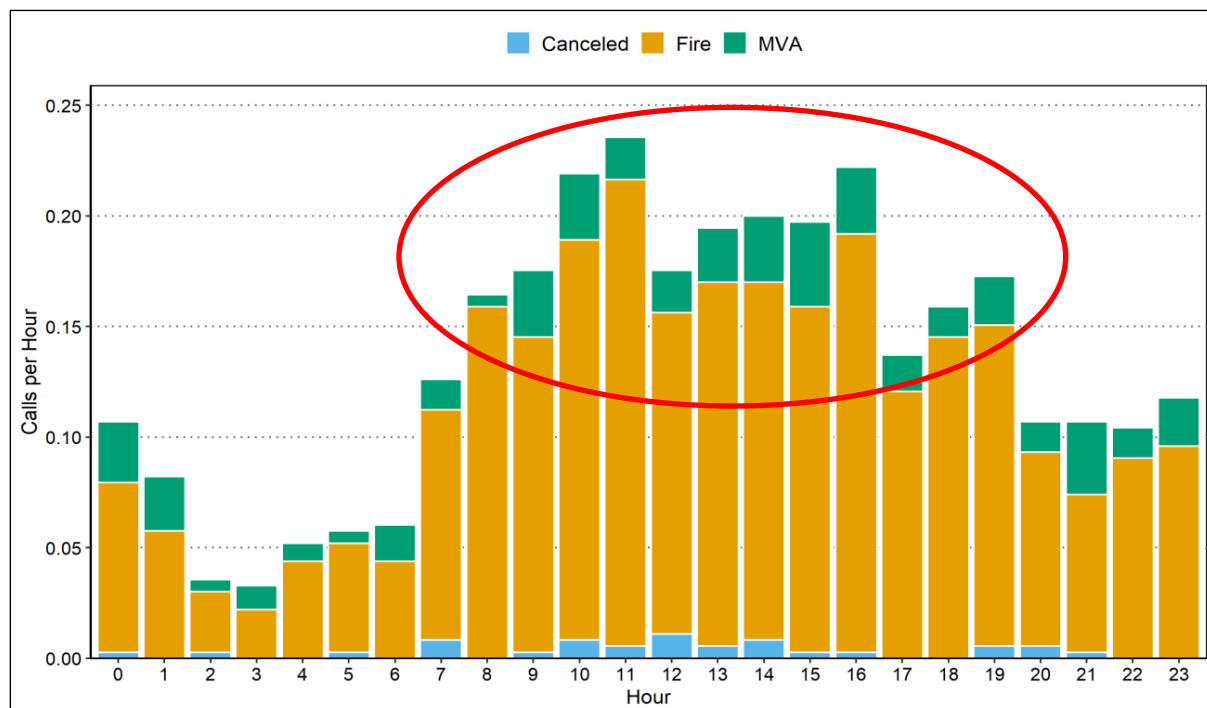
Note: *2020 includes one incident with a \$12 million loss (high-value vehicles).

Fire and MVA Incident Demand

Analyzing where the fire and EMS/MVA incidents occur, and the demand density of these incidents, helps to determine adequate fire management zone resource assignment and deployment. The following figures illustrate the fire department's demand in a more defined manner by specific call types. These include a breakout of structural and outside fire incidents; false alarms; other types of fire-related incidents such as good intent and public service calls, and motor vehicle accidents.

Call frequency by time of day is also an important demand factor, particularly for volunteer fire departments that depend on the availability of members for response. The next figure illustrates the frequency of calls by time of day, which in Darien peaks between 8:00 a.m. and 7:00 p.m.

FIGURE 4-8: Average Calls by Hour of Day



The maps show that for fire and fire-related calls for service the demand is consistent to the central portion of the town, which is where the business/downtown districts are, as is the highest residential density. Not surprisingly MVA incident demand is high along the major arterials and collector roads such as Interstate 95, Post Road (Route 1), Noroton Ave., Hollow Tree Ridge Road, Leroy Ave., and Tokeneke Road. These roads are identified above as traffic challenges for various reasons such as design, high volume, flooding, and narrowing near underpasses and overpasses.

The next figures illustrate demand by location in each fire district.

FIGURE 4-9: All Fire Incident Demand

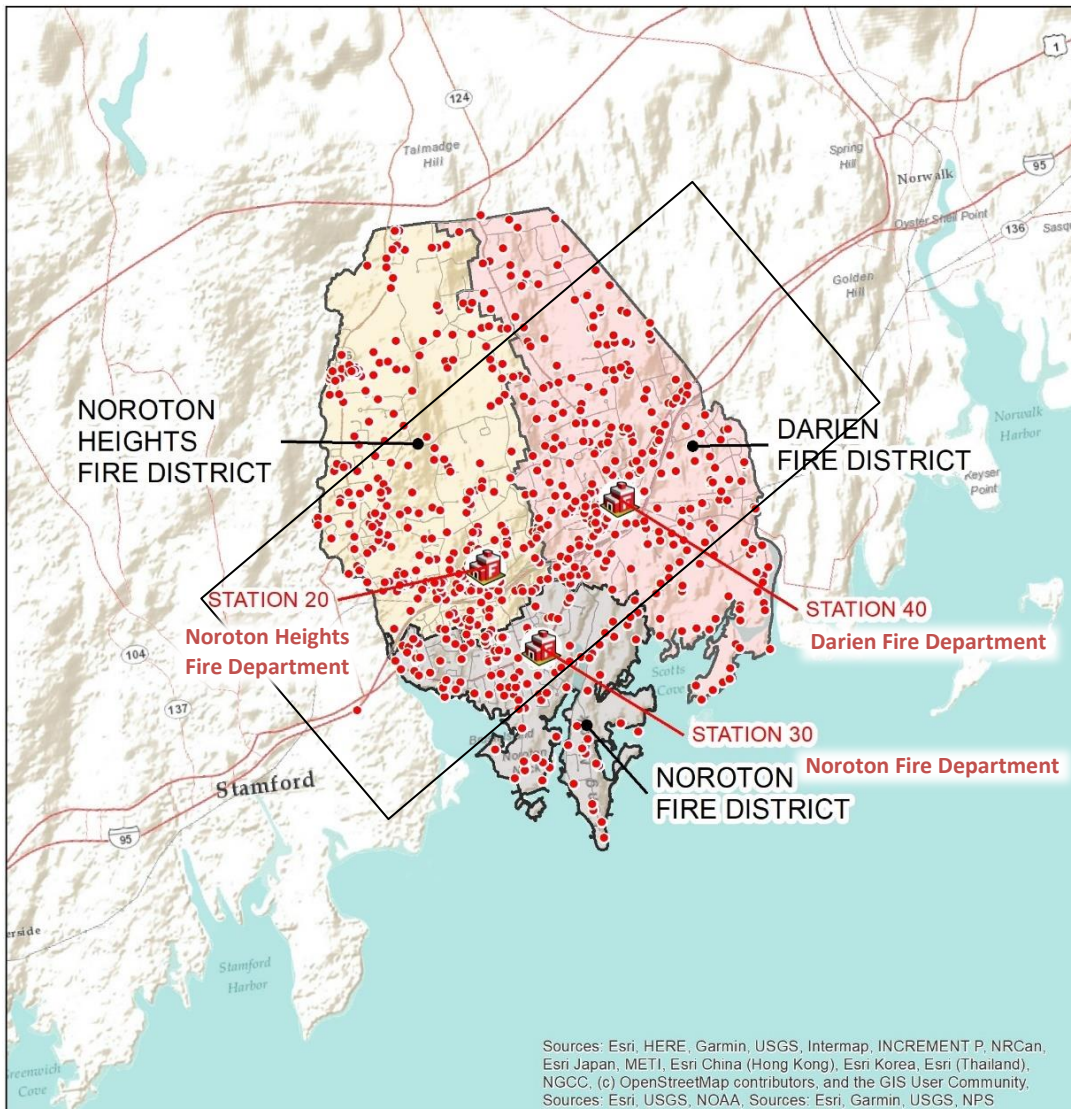
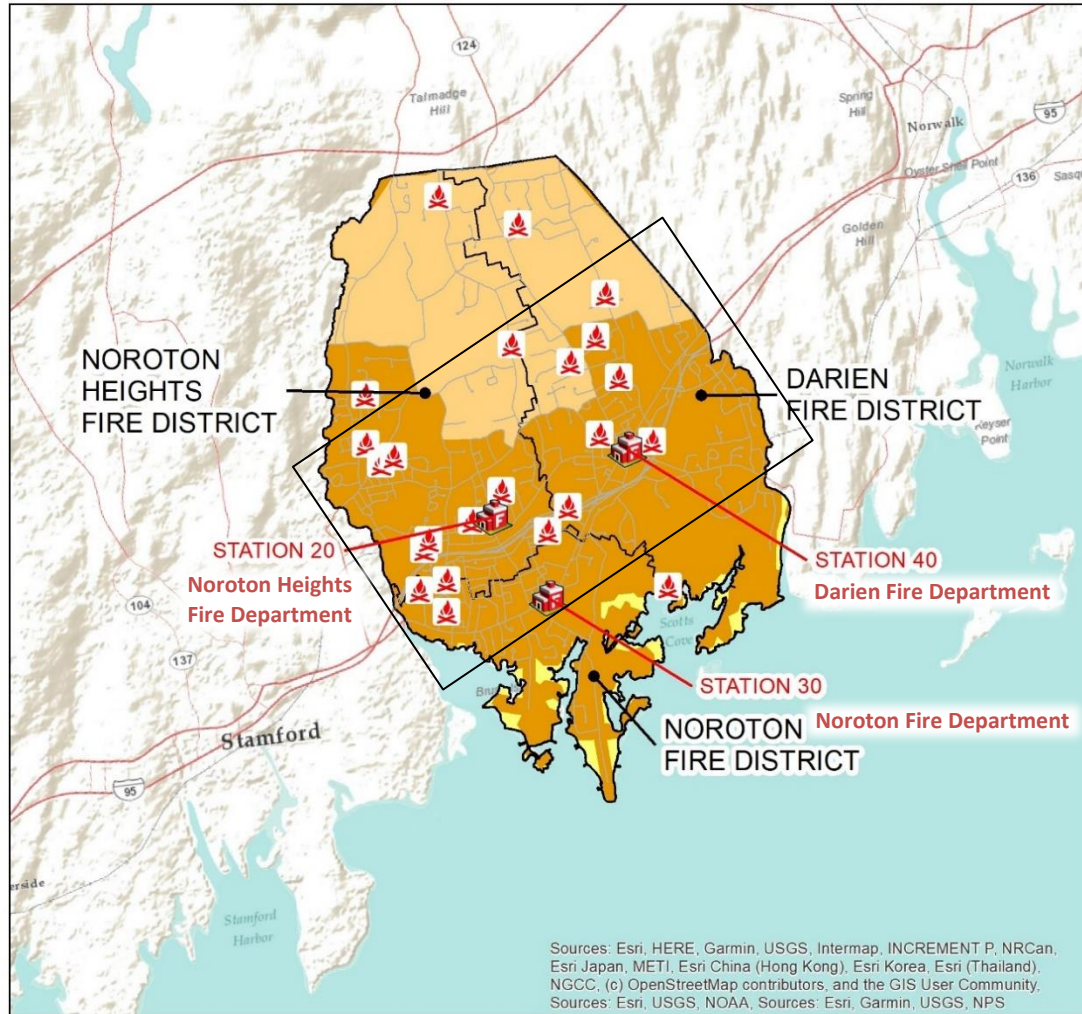


FIGURE 4-10: Structural Fire Incident Demand



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community, Sources: Esri, USGS, NOAA, Sources: Esri, Garmin, USGS, NPS

2021 POPULATION DENSITY W STRUCTURE FIRE

2021 POPULATION DENSITY (Source: US Census Bureau)

- URBAN (> 1000 people /sq mi)
- SUBURBAN (500-1000 people /sq mi)
- RURAL (< 500 people /sq mi)
- REMOTE (Travel Distance > 8 miles)

NFPA 1720 Standard Population Density Benchmark

STRUCTURE FIRE

0 0.4 0.8 1.6 Miles
1 inch = 1.19 miles

Date: 6/22/2022

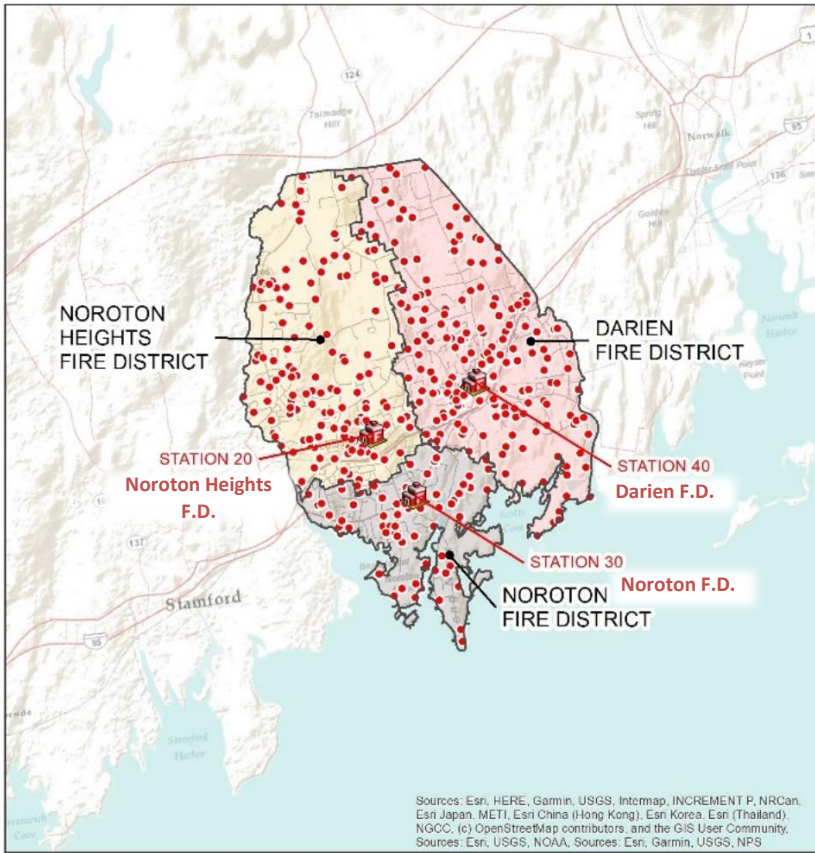
Sources: City of Roswell GIS, USGS, Garmin, ESRI
Document Name: DARIEN_CT_MAP_24_POPULATION2021_AND_STRUCTURE FIRE

CPSM

Map created by S. Williams on behalf of Center for Public Safety Management. Map creator attempts to use the most up-to-date and accurate spatial data available; however, map creator does not warrant the accuracy of the data contained herein. All data is provided "as is" with faults, without warranty of any kind, either expressed or implied, including but not limited to the implied warranties of merchantability or fitness for a particular purpose.

FIGURE 4-11: False Alarm and Other Fire-related Incident Demand

False Alarms



Other Fire-related Incident Demand

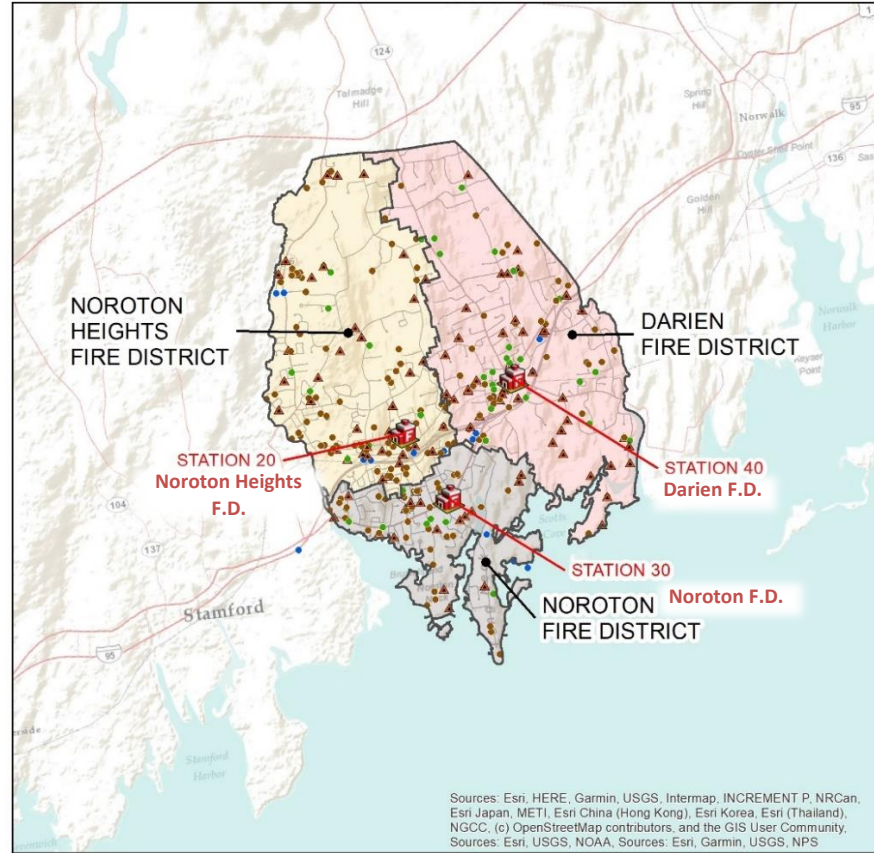
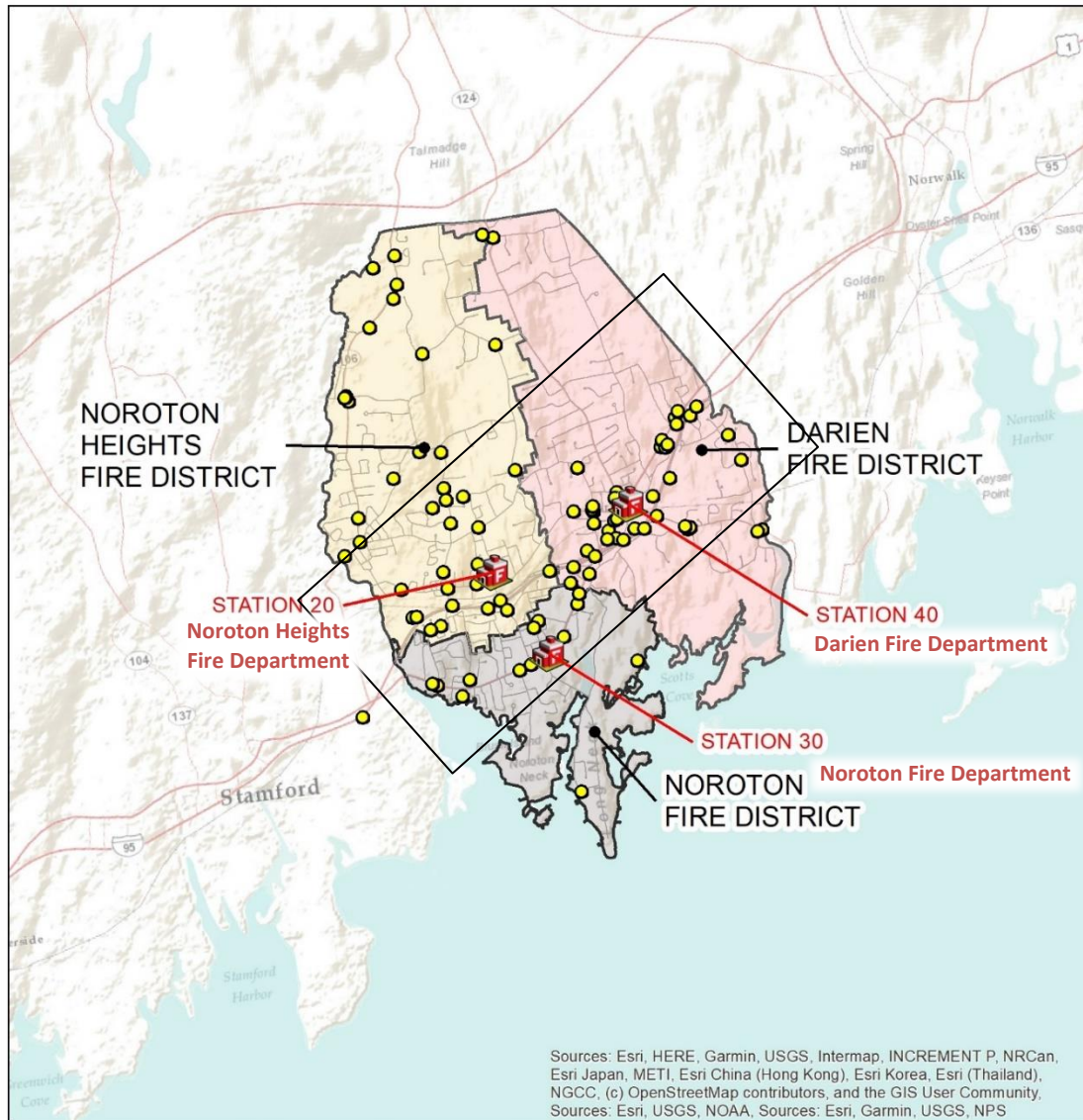


FIGURE 4-12: Motor Vehicle Incident Demand



Marine and Water Risks

The south and southeastern areas of the Town include marine vessel, marina, and water risks for the fire departments (primarily the NFD). Due to these risks the Town has invested in a fireboat that is operated by the NFD. Marine vessel emergencies can occur while docked, fueling, during trailering and launching, and while on the open water. These emergencies can include fire, fuel leaks, medical emergencies, mechanical malfunctions, taking on water, swimmers in distress, and the like.

Fires that occur on boats or in marinas typically spread quickly due to the fuel load and materials some boats are made from, and those docked present response challenges, hazardous conditions, and limited access. Fires on the open water have firefighting access issues unless a fire boat is available to respond. Both boat fire incident types and those involving

trailing and launching involve life-safety concerns that are of primary importance. Water rescue is a specialized rescue of victims from water or water-related environments where responders utilize various specialized equipment based on the type of situation (surface or underwater) and environmental conditions.

The next figure illustrates the marine and water risks the fire departments face.

FIGURE 4-13: Marine and Water Risks



**Noroton Fire Department
Fire Boat**



RESILIENCY

Resiliency as defined by the Center for Public Safety Excellence (CPSE) in the Fire and Emergency Service Self-Assessment Manual (FESSAM), ninth edition, is: “an organization’s ability to quickly recover from an incident or events, or to adjust easily to changing needs or requirements.” Greater resiliency can be achieved by constant review and analysis of the response system and focuses on three key components:

- Resistance: The ability to deploy only resources necessary to control an incident and bring it to termination safely and effectively.
- Absorption: The ability of the agency to quickly add or duplicate resources necessary to maintain service levels during heavy call volume or incidents of high resource demand.
- Restoration: The agency’s ability to quickly return to a state of normalcy.

Resistance is controlled by the fire departments through available staffing and response protocol, and with each fire department’s resources (independently and aggregately) dependent on the level of staffing and units available at the time of the alarm.

Absorption is accomplished through availability to respond by the three fire departments’ units and through regional mutual aid resources. This is aided through the computer-aided dispatch at the fire dispatch center.

Restoration is managed by department unit availability as simultaneous calls occur, the availability of regional mutual aid resources, response of firefighters during campaign events, and backfilling DFD, NHFD, and NFD stations when needed through mutual aid.

The following tables analyze fire department resiliency. In this analysis, CPSM included all fire department calls that occurred inside the Town as recorded during the study period. Calls are individual incident dispatches. Runs are responses to individual incidents with all units counted.

TABLE 4-4: Workload by District

Agency	District	Calls	Calls per Day	Runs	Runs per Day	Work	Percent Work
Darien FD	Darien	523	1.4	1,233	3.4	466.1	95.9
	Noroton	17	0.0	36	0.1	11.3	2.3
	Noroton Heights	16	0.0	24	0.1	8.5	1.8
	Total	556	1.5	1,293	3.5	485.9	100.0
Noroton FD	Darien	8	0.0	12	0.0	3.7	1.5
	Noroton	200	0.5	490	1.3	225.6	91.5
	Noroton Heights	15	0.0	24	0.1	17.2	7.0
	Total	223	0.6	526	1.4	246.4	100.0
Noroton Heights FD	Darien	21	0.1	25	0.1	7.7	1.4
	Noroton	21	0.1	28	0.1	22.9	4.3
	Noroton Heights	447	1.2	955	2.6	504.4	94.3
	Total	489	1.3	1,008	2.8	535.1	100.0
Total		1,183	3.2	2,827	7.7	1,267.4	NA

TABLE 4-5: Structure and Outside Fire Runs by District

District	Outside Fire Runs	Outside Fire Minutes per Run	Structure Fire Runs	Structure Fire Minutes per Run	Total Hours	Percent Work
Darien	61	37.1	43	81.7	96.2	58.9
Noroton	3	41.6	9	32.3	6.9	4.2
Noroton Heights	48	35.1	45	42.9	60.2	36.8
Total	112	36.3	97	59.1	163.4	100.0

TABLE 4-6: Frequency of Overlapping Calls by Fire District

Fire District	Scenario	Number of Calls	Percent of All Calls	Total Hours
Darien FD	No overlapped call	478	91.2	168.7
	Overlapped with one call	32	6.1	6.1
	Overlapped with two calls	6	1.1	1.1
	Overlapped with three calls	7	1.3	0.7
	Overlapped with four calls	1	0.2	0.1
Noroton FD	No overlapped call	187	88.2	95.4
	Overlapped with one call	16	7.5	3.7
	Overlapped with two calls	7	3.3	1.4
	Overlapped with three calls	2	0.9	0.2
Noroton Heights FD	No overlapped call	374	83.7	206.3
	Overlapped with one call	24	5.4	7.3
	Overlapped with two calls	11	2.5	1.6
	Overlapped with three calls	9	2.0	0.9
	Overlapped with four calls	10	2.2	0.7
	Overlapped with five calls	5	1.1	0.7
	Overlapped with six calls	5	1.1	0.4
	Overlapped with seven calls	6	1.3	0.5
	Overlapped with eight calls	3	0.7	0.1

TABLE 4-7: Frequency Distribution of the Number of Calls by Year

Calls in an Hour	Frequency	Percentage
0	7,797	89.0
1	855	9.8
2	86	1.0
3+	22	0.3
Total	8,760	100.0

TABLE 4-8: Agency Availability to Respond to Calls

Fire District	Calls in Area	Agency Responded	Agency Arrived	Agency First	Percent Responded	Percent Arrived	Percent First
Darien FD	524	523	523	518	99.8	99.8	98.9
Noroton FD	212	200	200	188	94.3	94.3	88.7
Noroton Heights FD	447	447	447	436	100.0	100.0	97.5
Total	1,183	1,170	1,170	1,142	98.9	98.9	96.5

This analysis of the Town fire departments' resiliency to respond to calls tells us:

- DFD has the highest workload in terms of runs for fire units, followed by NHFD, which corresponds with the demand analysis maps.
- Overall, all fire departments aggregately averaged 7.7 runs per day.
- Aggregately, 37 percent of the time all response districts have an overlapped call. The greatest percentage of the time a district is overlapped with one call (19 percent).
- DFD and NHFD fire units arrived on scene in their first due district 98.9 percent and 97.5 percent of the time, respectively. The NFD arrived first in its district 88.7 percent of the time. Aggregately the departments arrived first in their first due districts 96.5 percent of the time. **This is an outstanding response for volunteer fire departments.**
- 99 percent of the time that a call was dispatched in a district, a district unit responded. **This is an outstanding response for volunteer fire departments.**

Aggregately, the Town's fire departments do not have a resiliency issue. This is due to the robust and dedicated membership each department has, multiple and diverse units in each station, and the ability to assemble members for one or multiple calls for service at all times of the day.

The three fire departments' ability to absorb multiple calls and restore response capabilities to a state of normal can be challenging at certain times and during certain environmental conditions; however, the data does not demonstrate that this impacts each department's response capabilities.

RISK CATEGORIZATION

A comprehensive risk assessment is a critical aspect of creating standards of cover and can assist the three fire departments in quantifying the risks that they potentially may face. Once these risks are known, the departments are better equipped to determine if the current response resources are sufficiently staffed, equipped, trained, and positioned.

In this component, the factors that drive the service needs are examined and then link directly to discussions regarding the assembling of an *Effective Response Force* (ERF) and when contemplating the response capabilities needed to adequately address the existing risks, which encompasses the component of critical tasking.

The risks that the departments face can be natural or manufactured and may be affected by the changing demographics of the community served. With the information available from the CPSM data and operational analysis, the three departments, the Town, and public research, the three departments can begin an analysis of the Town's risks and can begin working towards

recommendations and strategies to mitigate and minimize their effects. This section contains an analysis of the various risks considered within the three fire departments' service area.

Risk is often categorized in three ways: the probability the event will occur in the community, consequence of the event on the community, and the impact on the fire departments. The following three tables look at the probability of the event occurring, which ranges from unlikely to frequent; the impact to the organizations, which ranges from insignificant to catastrophic; and consequence to the community, which is categorized as ranging from insignificant to catastrophic.

TABLE 4-9: Event Probability Matrix

Probability	Chance of Occurrence	Description	Risk Score
Unlikely	2%-25%	Event may occur only in exceptional circumstances.	2
Possible	26%-50%	Event could occur at some time and/or no recorded incidents. Little opportunity, reason, or means to occur.	4
Probable	51%-75%	Event should occur at some time and/or few, infrequent, random recorded incidents, or little anecdotal evidence. Some opportunity, reason, or means to occur; may occur.	6
Highly Probable	76%-90%	Event will probably occur and/or regular recorded incidents and strong anecdotal evidence. Considerable opportunity, means, reason to occur.	8
Frequent	90%-100%	Event is expected to occur. High level of recorded incidents and/or very strong anecdotal evidence.	10

TABLE 4-10: Impact on DFD, NFD, NIFD Matrix

Impact	Impact Categories	Description	Risk Score
Insignificant	Personnel and Resources	One apparatus out of service for period not to exceed one hour.	2
Minor	Personnel and Resources	More than one but not more than two apparatus out of service for a period not to exceed one hour.	4
Moderate	Personnel and Resources	More than 50 percent of available resources committed to incident for over 30 minutes.	6
Significant	Personnel and Resources	More than 75 percent of available resources committed to an incident for over 30 minutes.	8
Catastrophic	Personnel, Resources, and Facilities	More than 90 percent of available resources committed to an incident for more than two hours or event which limits the ability of resources to respond.	10

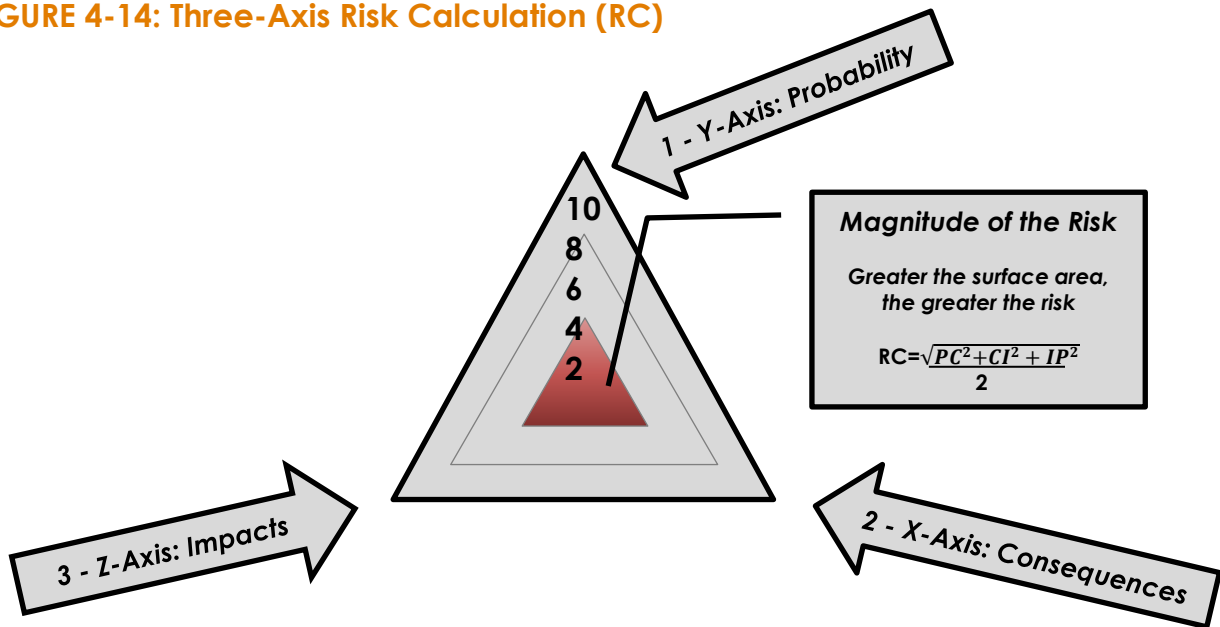
TABLE 4-11: Consequence to Community Matrix

Impact	Consequence Categories	Description	Risk Score
Insignificant	Life Safety	<ul style="list-style-type: none"> 1 or 2 people affected, minor injuries, minor property damage, and no environmental impact. 	2
Minor	Life Safety	<ul style="list-style-type: none"> A small number of people affected, no fatalities, and small number of minor injuries with first aid treatment. Minor displacement of people for <6 hours and minor personal support required. Minor localized disruption to community services or infrastructure for <6 hours. Minor impact on environment with no lasting effects. 	4
	Economic and Infrastructure		
	Environmental		
Moderate	Life Safety	<ul style="list-style-type: none"> Limited number of people affected (11 to 25), no fatalities, but some hospitalization and medical treatment required. Localized displacement of small number of people for 6 to 24 hours. Personal support satisfied through local arrangements. Localized damage is rectified by routine arrangements. Normal community functioning with some inconvenience. Some impact on environment with short-term effects or small impact on environment with long-term effects. 	6
	Economic and Infrastructure		
	Environmental		
Significant	Life Safety	<ul style="list-style-type: none"> Significant number of people (>25) in affected area impacted with multiple fatalities, multiple serious or extensive injuries, and significant hospitalization. A large number of people displaced for 6 to 24 hours or beyond. External resources required for personal support. Significant damage that requires external resources. Community only partially functioning, some services unavailable. Significant impact on environment with medium- to long-term effects. 	8
	Economic and Infrastructure		
	Environmental		
Catastrophic	Life Safety	<ul style="list-style-type: none"> A very large number of people in affected area(s) impacted with significant numbers of fatalities, large number of people requiring hospitalization; serious injuries with long-term effects. General and widespread displacement for prolonged duration; extensive personal support required. Extensive damage to properties in affected area requiring major demolition. Serious damage to infrastructure. Significant disruption to, or loss of, key services for a prolonged period. Community unable to function without significant support. Significant long-term impact on environment and/or permanent damage. 	10
	Economic and Infrastructure		
	Environmental		

This section also contains an analysis of the various risks considered in the Town. In this analysis, information presented and reviewed in this section (All-Hazards Risk Assessment of the Community) have been considered. Risk is categorized as Low, Moderate, High, or Special.

Prior risk analysis has only attempted to evaluate two factors of risk: probability and consequence. Contemporary risk analysis considers the impact of each risk to the organization, thus creating a three-axis approach to evaluating risk as depicted in the following figure. A contemporary risk analysis now includes probability, consequences to the community, and impact on the organization, in this case the three fire departments.

FIGURE 4-14: Three-Axis Risk Calculation (RC)



The following factors/hazards were identified and considered:

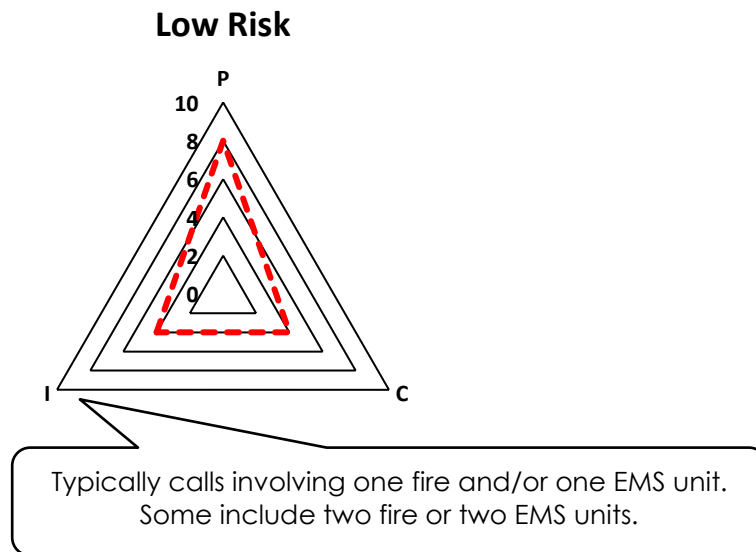
- **Demographic factors** such as age, socio-economic, vulnerability.
- **Environmental/natural hazards** such as flooding, wind events, winter storms, wildland fires.
- **Manufactured hazards** such as rail lines, roads and intersections, target hazards.
- **Structural/building risks.**
- **Fire and MVA incident numbers and density.**
- **Resiliency.**

The assessment of each factor and hazard as listed below took into consideration the likelihood of the event, the impact on the Town itself, and the impact on DFD's, NFD's, and NHFD's ability to deliver emergency services, which includes their resiliency as well. The list is not all inclusive but includes categories most common or that may present to the Town and the three fire departments.

Low Risk

- Automatic fire/false alarms.
- Low-acuity EMS Incidents.
- Low-risk environmental event.
- Motor vehicle accident (MVA); no entrapment or Mass Casualty Incident (MCI).
- Good intent/hazard/public service fire incidents with no life-safety exposure.
- Outside fires such as grass, rubbish, dumpster, vehicle with no structural/life-safety exposure.
- Low acuity marine or water incident.

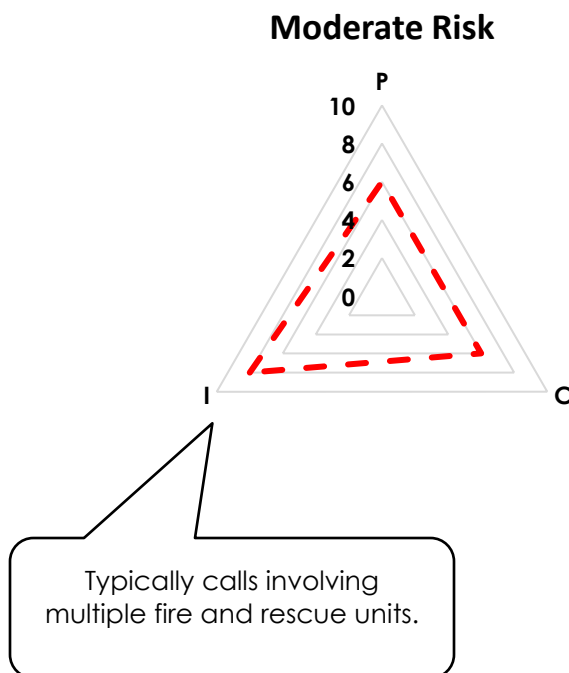
FIGURE 4-15: Low Risk



Moderate Risk

- Fire incident in a single-family dwelling where fire and smoke or smoke is visible, indicating a working fire.
- Suspicious substance investigation involving multiple fire companies and law enforcement agencies.
- Environmental event with moderate conditions requiring fire and rescue mitigation.
- MVA with entrapment of passengers.
- Grass/brush fire with structural endangerment/exposure.
- Low-angle rescue involving ropes and rope rescue equipment and resources.
- Surface water rescue.
- Single boat fire.
- Good intent/hazard/public service fire incidents with life-safety exposure.
- Rail or bus event with no threat to life safety but requiring multiple transports of minor injuries.

FIGURE 4-16: Moderate Risk

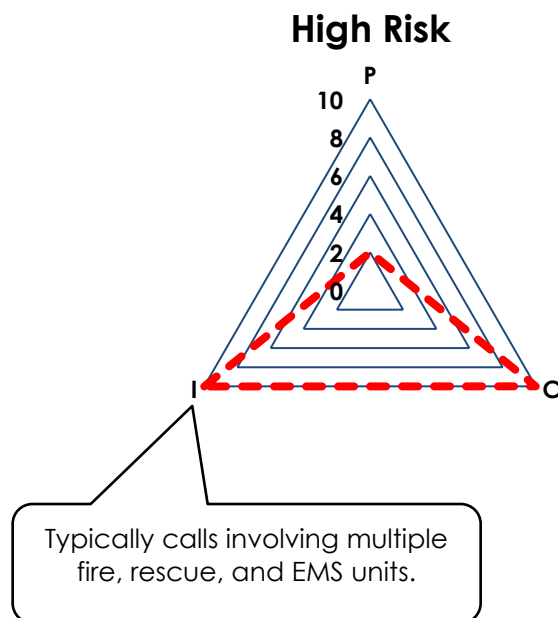


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High Risk

- Working fire in a target hazard.
- Marine or water incident with significant life safety exposure.
- MCI of more than 10 patients but fewer than 25 patients.
- Confined space rescue.
- Structural collapse involving life-safety exposure.
- High-angle rescue involving ropes and rope rescue equipment.
- Trench rescue.
- Suspicious substance incident with multiple injuries.
- Industrial leak of hazardous materials that causes exposure to persons or threatens life safety.
- Weather event that creates widespread flooding, heavy winds, building damage, significant snow/ice, and/or life-safety exposure.

FIGURE 4-17: High Risk

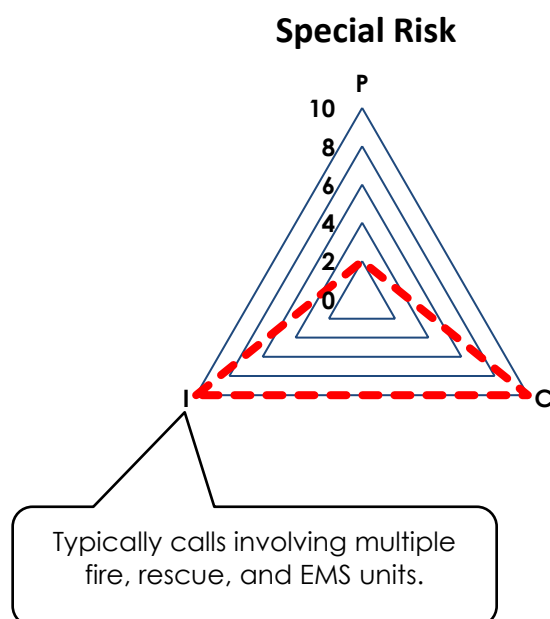


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Special Risk

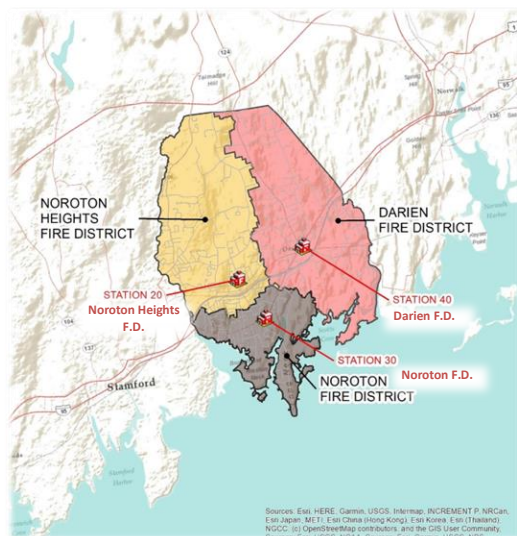
- Working fire in a structure of more than three floors or multiple buildings.
- Fire at an industrial building or complex with hazardous materials.
- Fire in an occupied targeted hazard with special life-safety risks such as age, medical condition, or other identified vulnerabilities.
- Wildland fire during a drought, high wind event encroaching more than one built upon area on several fronts.
- Mass casualty incident of more than 25 patients.
- Rail or transportation incident that causes life-safety exposure or threatens life safety through the release of hazardous smoke or materials and evacuation of residential and business occupancies.
- Explosion in a building that causes exposure to persons or threatens life safety or outside of a building that creates exposure to occupied buildings or threatens life safety.
- High-impact environmental event such as an earthquake, epidemic, or pandemic.
- Mass gathering with threat of fire and threat to life safety or other civil unrest, weapons of mass destruction release.
- Marine incident involving multiple boats that are docked and fueled.

FIGURE 4-18: Special Risk



SECTION 5. FIRE SERVICES

TOWN-BASED VOLUNTEER FIRE SYSTEM



As discussed previously, fire services in Darien are provided by three **100-percent** volunteer fire departments. The three fire departments (Darien, Noroton, Noroton Heights) are independent of each other in terms of having defined fire districts and separate organizations. However, these fire departments work in unison to provide outstanding fire services to the community.

Fire services are provided from three locations which are centrally located in the most populated areas of the town. Each fire department has a Fire Chief who leads the operational component and a president who manages the administrative affairs. The remaining organizational charts are populated by subordinate operational and administrative officers, and operational and administrative members, which is typical across the country.

The backbone of these organizations is the membership, which is made up of community members who dedicate their time, knowledge, and skills to each department and the community. Each department reports strong membership numbers, although each also reports recruitment is not as robust as it was in the past. This is common across the country in all volunteer organizations. Each department reports strong retention efforts, which are focused on inclusionary activities internal to each department, as well as family-focused activities and involvement in community events. It is important in any volunteer agency to manage volunteer membership expectations and recognize the value each volunteer member brings to the organization. Every volunteer member CPSM spoke to during our on-site visit spoke highly of their department and felt appreciated and valued by their department. All openly spoke to CPSM staff about their department and how proud they are to serve their community.

One recruitment and retention program each department has implemented is a “junior membership” classification. This program is open to young adults ages 16 to 18. Through this program young adults enter the fire service, receive training, and are exposed to emergency response, although their participation on scene is restricted to support roles. This program offers young adults the opportunity to explore the fire service; if appealing to them they can continue to full membership of their department. Some even make the fire service their career.

TRAINING

Each department organizes and administers their organizational training programs. This includes new members, incumbent, specialized, and officer training. While there are some inconsistencies between the departments, each maintains an individual approach to remain consistent in their respective departments. The next table outlines each department’s training as reported by each Fire Chief.

TABLE 5-1: Fire Department Training

Department	Training Programs
<p>Darien Fire Department 100 Members 40 Combat</p>	<p>New Member: All firefighters are required to attend regular Monday training, which covers a variety of topics and lasts 2 to 3 hours. Monday night training occurs 2 to 3 times per month and is led by the Captain of the department. Probationary firefighters are also afforded extra training on Saturdays or Sundays to review fundamental skills and these trainings are led by experienced firefighters and officers.</p> <p>Incumbents: All firefighters who have passed their probationary period (1 year) are offered the opportunity to attend various courses provided by state & local academies. This includes FF I, FF II, and other specialized courses. Specialized courses are brought in for all members. These are larger series of classes designed to address specific topics (i.e., stabilization & lifting, incident size-up, building construction, etc.).</p> <p>Officer: Officers are required to have FF I or equivalent level training. Officers or aspiring officers are encouraged to complete officer training courses.</p>
<p>Noroton Fire Department 100 Members 40 Combat</p>	<p>New Member: Completion of "Clear to Ride" Introductory training packet, approximately 15 to 20 hour introductory training. Probationary members are required to attend at least 24 training drills (approximately 50 hours) each year.</p> <p>Incumbents: The vast majority of members attain FF1 certification. All interior firefighters are required to be FF1. All members are encouraged to attend FF1 class as soon as they reach 18 years of age. Members typically take additional certification classes throughout their careers, such as FF2, pump operator, Q endorsement, Rescue Tech, Hazmat Awareness/Ops, Instructor classes, Officer classes, EMT/EMR certifications. Apparatus operators must be requalified annually to be considered a qualified apparatus operator. Additionally, Marine Unit members attend specialized marine training with skippers required to achieve periodic recertification with senior officer/ marine instructors. Additionally, the Marine Unit recertifies with the U.S. Coast Guard for maritime search & rescue incidents.</p> <p>Officer: Officers are required to maintain active status, a minimum of 18 training sessions annually, roughly 40 hours. There is no required minimum certification.</p>

<p>Noroton Heights Fire Department</p> <p>75 members</p> <p>35-40 Combat</p>	<p>New Member: New members with no experience are provided a copy of the NHFD Probationary Firefighter Advancement binder (developed in-house and specific to department's needs). The contents of the binder outline the departmental information, structure, bylaws, members' handbook, and six training levels. Before being permitted to attend alarms, new members must complete a "Ready to Ride" checklist. This is to make sure they are familiar and comfortable with different types of responses, names, and locations of essential equipment. Each level of the binder outlines different skills and how they relate to the department's apparatus and job functions. This binder includes all skill sheets for FF I certification so the probationary firefighters can practice skills amongst themselves and with their individual assigned platoons. The binder includes sections that are self-study. On average, it takes 8 months to complete the training required for new probationary members. New members are also required to successfully complete the Highway Safety For Emergency Service Personnel course. This course will soon be replaced with Traffic Incident Management (TIM), which is a more accepted practice.</p> <p>Incumbents: Line personnel must attend a CT FF I certification to be able to participate in any structural firefighting. It is a requirement by the state that participants in the FF I program must be a minimum age of 18 by the date of the live burn practical. All members are encouraged to continue their fire service education through the state-run certification courses and other courses as long as it is an approved course by the Chief or their designee. Members must be in good standing, and if they fail to obtain the certification, they must pay for the class unless there are extenuating circumstances.</p> <p>Officer: Officer training and development is completed in-house except for State of Connecticut Fire Officer Certification courses and through other vendors. Those holding office or wishing to become an officer are encouraged to take certification classes in FF II, Instructor I, and Officer I. These classes are not required. Officers must have NIMS courses, Sexual Harassment, and EVOC.</p>
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Training is, without question, one of the most essential functions that a fire department should be performing on a regular basis. One could even make a credible argument that training is, in some ways, more important than emergency responses because a department that is not well-trained, prepared, and operationally ready will be unable to fulfill its emergency response obligations and mission. Education and training are vital at all levels of fire service operations to ensure that all necessary functions are completed correctly, safely, and effectively. A diverse, comprehensive, and ongoing training program is critical to the fire department's level of success.

An effective fire department training program must cover all the essential elements of that department's core missions and responsibilities. The level of training or education required for a set of tasks varies with the jobs to be performed. The program must include an appropriate combination of technical/didactic training, manipulative or hands-on/practical evolutions, and training assessment to gauge the effectiveness of these efforts. Most of the training, but particularly the practical, standardized, hands-on training evolutions should be developed based upon the department's own operating procedures and operations while remaining cognizant of widely accepted practices and standards that could be used as a benchmark to judge the department's operations for any number of reasons.

It is incumbent on the leadership of each of the fire departments that combat firefighters and officers achieve and maintain the basic-level firefighting and officer certifications. This is critical to ensure the safety of each fire department member and the citizens of the town. Operating in immediately dangerous to life and health (IDLH) environments with zero visibility, or on the perimeter of a fast-moving brush fire, requires formal classroom training that teaches the behavior of fire and the fundamental aspects of an IDLH environment. When followed up with initial and continuous hands-on practical application through certification courses, this breadth of training ensures a firefighter and fire officer has acquired the fundamentals of the profession, from which it becomes his/her responsibility to continuously learn and master.

Training Recommendation:

- CPSM recommends that each department establish and ensure compliance whereby each combat firefighter receives initial and continuous training for all types of firefighting, with training specific to interior firefighting. CPSM recommends this training be of high level, documented, and that it complies with the State of Connecticut Firefighter 1 curriculum as outlined in Appendix A. CPSM further recommends the three departments jointly establish and deliver officer training courses and training opportunities for incumbent members who are or aspire to be officers in their respective departments. CPSM recommends this training be of high level, documented and that it complies with the State of Connecticut Officer 1 curriculum as outlined in Appendix A. CPSM also recommends that annually, on or about January 15, each Fire Chief provide the Town Fire Commission an updated list of combat personnel (firefighter and officer) who have completed firefighter training compliant with State of Connecticut Firefighter 1 curriculum, and officer level training compliant with the State of Connecticut Officer 1 curriculum. Each report should also list those who do not have this training and a schedule for completion. (Recommendation No. 2.)

FLEET

The provision of an operationally ready and strategically located fleet of mission-essential fire vehicles is fundamental to the ability of a fire department to deliver reliable and efficient public safety within a community.

The procurement, maintenance, and eventual replacement of response vehicles is one of the largest expenses incurred in sustaining a community's fire department. While it is the personnel of the three departments who provide emergency services within the community, each department's fleet of response vehicles is essential to operational success. Modern, reliable vehicles are needed to deliver responders and the equipment/materials they employ to the scene of dispatched emergencies within the town.

Apparatus maintenance, depending on the level of maintenance, is either performed in-house or by a vendor selected by the volunteer department specializing in diesel motors and heavy

chassis vehicles. Apparatus-specific work, aerial ladder testing, annual preventive maintenance and required service is performed by a private vendor that specializes in this type of fire apparatus work. This combination of maintenance and repair work is common practice across the country in volunteer departments. The intricacies and scope of fire pumps and fire pump controls, aerial ladder hydraulic systems and controls, and apparatus electrical control systems (the main components outside of the motor, chassis, and drive train) are best left in the hands of specialists for diagnosis, maintenance, and repair.

The three departments' heavy operational apparatus are outlined in the next table.

TABLE 5-2: Profile of Department Fleets

Department	Apparatus	Year
Darien	Engine 41	2006
Darien	Engine 42	2006
Darien	Tower Ladder 43 75-feet	2011-Refurbished
Darien	Rescue 44	2004 (Scheduled for replacement in FY 2023)
Darien	Tanker 45 2,500 gallon	1996
Noroton	Engine 31	2015
Noroton	Engine 32	2002 (Scheduled for replacement in FY 2023)
Noroton	Ladder 30 100-ft. Mid-Mount Straight Ladder	2020
Noroton	Rescue 33	1989-Refurbished 2017
Noroton	Marine 34	1989
Noroton Heights	Squad 21	2018
Noroton Heights	Engine 23	1989-Refurbished 2006 (Scheduled for replacement in FY 2023)
Noroton Heights	Truck 20 75-ft. Rear-Mount Straight Ladder	1988-Refurbished
Noroton Heights	Rescue 25	1989
Noroton Heights	Tanker 22 2,000 gallons	2015

The aggregate fleet of the three departments offers the Town a diverse complement of fire apparatus. For instance, each ladder is different by ladder length, ladder mount, and one is a tower ladder. Each tanker carries a different amount of water and is constructed differently. There are two heavy squads and one light squad. Engines are diverse as well, carrying different equipment for firefighting and vehicle rescue, and are of varying sizes, with varying pump capacities and water tanks. This diversity is important and serves the Town well considering the varying street sizes, underpasses, building setbacks, long driveways to some structures, and non-hydranted areas.

Fleet Recommendation:

- Based on CPSM's operational analysis, and considering the risk in the Town as outlined previously in this report, and through discussion with the three Fire Chiefs, our conclusion and recommendation is the Town should maintain three ladder trucks (one at each department) and these ladder trucks should continue to be diverse in size and aerial device type; two heavy rescue apparatus (one at Darien Fire Department and one at Noroton Heights Fire Department); one fire boat to be staffed and operated by the Noroton Fire Department; two tankers (tenders) (one at Darien Fire Department and one at Noroton Heights Fire Department); and two engine apparatus at each station that remain diverse in pump and tank capacity and equipment carried, but specific to the fire district they serve. CPSM further recommends the Noroton Fire Department maintain a light utility type vehicle to support their marine and/or other light rescue operations. For motor vehicle accidents that require heavy rescue apparatus in the Noroton Heights district, CPSM recommends these services be provided by either the Darien Fire Department or Noroton Heights Fire Department heavy rescue apparatus based on location and availability of these units. (Recommendation No. 3.)

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Replacement of fire response vehicles is a necessary, albeit expensive, element of fire department budgeting that should reflect careful planning. A well-planned and documented emergency vehicle replacement plan ensures ongoing preservation of a safe, dependable, and operationally capable response fleet. A plan must also include a schedule for future capital outlay that is affordable to the community.

NFPA 1901, *Standard for Automotive Fire Apparatus*, serves as a guide to the manufacturers that build fire apparatus and the fire departments that purchase them. This document is updated every five to eight years (or shorter time periods) using input from the public and industry stakeholders through a formal review process. The committee membership is made up of representatives from the fire service, manufacturers, consultants, and special interest groups. The committee monitors various issues and problems that occur with fire apparatus and attempts to develop standards that address those issues. A primary interest of the committee over the past years has been improving firefighter safety and reducing fire apparatus crashes.

The Annex Material in NFPA 1901 (2016) contains recommendations and work sheets to assist in decision making in vehicle purchasing. With respect to recommended vehicle service life, the following excerpt is noteworthy:

"It is recommended that apparatus greater than 15 years old that have been properly maintained and that are still in serviceable condition be placed in reserve status and upgraded in accordance with NFPA 1912, Standard for Fire Apparatus Refurbishing (2016), to incorporate as many features as possible of the current fire apparatus standard. This will ensure that, while the apparatus might not totally comply with the current edition of the automotive fire apparatus standards, many improvements and upgrades required by the recent versions of the standards are available to the firefighters who use the apparatus."

The impetus for these recommended service life thresholds is the continual industry advances in vehicle and occupant safety. Despite good stewardship and maintenance of emergency vehicles in sound operating condition, there are many advances in occupant and vehicle component safety, such as fully enclosed cabs, enhanced rollover protection and air bags, three-point restraints, antilock brakes, increased visibility, cab noise abatement/hearing protection, a clean cab free from carbon products, and a host of other improvements as

reflected in each revision of NFPA 1901. These improvements provide safer response vehicles for those providing emergency services within the community, as well those "sharing the road" with these responders.

Annex D of the current NFPA 1912 edition states:

To maximize fire fighter capabilities and minimize risk of injuries, it is important that fire apparatus be equipped with the latest safety features and operating capabilities. In the last 10 to 15 years, much progress has been made in upgrading functional capabilities and improving the safety features of fire apparatus. Apparatus more than 15 years old might include only a few of the safety upgrades required by the recent editions of the NFPA fire department apparatus standards or the equivalent Underwriters Laboratories of Canada (ULC) standards. Because the changes, upgrades, and fine tuning to NFPA 1901, Standard for Automotive Fire Apparatus have been truly significant, especially in the area of safety, fire departments should seriously consider the value (or risk) to fire fighters of keeping fire apparatus more than 15 years old in first-line service.

Under the NFPA 1912 standard there are two types of refurbishments a fire department can choose. These are Level 1 and Level 2 refurbishments. According to NFPA 1912, a Level 1 refurbishment includes the assembly of a new fire apparatus by the use of a new chassis frame, driving and crew compartment, front axle, steering and suspension components, and the use of either new components or components from existing apparatus for the remainder of the of the apparatus. A Level 2 refurbishment includes the upgrade of major components or systems of a fire apparatus with components or systems of a fire apparatus that comply with the applicable standards in effect at the time the original apparatus was manufactured.

A few important points to note regarding the NFPA 1912 standard regarding the refurbishment of heavy fire apparatus. These are:⁵

- Apparatus that was not manufactured to applicable NFPA fire apparatus standards or that is 25 years old should be replaced.
- A vehicle that undergoes a Level 1 refurbishing receives a new make and model designation and a new Certificate of Origin for the current calendar year. Apparatus receiving a Level 1 refurbishing are intended to meet the current edition of the NFPA automotive fire apparatus standard. *This is the optimal level of refurbishing.*
- A vehicle that has undergone a Level 2 refurbishing retains its original make and model identification as well as its original title and year of manufacture designation. Apparatus receiving Level 2 refurbishing are intended to meet the NFPA automotive fire apparatus standard in effect when the apparatus was manufactured.

One method to reduce the replacement costs of heavy apparatus is to consider the refurbishment process. Refurbishing engine and ladder apparatus typically costs much less than a new apparatus, depending of course on the type of apparatus (engine or ladder) and the components (motor, drive train, chassis, pump, paint, steering etc.) that must be refurbished. As each department maintains their fleet in superior shape and have already refurbished apparatus that is currently in service, this alternative should be considered when an apparatus meets the mechanical and the criterion as outlined in NFPA 1901 and 1912, above.

⁵. NFPA 1912 Standard for Fire Apparatus Refurbishing, 2016 Edition.

Fleet Recommendation:

- The Town should continue with the current replacement plan for apparatus, which is at 17 to 20 years in service. CPSM further recommends that when appropriate, and when an apparatus meets the mechanical feasibility and NFPA 1901 and 1912 criterion for refurbishment, the Town consider the refurbishment alternative when scheduling replacement. (Recommendation No. 4.)

PROTECTIVE EQUIPMENT

Two of the most important components of firefighter safety are the structural firefighting protective ensemble (turnout or bunker gear as it is commonly referred to) and self-contained breathing apparatus (SCBA). Each on its own and together are designed to keep firefighters safe from the environment they are working in, which can include thermal, mechanical, and atmospheric hazards that can potentially harm them. Each of the departments provides members with this equipment either directly or makes a component available for use. The next table outlines the type and issuance of equipment by each department.

TABLE 5-3: Profile of Fire Department Protective Equipment

Department	Structural Firefighting Protective Ensemble	Self-Contained Breathing Apparatus
Darien Fire Department	<p>Coat/Pants: Globe & Honeywell</p> <p>Gloves: Vanguard, Shelby, Fire Dex</p> <p>Hood: Kermel, BarriiAire, PGI Gold</p>	<p>Type: Scott</p> <p>Models: X3 Pro, AP75</p> <p><i>Currently upgrading</i></p> <p>Not all members have been issued a personal SCBA mask. In progress.</p>
Noroton Fire Department	<p>Coat/Pants: Morning Pride & Honeywell</p> <p>Gloves: Pro-Tech Fusion</p> <p>Hood: Honeywell</p>	<p>Type: Scott</p> <p>Models: X3 Pro</p> <p>Not all members have been issued a personal SCBA mask. In progress.</p>
Noroton Heights Fire Department	<p>Coat/Pants: Morning Pride & Globe</p> <p>Gloves: Pro-Tech Structural Firefighting Glove; HexArmor Extrication Gloves</p> <p>Hood: Honeywell</p>	<p>Type: Scott</p> <p>Models: X3 Pro, AP75, AP50</p> <p>Not all members have been issued a personal SCBA mask.</p>

Our review of the equipment provided shows that while each fire department provides state-of-the-art personal protective equipment, there are improvements that can be made. Currently there is no consistency in the procurement and implementation of structural firefighting gear between the departments, which minimizes procurement cost savings and the availability of like gear to share between departments. One important improvement the three departments could make, especially through the Board of Fire Commissioners, is to work together to test, select, procure, and issue structural firefighting ensemble components that are the same. This action would offer economy of scale procurement (a single vendor contract) and would result in a cache of structural firefighting ensemble components that are interchangeable between departments when needed for new and incumbent members.

Another improvement that can be made, and which is recommended, is the issuance of SCBA masks on an individual basis. As respiratory protection is paramount, SCBA masks require annualized mask fit testing to a specific mask, and as the SCBA masks require regular cleaning and care, it is sensible to issue each combat firefighting member an individual mask. Although costly, each department has issued some or most members an individual mask. An improvement could also be made in the purchase of SCBA frame and harness systems and cylinders. The benefit here is the same as with structural firefighting ensemble components, which is the benefit of economy of scale procurement (a single vendor contract). An additional improvement would be a single upgrade of all SCBA frame and harness systems and cylinders (all three departments aggregately). This would establish a procurement cycle for all SCBA frames & harness systems and cylinders and would establish frame & harness model consistency between all three departments.

The Federal Emergency Management Agency (FEMA) with the United States Fire Administration annually makes funding available for upgrade programs such as this. For the FY 21 funding cycle, FEMA made available \$414 million through the Assistance to Firefighters Grant to fire departments to enhance their response capabilities and to protect the health and safety of the public and emergency personnel more effectively. Many fire departments in Connecticut (volunteer and career) have received substantial funding through this grant program.

Protective Equipment Recommendations:

- As there is not consistency between the three fire departments regarding the purchase and implementation of structural firefighting ensemble components, CPSM recommends the three volunteer fire departments collectively participate in a testing and selection process for structural firefighting ensemble components and then establish common ensemble components for future purchases. The common testing and selection will offer economy of scale procurement (a single vendor contract) and will also result in a cache of structural firefighting ensemble components that are interchangeable between departments when needed for new and incumbent members. (Recommendation No. 5.)
- CPSM further recommends the Town participate in the FY22 FEMA Assistance to Firefighters Grant process for the replacement of self-contained breathing apparatus (SCBA) frame & harness components and cylinders (replacement of those needed to reach the most contemporary model at the time). The purposes of this upgrade/replacement effort are to establish a procurement cycle for all SCBA frame & harness components and cylinders, to establish frame & harness model consistency between all three departments, and to establish economy of scale procurement (a single vendor contract) for these components. The grant should also include upgrade/replacement of SCBA masks as applicable and should ensure there are adequate numbers of each size of mask to issue to all incumbent and new members. (Recommendation No. 6.)

HEALTH AND SAFETY

Another important component for firefighter health and safety is annualized medical physicals and annualized SCBA mask fit testing. Annualized fit testing and annualized medical physicals go hand-in-hand. OSHA 1910.134 and NFPA 1500 both require annualized fit-testing of SCBA masks. As part of a Town/volunteer department respiratory protection program, and in accord with OSHA 1910.134, NFPA 1500, and NFPA 1582,⁶ medical physicals are required prior to the initial mask fit test and annualized thereafter, when new respiratory protective masks are introduced, or when a member has undergone physical changes that may affect the previous mask fit test and assigned mask size.

The next table outlines the departments' efforts in terms of SCBA mask fit testing and member medical physicals.

TABLE 5-4: Profile of Fire Department Member Health and Safety

Department	Mask Fit Testing	Medical Physicals
Darien Fire Department	<p>Requirement: All combat firefighters Annualized: Yes Compliance monitored: Yes No non-compliance reported. Who provides this service: Officers in department who are specifically trained in this testing. AAA Emergency Supply. Town funded: Yes</p>	<p>Requirement: All combat firefighters required to receive NFPA 1582 physicals. Annualized: Yes Compliance monitored: Yes No non-compliance reported. Where do the medical physicals occur: AFC Urgent Care, Norwalk. Town funded: Yes</p>
Noroton Fire Department	<p>Requirement: All combat firefighters Annualized: Yes Compliance monitored: Yes No non-compliance reported. Who provides this service: AAA Emergency Supply Town funded: Yes</p>	<p>Requirement: All combat firefighters required to receive NFPA 1582 physicals. Annualized: Yes Compliance monitored: Yes No non-compliance reported. Where do the medical physicals occur: AFC Urgent Care, Norwalk. Town funded: Yes</p>
Noroton Heights Fire Department	<p>Requirement: All combat firefighters Annualized: Yes Compliance monitored: Yes No non-compliance reported. Who provides this service: AAA Emergency Supply Town funded: Yes</p>	<p>Requirement: All combat firefighters required to receive NFPA 1582 physicals. Annualized: Yes Compliance monitored: Yes No non-compliance reported. Where do the medical physicals occur: AFC Urgent Care, Norwalk. Town funded: Yes</p>

6. NFPA 1500 and NFPA 1582 also specify annualized medical evaluations to ensure firefighter medical performance for all facets of the work being performed.

Health and Safety Recommendation:

- CPSM recommends the three volunteer fire departments continue to document annual mask fit testing and annual medical physicals of members to ensure 100 percent compliance. CPSM further recommends each volunteer Fire Chief have available a report to share with the Town Fire Commission annually, on or about January 15, that outlines member compliance with these two important health and safety programs that are funded by the Town. (Recommendation No. 7.)

ISO-PPC COMMUNITY RATING

The ISO is a national, not-for-profit organization that collects and evaluates information from communities across the United States regarding their capabilities to combat building fires.

ISO conducts field evaluations in an effort to rate communities and their relative ability to provide fire protection and mitigate fire risk. This evaluation allows ISO to determine and publish the Public Protection Classification (PPC). The data collected from a community is analyzed and applied to ISO's Fire Suppression Rating Schedule (FSRS) from which a Public Protection Classification (PPC) grade is assigned to a community (1 to 10). This is an analysis of the structural fire suppression delivery system in a community.

Class 1 (highest classification/lowest numerical score) represents an exemplary community fire suppression program that includes all of the components outlined below. A Class 10 indicates that the community's fire suppression program does not meet ISO's minimum criteria. It is important to understand the PPC is not just a fire department classification, but a compilation of community services that include the fire department, the emergency communications center, and the community's potable water supply system operator.⁷

A lower PPC numerical rating indicates a more favorable rating, which potentially may translate into lower insurance premiums for business owners and homeowners. This more favorable classification makes the community more attractive from an insurance risk perspective. How the PPC for each community affects business and homeowners can be complicated because each insurance underwriter is free to utilize the information as they deem appropriate. Overall, many factors feed into the compilation of an insurance premium, not just the PPC.

A community's PPC grade depends on:

- **Needed Fire Flows** (building locations used to determine the theoretical amount of water necessary for fire suppression purposes). The Darien needed fire flow is 3,500 gallons per minute. This is based on the fifth-largest needed fire flow in the town.
- **Emergency Communications** (10 percent of the evaluation).
- **Fire Department** (50 percent of the evaluation).
- **Water Supply** (40 percent of the evaluation).

The Town of Darien has an ISO rating of **Class 04/4X**. The first number indicates a fire suppression system is present that includes a creditable dispatch center, fire department, and water supply (fire hydrants). The second number indicates a fire suppression system is present that includes a

7. Town of Darien ISO PPC report Effective July 1, 2021.

creditable dispatch center, fire department, but no ISO-Fire Suppression Rating System (FSRS) water supply (typically a lack of fire hydrants). This Town's ISO rating was effective July 1, 2021.

The following figures illustrate the PPC ratings across the United States and in Connecticut.

FIGURE 5-1: PPC Ratings in the United States⁸

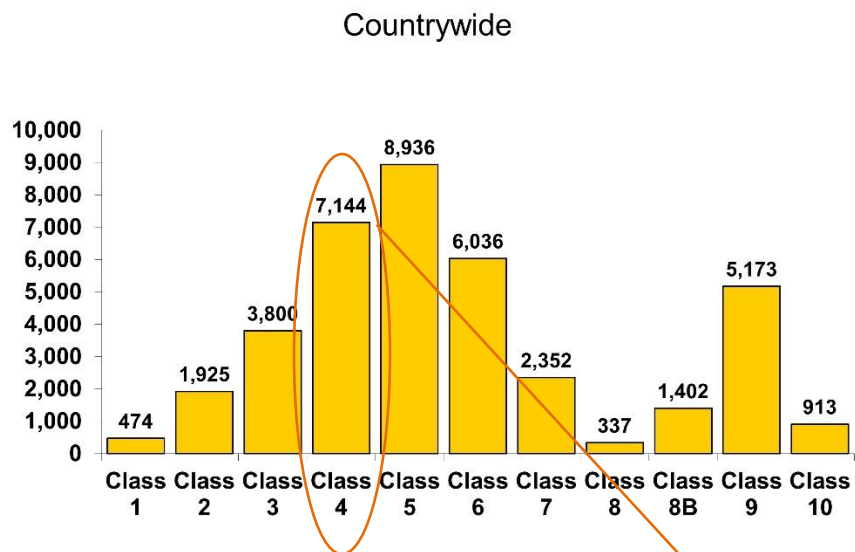
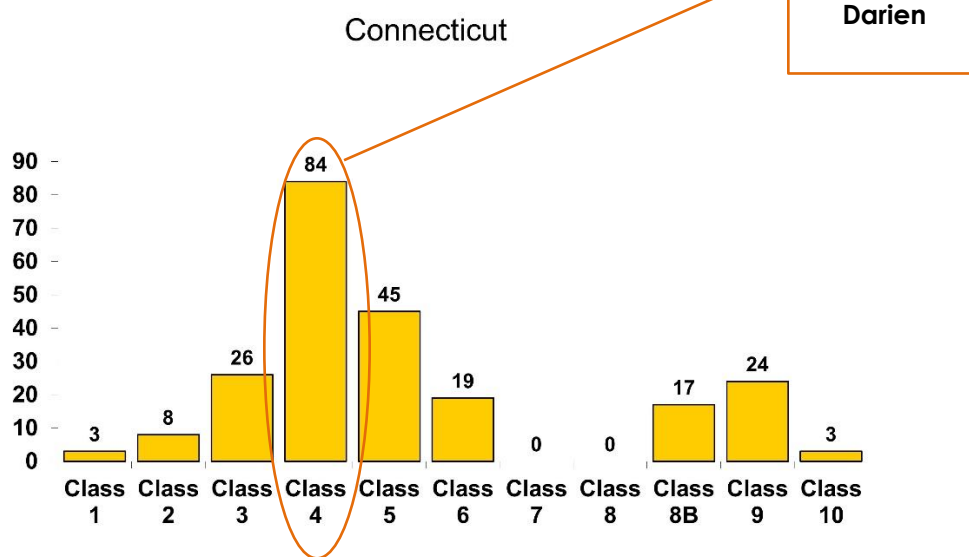


FIGURE 5-2: PPC Ratings in Connecticut⁹



8. <https://www.isomitigation.com/ppc/program-works/facts-and-figures-about-ppc-codes-around-the-country/>

9. Ibid.

The Town of Darien's 2021 report included the following credit points by major category:

- **Emergency Communications:** 6.36 earned credit points/10.00 credit points available.
- **Fire Department:** 29.64 earned credit points/50.00 credit points available.
- **Water Supply:** 28.31 earned credit points/40.00 credit points available.
- **Community Risk Reduction** (Fire Prevention/Inspection, Public Education, and Fire Investigation activities): 4.88 earned credit points/5.50 credit points available.

Overall, the community PPC rating yielded 66.89 earned credit points/105.50 credit points available. There was a -2.30 point diversion reduction assessed as well, which is automatically calculated based on the relative difference between the fire department and water supply scores. **60.00 points or more qualify a community for a rating of 4/4X.**

The next table outlines the scoring for the three Town of Darien ISO-FSRS components.

TABLE 5-5: Darien ISO Earned Credit Overview

FSRS Component	Earned Credit	Credit Available
414. Credit for Emergency Reporting	2.40	3
422. Credit for Telecommunicators	2.40	4
4.32. Credit for Dispatch Circuits	1.56	3
440. Credit for Emergency Communications	6.36	10
513. Credit for Engine Companies	5.69	6
523. Credit for Reserve Pumpers	0.50	0.50
532. Credit for Pump Capacity	3.00	3
549. Credit for Ladder Service	3.93	4
553. Credit for Reserve Ladder and Service Trucks	0.00	0.50
561. Credit for Deployment Analysis	7.86	10
571. Credit for Company Personnel	5.19	15
581. Credit for Training	1.97	9
730. Credit for Operational Considerations	2.00	2
590. Credit for Fire Department	29.64	50
616. Credit for Supply System	20.51	30
621. Credit for Fire Hydrants	3.0	3
631. Credit for Inspection and Flow Testing	4.80	7
640. Credit for Water Supply	28.31	40
Divergence	-2.30	-
1050. Community Risk Reduction	4.88	5.50
Total Credit	66.89	105.50

Areas of scoring that should be reviewed further internally by the Town and the three fire departments, and which can have the most impact on individual areas evaluated and scored that connect to total section scoring include:¹⁰

10. Public Protection Classification Summary Report, Darien, CT 2021.

- Emergency Communications: #410(3) (10/15 credits)
 - This category contemplates the basic CAD system(s) in place (Town and SWRCC), each CAD's management information system, and the ability for one CAD system to communicate with the other. When CAD systems are able to communicate with each other, they can electronically exchange information, which eliminates the need to transmit vital call information by phone. Currently the Town and the SWRCC do not have CAD-to-CAD interoperability. The SWRCC does push CAD information to the fire and EMS records management systems for report documentation. As the Town serves as the primary PSAP, the caller, after the Town 911-dispatch center receives the call and obtains information, is transferred by phone to the SWRCC for call processing once again. CAD-to-CAD interoperability eliminates this phone call method of call processing.
- Emergency Communications: #410(4) (0.00/15 credits)
 - This category contemplates the use by the PSAP of a fully integrated CAD/GIS management system with automatic vehicle location (AVL) integrated with CAD. This is not available in the Town PSAP. The SWRCC has AVL capability however the three fire departments do not have the required interface as their responses are not currently based on closest unit response.
- Emergency Communications: #420(A2) (0.00/20 credits)
 - This category contemplates the processing of calls in the PSAP and then benchmarking the findings against the requirements of the NFPA 1221 standard. The primary PSAP (Town of Darien) call processing and transfer times to the secondary PSAP (SWRCC) are in excess of the NFPA standard.
- Emergency Communications: #420(A2) (0.00/20 credits)
 - This category contemplates if telecommunicators have emergency dispatch protocols that contain questions and decision-support process to facilitate correct call categorization and prioritization. The Town 911-dispatch center does not as the primary PSAP. The secondary PSAP (SWRCC) currently has the APCO International Emergency Medical Dispatch software, which is a decision-support process to facilitate correct call categorization and prioritization, which was implemented after the Town's 2021 ISO-FSRS analysis. However the SWRCC was using another EMS decision-support system prior to the APCO implementation and during the most recent ISI-FSRS analysis. The SWRCC is readying for the implementation of fire service dispatch guides, which will facilitate a decision-support process and correct call categorization and prioritization for fire-related calls that will match the needs and resources of the Town's three fire departments.
- Credit for Company Personnel: #571 (5.19/15 credits).
 - This category reviews the average number of existing firefighters and company officers available to respond to first alarm structure fires. Because the three departments in the town are volunteer and are not always at the station (have restricted availability, the ISO-FSRS grading schedule credits three volunteers as equivalent to one career firefighter. The three departments aggregately received credit for 46.73 on-call personnel responding on first alarm structure fires, or divided by three, 15.58 (16) personnel. The number of people responding by fire district and department is consistent with CPSM data. For the time that the volunteers are on duty at the station, ISO will consider them as equivalent to on-duty firefighters; however, this information has to be recorded.

- Training: #581 (A) Facilities and Use (8.71/35 credits).
 - For maximum credit each firefighter should receive 18 hours per year in structure fire-related subjects as outlined in the NFPA 1001 standard at a training facility where props and fire simulation buildings can be used. The three departments are not meeting this section to their fullest potential.
- Training: #581 (B) Company Training (2.21/25 credits).
 - For maximum credit, each firefighter should receive 16 hours per month in structure fire-related subjects as outlined in the NFPA 1001 standard. The three departments are not meeting this section to their fullest potential.
- Training: #581 (C) Classes for Officers (6.00/12 credits).
 - For maximum credit each officer should be certified in accordance with the general criteria of NFPA 1021 standard. In addition to this benchmark, each officer should receive 12 hours of continuing education on or off-site annually. The three departments are not meeting this section to their fullest potential.
- Training: #581 (G) Recruit Training (1.38/5 credits).
 - For maximum credit, each firefighter should receive 240 hours of structure fire-related training in accordance with the NFPA 1001 standard within one year of their tenure. The three departments are not meeting this section to their fullest potential.
- Training: #581 (H) Pre-Fire Planning Inspections (1.20/12 credits).
 - For maximum credit, company members should annually make pre-fire planning inspections of each commercial, industrial, institutional, and other similar type building (all buildings except one- to four-family dwellings). Pre-fire planning inspections are company-level walk-throughs of commercial, industrial, institutional, hotels/motels, and larger footprint buildings to become familiar with floor plans, hose connections, means of egress, concentrations of population, hazardous materials storage, and the like. Typically, fire departments have templates they fill in while conducting these pre-fire plan inspections that include pertinent owner/occupant information, sketched floor plans, hydrant locations, fire department connections, elevator locations, hazardous storage, or process locations in the building, etc. Another purpose of a pre-fire plan is its use when an actual incident is occurring at the target hazard site or building. In this case the incident commander has at his/her disposal vital information that he/she can reference when making incident decisions. A record of inspections is important as well to gain appropriate credits. The three departments are not completing pre-fire plans on targeted hazard buildings that are commercial, industrial, institutional, and other similar types to their fullest potential.
- Water Supply: #616 (20.51/30)
 - This item reviews the water supply system (fire hydrants). The town has received maximum credit for built upon areas that have fire hydrants. There are areas of the town that do not have hydrants. Each of the three departments, however, have water tenders to augment engine company water tanks in these areas.
- Water Supply: #630. #631 (4.80/7)
 - This item reviews the fire hydrant inspection frequency, and the completeness of the inspections in accordance with the AWWA M-17 standard. The credits received (2.40) means fire hydrants have not been inspected in five years or more.

- This item also reviews the frequency of flow testing of hydrants. The credits received (2.40) means the hydrants have not been flow tested for ten or more years.

ISO-PPC Community Rating Recommendations:

- CPSM recommends the three departments review and address, to the extent possible, deficiencies in the Fire Department section of the current ISO-Public Protection Classification report as outlined in this analysis. Special attention should be given to developing methods and opportunities for members to achieve the training as required in the ISO analysis, as it is focused on firefighter safety, improved competencies, and overall improved fireground effectiveness and functionality. This includes, given the identified building risks in the town, ensuring company personnel conduct (and document for future ISO reviews) some level of commercial, industrial, institutional, and other similar type buildings familiarization and pre-plan information gathering; and developing an officer training program targeted at ensuring officers have opportunities for the various levels of officer certification and that they receive structured annualized officer training. (Recommendation No. 8.)
- CPSM further recommends the Town work with Aquarion Water Company to ensure the fire hydrants are inspected annually. CPSM further recommends Town fire hydrants be flow-tested every five years in accordance with NFPA 291 *Recommended Practice for Fire Flow Testing and Marking of Hydrants*. (Recommendation No. 9.)

NFPA 1720 STANDARD FOR FIRE RESPONSE

Emergency events occur at all hours, on all days, and under all conditions. Emergencies are like lightning strikes—they can occur anytime, anywhere. The fire and EMS service's response to these unpredictable conditions has been to develop a methodology for being prepared to respond and deploy adequate resources in a timely fashion when they occur.

The rapid and effective performance of highly coordinated assigned tasks is the hallmark of a successful emergency response force whether it be fire or EMS or combined. Time and on-scene performance expectations are the target indicators established for measuring the operational elements (individuals, crews, and work units) that comprise response-ready resources.

Critical tasks are those activities that must be conducted on time and preferably simultaneously by responders at emergency incidents to control the situation and minimize/stop loss (property and life-safety).

Critical tasking for fire operations is the minimum number of personnel needed to perform the tasks needed to effectively control and mitigate a fire or other emergency.

Critical tasking for EMS operations is those activities (clinical and operational) that must be conducted, some in succession, and some simultaneously to rapidly assesses the patient, determine the level of intervention needed, if any, and connect the patient with the appropriate level of pre-hospital clinical care.

To be effective, critical tasking must assign enough personnel so that all identified functions can be performed as described above. However, it is important to note that initial response personnel may manage secondary support functions once they have completed their primary assignment. Thus, while an incident may end up requiring a greater commitment of resources or

a specialized response, a properly executed critical tasking assignment will provide adequate resources to immediately begin bringing the incident under control.

The specific number of people required to perform all the critical tasks associated with an identified risk or incident type (Fire, EMS, and Fire/EMS) is referred to as an **Effective Response Force (ERF)**. The goal is to deliver an ERF within a prescribed period. NFPA 1720 provides the benchmarks for effective response forces for the three departments. There are no established critical tasks for all EMS incidents per se, however, a Standards of Cover will provide critical tasking for incidents that EMS units typically respond to.

Fire Critical Tasking

As volunteer agencies the three fire departments align with 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*, 2020 edition (National Fire Protection Association, Quincy, Mass.). This standard outlines organization and deployment of operations by volunteer and combination (a fire department having emergency service personnel comprising less than 85 percent majority of either volunteer or career membership) fire and rescue organizations.¹¹ It serves as a benchmark to measure staffing and deployment of resources to certain fire incidents and emergencies.

According to NFPA 1720, fire departments should base their specific role on a formal community risk management plan, as discussed earlier in this analysis, and taking into consideration:¹²

- Life hazard to the population protected. The number and type of units assigned to respond to a reported incident shall be determined by risk analysis and/or pre-fire planning.
- Fire suppression operations shall be organized to ensure that the fire department's fire suppression capability includes personnel, equipment, and other resources to deploy fire suppression resources in such a manner that the needs of the organization are met.
- The Authority Having Jurisdiction shall promulgate the fire department's organizational, operational, and deployment procedures by issuing written administrative regulations, standard operating procedures, and departmental orders.
- The number of members that are available to operate on an incident is sufficient and able to meet the needs of the department.
- Provisions for safe and effective firefighting performance conditions for the firefighters.
- Personnel responding to fires and other emergencies shall be organized into company units or response teams and have the required apparatus and equipment to respond.
- Initial firefighting operations shall be organized to ensure that at least four members are assembled before interior fire suppression operations are initiated in a hazardous area.
- The capability to sustain operations shall include the personnel, equipment, and resources to conduct incident specific operations.

11. NFPA 1720 is a nationally recognized standard, but it has not been adopted as a mandatory regulation by the federal government or the State of Connecticut. It is a valuable resource for establishing and measuring performance objectives for the three Darien departments but should not be the only determining factor when making local decisions about the Town's fire services.

12. NFPA 1710, 5.2.1.1, 5.2.2.2

Fire and rescue work are task-oriented and labor intensive, performed by personnel wearing heavy, bulky personal protective equipment (PPE). Many critical fireground tasks require the skillful operation and maneuvering of heavy equipment.

The speed, efficiency, and safety of fireground operations are dependent upon the number of firefighters performing the tasks. If fewer firefighters are available to complete critical fireground tasks, those tasks will require more time to complete. This increased time is associated with elevated risk to both firefighters and civilians.

To ensure civilian and firefighter safety, fireground tasks must be coordinated and performed in rapid sequence. Assembling an Effective Response Force (ERF) is essential to accomplish on-scene goals and objectives safely and efficiently. Without adequate resources to control a building fire, the building and its contents continue to burn. This increases the likelihood of a sudden change in fire conditions, and thus the potential for failure of structural components leading to collapse. An inadequate ERF limits firefighters' ability to successfully perform a search and potential rescue of any occupants.

As a fire grows and leaves the room and then floor of origin, or extends beyond the building of origin, it is most probable that additional personnel and equipment will be needed, as initial response personnel will be taxed beyond their available resources. From this perspective it is critical that the BFD units respond quickly and initiate extinguishment efforts as rapidly as possible after notification of an incident. It is, however, difficult to determine in every case the effectiveness of the initial response in limiting the fire spread and fire damage. Many variables will impact these outcomes, including:

- The time of detection, notification, and response of fire units.
- The age and type of construction of the structure.
- The presence of any built-in protection (automatic fire sprinklers) or fire detection systems.
- The contents that are stored in the structure and its flammability.
- The presence of any flammable liquids, explosives, or compressed gas canisters.
- Weather conditions and the availability of water for extinguishment.

Subsequently, in those situations in which there are extended delays in the extinguishment effort, or the fire has progressed sufficiently upon arrival of fire units, there is actually very little that can be done to limit the extent of damage to the entire structure and its contents. In these situations, suppression efforts may need to focus on the protection of nearby or adjacent structures (exterior exposures) with the goal being to limit the spread of the fire beyond the building of origin, and sometimes the exposed building. This is often termed **protecting exposures**. When the scope of damage is extensive, and the building becomes unstable, firefighting tactics typically move to what is called a **defensive attack**, or one in which hose lines and more importantly personnel are on the outside of the structure and their focus is to merely discharge large volumes of water until the fire goes out. In these situations, the ability to enter the building is extremely limited and if victims are trapped in the structure, there are very few safe options for making entry.

Today's fire service is actively debating the options of interior firefighting vs. exterior firefighting. These terms are self-descriptive in that an **interior fire attack** is one in which firefighters enter a burning building in an attempt to find the seat of the fire and from this interior position extinguish the fire with limited amounts of water. An **exterior fire attack**, also sometimes referred to as a **transitional attack**, is a tactic in which firefighters initially discharge water from the exterior of the

building, either through a window or door and knock down the fire before entry in the building is made. The concept is to introduce larger volumes of water initially from the outside of the building, cool the interior temperatures, and reduce the intensity of the fire before firefighters enter the building.

A transitional attack is most applicable in smaller structures, typically single-family, one-story detached units that are smaller than 2,500 square feet in total floor area. For fires in larger structures, the defensive-type, exterior attacks involve the use of master streams, typically from an elevated aerial device, and capable of delivering large volumes of water for an extended period of time.

The exterior attack limits the firefighter from making entry into those super-heated structures that may be susceptible to collapse. From CPSM's perspective, there is the probability, depending on the time of day, a Darien response crew of a limited number of personnel on the initial response will encounter a significant and rapidly developing fire situation. ***It is prudent, therefore, that the three departments build at least one component of their training and operating procedures around the tactical concept of this occurring.***

The variables of how and where personnel and companies are located, and how quickly they can arrive on scene, play major roles in controlling and mitigating emergencies. ***The reality is that the three departments rely on volunteer response from home or work to make up the teams and crews of the Effective Response Force.*** The three departments' volunteer member availability at any time of the day may have an impact on assembling enough personnel and resources on the scene. This factor has to be considered at all times by those responding to the scene, those responding to the station to pick up apparatus, and command officers responding who must manage and coordinate available responding and on-scene resources.

NFPA 1720 establishes the minimum response staffing for a predominately volunteer department for low-hazard structural firefighting incidents (to include out buildings and up to a 2,000 square-foot, one- to two-story, single-family dwelling without a basement and no exposures) for specific demand zones as shown in the following table.

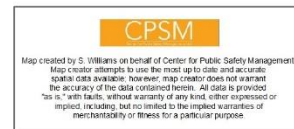
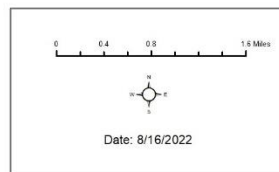
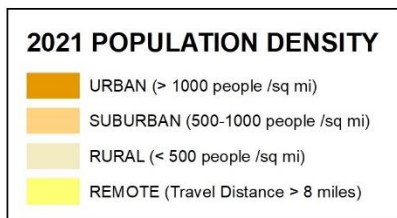
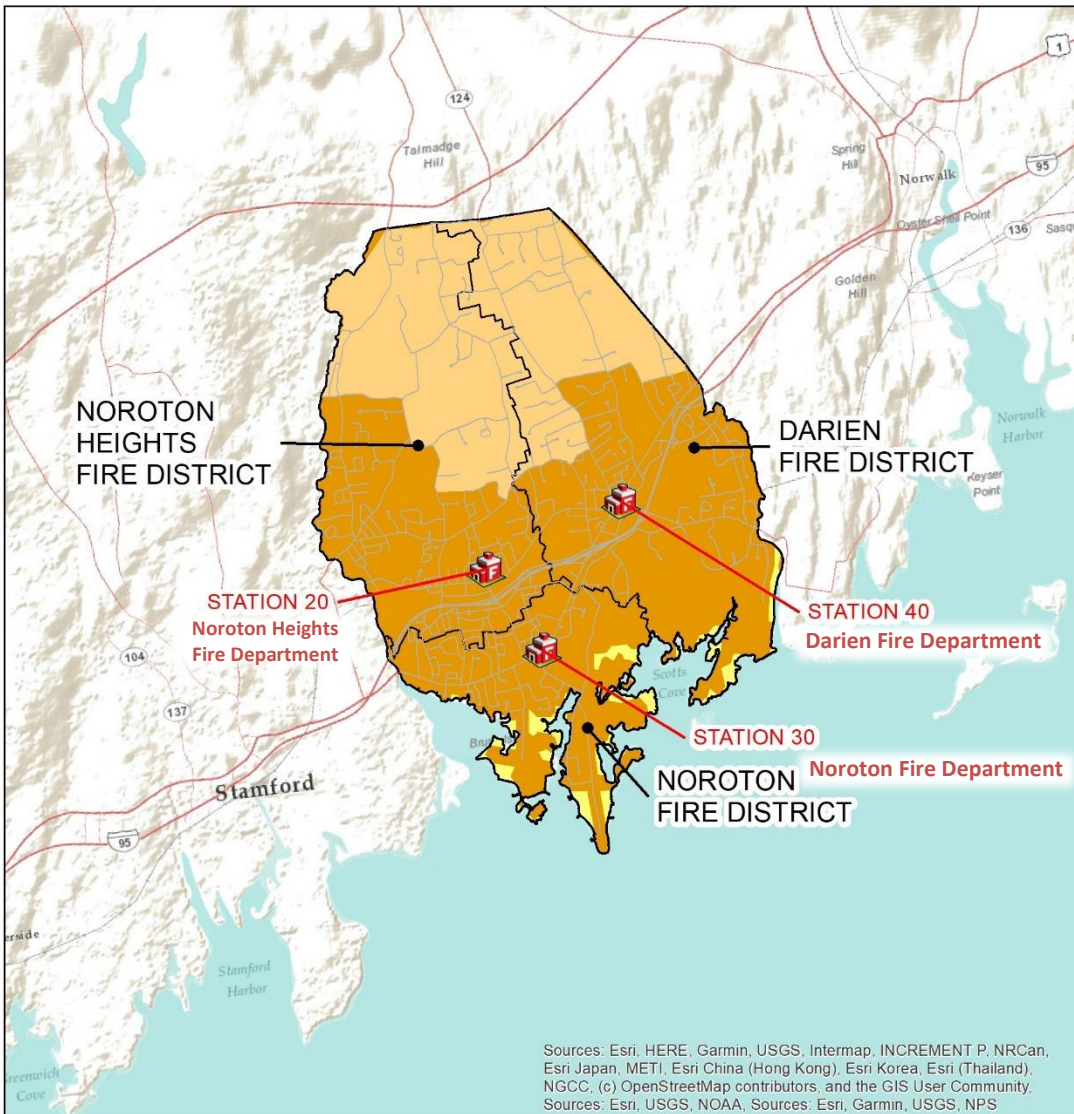
Each demand zone takes into consideration certain risk elements such as population density, exposed occupied buildings (more predominant in urban and suburban demand zones), water supply, and proximity to responding apparatus and members (incident and fire station).

TABLE 5-6: NFPA 1720 Staffing for Effective Response Force, Residential Structure, by Demand Zone

Demand Zone	Demographics	Minimum Staff to Respond to Scene*	Response Time Standard
Urban Area	>1000 people/mi ²	15	Within 9 minutes 90 percent of the time
Suburban Area	500-1000 people/mi ²	10	Within 10 minutes 80 percent of the time
Rural Area	<500 people/mi ²	6	Within 14 minutes 80 percent of the time
Remote Area	Travel Distance ≥8 miles	4	Directly dependent on travel distance, determined by AHJ, 90 percent of the time

The next figure shows the areas of the Town of Darien that are urban, suburban, and rural as benchmarked against the NFPA 1720 demographics. The purpose of this map is to identify where the NFPA 1720 demand zones exist in the town and how this links to the Effective Response Force for each zone which the departments strive to assemble for building fires.

FIGURE 5-3: Town of Darien NFPA 1720 Demand Zones



The next tables provide the NFPA 1720 minimum staffing criteria. As indicated above, the urban demand zone stipulates the largest minimum staffing and more closely aligns with the NFPA 1710

Effective Response Force. In the urban demand zone, when the minimum staffing assembles, critical tasks are completed simultaneously. The DFD and NHFD have urban and suburban demand zones in their response districts as defined by NFPA 1720. The NFD has urban and remote (remote by street network) demand zones in their response districts as defined by NFPA 1720.

The next set of tables outlines the critical tasking in urban and suburban demand zones for structural fires.

TABLE 5-7: Critical Tasking in an Urban Demand Zone, Single-Family Dwelling

Critical Task	# of Responders Assigned to Task
Attack Line (2-In)	2
Backup/Second Line	2
Ventilation	2
Search and Rescue	2
Rapid Intervention (2-Out)	2
Attack Engine Pump Operator	1
Water Source Engine Pump Operator	1
Outside Crew for: utility control, hose management, potential exposure line or additional fire suppression line	2
Incident Commander	1
Total Minimum Response for Urban Demand Zone	15

DFD Minimum Effective Response Force by Apparatus and Officers: 18
NHFD Minimum Effective Response Force by Apparatus and Officers: 18
NFD Minimum Effective Response Force by Apparatus and Officers: 18

TABLE 5-8: Critical Tasking in a Suburban Demand Zone, Single-Family Dwelling

Critical Task	# of Responders Assigned to Task
Attack Line/Search and Rescue (2-In)	2
Backup/Second Line	2
Attack Engine Pump Operator	1
Water Source Engine Pump Operator	1
Outside crew for: rapid intervention crew ventilation, utility control, hose management, potential exposure line or additional fire suppression line	3
Incident Commander	1
Total Minimum Response for Suburban Demand Zone	10

DFD Minimum Effective Response Force by Apparatus and Officers: 18
NHFD Minimum Effective Response Force by Apparatus and Officers: 18
NFD Minimum Effective Response Force by Apparatus and Officers: 18

To assemble an Effective Response Force on structural fires and other structural type *box alarms*, each department has run procedures both inside and outside of their districts. Each department has standard operating procedures that outline the response of apparatus. In each department, members respond to the station (other than officers strategically close to the incident), staff up the apparatus, then respond. The minimum staffing is four per apparatus (other than those apparatus that has less seating such as tenders), although there are times when staffing may be at three. This staffing model ensures accountability of responding crews, establishes a leadership presence on each apparatus, and minimizes freelancing through responding staff in personal vehicles. **This response protocol is a best practice.**

There is an established town-wide mutual aid response to structural fires and structural type *box alarms* between the hours of 6:00 a.m. and 6:00 pm. During this time period the department whose district the call originates in shall provide at a minimum an aerial apparatus (although each may typically get an engine out as well). The other two departments provide one engine each. There are also other specific locations that include specific apparatus from each of the three departments. This response pattern yields 18 personnel on response apparatus (staffing of four) along with officers responding in light vehicles.

In-district responses have a department-specific response matrix for various call types, to include structural and structural type *box alarms*. Typical response includes two engines, one rescue, and one ladder in hydranted areas, and the addition of a tanker in non-hydranted areas. This response pattern yields 18 personnel (staffing of four) on response apparatus (between the hours of 6:00 p.m. and 6:00 a.m.), along with officers responding in department vehicles.

Lastly, for second or general alarms (incidents requiring additional apparatus and staffing beyond the initial alarm assignment in a district) each department has response protocols and procedures. This response protocol typically yields 30 or more staff.

In terms of assembling an Effective Response Force by firefighters and officers (not by the response time), CPSM analyzed structural fire responses in the urban and suburban areas as outlined in the map above. The results of this are as follows:

DFD District: Urban Structure Fire Responses (5)

Staff Response: 10; 17; 22; 23; 27

Suburban Structure Fire Responses (5)

Staff Response: 7; 12; 15; 16; 28

NFD District: Urban Structure Fire Responses (3)

Staff Response: 10; 1; 18

Suburban Structure Fire Responses (1)

Staff Response: 3

NHFD District: Urban Structure Fire Responses (8)

Staff Response: 5; 6; 7; 9; 12; 13; 13; 17

Suburban Structure Fire Responses (1)

Staff Response: 18

Demand Zone	Demographics	Minimum Staff to Respond to Scene
Urban Area	>1000 people/mi ²	15
Suburban Area	500-1000 people/mi ²	10

As a note, CPSM reviewed structure fire type call data. This includes single-family dwellings and other building types. Staff response numbers highlighted indicate a fire department district did not assemble the Effective Response Force as outlined in NFPA 1720. There are factors to consider when reviewing this and include an officer or first-arriving apparatus arrived on scene, found either nothing or the incident required a downgraded response to handle, and the call was still classified as a structural fire. This would affect the staff count. In totality however, of the 16 urban structural fires where more than one staff member arrived, 38 percent of the time an Effective Response Force was assembled. Of the seven suburban structural fires, 71 percent of the time an Effective Response Force was assembled. Again, call counts are affected by first arriving units sizing-up the incident, and potentially downgrading the event or canceling the response.

In addition to the NFPA 1720 standard, the NFPA *Fire Protection Handbook* classifies buildings and occupancies by their relative risk and provides recommendations on the minimum Effective Response Force that will be needed to handle fire incidents in them.¹³ These include:

High-hazard Occupancies: Schools, hospitals, nursing homes, high-rise buildings, and other high life safety-hazard or large fire-potential occupancies.

Operational Response: at least 4 pumpers, 2 ladder trucks (or combination apparatus with equivalent capabilities), 2 chief officers and other specialized apparatus as may be needed to cope with the combustibles involved; not less than 24 firefighters and 2 chief officers plus a safety officer and a rapid intervention team. Extra staffing for high hazard occupancies is advised.

Medium-hazard Occupancies: Apartments, offices, and mercantile and industrial occupancies, not normally requiring extensive rescue by firefighting forces.

Operational Response: At least 3 pumpers, 1 ladder truck (or combination apparatus with equivalent capabilities such as a quint), 1 chief officer, and other specialized apparatus as may be needed or available; not less than 16 firefighters and 1 chief officer plus a safety officer and a rapid intervention team.

Low-hazard Occupancies: One, two, or three-family dwellings and scattered small business and industrial occupancies.

Operations Response Capability: At least 2 pumpers, 1 ladder truck (or combination apparatus with equivalent capabilities such as a quint), 1 chief officer, and other specialized apparatus as may be needed or available; not less than 12 firefighters and 1 chief officer, plus a safety officer, and a rapid intervention team.

NFPA 1720/ERF Recommendation:

- CPSM recommends the three departments meet and confer regarding the district response to building structural fires beyond that of a low risk (one, two, or three-family dwellings and scattered small business and industrial occupancies), and consider adding resources on the initial alarm from the other two fire departments, regardless of the hour of the day, for medium- and high-risk occupancies (buildings) to ensure adequate resources and staffing are available to fill all the critical tasking necessary to mitigate the incident. (Recommendation No. 10.)

¹³. Cote, Grant, Hall & Solomon, eds., *Fire Protection Handbook* (Quincy, MA: NFPA 2008), 12-3

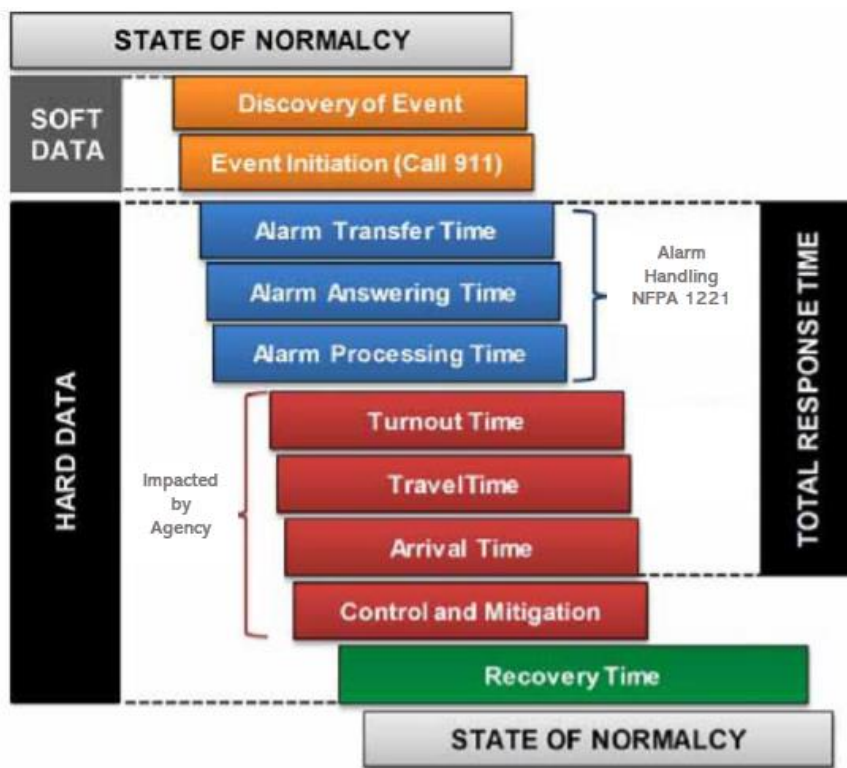
RESPONSE TIMES AND PERFORMANCE OBJECTIVES

Fire and EMS agencies develop and review performance goals with an aim to limit the risk to their communities, citizens, and visitors from fire, injury, death, and property damage associated with fire, accidents, illness, explosions, hazardous materials incidents, and other natural or manufactured emergencies through prevention and response. Performance Level Objectives outline the commitment of fire and EMS agencies to meet pre-established objectives regarding the timeliness of response to specific incident types and risks.

Most fire and EMS incident/response performance goals are developed based on industry and national standards. Fire agencies utilize applicable NFPA, ISO, OSHA, and Center for Public Safety Excellence (CPSE) accreditation standards. EMS agencies do not have the advantage that fire agencies have in that there are few adopted national benchmarks for EMS. That said, EMS agencies also utilize to some extent applicable NFPA, CPSE accreditation, and CMS standards. There are suggested industry standards; however, these vary, and most are adapted by agencies and applied where practical.

In both disciplines there is one commonality and that is the cascade of events and the associated response time benchmarks and goals.

FIGURE 5-4: Cascade of Events



The ability to quickly deploy adequate fire staff prior to flashover limits a fire's extension beyond the room or area of origin. Regarding the risk of flashover, the authors of an IAFF report conclude: *Clearly, an early aggressive and offensive initial interior attack on a working structural fire results in greatly reduced loss of life and property damage. Consequently, given that the*

progression of a structural fire to the point of "flashover" (the very rapid spreading of the fire due to super-heating of room contents and other combustibles) generally occurs in less than ten minutes, two of the most important elements in limiting fire spread are the quick arrival of sufficient numbers of personnel and equipment to attack and extinguish the fire as close to the point of its origin as possible.¹⁴

A crucial factor in the whole response time question is what we term "**detection time**." This is the time it takes to detect a fire or a medical situation and notify 911 to initiate the response. In many instances, particularly at night or when automatic detection systems (fire sprinklers and smoke detectors) are not present or inoperable, the fire detection process can be extended. The same holds true for EMS incidents. Many medical emergencies are often thought to be something minor by the patient, treated with home remedies, and the true emergency goes undetected until signs and symptoms are more severe. When the fire-EMS department responds, they often find these patients in acute states. Fires that go undetected and are allowed to expand in size become more destructive, are difficult to extinguish, and require more resources for longer periods of time.

Dispatch time is the difference between the time a call is received and the earliest time an agency is dispatched. Dispatch time includes call processing time, which is the time required to determine the nature of the emergency and the types of resources to dispatch. The NFPA 1221 standard for this component of response times is the most utilized benchmark. Benchmark times include:

- ≤ 15 seconds 90 percent of the time to answer incoming emergency lines.
- ≤ 20 seconds 95 percent of the time to answer incoming emergency lines.
- ≤ 60 seconds 90 percent of the time for the highest priority level of emergency calls.

The next component of response time is **turnout time**, an aspect of response which is controlled by the responding Fire and/or EMS agency.

The last component of response time is **travel time**, an aspect of response time that is affected by factors such as station location, road conditions, weather, and traffic control systems.

Fire Performance Objectives

As a benchmark, for a volunteer or predominately volunteer fire department/paid-per-call department such as those in Darien, NFPA 1720 recommends the entire initial effective response force of between 4 and 15 personnel, depending on demand zone (urban, suburban, rural, remote areas), be on scene within 9 to 14 minutes of dispatch, depending on demand zone (other than remote, which is dependent on travel distance). It is also important to keep in mind that once units arrive on scene there is a time lag before water reaches the fire as crews and responding units have several tasks to complete in the initiating action period immediately after arrival at the scene.

NFPA 1720 calls attention to additional requirements worth noting here:

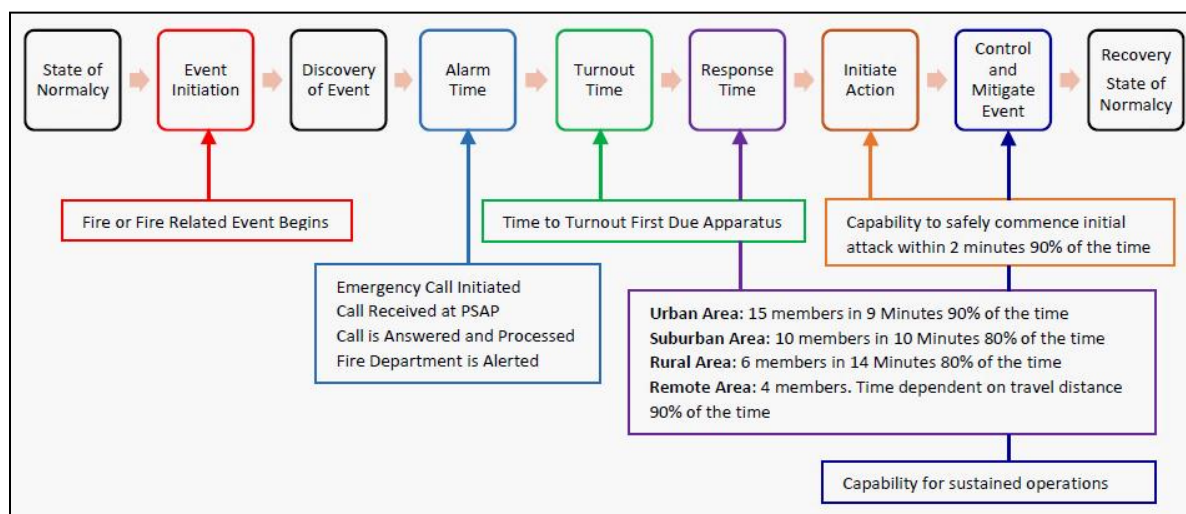
- *The fire department shall identify minimum staffing requirements to ensure that the number of members that are available to operate are able to meet the needs of the department.*

14. *Safe Fire Fighter Staffing: Critical Considerations*, 2nd ed. (Washington, DC: International Association of Fire Fighters, 1995), 5.

- The three departments have implemented policies wherein members respond to the station, dress out, and then respond on apparatus to the scene.
- Upon assembling the necessary resources at the emergency scene, the fire department shall have the capability to safely commence an initial attack within 2 minutes 90 percent of the time.
 - This should be announced by the incident commander over the radio and measured through the computer-aided dispatch (CAD) system after the arrival of the initial arriving companies and response teams.
- Personnel responding to fires and other emergencies shall be organized into company units or response teams and have the required apparatus and equipment.
 - This avoids freelancing by personnel before and after the arrival of the fire suppression units; enables the incident commander to size-up available on-scene resources, ensures fireground accountability, and ensures a coordinated assignment of critical tasks.

The next figure illustrates the overview of response time performance for fire response under NFPA 1720.

FIGURE 5-5: NFPA 1720 Response Time Performance Measures



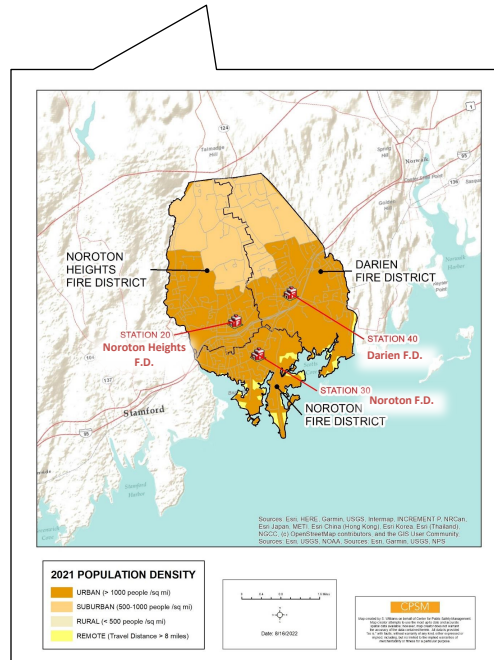
To review, the next table shows the response time and minimum staffing level for low-hazard structural firefighting incidents (to include out-buildings and up to a 2,000 square-foot, one- to two-story, single-family dwelling without a basement and no exposures) in each demand zone as defined by NFPA 1720. This table reflects the minimum staffing and response time in minutes to assemble the minimum staffing in each demand zone type (urban, suburban, rural, and remote). The minimum staffing represents the response force necessary to combat or begin to combat a structural type of fire as described above.

Urban and suburban demand zones differ as these demand zones have a higher population density, and have a higher percentage of multifamily, townhouse, condominium, and multistory apartment building structures, which require a greater response force to complete the critical tasking necessary to mitigate the fire and life-safety emergency. The Town of Darien is either urban or suburban, although the mapping shows some remote areas in the Noroton district. This

is due to the road network and, for the purpose of this analysis, are considered in the Noroton urban district when discussing the Effective Response Force.

TABLE 5-9: NFPA 1720 Staffing and Response Times, Low-Hazard Structural Fire

Demand Zone	Demographics	Minimum Staff to Respond	Response Time in Minutes	Meets Objective Percentile
Urban Area	>1000 people/mi	15	9	90%
Suburban Area	500-1000 people/mi	10	10	80%



Aggregate response times for the first arriving fire suppression unit for all calls for the three departments at the 80th percentile (suburban areas) and the 90th percentile (urban areas) are outlined in the next table. The NFPA 1720 standard is benchmarked against structure fires.

§ § §

TABLE 5-10: Aggregate 80th and 90th Percentile Response Times of First Arriving Unit, by Call Type

Call Type	80th Percentile Response Time, Minutes				90th Percentile Response Time, Minutes			
	Dispatch	Turnout	Travel	Total	Dispatch	Turnout	Travel	Total
False Alarm	1.9	6.7	5.4	12.1	2.4	8.2	6.5	13.6
Good Intent	1.7	3.6	5.4	9.4	2.0	5.3	6.7	10.3
Hazard	2.1	7.0	4.6	12.5	2.7	8.4	6.3	14.3
Outside Fire	2.0	5.4	3.9	11.5	2.1	9.1	5.9	14.4
Public Service	2.2	7.7	4.6	13.2	2.6	8.5	7.4	14.2
Structure Fire	2.4	3.2	5.1	10.7	3.4	5.1	6.6	11.6
Technical Rescue	1.8	5.5	4.4	9.9	2.1	6.5	5.8	10.7
Fire Subtotal	2.0	6.6	5.2	12.0	2.4	8.2	6.5	13.7
MVA	1.9	5.4	4.7	10.1	2.7	7.0	5.7	11.2
Total	2.0	6.3	5.1	11.6	2.5	8.0	6.3	13.3

Aggregately, turnout and travel times for the three departments at the 80th and 90th percentiles for structure fires are very good.

The next table breaks out each fire department's response times. For all call types aggregately, each department's turnout and travel times are good, considering these are volunteer departments and members respond to the station (depending on the time of day the traffic in Darien can be congested), dress, and then respond on the apparatus.

TABLE 5-11: 80th and 90th Percentile Response Time of First Arriving Unit

Fire District	80th Percentile Response Time, Minutes				90th Percentile Response Time, Minutes			
	Dispatch	Turnout	Travel	Total	Dispatch	Turnout	Travel	Total
Darien	2.0	4.9	4.9	10.3	2.5	7.4	6.1	12.4
Noroton	2.2	7.7	4.1	12.4	2.7	8.9	5.0	13.8
Noroton Heights	1.8	6.4	5.8	12.6	2.4	8.2	6.9	14.4
Total	2.0	6.3	5.1	11.6	2.5	8.0	6.3	13.3

Performance Objectives Recommendations:

CPSM recommends the following baseline performance objectives for the DFD, NFD, and NHFD: (Recommendation No. 11.)

- Meet department and NFPA 1720 staffing parameters for an on-scene Effective Response Force for structure fires in the urban response areas in 9 minutes, 90 percent of the time.
- Meet department and NFPA 1720 staffing parameters for an on-scene Effective Response Force for structure fires in the suburban response areas in 10 minutes, 80 percent of the time.
- Meet department staffing parameters for an on-scene Effective Response Force for MVA incidents in all response areas (urban and suburban) in 10 minutes, 80 percent of the time.

- Meet department staffing parameters for an on-scene Effective Response Force for all non-structural fire, fire-related incidents (fire alarms, outside fires, public assist, good intent, hazards, technical rescue) in all response areas (urban and suburban) in 12 minutes, 80 percent of the time.

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Considering the three departments are volunteer, the turnout times shown in the tables above are not alarmingly long for the initial unit. There are some considerations, however, each department may choose to implement to reduce turnout times and thereby reduce overall response times. These include:

- For nights only (Sunday-Saturday) when volunteer members are able to commit more readily based on work hours, assign a crew of four to a station to immediately respond in one apparatus. All other members respond to the station to staff and respond in other apparatus assigned to the incident. Typical hours are 6:00 p.m. to 6:00 a.m.
- Another more aggressive model is night and weekend crews when volunteer members are able to commit more readily based on work hours. Under this model a department would assign a crew of four to a station to immediately respond in one apparatus. All other members respond to the station to staff and respond in other apparatus assigned to the incident. Typical crew assignment commitment times are 6:00 a.m. to 6:00 p.m. and 6:00 p.m. to 6:00 a.m.

The three fire departments utilize Spotted Dog, a software app that links available volunteers to the incident and the dispatch center through a cloud-based computer-aided dispatch-to-mobile platform. Spotted Dog *transmits complete information to responders such as site details, incident severity, and turn-by-turn navigation based on their location. Through the mobile app, Rover relays the responder's availability, qualification, and estimated arrival time so that crew leaders can make life- and time-saving decisions that get the right resources quickly and safely to the scene.*¹⁵ **This is a best practice.**

NFPA 1720 calls attention to additional staffing/response requirements worth noting here:

- *The fire department shall identify minimum staffing requirements to ensure that the number of members that are available to operate are able to meet the needs of the department.*
 - For the volunteer component this can include scheduled staffing at predetermined stations or pre-determined staff responding to stations to assemble and response apparatus such as what the three departments in the Town currently do.
- *Where staffed stations are provided, when determined by the authority having jurisdiction, they shall have a turnout time of 90 seconds for fire and special operations and 60 seconds for EMS incidents, 90 percent of the time.*
 - This should be measured at staffed stations.
- *Upon assembling the necessary resources at the emergency scene, the fire department shall have the capability to safety commence an initial attack within 2 minutes 90 percent of the time.*

15. Fire Department Alerting - Rover Fire Service Incident Response (roveralert.com)

- This should be announced by the incident commander over the radio and measured through the computer-aided dispatch (CAD) system after the arrival of the initial arriving members, companies, and response teams.
- *Personnel responding to fires and other emergencies shall be organized into company units or response teams and have the required apparatus and equipment.*
- This avoids freelancing by personnel before and after the arrival of the fire suppression units; enables the incident commander to size-up available on-scene resources, ensures fireground accountability, and ensures a coordinated assignment of critical tasks.

The three volunteer fire departments have an established and consistent fireground accountability process and procedure. Each department utilizes the Salamander Accountability Tag system which includes a firefighter ID clip/tag that is either collected on the fireground by a safety officer or dropped off at the command post. This system, when utilized correctly, serves as an effective fireground accountability system, particularly for those members operating in and around the emergency scene or fire buildings.

Conclusion

The analysis of the volunteer fire departments contains illustrative and descriptive material, specific operational and administrative findings, and recommendations regarding the delivery of fire protective services by each. Included in this analysis are several components that create the foundation of effective fire protection to include training and education; fleet deployment by department and alternative replacement schedules; personal protective equipment and a recommendation of improved procurement; health and safety of volunteer members; the ISO-PPC community rating and recommendations on improvement; and emergency response and fire department performance and benchmarking against national standards.

CPSM found the three volunteer fire departments to be open and transparent about their operations. Officers and members with whom the project team interacted were passionate about their volunteer service to the community. In fact, CPSM did not encounter a single member who was not passionate about what they do within their department and for the community. All volunteer fire department members are to be commended for their volunteer service and their commitment to the citizens of their community.

Although there are findings of this analysis that may be viewed as something other than positive, they should not be considered as such. Rather, they should be viewed as opportunities to make the three volunteer fire departments stronger, more efficient, and more effective in how they provide fire protective services in the city.

CPSM finds the present fire protection model, utilizing volunteer firefighters and the current fire districts sufficient and the most cost effective model for the town. CPSM based this on the workload, turnout of personnel and response times, resiliency, and demand data as presented in this report. Recommendations and alternatives have been made that are aimed at improving the overall system and making the current system more efficient in terms of procurement of equipment (personal protective and fleet), and the alignment of fleet at each department. That said, each volunteer department leadership should not lose sight of aggressive recruitment and retention of members and monitoring their individual department's ability to turnout a sufficient response force in a timely manner as outlined in the performance objectives recommendations in this section.

Managing and monitoring all components of three volunteer fire departments with the variables Darien has and with the supportive public funds the Town provides as reported herein, requires a well-versed and experienced person. The role includes program oversight such as budget development and implementation; volunteer department liaison with the Town Administrator and Board of Selectmen; ensuring the training and education of members; monitoring department turnout and emergency response force and consulting with those departments who have response force issues; apparatus replacement; understanding the ISO report and devising a plan to correct deficiencies; personnel guidance to include recruitment and retention of volunteer membership; and logistical support.

Therefore, CPSM recommends the Town consider appointing a Fire Administrator to oversee the administrative functions outlined above for all three volunteer fire departments, and who reports directly to the Town Administrator and acts a liaison between the volunteer fire departments, the Town, and the Town Fire Commission if one is established as recommended.

Recommendation:

- CPSM recommends the Town consider appointing a Fire Services Administrator to oversee certain administrative functions for all three volunteer fire departments such as budget development and implementation; volunteer department liaison with the Town Administrator and Board of Selectmen; ensuring the training and education of all members; monitoring department turnout and emergency response force; apparatus replacement; understanding the ISO report and devising a plan to correct deficiencies; personnel guidance to include recruitment and retention of volunteer membership; and grant development and implementation if awarded. CPSM further recommends this position report directly to the Town Administrator and also have reporting responsibilities to the Town Fire Commission as established, and act as a liaison between the volunteer fire departments, the Town, and the Town Fire Commission.
- As the Town already has a Fire Marshal, it may be prudent to consider combining the function of Fire Services Administration with the Fire Marshal position to create a Fire Protection Services Director. This combined position would have the responsibility of oversight of the Town's fire protective services as outlined in this recommendation (and which can be expanded), and direction of the Town's Community Risk Reduction program (fire prevention, fire investigation, public fire education). Alternatively, the duties of fire service administration could be included in the duties of the newly created Emergency Manager position. (Recommendation No. 12)

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SECTION 6. FIRE MARSHAL AND EMERGENCY MANAGEMENT

FIRE MARSHAL AND COMMUNITY RISK REDUCTION

Community Risk Reduction activities are important undertakings of a modern-day fire department. A comprehensive fire protection system in every jurisdiction should include, at a minimum, the key functions of fire prevention, code enforcement, inspections, and public education. Preventing fires before they occur, and limiting the impact of those that do, should be priority objectives of every fire department.

Fire investigation is a mission-important function of fire departments, as this function serves to determine how a fire started and why the fire behaved the way it did, providing information that plays a significant role in future fire prevention efforts.

Educating the public about fire safety and teaching them appropriate behaviors on how to react should they be confronted with a fire is also an important life-safety responsibility of the fire department.

Fire suppression and response, although necessary to protect property, have negligible impact on preventing fire. Rather, it is public fire education, fire prevention, and built-in fire protection systems that are essential elements in protecting citizens from death and injury due to fire, smoke inhalation, and carbon monoxide poisoning. The fire prevention mission is of utmost importance, as it is the only area of service delivery that dedicates 100 percent of its effort to the reduction of the incidence of fire.

Fire prevention should be approached in a systematic manner, and many community stakeholders have a personal stake and/or responsibility in these endeavors. It has been estimated that a significant percentage of all the requirements found in building/construction and related codes are related in some way to fire protection and safety. Various activities such as plan reviews, permits, and inspections are often spread among different departments in the municipal government and are often not coordinated nearly as effectively as they should be. Every effort should be made to ensure these activities are managed effectively between departments.

The Fire Marshal's Office is staffed by the Fire Marshal, an Assistant Fire Marshal (who also serves as the Emergency Manager), one full-time Deputy Fire Marshal, three part-time Fire Inspectors, and one administrative support position. One Fire Inspector also serves as the Blight Prevention Officer for the Town. Together this team administers the fire code inspection program, fire permitting functions, plan review (all occupancies except one- and two-family dwellings), conducts fire origin and cause, conducts life safety public education, and manages the blight program. Additionally, the Fire Marshal's Office issues permits for all gasoline, fuel oil, and liquid petroleum tank installations and removal.

The Fire Marshal's Office has a two-pronged role in terms of services: first, in a community capacity, as the entity responsible for assisting businesses and residents to successfully occupy and continue to provide business services or maintain a residence in buildings safely in accordance with established fire safety codes, and second, as the enforcement agency responsible for compliance with fire safety-related legislation.

The Fire Marshal's Office team members maintain required certifications and training to perform their assigned functions and tasks.

At the time of this analysis the Darien Fire Marshal's Office was utilizing the following Building and Fire Codes:

- 2018 Connecticut State Building Code and 2018 State Amendments.
- 2018 Connecticut Fire Prevention Code (NFPA 1 with Connecticut State Amendments).
 - Connecticut State Law Chapter 541, Sections 29-291 through 29-370.
 - Connecticut Fire Safety Code.
 - Connecticut Fire Prevention Code.

There is 800+ occupancies in Darien that require fire code inspections. Annualized inspections are required pursuant to Sec. 105.1 of the 2018 Connecticut State Fire Prevention Code for certain public assembly, educational, residential, high hazard, mercantile, and institutional occupancies. There are additional inspection schedules for occupancies as follows:

- Every two years: Certain public assembly, high hazard, business, and institutional occupancies.
- Every three years: Certain business, high hazard, mercantile, storage, and public assembly occupancies.
- Every four years: Certain factory and industrial, high hazard, storage, and utility occupancies.

The Fire Marshal advised CPSM that the schedule as outlined above is followed. For 2020 and 2021 the Fire Marshal's Office conducted inspections as outlined in the following table. Inspections include tanks, blasting sites, construction sites, and fire code.

TABLE 6-1: Darien Fire Marshal's Office Fire Inspections Completed: 2020, 2021

2020	2021
1,269*	743

Note: *Multiple apartment and assisted living units inspected prior to onset of the pandemic, in-unit inspections returned during FY2022, Q4.

The investigation of the cause and origin of fires is also an important part of a comprehensive fire prevention system. Determining the cause of fires can help with future prevention efforts. Officers on scene initiate the fire origin and cause determination process. When needed, particularly when the on-scene officers cannot determine the origin and cause of the fire, or they believe a crime has been committed, the Fire Marshal and/or Assistant Fire Marshal respond to fire and arson investigation. The state also has a Fire & Explosion Investigation Unit with the Connecticut State Police that is available to assist in the origin and cause of fires and arson investigations.

For 2020, and 2021 the Fire Marshal's Office conducted the following number of fire investigations.

TABLE 6-2: Darien Fire Marshal's Office Fire Investigations: 2020, 2021

2020	2021
20	34

The Fire Marshal's Office conducted the following number of fire plan reviews in 2020 and 2021.

TABLE 6-3: Darien Fire Marshal's Office Plan Reviews: 2020, 2021

2020	2021
122	126

It should be noted that many plan reviews, particularly those involving fire protection systems, site plan review, and fire department ingress and egress require a final fire inspection, which are coordinated and conducted by the Fire Marshal's Office as well and are noted in the fire inspection table above.

The Fire Marshal's Office issued the following number of permits in 2020 and 2021.

TABLE 6-4: Darien Fire Marshal's Office Issued Permits: 2020, 2021

2020	2021
138	166

CPSM found the Fire Marshal's Office to run effectively and meet the demands of the Connecticut State Fire Prevention Code. However, there are times when the Assistant Fire Marshal, who devotes only partial time to the Fire Marshal's Office because of his Emergency Management responsibilities, is not available or able to fulfill the role. A discussion and recommendations regarding this are addressed in the next section.

EMERGENCY MANAGEMENT

Emergency management is the discipline of dealing with and avoiding risks. Its role in the community is to assess and prepare for current risk conditions, to proactively take steps to mitigate those risks, and to respond/recover should an emergency situation occur. Further, through the crucial roles of planning and preparedness and the coordination of response and management of resources, emergency management plays a major role in mitigating the impacts of disasters.

Emergency management for the Town of Darien is coordinated on a part-time basis by the Assistant Fire Marshal. Funding for this position is through state grant funds (federal pass-through grants funding) and covers 40 percent of the overall full-time salary (60 percent of the position is funded by the Town for the position's Fire Marshal work). The Town also has a volunteer Deputy Emergency Management Director with significant experience in the field.

The First Selectman, as the Chief Elected Official of the Town, serves as the lead official during an emergency, and thus has the authority to issue a proclamation declaring a state of emergency when needed and required. The First Selectman also and pursuant to Section 28-8a of the General Statutes of Connecticut, *may take such action as they deem necessary to mitigate the major disaster or emergency and to secure and preserve any documents and evidence pertinent to and necessary for a future investigation.*

The emergency management community consists of many organizations (local, state, military, nonprofit, federal, and private). Examples of organizations that interact with a local Emergency Management office include: the Federal Emergency Management Agency (FEMA), local fire and EMS agencies, local public works departments, emergency communications centers (i.e., 911-dispatch), emergency management agencies at the municipal and state level, public

health agencies, Coast Guard, National Guard, local and state law enforcement, public works, non-profits, and the American Red Cross.

Most recently (since 2020) the Town of Darien has participated in six federal declarations:

- FEMA 3439-EM (8 counties, including Fairfield) 03/13/2020, related to COVID-19.
- FEMA 4500-DR Connecticut COVID-19 (DR-4500-CT) 03/28/2020, Individual and Public Assistance.
- FEMA 3535-EM Tropical Storm Isaias 08/06/2020, Public Assistance.
- FEMA 4580-DR Tropical Storm Isaias 01/12/2021 Hazard Mitigation Grant Program Assistance.
- FEMA 3564-EM Hurricane Henri (EM-3564-CT) Public Assistance 75 percent funding 08/22/2021.
- FEMA 4629 DR Remnants of Hurricane Ida (DR-4629-CT) Public Assistance (A-G) 05/10/22.

Emergency Planning

CPSM reviewed the Town's existing Local Emergency Operations Plan (LEOP) and Hazard Mitigation Plan (HMP) and found the content valid.¹⁶ The LEOP is an Emergency Support Function (ESF)-based plan and is compliant with State of Connecticut standards and general statutes. Also, all tenets of emergency management are discussed within the LEOP. Lastly, the LEOP meets or exceeds the five areas of emergency management in the content of the [respective] plan.

Pursuant to Connecticut General Statutes Sec. 28-7 (a), to be eligible for any state or federal benefits under Chapter 517, each town or city of the state must have a current emergency plan of operations submitted to the state Department of Emergency Services and Public Protection (DESPP), Division of Emergency Management and Homeland Security (DEMHS) by January 1, 2017, and biennially thereafter. The LEOP must address all the activities and measures of civil preparedness identified in Connecticut General Statute Section 28-1(4), as well as the provisions of FEMA's Community Planning Guide (CPG) 101, v.3. Darien's plan meets this standard.

Additionally, while comparing Darien's LEOP to FEMA's CPG 101, v.3, all aspects of the [respective] plan are compliant. The updated content in CPG 101, v 3 is based on practitioner feedback, identified lessons learned, and successful practices from real-world events and exercises that can inform/improve the planning process. CPG 101 shows how emergency operations plans connect to planning efforts in all five mission areas. Version 3.0 of the guide emphasizes the importance of including the private and nonprofit sectors in planning activities and incorporates lessons learned as well as pertinent new doctrine, policy, and laws.

National Incident Management System (NIMS)

While threat/hazard-based planning is conducted by the Town, Darien is not fully compliant with the National Incident Management System (NIMS) training components for employees with response and/or EOC assignments. The primary components are Fundamentals and Concepts, Resource Management, Command and Coordination and Communications and Information Management. The NIMS training classes listed below are designed to educate response personnel in the fundamentals of incident management, as well as the application of the NIMS components in their home jurisdiction.

16. Hazard Mitigation Plan developed by the Western Connecticut Council of Governments.

NIMS guides all levels of government, nongovernmental organizations, and the private sector to work together to prevent, protect against, mitigate, respond to, and recover from incidents.¹⁷

NIMS provides stakeholders across the entire community with the shared vocabulary, systems, and processes to successfully deliver the capabilities described in the National Preparedness System. In addition to the benefits of a coordinated response as outlined above, federal preparedness and other federal grants (including state pass-through in some instances) to a local entity is contingent on that entity being NIMS compliant.

The Town of Darien is not NIMS compliant. To become compliant with NIMS training, CPSM recommends the following training:

- NIMS ISC-100: Introduction to Incident Command System
 - All Town employees with response and/or EOC assignments and volunteer fire department members.
 - Independent study program offered through FEMA's Emergency Management Institute. <http://training.fema.gov.nims>
- NIMS ISC-200: ICS for Single Resources and Initial Action Incidents
 - All Town employees with response and/or EOC assignments and volunteer fire department members.
 - Independent study program offered through FEMA's Emergency Management Institute. <http://training.fema.gov.nims>
- NIMS ICS-300: Intermediate Incident Command System for Expanding Incidents
 - Employees and volunteer firefighters/officers who are decision makers, serve on respective agency unified command, and or may staff state or local emergency operations center.¹⁸
 - In-class multi-day course. Courses are offered at locations in Connecticut throughout the year.
- NIMS ICS-400: Advanced Incident Command System for Complex Incidents
 - Employees and volunteer firefighters/officers who are decision makers, serve on respective agency unified command, and or may staff state or local emergency operations center.¹⁹
 - In-class multi-day course. Courses are offered at locations in Connecticut throughout the year.
- NIMS ISC-700: National Incident Management System, An Introduction
 - All Town employees with response and/or EOC assignments and volunteer fire department members.
 - Independent study program offered through FEMA's Emergency Management Institute. <http://training.fema.gov.nims>
- NIMS ISC-800: National Response Framework, An Introduction

17. National Incident Management System | FEMA.gov

18. Connecticut Department of Emergency Services and Public Protection, Division of Emergency Management, State Agency Training and Exercise Plan, October 2019.

19. Connecticut Department of Emergency Services and Public Protection, Division of Emergency Management, State Agency Training and Exercise Plan, October 2019.

- All Town employees with response and/or EOC assignments and volunteer fire department members.
- Independent study program offered through FEMA's Emergency Management Institute. <http://training.fema.gov.nims>

Continuity of Operations Plan (COOP)

Another important document the Town's Emergency Management office should maintain is a Continuity of Operations Plan (COOP). A COOP is important to any organization, especially local governments that operate financial and human resources systems, facilities, public operations, and vital community services. A COOP is developed to serve as a roadmap that builds the organization's plan to prepare for, react to, and respond to any event that disrupts one or more operation, facility, service, or line of succession. COOP planning includes:

- Essential Functions – The critical activities performed by organizations, especially after a disruption of normal activities.
- Orders of Succession – Provisions for the assumption of senior agency offices during an emergency if any of those officials are unavailable to execute their duties.
- Delegations of Authority – Identification, by position, of the authorities for making policy determinations and decisions at the executive, middle management, and operational levels, and all other organizational locations. Generally, pre-determined delegations of authority will take effect when normal channels of direction have been disrupted and will lapse when these channels have been reestablished.
- Continuity of Facilities – Locations, other than the primary facility, used to carry out essential functions, particularly in a continuity event. Continuity Facilities, or "Alternate facilities," refers to not only other locations, but also nontraditional options such as working at home, ("teleworking"), telecommuting, and mobile-office concepts.
- Continuity of Communications – Communications that provide the capability to perform essential functions, in conjunction with other agencies, under all conditions.
- Vital Records Management – The identification, protection, and ready availability of electronic and hard-copy documents, references, records, information systems, and data management software and equipment needed to support essential functions during a continuity situation.
- Human Capital – During a continuity event, emergency employees and other special categories of employees are activated by an agency to perform assigned response duties.
- Devolution of Control and Direction – Capability to transfer statutory authority and responsibility for essential functions from an agency's primary operating staff and facilities to other agency employees and facilities.
- Reconstitution – The process by which agency personnel resume normal agency operations from the original or replacement primary operating facility.²⁰

Although the Town does not have a COOP as described herein, the Town does have a Severe Weather Plan and Playbook, which provides excellent information for managing and

20. coop_brochure.pdf (fema.gov)

coordinating these type of events. The Severe Weather Plan and Playbook should be used as the foundation for the Town to formulate an overarching COOP.

Emergency Operations Center (EOC)

The Town Emergency Operations Center (EOC) is a training room located in the Darien Police Department headquarters. The room is used regularly for roll call and training and is not set up for immediate EOC use. According to Town officials, this area can however be set up quickly to serve as an EOC.

During an emergency, particularly one that involves multiple agencies and where a central command and control in accordance with the Emergency Operations Plan is established and implemented, a functional area (operations room) is required for the assembling of Emergency Support Function (ESF) personnel. This area requires enough room so that individual ESFs can plan and direct their sections and includes communication via telephone and computer software available at each ESF, functioning utilities with uninterrupted power supply and emergency generator, and located in a facility that is accessible to staff and with adequate parking. Ideally an EOC is set up and functional at a moment's notice. Additional areas for consideration include planning areas, facilities to include areas to rest for 24-hour operations, and a break area away from the operations room for nourishment.

Staffing, equipment, materials, and infrastructure considerations required in the set-up and continual operation of an EOC are many yet scalable to the size of the EOC, whether it is a permanent facility/area or a shared space, and what may work best for the locality, in this case the Town of Darien.

FEMA has published a quick reference guide for the location, set-up, operations, suggested staffing, equipment, materials, and infrastructure of an EOC. This manual can be accessed and downloaded as a guide for Town officials as they continue to make improvements to their existing EOC, and for use should the Town at some point in the future consider relocating the EOC. The link to this document is:

https://www.fema.gov/sites/default/files/documents/fema_eoc-quick-reference-guide.pdf

Emergency Management Recommendations:

- CPSM recommends the Town create a full-time Emergency Manager position. This action is recommended and necessary as the current Emergency Management Director is assigned other roles as the Assistant Fire Marshal, and there is a critical need for continuous planning and preparation, project management, collaboration with town and state officials, and development and sustainment of required and ancillary written plans required in the emergency management discipline. Darien can be subject to environmental and other emergencies that evolve into federally declared emergencies and thus should put more resources into the position. (Recommendation No. 13.)
- CPSM recommends the Emergency Management office begin the process of implementing the National Incident Management System (NIMS) to include developing and implementing a plan and training town officials and staff to the appropriate NIMS levels. (Recommendation No. 14.)

- CPSM recognizes the Town has an existing Severe Weather Plan and Playbook, which should be used as the basis to formulate an overarching and formal Continuity of Operations Plan (COOP) that is all-hazards and that has the ability to ensure the effects of any interruption in a Town office, system, operation, and staffing before or during an event are successfully managed and the Town is able to perform all essential functions. (Recommendation No. 15.)
- CPSM recommends the Town maintain an Emergency Operations Center or Emergency Management Operations area that can quickly become operational, with minimal set-up, and is capable of supporting necessary emergency support functions to handle a multi-agency emergency 24-hours/day if necessary. The location of such Emergency Operations Center or Emergency Management Operations area(s) should be in an established facility or area of a facility designated as an EOC. The EOC should have the ability to be quickly relocated if compromised, and should contain, at a minimum, equipment, materials, and infrastructure as outlined in the Emergency Operations Center section of this report. (Recommendation No. 16.)

SECTION 7. 911-DISPATCH SERVICES

TOWN OF DARIEN

The Town of Darien maintains a 911-dispatch center in the Darien Police Department (DPD). The center is located in a single area/space at police headquarters and is funded by the Town within the DPD budget. The DPD 911-dispatch center is budgeted for nine full-time positions. The current primary function for this center is as the Public Safety Answering Point (PSAP) for 911 phone calls originating in the Town or through cellular phones that are routed to the PSAP and to dispatch and handle DPD law enforcement incidents.

Staffing in the DPD 911-center consists of two telecommunicators at all times, each working a console and capable of receiving incoming emergency and non-emergency calls. Each of the three consoles are typical of a 911-center and consists of multiple mounted computer monitors each linked to the computer-aided dispatch software, telephone and GIS system, and accessories to communicate via radio and phone. Each console is the workstation for the telecommunicator.

As noted above, the DPD 911-dispatch center is the primary PSAP for 911 phone calls originating in the Town or through cellular phones that are routed to the PSAP. If the DPD PSAP receives a fire or EMS call for service, the telecommunicator takes the basic nature of the caller's reason for calling, address, and then transfers the call to the Southwest Regional Communications Center for further caller intake and then the dispatching of the proper fire and EMS units in the town. If the 911 call is for police services, the telecommunicator processes the nature of the call and then dispatches the proper available DPD resource.

CPSM visited the DPD 911-dispatch center and found it to be in order with two telecommunicators on duty. We were provided with a demonstration of the center's capabilities and observed the telecommunicators at their workstations. The visit was positive. As a note, the Town does experience difficulty, as do other 911-centers across the country, sustaining a full level of staffing.

SOUTHWEST REGIONAL COMMUNICATIONS CENTER

The Southwest Regional Communications Center (SWRCC) is a public safety communications center that provides fire and EMS PSAP and dispatch services on a regional basis to participating communities through contractual agreements. This includes six town EMS agencies and two towns' fire departments. In addition to these functions, SWRCC also coordinates communications between EMS units and hospitals in the region. SWRCC is governed by a Board of Directors with day-to-day administration and operations managed by an Executive Director. The Town of Darien has a First Selectman appointed as a member to the SWRCC board.

The Town of Darien contracts with the SWRCC for fire and EMS 911 dispatch services. The SWRCC facility includes six consoles/workstations, a break area, training room, and administrative offices.

Staffing in the SWRCC is similar to that of similarly sized 911-centers:

- Call Takers:
 - 10:00 a.m. to 6:00 p.m. and 12:00 p.m. to 8:00 p.m., seven days/week
- 911 Operators:
 - Day shift: 7:00 a.m. to 3:00 p.m. and 8:00 a.m. to 4:00 p.m. (3 to 4 operators, 7 days/week).
 - Evening Shift: 3:00 p.m. to 11:00 p.m. and 4:00 p.m. to midnight (3 operators, 7 days/week).
 - Overnight: 11:00 p.m. to 7:00 a.m. and midnight to 8:00 p.m. (2 operators, 7 days/week).

All SWRCC telecommunicators (call takers and 911 operators) are interchangeable. Additionally, SWRCC telecommunicators have completed the State Public Safety Telecommunicator training as well as APCO International Emergency Medical Dispatch training (discussed later in this section). All telecommunicators participate in bi-annual performance objectives and review as well as continual quality assurance/quality improvement reviews. The SWRCC employees are also trained in NIMS to the level commensurate with their operational assignments.

For Darien, the SWRCC provides secondary PSAP functions and EMS dispatch services for Post 53 EMS, and for the three town fire departments. Regarding the PSAP services and by contract, the DPD telecommunicators take the 911 call, take preliminary information, stay on the phone line, and transfer the call to the SWRCC. Once a 911 call is received by the SWRCC, the call is processed accordingly as fire or EMS.

For Darien Post 53, all EMS 911 intake calls are processed utilizing the APCO International Emergency Medical Dispatch (EMD) system. This call processing is a systematic program of handling medical calls for assistance. Trained telecommunicators use locally approved EMD guidecards to quickly and properly determine the nature and priority of the call, dispatch the appropriate response, and give the caller instructions to help treat the patient until the responding EMS unit arrives.²¹ This call processing system, which in the SWRCC is configured with both manual guidecards and the vendor's *Intellicom Software* that is integrated in the workstation software system, ensures the most appropriate call determinant (high priority/low priority as examples) is made through the call-taker interview process, and that the appropriate resources are dispatched to the incident. **This is a best practice.**

In Darien, low-acuity calls that do not require the town-based Advanced Life Support Fly Car are handled by an ambulance only. Conversely, those incidents processed as higher acuity are

21. EMD Program - APCO International (apcointl.org)

then dispatched with a Post 53 ambulance and the town-based Advanced Life Support Fly Car. When calls are dispatched, it is through radio and text functions. The call determinant process and what units are dispatched is approved by Post 53's medical control. **This is a best practice.**

For the three Town of Darien fire departments, each provides individual run card assignments (call type and desired unit dispatch assignment) to the SWRCC, which has put the information into its system so that when a call is received, for example, in Norton Heights, SWRCC dispatches the desired response units from Norton Heights (or any other of the fire department) based on the call type. Collectively, the three departments also provide run card assignments for combined responses to certain incidents and by the time of day. For example, between 6:00 a.m. and 6:00 p.m. there is a townwide response protocol in place that includes a response from the department whose district the incident is in and each of the other two departments responding an engine or ladder or both to the incident. When calls are dispatched, it is through radio and text functions (includes the Spotted Dog app as discussed earlier).

The SWRCC communicated to CPSM during our visit to the center the intention to implement the APCO International Fire Service Dispatch guide card system for the triaging and dispatching of fire-related calls. This system is similar to the Emergency Medical Dispatch in that it is designed to differentiate low- and high-acuity calls while customizing resource deployment that matches the needs of the individual fire department.²² **Both the Fire Service Dispatch and the Emergency Medical Dispatch systems of call processing are national best practices.**

As discussed earlier, the Town contracts with the SWRCC to provide fire and EMS 911-dispatch PSAP and dispatch services. The cost for these services is \$120,450 per year aggregately; the separate annual fees are:

- SWCC Fire Contractual Cost: \$59,965.
- SWCC EMS Contractual Costs: \$60,485.

The EMS service also includes the Medical Priority Dispatch and coordination of ambulance-to-hospital communications.

CPSM was asked to review the potential of moving the fire dispatch function to the DPD 911 center. The upshot is a potential savings of an annualized contract fee, which is currently \$59,965. The downside is the potential of needing to add an additional telecommunicator at least during the peak times of the day to staff a fire console/workstation. CPSM estimates this cost (minimum of two employees) to be \$164,920. CPSM did have the DPD center conduct a test of the station alerting system from the DPD 911 consoles, and it was successful. There are other potential costs to include the Spotted-Dog app integration with the DPD CAD system, telecommunicator training on the three fire departments' response templates, and integration of these response templates into the current CAD system (may require a CAD update or procurement of a fire system).

CPSM believes that the Town is in a strong position with the SWRCC for fire dispatch services as the center is focused on fire and EMS dispatch services to include Emergency Medical Dispatch and over the near term the implementation of a Fire Service Dispatch guide card system. The SWRCC telecommunicators train and are evaluated regularly on fire and EMS dispatch, call taking, and response unit coordination. All of these, while not insurmountable for the DPD to achieve in the fire dispatch discipline, are in place at the SWRCC and is working well at a very reasonable fee, or less than the full cost of one DPD telecommunicator.

22. Guidecards - APCO International (apcointl.org)

Based on the DPD budget for the 911 center, the Town should at least consider, if CMED has demonstrated the capability, a discussion with the SWRCC to take on law enforcement dispatch services for the DPD, which potentially will be less than the amount currently budgeted.

Dispatch Service Recommendations:

- CPSM recommends the Town continue contractual services with the Southwest Regional Communications Center for fire services secondary PSAP and dispatch services as the current fire dispatch system works well and has a cost-effective contractual cost. (Recommendation No. 17.)
- CPSM recommends the Town explore through discussion with the SWRCC the practicality and efficiencies of the SWRCC taking on law enforcement dispatch services for the DPD, which potentially could cost less than the amount currently budgeted for the DPD 911 center (which includes staffing). (Recommendation No. 18.)

SECTION 8. DATA ANALYSIS

This data analysis is a key component of the study of the Darien Fire Department (DFD), the Noroton Fire Department (NFD), and the Noroton Heights Fire Department (NHFD), which provide fire protection service to the Town of Darien. This analysis examines all calls for service between March 1, 2021, and January 28, 2022, as recorded in the Southwest Regional Communications Center's computer-aided dispatch (CAD) system, and the National Fire Incident Reporting System (NFIRS).

This analysis is made up of four parts. The first part focuses on call types and dispatches. The second part explores the time spent and the workload of individual units. The third part presents an analysis of the busiest hours in the year studied. The fourth and final part provides a response time analysis of the studied agency's units.

The Darien, Noroton, and Noroton Heights Fire Departments are staffed by volunteers, primarily serving an area of approximately 23.4 square miles (land and water) and 21,750 residents. They provide fire protection, rescue services, and hazmat response to the Town of Darien. The frontline apparatus utilized by the three fire departments includes an ATV brush truck, six engines, two fire boats, three ladders, two tankers, and three rescue units.

Between March 1, 2021, and February 28, 2022, these fire departments responded to a combined total of 1,183 calls. The total combined workload (deployed time) for all units was 1,267.4 hours. The average dispatch time was 1.7 minutes, and the average total response time was 10.4 minutes. The 80th percentile dispatch time was 2.0 minutes and the 80th percentile total response time was 13.3 minutes. The 90th percentile dispatch time was 2.6 minutes and the 90th percentile total response time was 15.3 minutes.

METHODOLOGY

In this report, CPSM analyzes calls and runs. A call is an emergency service request or incident. A run is a dispatch of a unit (i.e., a unit responding to a call). Thus, a call may include multiple runs.

We linked the CAD and NFIRS data sets. Then, we classified the calls in a series of steps. We first used the NFIRS incident type to identify canceled calls, motor vehicle accidents (MVA), and fire category call types. Calls that lacked a matching NFIRS record were categorized using the CAD system's incident descriptions. We describe the method of call categorization in Attachment V.

Between March 1, 2021, and February 28, 2022, the three studied fire departments responded to a total of 1,183 calls in the Town of Darien. We excluded three calls to which the unit from the Fire Marshal's office was the sole responder; however, the workload of these units is documented in Attachment I.

AGGREGATE CALL TOTALS AND RUNS

Between March 1, 2021, and February 28, 2022, the Darien, Noroton, and Noroton Heights Fire Departments responded to a total of 1,183 calls that occurred in the Town of Darien, of which 524 calls (44 percent), 212 calls (18 percent), and 447 calls (38 percent) occurred within the primary service area of DFD, NFD, and NHFD, respectively. During the studied period, there were 33 outside fire calls and 23 structure fire calls, respectively.

Calls by Type

Table 8-1 shows the number of calls by the primary service area of each fire department, call type, average calls per day, and the percentage of calls that fall into each category. Figure 8-1 shows the percentage of calls that fall into each call type category. Figure 8-2 illustrates the percentage of calls that occurred in the district of each fire department.

TABLE 8-1: Calls by Type and Fire District

Call Type	Fire District				Calls per Day	Call Percentage
	Darien	Noroton	Noroton Heights	Total		
False alarm	278	104	184	566	1.6	47.8
Good intent	27	7	10	44	0.1	3.7
Hazard	44	19	39	102	0.3	8.6
Outside fire	17	1	15	33	0.1	2.8
Public service	42	54	100	196	0.5	16.5
Structure fire	9	2	12	23	0.1	1.9
Technical rescue	7	4	7	18	0.0	1.5
Fire Subtotal	424	191	367	982	2.7	83.0
MVA	84	15	74	173	0.5	14.6
Canceled	16	6	6	28	0.1	2.4
Total	524	212	447	1,183	3.2	100.0

FIGURE 8-1: Calls by Type

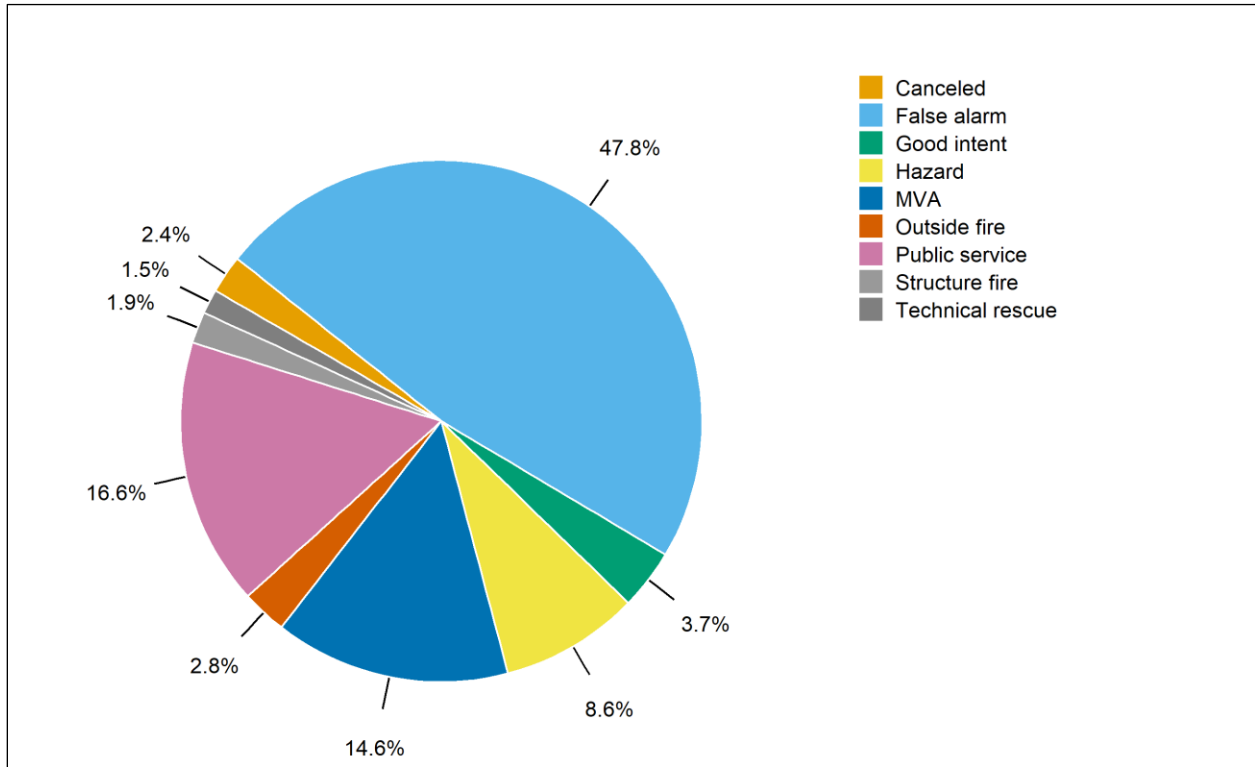
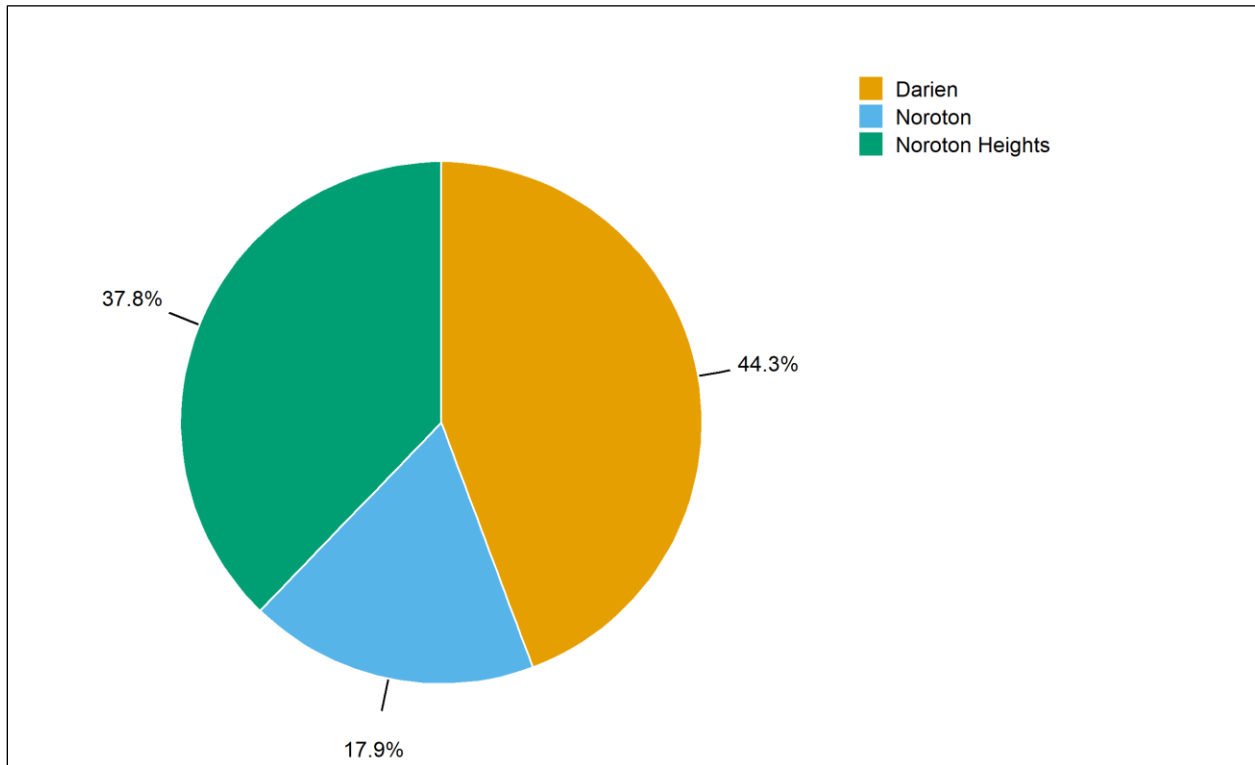


FIGURE 8-2: Calls by Fire District



Observations:

- There was an average of 3.2 calls per day, including 0.1 canceled calls per day.
- Motor vehicle accident (MVA) calls totaled 173 (15 percent of all calls), or an average of 0.5 calls per day.
- Fire calls totaled 985 (83 percent of all calls), or an average of 2.7 calls per day.
 - False alarm calls made up 48 percent of total calls (58 percent of fire calls).
 - Outside and structure fire calls totaled 56 and made up five percent of total calls (six percent of fire calls).
- 524 calls (44 percent of total calls) were in the Darien fire district.
- 212 calls (18 percent of total calls) were in the Noroton fire district.
- 447 calls (38 percent of total calls) were in the Noroton Heights fire district.

Calls by Type and Duration

The following table shows the duration of calls by type using four duration categories: less than 30 minutes, 30 minutes to one hour, one to two hours, and two or more hours.

TABLE 8-2: Calls by Type and Duration

Call Type	Less than 30 Minutes	30 Minutes to One Hour	One to Two Hours	Two or More Hours	Total
False alarm	510	49	5	2	566
Good intent	35	8	1	0	44
Hazard	57	27	12	6	102
Outside fire	11	15	7	0	33
Public service	133	43	10	10	196
Structure fire	3	13	6	1	23
Technical rescue	9	7	2	0	18
Fire Subtotal	758	162	43	19	982
MVA	96	59	15	3	173
Canceled	22	4	0	2	28
Total	876	225	58	24	1,183

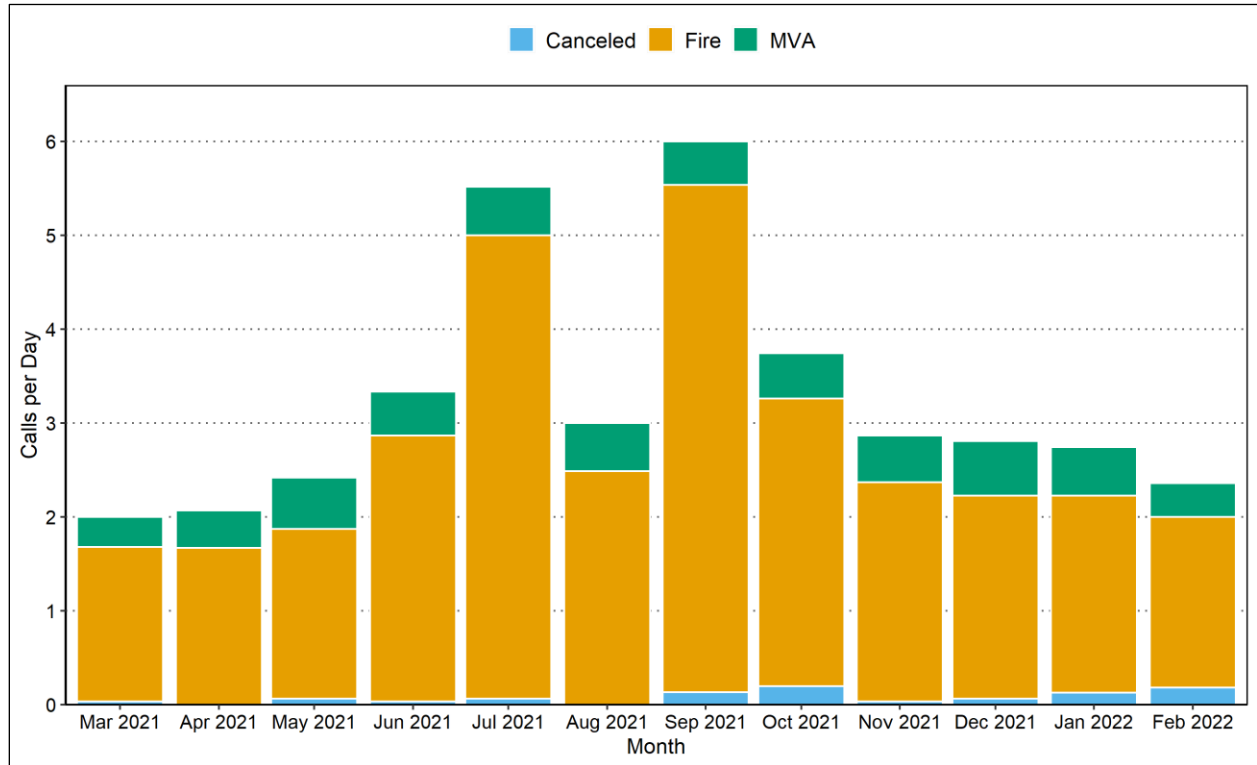
Observations:

- A total of 155 MVA calls (90 percent) lasted less than one hour, 15 MVA calls (nine percent) lasted one to two hours, and 3 MVA calls (two percent) lasted two or more hours.
- A total of 920 fire calls (94 percent) lasted less than one hour, 43 fire calls (four percent) lasted one to two hours, and 19 fire calls (two percent) lasted two or more hours.
- A total of 26 outside fire calls (79 percent) lasted less than one hour and seven outside fire calls (21 percent) lasted one to two hours.
- A total of 16 structure fire calls (70 percent) lasted less than one hour, six structure fire calls (26 percent) lasted one to two hours, and one structure fire call (four percent) lasted two or more hours.

Average Calls by Month and Hour of Day

Figure 8-3 shows the monthly variation in the combined daily number of calls handled by the three fire departments in the Town of Darien. Similarly, Figure 8-4 illustrates the average number of calls received each hour of the day.

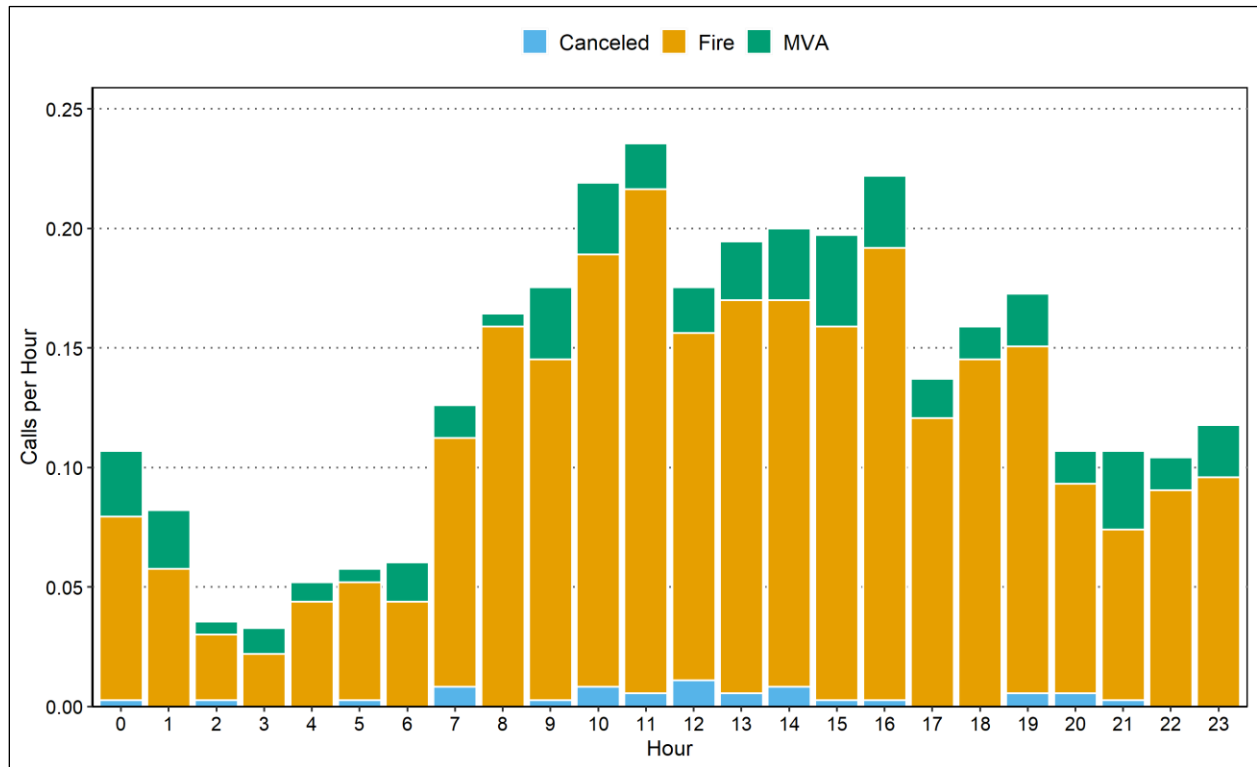
FIGURE 8-3: Average Calls by Month



Observations:

- Average fire calls per day ranged from 1.6 in March 2021 to 5.4 in September 2021.
- Average motor vehicle accident calls per day ranged from 0.3 in March 2021 to 0.6 in December 2021.
- Average calls per day overall ranged from 2.0 in March 2021 to 6.0 in September 2021.
- The average numbers of calls per day in July and September are significantly greater than those in other months.
 - In July, Tropical Storm Elsa caused heavy flooding in Darien.
 - In September, Tropical Storm Ida caused heavy flooding in Darien.

FIGURE 8-4: Average Calls by Hour of Day



Observations:

- Average fire calls per hour ranged from 0.02 between 3:00 a.m. and 4:00 a.m. to 0.21 between 11:00 a.m. and noon.
- Average motor vehicle accidents per hour ranged from 0.01 between 2:00 a.m. and 3:00 a.m., between 5:00 a.m. and 6:00 a.m., and between 8:00 a.m. and 9:00 a.m. to 0.04 between 3:00 p.m. and 4:00 p.m.
- Average calls per hour overall ranged from 0.03 between 3:00 a.m. and 4:00 a.m. to 0.24 between 11:00 a.m. and noon.

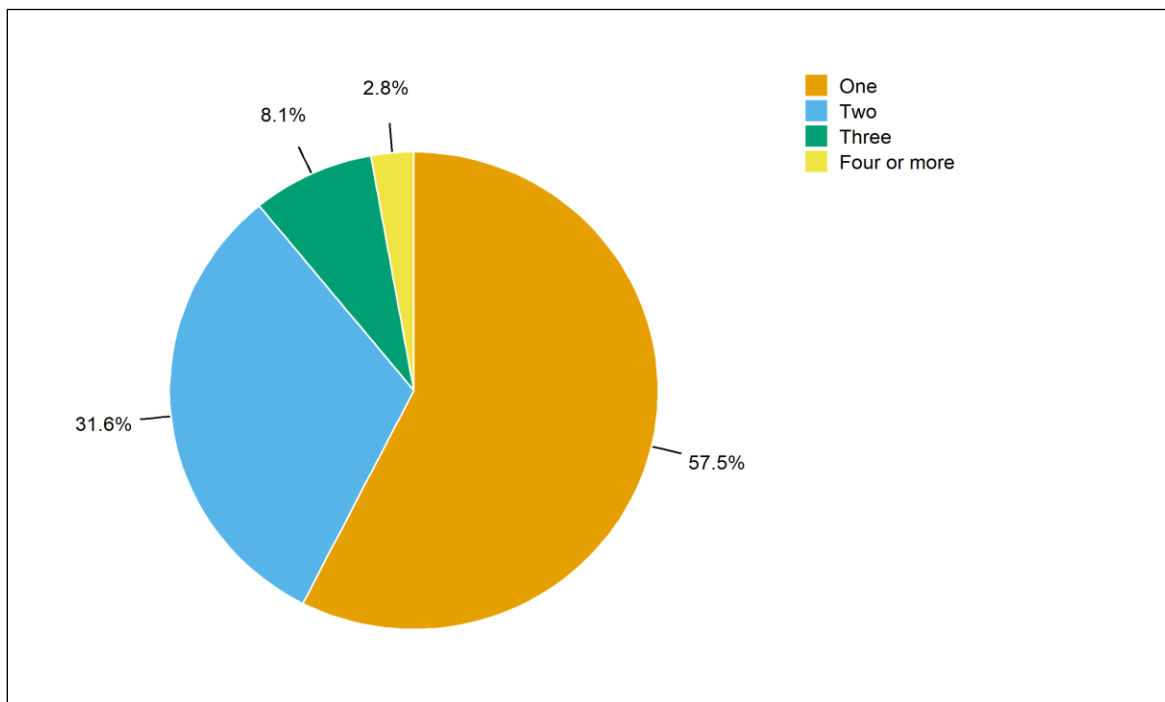
Arriving Fire Suppression and Rescue Units

Table 8-3, along with Figure 8-5, detail the number of calls with one, two, three, and four or more arriving units by call type. This analysis includes only the arriving fire suppression and rescue units from the three studied fire agencies. The Fire Marshal, Fire Chief, and privately owned vehicles were not included. For this reason, there are 157 fewer calls in Table 8-3 than in Table 8-1.

TABLE 8-3: Calls by Call Type and Number of Arriving Units

Call Type	Number of Units				Total Calls
	One	Two	Three	Four or more	
False alarm	294	150	26	5	475
Good intent	14	17	5	1	37
Hazard	54	22	14	4	94
Outside fire	12	12	3	4	31
Public service	136	30	6	0	172
Structure fire	3	9	4	7	23
Technical rescue	6	5	4	1	16
Fire Subtotal	519	245	62	22	848
MVA	61	73	17	5	156
Canceled	10	6	4	2	22
Total	590	324	83	29	1,026
Percentage	57.5	31.6	8.1	2.8	100.0

FIGURE 8-5: Calls by Number of Arriving Units



Observations:

Overall

- On average, 1.5 fire suppression and rescue units arrived per call; for 58 percent of calls, only one unit arrived.
- Overall, three or more units arrived at three percent of calls.
- On average, 1.8 units arrived per motor vehicle accident call.
- For fire calls, one unit arrived 61 percent of the time, two units arrived 29 percent of the time, three units arrived seven percent of the time, and four or more units arrived three percent of the time.
- For outside fire calls, three or more units arrived 23 percent of the time.
- For structure fire calls, three or more units arrived 48 percent of the time.

WORKLOAD: RUNS AND TOTAL TIME SPENT

The workload of the three fire departments' units is measured in two ways: runs and deployed time. The deployed time of a run is measured from the time a unit is dispatched through the time the unit is cleared. Because multiple units respond to some calls, there are more runs (2,827) than calls (1,183) and the average deployed time per run varies from the total duration of calls.

Runs and Deployed Time – All Units

Deployed time, also referred to as deployed hours, is the total workload of the three departments' units deployed on all runs. Table 8-4 shows the total deployed time, both overall and broken down by type of run, for all units in the study period. Table 8-5 and Figure 8-6 present the average deployed minutes of the three fire departments by hour of day.

TABLE 8-4: Annual Runs and Deployed Time by Run Type

Run Type	Minutes per Run	Total Hours	Percent of Hours	Minutes per Day	Total Runs	Runs per Day
False alarm	17.6	368.5	29.1	60.6	1,256	3.4
Good intent	19.9	38.8	3.1	6.4	117	0.3
Hazard	41.2	186.6	14.7	30.7	272	0.7
Outside fire	36.3	67.8	5.4	11.2	112	0.3
Public service	33.0	196.1	15.5	32.2	357	1.0
Structure fire	59.1	95.5	7.5	15.7	97	0.3
Technical rescue	35.4	26.6	2.1	4.4	45	0.1
Fire Subtotal	26.1	979.9	77.3	161.1	2,256	6.2
MVA	30.8	252.8	19.9	41.6	493	1.4
Canceled	26.7	34.7	2.7	5.7	78	0.2
Total	26.9	1,267.4	100.0	208.3	2,827	7.7

Observations:

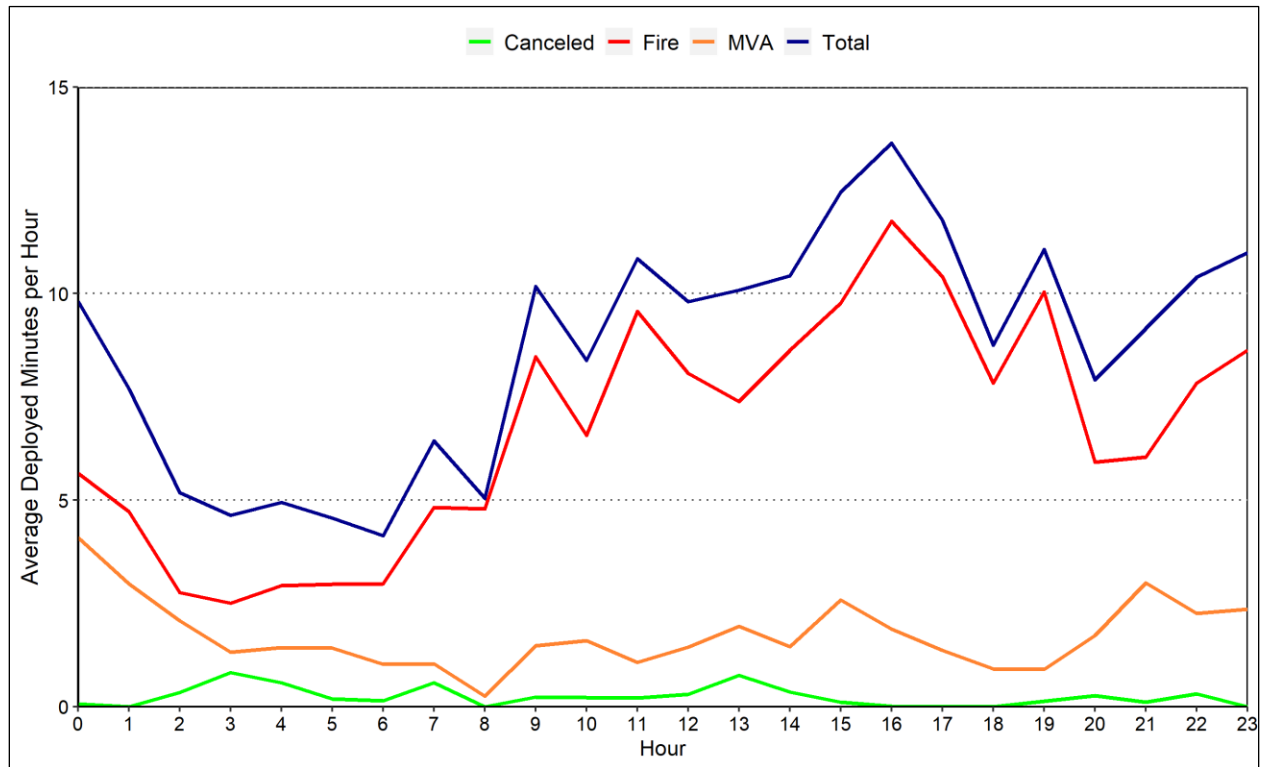
Overall

- The total deployed time for the year was 1,267.4 hours. The daily average was 3.5 hours for all the fire departments' units combined.
- There were 2,827 runs (including 78 runs for canceled calls). The daily average was 7.7 runs.
- Runs for motor vehicle accidents (MVA) accounted for 20 percent of the total workload.
- The average deployed time for MVA runs was 30.8 minutes. The deployed time for all MVA runs averaged 41.6 minutes per day.
- Fire runs accounted for 77 percent of the total workload.
- The average deployed time for fire runs was 26.1 minutes. The deployed time for all fire runs averaged 2.7 hours per day.
- There were 209 runs for outside and structure fire calls combined, with a total workload of 163.4 hours. This accounted for 13 percent of the total workload.
- The average deployed time for outside fire runs was 36.3 minutes.
- The average deployed time for structure fire runs was 59.1 minutes.

TABLE 8-5: Deployed Minutes by Hour of Day

Hour	MVA	Fire	Canceled	Total
0	4.1	5.7	0.1	9.8
1	3.0	4.7	0.0	7.7
2	2.1	2.8	0.3	5.2
3	1.3	2.5	0.8	4.6
4	1.4	2.9	0.6	4.9
5	1.4	3.0	0.2	4.6
6	1.0	3.0	0.1	4.1
7	1.0	4.8	0.6	6.4
8	0.3	4.8	0.0	5.0
9	1.5	8.5	0.2	10.2
10	1.6	6.6	0.2	8.4
11	1.1	9.6	0.2	10.8
12	1.4	8.1	0.3	9.8
13	1.9	7.4	0.8	10.1
14	1.4	8.6	0.4	10.4
15	2.6	9.8	0.1	12.5
16	1.9	11.7	0.0	13.6
17	1.4	10.4	0.0	11.8
18	0.9	7.8	0.0	8.7
19	0.9	10.0	0.1	11.1
20	1.7	5.9	0.3	7.9
21	3.0	6.0	0.1	9.1
22	2.3	7.8	0.3	10.4
23	2.4	8.6	0.0	11.0
Daily Avg.	41.6	161.1	5.7	208.3

FIGURE 8-6: Average Deployed Minutes by Hour of Day



Observations:

- Hourly deployed time was highest during the day from 11:00 a.m. to 6:00 p.m., averaging 11.3 minutes per hour.
- Average deployed time peaked between 4:00 p.m. and 5:00 p.m., averaging 13.6 minutes.
- Average deployed time was lowest between 6:00 a.m. and 7:00 a.m., averaging 4.1 minutes.

Workload by Unit

This section examines the unit's workload for each fire department. We grouped the units into two types, i.e., (1) the fire suppression and rescue units and (2) the administrative units and privately owned vehicles (POVs). Table 8-6 provides a summary of each type of unit's workload for each fire department (agency). Tables 8-7 and 8-8 present each type of unit's runs broken out by run type (Table 8-7) and the corresponding daily average deployed time by run type (Table 8-8).

Tables 8-9 and 8-10 detail the workload of each fire protection and rescue unit (Table 8-9) and each administrative and POV unit (Table 8-10). Tables 8-11 to 8-14 provide a more detailed view of workload, showing each unit's runs broken out by run type (Table 8-11 for fire suppression and rescue units and 8-Table 12 for administrative and POV units) and its daily average deployed time by run type (Table 8-13 for fire suppression and rescue units and Table 8-14 for administrative and POV units).

TABLE 8-6: Overall Workload by Type of Unit Type and Agency

Agency	Unit Type	Minutes per Run	Total Hours	Total Percent	Minutes per Day	Total Runs	Runs per Day
Darien FD	Fire suppression & rescue	24.3	254.8	20.1	41.9	628	1.7
	Admin & POV	20.9	231.1	18.2	38.0	665	1.8
	Total	22.5	485.9	38.3	79.9	1,293	3.5
Noroton FD	Fire suppression & rescue	28.6	163.4	12.9	26.9	343	0.9
	Admin & POV	27.2	83.1	6.6	13.7	183	0.5
	Total	28.1	246.4	19.4	40.5	526	1.4
Noroton Heights FD	Fire suppression & rescue	32.4	346.4	27.3	56.9	641	1.8
	Admin & POV	30.8	188.7	14.9	31.0	367	1.0
	Total	31.8	535.1	42.2	88.0	1,008	2.8
Total		26.9	1,267.4	100.0	208.3	2,827	7.7

TABLE 8-7: Total Runs by Run Type, Unit Type, and Agency

Agency	Unit Type	MVA	False Alarm	Good Intent	Hazard	Outside Fire	Public Service	Structure Fire	Technical Rescue	Cancel	Total
Darien FD	Fire suppression & rescue	114	293	32	51	30	48	29	9	22	628
	Admin & POV	123	331	32	55	29	52	15	4	24	665
	Total	237	624	64	106	59	100	44	13	46	1,293
Noroton FD	Fire suppression & rescue	37	149	14	46	2	71	10	9	5	343
	Admin & POV	16	93	10	22	3	31	3	2	3	183
	Total	53	242	24	68	5	102	13	11	8	526
Noroton Heights FD	Fire suppression & rescue	127	251	21	62	29	95	27	14	15	641
	Admin & POV	76	139	8	36	19	60	13	7	9	367
	Total	203	390	29	98	48	155	40	21	24	1,008
Total		493	1,256	117	272	112	357	97	45	78	2,827

TABLE 8-8: Deployed Minutes Per Day by Run Type, Unit Type, and Agency

Agency	Unit Type	MVA	False Alarm	Good Intent	Hazard	Outside Fire	Public Service	Structure Fire	Technical Rescue	Cancel	Total
Darien FD	Fire suppression & rescue	8.7	12.8	1.3	3.0	3.5	2.8	6.4	1.0	2.4	41.9
	Admin & POV	9.7	12.6	1.0	3.5	2.5	2.8	3.3	0.6	1.9	38.0
	Total	18.4	25.5	2.3	6.5	6.1	5.6	9.7	1.6	4.2	79.9
Noroton FD	Fire suppression & rescue	3.4	8.7	1.1	6.0	0.2	5.4	1.1	0.6	0.4	26.9
	Admin & POV	1.5	5.4	0.9	2.2	0.3	2.9	0.4	0.0	0.2	13.7
	Total	4.8	14.1	2.0	8.2	0.5	8.2	1.4	0.6	0.7	40.5
Noroton Heights FD	Fire suppression & rescue	11.9	13.6	1.6	10.1	2.9	11.8	3.2	1.3	0.6	56.9
	Admin & POV	6.4	7.4	0.5	5.9	1.7	6.6	1.3	0.8	0.3	31.0
	Total	18.3	21.1	2.1	16.0	4.6	18.4	4.5	2.2	0.9	88.0
Total		41.6	60.6	6.4	30.7	11.2	32.2	15.7	4.4	5.7	208.3

TABLE 8-9: Workload of Fire Protection Units by Agency

Agency	Unit	Unit Type	Minutes per Run	Total Hours	Total Percent	Minutes per Day	Total Runs	Runs per Day
Darien FD	E41	Engine	27.8	69.0	9.0	11.3	149	0.4
	E42	Engine	19.8	99.2	13.0	16.3	301	0.8
	L43	Ladder	22.5	37.5	4.9	6.2	100	0.3
	R44	Rescue	37.1	38.3	5.0	6.3	62	0.2
	TA45	Tanker	40.4	10.8	1.4	1.8	16	0.0
	Total			24.3	254.8	33.3	41.9	628
Noroton FD	E31	Engine	22.7	43.9	5.7	7.2	116	0.3
	E32	Engine	32.1	43.8	5.7	7.2	82	0.2
	L30	Ladder	25.5	26.8	3.5	4.4	63	0.2
	MAR34	Fire Boat	20.6	1.4	0.2	0.2	4	0.0
	R33	Rescue	34.2	26.8	3.5	4.4	47	0.1
	SL1	Fire Boat	32.2	2.7	0.4	0.4	5	0.0
	U35	Utility	43.4	16.7	2.2	2.7	23	0.1
	U36	Utility	28.0	1.4	0.2	0.2	3	0.0
	Total			28.6	163.4	21.4	26.9	343
Noroton Heights FD	Brush27	Brush	286.8	9.6	1.3	1.6	2	0.0
	E23	Engine	28.3	65.0	8.5	10.7	138	0.4
	R25	Rescue	34.1	42.0	5.5	6.9	74	0.2
	SQ21	Engine	31.1	128.6	16.8	21.1	248	0.7
	T20	Tanker	23.9	57.8	7.6	9.5	145	0.4
	TA22	Tanker	55.4	20.3	2.7	3.3	22	0.1
	U24	Utility	79.9	12.0	1.6	2.0	9	0.0
	U26	Utility	223.0	11.1	1.5	1.8	3	0.0
Total			32.4	346.4	45.3	56.9	641	1.8
Total			28.5	764.6	100.0	125.7	1,612	4.4

TABLE 8-10: Workload of Administrative and Privately Owned Units by Agency

Agency	Unit	Unit Type	Minutes per Run	Total Hours	Total Percent	Minutes per Day	Total Runs	Runs per Day
Darien FD	UNIT400	Fire Chief	23.3	59.5	11.8	9.8	153	0.4
	UNIT401	Fire Chief	21.1	112.1	22.3	18.4	319	0.9
	UNIT402	POV	21.8	23.3	4.6	3.8	64	0.2
	UNIT403	POV	19.2	16.3	3.2	2.7	51	0.1
	UNIT404	POV	9.9	3.6	0.7	0.6	22	0.1
	UNIT405	POV	23.5	1.6	0.3	0.3	4	0.0
	UNIT406	POV	24.2	2.8	0.6	0.5	7	0.0
	UNIT407	POV	23.9	0.8	0.2	0.1	2	0.0
	UNIT408	POV	17.4	5.8	1.2	1.0	20	0.1
	UNIT409	POV	13.9	5.3	1.1	0.9	23	0.1
	Total		20.9	231.1	46.0	38.0	665	1.8
Noroton FD	UNIT300	Fire Chief	27.6	26.3	5.2	4.3	57	0.2
	UNIT301	POV	25.1	18.4	3.7	3.0	44	0.1
	UNIT302	POV	24.1	24.5	4.9	4.0	61	0.2
	UNIT303	POV	21.0	1.0	0.2	0.2	3	0.0
	UNIT305	POV	273.7	4.6	0.9	0.7	1	0.0
	UNIT334	POV	29.3	8.3	1.6	1.4	17	0.0
	Total		27.2	83.1	16.5	13.7	183	0.5
Noroton Heights FD	UNIT200	Fire Chief	27.1	54.2	10.8	8.9	120	0.3
	UNIT201	Fire Chief	28.1	69.9	13.9	11.5	149	0.4
	UNIT202	Fire Chief	34.2	28.0	5.6	4.6	49	0.1
	UNIT203	POV	35.5	4.1	0.8	0.7	7	0.0
	UNIT204	POV	40.8	5.4	1.1	0.9	8	0.0
	UNIT205	POV	47.2	6.3	1.3	1	8	0.0
	UNIT220	POV	31.7	0.5	0.1	0.1	1	0.0
	UNIT221	POV	64.7	16.2	3.2	2.7	15	0.0
	UNIT223	POV	43.1	1.4	0.3	0.2	2	0.0
	UNIT225	POV	19.1	2.6	0.5	0.4	8	0.0
	Total		30.8	188.7	37.5	31.0	367	1.0
Total			24.8	502.9	100.0	82.7	1,215	3.3

TABLE 8-11: Fire Suppression and Rescue Runs by Run Type and Agency

Agency	Unit	MVA	False Alarm	Good Intent	Hazard	Outside Fire	Public Service	Structure Fire	Technical Rescue	Cancel	Total
Darien FD	E41	70	23	13	12	10	9	6	3	3	149
	E42	4	199	9	29	10	26	11	2	11	301
	L43	2	63	7	7	2	7	8	0	4	100
	R44	35	7	1	2	3	5	3	3	3	62
	TA45	3	1	2	1	5	1	1	1	1	16
	Total	114	293	32	51	30	48	29	9	22	628
Noroton FD	E31	6	70	5	8	1	22	4	0	0	116
	E32	15	28	2	19	0	13	2	2	1	82
	L30	0	39	5	6	0	6	4	0	3	63
	MAR34	0	0	0	0	1	0	0	3	0	4
	R33	11	11	1	9	0	14	0	0	1	47
	SL1	0	0	0	0	0	4	0	1	0	5
	U35	5	1	1	4	0	11	0	1	0	23
	U36	0	0	0	0	0	1	0	2	0	3
	Total	37	149	14	46	2	71	10	9	5	343
Noroton Heights FD	Brush27	0	0	0	0	1	1	0	0	0	2
	E23	9	78	8	10	7	14	8	2	2	138
	R25	37	6	0	4	0	20	1	5	1	74
	SQ21	76	56	6	34	12	48	4	6	6	248
	T20	2	106	6	7	2	6	12	0	4	145
	TA22	3	5	1	1	5	3	2	0	2	22
	U24	0	0	0	5	1	2	0	1	0	9
	U26	0	0	0	1	1	1	0	0	0	3
	Total	127	251	21	62	29	95	27	14	15	641
Total	278	693	67	159	61	214	66	32	42	1,612	

TABLE 8-12: Administrative and POV Runs by Run Type and Agency

Agency	Unit	MVA	False Alarm	Good Intent	Hazard	Outside Fire	Public Service	Structure Fire	Technical Rescue	Cancel	Total
Darien FD	UNIT400	33	68	6	12	5	13	4	2	10	153
	UNIT401	56	172	13	25	14	19	7	2	11	319
	UNIT402	13	28	4	6	2	7	2	0	2	64
	UNIT403	6	23	2	7	4	8	0	0	1	51
	UNIT404	5	12	1	2	0	1	1	0	0	22
	UNIT405	0	2	0	0	1	0	1	0	0	4
	UNIT406	2	3	0	1	1	0	0	0	0	7
	UNIT407	0	1	0	1	0	0	0	0	0	2
	UNIT408	2	11	3	1	2	1	0	0	0	20
	UNIT409	6	11	3	0	0	3	0	0	0	23
	Total	123	331	32	55	29	52	15	4	24	665
Noroton FD	UNIT300	5	31	4	7	1	5	2	1	1	57
	UNIT301	3	20	3	10	1	6	0	0	1	44
	UNIT302	3	39	3	4	1	8	1	1	1	61
	UNIT303	0	1	0	0	0	2	0	0	0	3
	UNIT305	0	0	0	0	0	1	0	0	0	1
	UNIT334	5	2	0	1	0	9	0	0	0	17
		Total	16	93	10	22	3	31	3	2	3
Noroton Heights FD	UNIT200	23	57	1	9	9	11	5	2	3	120
	UNIT201	36	53	5	16	8	21	5	1	4	149
	UNIT202	9	14	2	7	1	10	2	3	1	49
	UNIT203	1	2	0	0	0	3	1	0	0	7
	UNIT204	1	3	0	1	0	2	0	1	0	8
	UNIT205	0	1	0	2	1	3	0	0	1	8
	UNIT220	0	1	0	0	0	0	0	0	0	1
	UNIT221	5	5	0	0	0	5	0	0	0	15
	UNIT223	0	0	0	0	0	2	0	0	0	2
	UNIT225	1	3	0	1	0	3	0	0	0	8

Agency	Unit	MVA	False Alarm	Good Intent	Hazard	Outside Fire	Public Service	Structure Fire	Technical Rescue	Cancel	Total
	Total	76	139	8	36	19	60	13	7	9	367
Total		215	563	50	113	51	143	31	13	36	1,215

TABLE 8-13: Average Deployed Minutes of Fire Suppression and Rescue Units by Run Type and Agency

Agency	Unit	MVA	False Alarm	Good Intent	Hazard	Outside Fire	Public Service	Structure Fire	Technical Rescue	Cancel	Total
Darien FD	E41	4.9	1.2	0.6	0.6	1.2	0.4	1.4	0.4	0.7	11.3
	E42	0.2	8.6	0.3	1.8	1.0	1.6	2.2	0.1	0.5	16.3
	L43	0.1	2.9	0.3	0.4	0.3	0.4	1.7	0.0	0.2	6.2
	R44	3.2	0.2	0.0	0.1	0.5	0.3	0.9	0.4	0.7	6.3
	TA45	0.2	0.0	0.1	0.1	0.5	0.1	0.2	0.2	0.3	1.8
	Total	8.7	12.8	1.3	3.0	3.5	2.8	6.4	1.0	2.4	41.9
Noroton FD	E31	0.5	3.5	0.5	0.8	0.1	1.5	0.3	0.0	0.0	7.2
	E32	1.5	2.0	0.1	2.5	0.0	0.7	0.3	0.1	0.1	7.2
	L30	0.0	2.2	0.4	0.6	0.0	0.4	0.5	0.0	0.2	4.4
	MAR34	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.0	0.2
	R33	1.1	0.9	0.1	1.4	0.0	0.9	0.0	0.0	0.1	4.4
	SL1	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.1	0.0	0.4
	U35	0.3	0.0	0.1	0.7	0.0	1.4	0.0	0.1	0.0	2.7
	U36	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.2
	Total	3.4	8.7	1.1	6.0	0.2	5.4	1.1	0.6	0.4	26.9
Noroton Heights FD	Brush27	0.0	0.0	0.0	0.0	0.1	1.5	0.0	0.0	0.0	1.6
	E23	0.9	4.2	0.5	1.8	0.7	1.3	1.1	0.1	0.1	10.7
	R25	3.3	0.4	0.0	1.1	0.0	1.5	0.1	0.6	0.0	6.9
	SQ21	7.2	3.2	0.5	4.5	1.1	3.4	0.4	0.6	0.2	21.1
	T20	0.2	5.6	0.4	1.0	0.2	0.4	1.5	0.0	0.1	9.5
	TA22	0.3	0.3	0.1	0.2	0.5	1.9	0.1	0.0	0.0	3.3
	U24	0.0	0.0	0.0	1.3	0.1	0.4	0.0	0.1	0.0	2.0
	U26	0.0	0.0	0.0	0.2	0.2	1.4	0.0	0.0	0.0	1.8
	Total	11.9	13.6	1.6	10.1	2.9	11.8	3.2	1.3	0.6	56.9
Total		23.9	35.2	4.0	19.1	6.6	20.0	10.7	2.9	3.4	125.7

TABLE 8-14: Average Deployed Minutes of Administrative and POV Units by Run Type and Agency

Agency	Unit	MVA	False Alarm	Good Intent	Hazard	Outside Fire	Public Service	Structure Fire	Technical Rescue	Cancel	Total
Darien FD	UNIT400	2.7	2.6	0.2	0.6	0.6	0.8	1.2	0.3	0.8	9.8
	UNIT401	4.7	6.8	0.5	1.5	1.0	1.0	1.7	0.3	1.0	18.4
	UNIT402	0.9	1.2	0.1	0.5	0.2	0.4	0.4	0.0	0.1	3.8
	UNIT403	0.6	0.7	0.1	0.6	0.3	0.4	0.0	0.0	0.0	2.7
	UNIT404	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
	UNIT405	0.0	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.3
	UNIT406	0.2	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.5
	UNIT407	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	UNIT408	0.1	0.4	0.1	0.2	0.2	0.0	0.0	0.0	0.0	1.0
	UNIT409	0.3	0.4	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.9
	Total	9.7	12.6	1.0	3.5	2.5	2.8	3.3	0.6	1.9	38.0
Noroton FD	UNIT300	0.4	2.1	0.4	0.7	0.1	0.3	0.3	0.0	0.1	4.3
	UNIT301	0.3	1.1	0.3	0.9	0.1	0.3	0.0	0.0	0.0	3.0
	UNIT302	0.3	2.0	0.2	0.3	0.1	1.0	0.1	0.0	0.1	4.0
	UNIT303	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
	UNIT305	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.7
	UNIT334	0.5	0.1	0.0	0.3	0.0	0.4	0.0	0.0	0.0	1.4
		Total	1.5	5.4	0.9	2.2	0.3	2.9	0.4	0.0	0.2
Noroton Heights FD	UNIT200	2.3	3.8	0.1	0.9	0.7	0.5	0.4	0.2	0.1	8.9
	UNIT201	3.4	2.3	0.3	2.7	0.7	1.6	0.4	0.1	0.1	11.5
	UNIT202	0.6	0.6	0.2	1.6	0.1	0.8	0.3	0.3	0.1	4.6
	UNIT203	0.1	0.2	0.0	0.0	0.0	0.2	0.3	0.0	0.0	0.7
	UNIT204	0.0	0.1	0.0	0.3	0.0	0.2	0.0	0.2	0.0	0.9
	UNIT205	0.0	0.0	0.0	0.3	0.1	0.5	0.0	0.0	0.0	1.0
	UNIT220	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	UNIT221	0.1	0.2	0.0	0.0	0.0	2.4	0.0	0.0	0.0	2.7
	UNIT223	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2
	UNIT225	0.0	0.2	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.4

Agency	Unit	MVA	False Alarm	Good Intent	Hazard	Outside Fire	Public Service	Structure Fire	Technical Rescue	Cancel	Total
	Total	6.4	7.4	0.5	5.9	1.7	6.6	1.3	0.8	0.3	31.0
Total		17.6	25.4	2.4	11.6	4.5	12.3	5.1	1.4	2.4	82.7

Observations:

- The fire suppression and rescue apparatus of the Noroton Heights FD made the most runs (641 or an average of 1.8 runs per day) and had the highest total annual deployed time (346.4 hours or an average of 56.9 minutes per day).
 - Motor vehicle accident (MVA) calls accounted for 20 percent of runs and 21 percent of total deployed time.
 - Outside and structure fire calls accounted for 9 percent of runs and 11 percent of total deployed time.
- The fire suppression and rescue apparatus of the Darien FD made the second most runs (628 or an average of 1.7 runs per day) and had the second highest total annual deployed time (254.8 hours or an average of 41.9 minutes per day).
 - Motor vehicle accident (MVA) calls accounted for 18 percent of runs and 21 percent of total deployed time.
 - Outside and structure fire calls accounted for 9 percent of runs and 24 percent of total deployed time.
- Among all fire suppression units, E42 made the most runs (301 or an average of 0.8 runs per day) and had the second highest total annual deployed time (99.2 hours or an average of 16.3 minutes per day).
 - Motor vehicle accident (MVA) calls accounted for one percent of runs and one percent of total deployed time.
 - Outside, and structure fire calls accounted for 7 percent of runs and 20 percent of total deployed time.
- Among all fire suppression units, SQ21 made the second-most runs (248 or an average of 0.7 runs per day) and had the highest total annual deployed time (128.6 hours or an average of 21.1 minutes per day).
 - Motor vehicle accident (MVA) calls accounted for 31 percent of runs and 34 percent of total deployed time.
 - Outside, and structure fire calls accounted for 6 percent of runs and 7 percent of total deployed time.

Workload by District

Table 8-15 breaks down the workload by the primary service district of each fire department. Table 8-16 provides further detail on the workload associated with structure and outside fire calls, also broken down by location.

TABLE 8-15: Annual Workload by District

District	Calls	Percent Calls	Runs	Runs Per Day	Minutes Per Run	Annual Hours	Percent Work	Minutes Per Day
Darien	524	44.3	1,270	3.5	22.6	477.6	37.7	78.5
Noroton	212	17.9	554	1.5	28.1	259.8	20.5	42.7
Noroton Heights	447	37.8	1,003	2.7	31.7	530.1	41.8	87.1
Total	1,183	100.0	2,827	7.7	26.9	1,267.4	100.0	208.3

TABLE 8-16: Structure and Outside Fire Runs by District

District	Outside Fire Runs	Outside Fire Minutes per Run	Structure Fire Runs	Structure Fire Minutes per Run	Total Hours	Percent Work
Darien	61	37.1	43	81.7	96.2	58.9
Noroton	3	41.6	9	32.3	6.9	4.2
Noroton Heights	48	35.1	45	42.9	60.2	36.8
Total	112	36.3	97	59.1	163.4	100.0

Observations:

Darien District

- There were 1,270 runs, including 45 runs dispatched for canceled calls. The daily average was 3.5 runs.
- Total deployed time for the year was 477.6 hours or 38 percent of the annual workload. The daily average was 78.5 minutes for all units combined.

Noroton District

- There were 554 runs, including 15 runs dispatched for canceled calls. The daily average was 1.6 runs.
- Total deployed time for the year was 259.8 hours or 20 percent of the annual workload. The daily average was 42.7 minutes for all units combined.

Noroton Heights District

- There were 1,003 runs, including 18 runs dispatched for canceled calls. The daily average was 2.8 runs.
- Total deployed time for the year was 530.1 hours or 42 percent of the annual workload. The daily average was 87.1 minutes for all units combined.

Workload by Agency and District

Between March 1, 2021, and February 28, 2022, each fire department provided service in both its primary fire district and in the service areas of other fire departments. Table 8-17 summarizes the response and workload of each fire department in responding to calls that occurred in the districts of Darien, Noroton, and Noroton Heights. As multiple agencies may respond to the same call, adding up the number of calls for each individual agency will exceed the total number of calls.

TABLE 8-17: Workload by Agency and District

Unit Agency	District	Calls	Calls per Day	Runs	Runs per Day	Work	Percent Work
Darien FD	Darien	523	1.4	1,233	3.4	466.1	95.9
	Noroton	17	0.0	36	0.1	11.3	2.3
	Noroton Heights	16	0.0	24	0.1	8.5	1.8
	Total	556	1.5	1,293	3.5	485.9	100.0
Noroton FD	Darien	8	0.0	12	0.0	3.7	1.5
	Noroton	200	0.5	490	1.3	225.6	91.5
	Noroton Heights	15	0.0	24	0.1	17.2	7.0
	Total	223	0.6	526	1.4	246.4	100.0
Noroton Height FD	Darien	21	0.1	25	0.1	7.7	1.4
	Noroton	21	0.1	28	0.1	22.9	4.3
	Noroton Heights	447	1.2	955	2.6	504.4	94.3
	Total	489	1.3	1,008	2.8	535.1	100.0
Total	1,183*	3.2*	2,827	7.7	1,267.4	NA	

Note: There were 1,114 calls with only one responding agency. There were 53 calls with two responding agencies and another 16 calls with three responding agencies. For this reason, adding the total number of calls for each individual agency will exceed the total number of calls. This does not affect total runs or workload.

Observations:

- The Darien FD made 96, two, and two percent of its workload in the Darien, Noroton, and Noroton Heights districts, respectively.
- The Noroton FD made two, 92, and seven percent of its workload in the Darien, Noroton, and Noroton Heights districts, respectively.
- The Noroton Heights FD made one, four, and 94 percent of its workload in the Darien, Noroton, and Noroton Heights districts, respectively.

ANALYSIS OF BUSIEST HOURS

In this analysis, we included all 1,183 calls that occurred in the Town of Darien between March 1, 2021, and February 28, 2022. For these calls, there is significant variability in the number of calls from hour to hour. One special concern relates to the resources available for hours with the heaviest workload. We tabulated the data for each of the 8,760 hours in the year. Table 8-18 shows the number of hours in the year in which there were zero to three or more calls during the hour. Table 8-19 shows the ten one-hour intervals which had the most calls during the year. Table 8-20 examines the number of times a call overlapped with another call in each station area in the studied period. Table 8-21 examines each fire department's availability to respond to calls within its first due area.

TABLE 8-18: Frequency Distribution of the Number of Calls by Year

Calls in an Hour	Frequency	Percentage
0	7,797	89.0
1	855	9.8
2	86	1.0
3+	22	0.3
Total	8,760	100.0

TABLE 8-19: Top Ten Hours with the Most Calls Received

Hour	Number of Calls	Number of Runs	Total Deployed Hours
7/9/2021, 11:00 a.m. to noon	19	21	3.3
9/1/2021, 11:00 p.m. to midnight	18	23	10.7
9/2/2021, midnight to 1:00 a.m.	16	25	15.1
7/9/2021, 10:00 a.m. to 11:00 a.m.	16	24	12.8
7/9/2021, 9:00 a.m. to 10:00 a.m.	12	14	5.6
7/9/2021, 8:00 a.m. to 9:00 a.m.	11	21	12.8
6/30/2021, 2:00 p.m. to 3:00 p.m.	7	15	6.0
9/2/2021, 1:00 a.m. to 2:00 a.m.	6	12	1.9
9/1/2021, 10:00 p.m. to 11:00 p.m.	5	10	4.3
7/9/2021, 3:00 p.m. to 4:00 p.m.	5	9	6.0

Note: Total deployed hours are a measure of the total time spent responding to calls received in the hour. The deployed time from these calls may extend into the next hour or hours. The number of runs and deployed hours includes all units from the three fire departments.

TABLE 8-20: Frequency of Overlapping Calls by Fire District

Fire District	Scenario	Number of Calls	Percent of All Calls	Total Hours
Darien FD	No overlapped call	478	91.2	168.7
	Overlapped with one call	32	6.1	6.1
	Overlapped with two calls	6	1.1	1.1
	Overlapped with three calls	7	1.3	0.7
	Overlapped with four calls	1	0.2	0.1
Noroton FD	No overlapped call	187	88.2	95.4
	Overlapped with one call	16	7.5	3.7
	Overlapped with two calls	7	3.3	1.4
	Overlapped with three calls	2	0.9	0.2
Noroton Heights FD	No overlapped call	374	83.7	206.3
	Overlapped with one call	24	5.4	7.3
	Overlapped with two calls	11	2.5	1.6
	Overlapped with three calls	9	2.0	0.9
	Overlapped with four calls	10	2.2	0.7
	Overlapped with five calls	5	1.1	0.7
	Overlapped with six calls	5	1.1	0.4
	Overlapped with seven calls	6	1.3	0.5
	Overlapped with eight calls	3	0.7	0.1

TABLE 8-21: Agency Availability to Respond to Calls

Fire District	Calls in Area	Agency Responded	Agency Arrived	Agency First	Percent Responded	Percent Arrived	Percent First
Darien FD	524	523	523	518	99.8	99.8	98.9
Noroton FD	212	200	200	188	94.3	94.3	88.7
Noroton Heights FD	447	447	447	436	100.0	100.0	97.5
Total	1,183	1,170	1,170	1,142	98.9	98.9	96.5

Note: For each fire department, we count the number of calls occurring within its district. Then, we count the number of calls where at least one unit arrived. Next, we focus on units from the primary agency to see if any of its units responded, arrived, or arrived first.

Observations:

- During 22 hours (0.3 percent of all hours), three or more calls occurred; in other words, the departments responded to three or more calls in an hour roughly once every 17 days.
- The hour with the most calls (19) was between 11:00 a.m. to noon on July 9, 2021, when Tropical Storm Elsa caused heavy flooding in Darien. The hour's 19 public service calls involved 21 individual dispatches resulting in 3.3 hours of deployed time.
- July 9, 2021 recorded 76 calls compared to the daily average of 3 to 4 calls.
- September 1 and 2, 2021 recorded 25 and 46 calls, respectively.

RESPONSE TIME

In this part of the analysis, we present response time statistics for different call types. We separate response time into its identifiable components. Dispatch time is the difference between the time a call is received by a fire department and the time a unit is dispatched. Dispatch time includes call processing time, which is the time required for a fire department to determine the nature of the emergency and the types of resources to dispatch. Turnout time is the difference between dispatch time and the time a unit is en route to a call's location. Travel time is the difference between the time en route and arrival on scene. Response time is the total time elapsed between receiving a call to arriving on scene.

In the following analysis, we included all calls within the Town of Darien to which at least one non-administrative unit arrived. Calls with a total response time exceeding 30 minutes were excluded. Also, we focused on units that had complete time stamps, that is, units with all components recorded, so that we could calculate each segment of response time.

Based on the methodology above, for 1,183 total calls, we excluded 39 calls responded by only private owned vehicles, 26 canceled calls, 17 calls where no units recorded a valid on-scene time, 13 calls with a total response time exceeding 30 minutes, and 87 calls where one or more segments of the first arriving unit's response time could not be calculated due to missing or faulty data. Finally, we removed 46 calls occurring on days when Darien was hit by two tropical storms which naturally increased response times on those days. These days were July 9, September 1, and September 2, 2021. As a result, a total of 898 calls are included in the section's analysis.

Response Time by Type of Call

Tables 8-22 and 8-23 break down the average, 80th percentile, and 90th percentile response times by call type. The three volunteer fire departments follow the NFPA 1720 standard that benchmarks 80th percentile response time. An 80th or 90th percentile means that 80 or 90 percent of calls had response times at or below that number, respectively. For example, Table 8-23 shows an overall 80th percentile response time of 11.6 minutes, which means that 80 percent of the time, a call had a response time of no more than 11.6 minutes. Figure 8-7 shows the components of the average response time by call type.

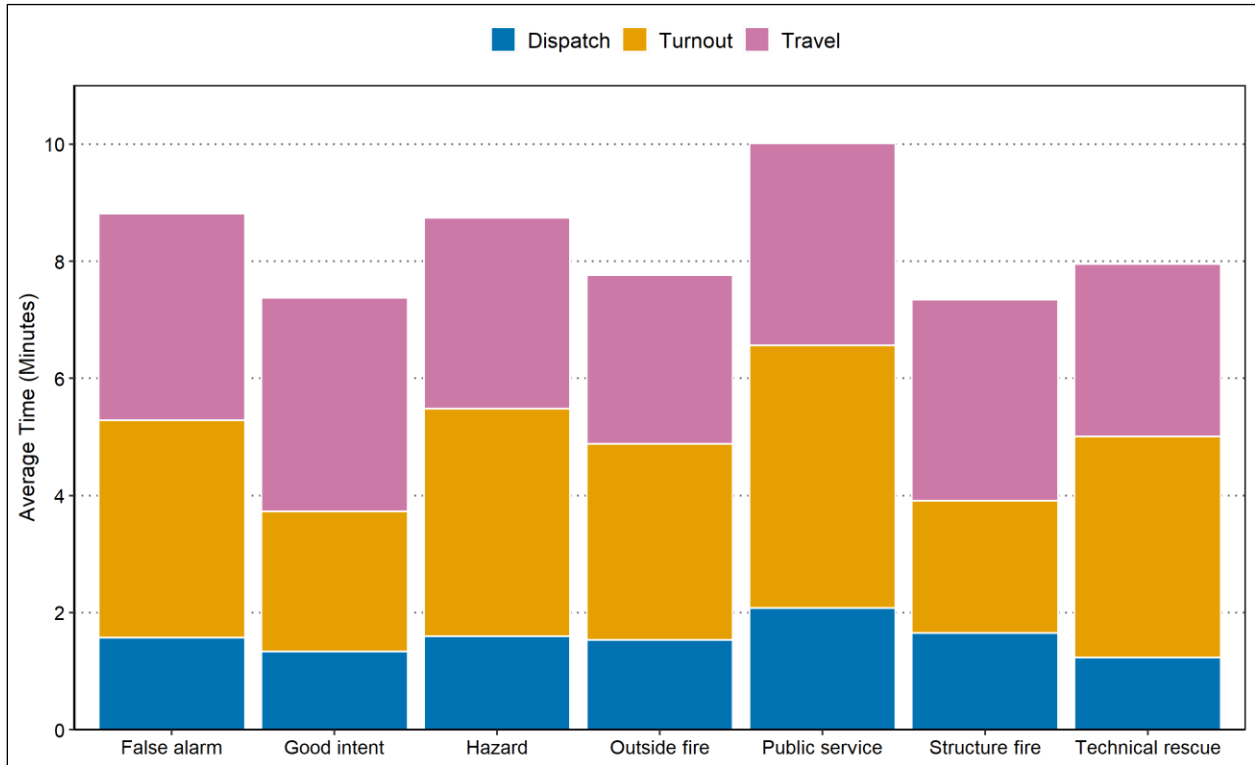
TABLE 8-22: Average Response Time of First Arriving Unit, by Call Type

Call Type	Minutes				Number of Calls
	Dispatch	Turnout	Travel	Total Response	
False alarm	1.6	3.7	3.5	8.8	499
Good intent	1.3	2.4	3.6	7.4	35
Hazard	1.6	3.9	3.3	8.7	86
Outside fire	1.5	3.3	2.9	7.8	27
Public service	2.1	4.5	3.4	10.0	63
Structure fire	1.7	2.3	3.4	7.3	19
Technical rescue	1.2	3.8	2.9	8.0	12
Fire Subtotal	1.6	3.7	3.5	8.8	741
MVA	1.5	3.1	2.8	7.4	157
Total	1.6	3.6	3.3	8.5	898

TABLE 8-23: 80th and 90th Percentile Response Times of First Arriving Unit, by Call Type

Call Type	80th Percentile Response Time, Minutes				90th Percentile Response Time, Minutes				Number of Calls
	Dispatch	Turnout	Travel	Total	Dispatch	Turnout	Travel	Total	
False alarm	1.9	6.7	5.4	12.1	2.4	8.2	6.5	13.6	499
Good intent	1.7	3.6	5.4	9.4	2.0	5.3	6.7	10.3	35
Hazard	2.1	7.0	4.6	12.5	2.7	8.4	6.3	14.3	86
Outside fire	2.0	5.4	3.9	11.5	2.1	9.1	5.9	14.4	27
Public service	2.2	7.7	4.6	13.2	2.6	8.5	7.4	14.2	63
Structure fire	2.4	3.2	5.1	10.7	3.4	5.1	6.6	11.6	19
Technical rescue	1.8	5.5	4.4	9.9	2.1	6.5	5.8	10.7	12
Fire Subtotal	2.0	6.6	5.2	12.0	2.4	8.2	6.5	13.7	741
MVA	1.9	5.4	4.7	10.1	2.7	7.0	5.7	11.2	157
Total	2.0	6.3	5.1	11.6	2.5	8.0	6.3	13.3	898

FIGURE 8-7: Average Response Time of First Arriving Unit, by Call Type



Observations:

- The average dispatch time was 1.6 minutes.
- The average turnout time was 3.6 minutes.
- The average travel time was 3.3 minutes.
- The average total response time was 8.5 minutes.
- The average response time was 7.4 minutes for motor vehicle incident calls.
- The average response time was 7.8 minutes for outside fires and 7.3 minutes for structure fires.
- The 80th percentile dispatch time was 2.0 minutes
- The 80th percentile turnout time was 6.3 minutes.
- The 80th percentile travel time was 5.1 minutes.
- The 80th percentile total response time was 11.6 minutes.
- The 80th percentile response time was 10.1 minutes for motor vehicle incident calls.
- The 80th percentile response time was 11.5 minutes for outside fires and 10.7 minutes for structure fires.
- The 90th percentile dispatch time was 2.5 minutes
- The 90th percentile turnout time was 8.0 minutes.
- The 90th percentile travel time was 6.3 minutes.
- The 90th percentile total response time was 13.3 minutes.
- The 90th percentile response time was 11.2 minutes for motor vehicle incident calls.
- The 90th percentile response time was 14.4 minutes for outside fires and 11.6 minutes for structure fires.

Response Time by Fire Department

Tables 8-24 and 8-25 examine the average, 80th percentile, and 90th percentile response times of the first arriving fire suppression and rescue unit to calls in the Darien, Noroton, and Noroton Heights fire districts, broken down by call type.

TABLE 8-24: Average Response Times of First Arriving Unit, by Fire District

Fire District	Minutes				Number of Calls
	Dispatch	Turnout	Travel	Total Response	
Darien	1.6	2.8	3.2	7.6	414
Noroton	1.8	5.3	2.5	9.6	147
Noroton Heights	1.5	3.8	3.9	9.2	337
Total	1.6	3.6	3.3	8.5	898

TABLE 8-25: 80th Percentile and 90th Percentile Response Times of First Arriving Unit, by Fire District

Fire District	80th Percentile Response Time, Minutes				90th Percentile Response Time, Minutes				Number of Calls
	Dispatch	Turnout	Travel	Total	Dispatch	Turnout	Travel	Total	
Darien	2.0	4.9	4.9	10.3	2.5	7.4	6.1	12.4	414
Noroton	2.2	7.7	4.1	12.4	2.7	8.9	5.0	13.8	147
Noroton Heights	1.8	6.4	5.8	12.6	2.4	8.2	6.9	14.4	337
Total	2.0	6.3	5.1	11.6	2.5	8.0	6.3	13.3	898

Observations:

Darien Fire District

In responding to calls that occurred within its first due area:

- The average response time was 7.6 minutes.
- The 80th percentile response time was 10.3 minutes.
- The 90th percentile response time was 12.4 minutes.

Noroton Fire District

In responding to calls that occurred within its first due area:

- The average response time was 9.6 minutes.
- The 80th percentile response time was 12.4 minutes.
- The 90th percentile response time was 13.8 minutes.

Noroton Heights Fire District

In responding to calls that occurred within its first due area:

- The average response time was 9.2 minutes.
- The 80th percentile response time was 12.6 minutes.
- The 90th percentile response time was 14.4 minutes.

Response Time by Hour of Day

For all calls in the Darien, Tables 8-26 through 8-28 show the average (Table 8-26), 80th percentile (Table 8-27), and 90th percentile (Table 8-28) response times by the time of day. Figure 8-8 shows the average response time by the time of day.

TABLE 8-26: Average Response Time of First Arriving Unit, by Hour of Day

Hour	Minutes				Number of Calls
	Dispatch	Turnout	Travel	Response Time	
0	1.2	5.0	3.5	9.7	21
1	1.0	6.1	2.6	9.7	21
2	1.1	5.3	4.0	10.4	11
3	0.9	6.0	4.4	11.2	11
4	1.4	5.9	4.5	11.9	16
5	0.9	4.4	4.6	9.9	11
6	1.6	4.8	3.6	10.0	18
7	1.3	2.9	3.6	7.9	33
8	2.5	4.6	4.0	11.1	39
9	1.7	3.4	2.9	8.1	47
10	1.8	3.3	2.8	7.9	54
11	1.5	3.3	3.3	8.1	59
12	1.7	3.1	2.9	7.7	49
13	1.6	3.2	3.3	8.1	60
14	2.2	3.0	2.8	8.0	60
15	1.5	3.3	2.7	7.6	60
16	1.6	3.3	3.2	8.1	70
17	1.9	2.9	2.9	7.7	43
18	1.4	2.9	3.4	7.8	47
19	1.4	3.1	4.0	8.5	51
20	1.2	3.1	3.7	8.0	31
21	1.3	3.8	3.8	8.9	34
22	1.5	3.8	4.0	9.2	29
23	1.2	5.0	3.8	9.9	23
Total	1.6	3.6	3.3	8.5	898

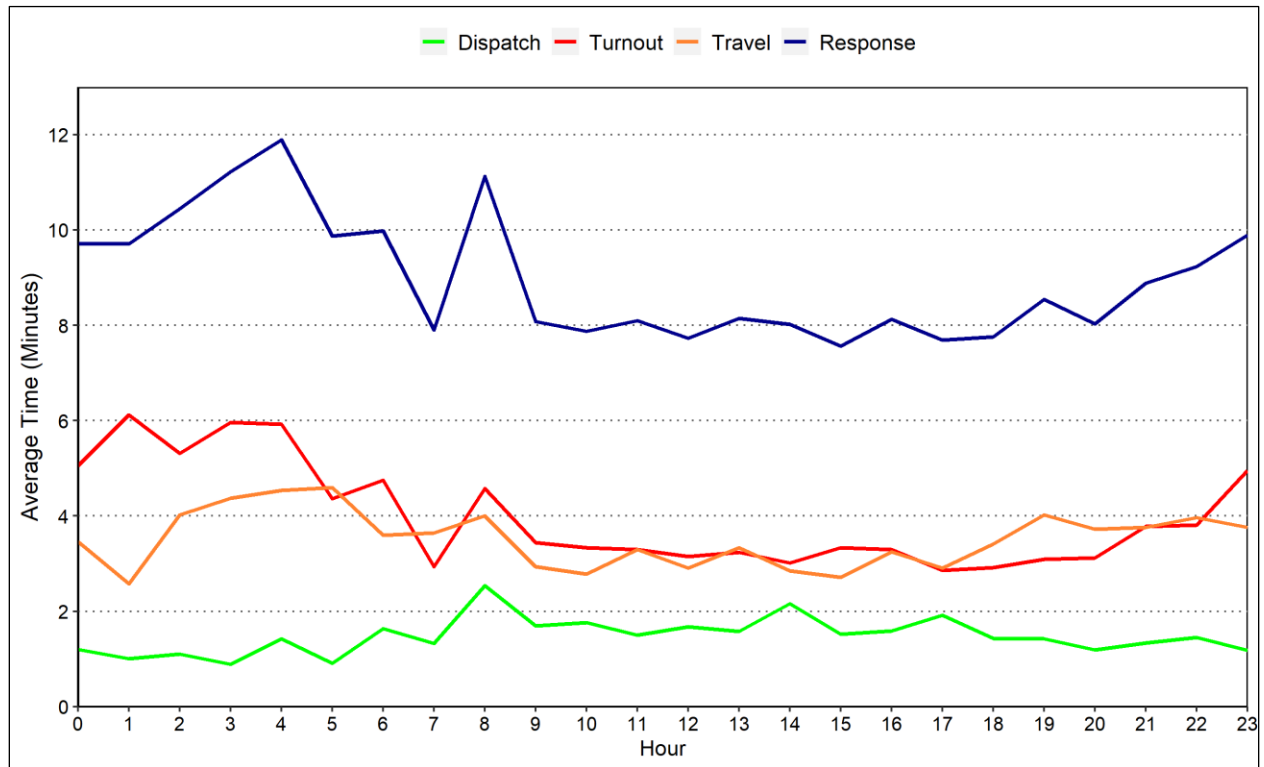
TABLE 8-27: 80th Percentile Response Time of First Arriving Unit, by Hour of Day

Hour	Minutes				Number of Calls
	Dispatch	Turnout	Travel	Response Time	
0	1.8	7.4	5.0	12.2	21
1	1.3	8.4	4.2	11.7	21
2	1.3	8.4	5.5	12.8	11
3	1.3	8.3	8.5	14.2	11
4	2.0	8.8	6.9	13.9	16
5	1.0	4.8	6.0	12.0	11
6	1.7	8.6	6.1	13.9	18
7	1.9	4.4	5.4	10.7	33
8	2.5	9.5	4.9	14.3	39
9	2.1	5.7	4.8	10.3	47
10	2.4	5.5	4.5	11.0	54
11	2.0	6.9	5.1	10.6	59
12	1.9	5.1	4.6	10.0	49
13	2.1	5.7	5.1	10.2	60
14	2.6	5.4	4.3	11.0	60
15	2.0	5.6	4.4	11.2	60
16	2.1	5.8	4.8	10.4	70
17	1.7	4.7	4.6	10.4	43
18	1.9	4.8	5.1	10.1	47
19	1.8	5.6	6.2	12.4	51
20	1.5	4.8	5.8	11.2	31
21	1.6	7.0	5.6	12.8	34
22	2.1	6.3	5.8	12.1	29
23	1.5	7.8	4.8	12.2	23
Total	2.0	6.3	5.1	11.6	898

TABLE 8-28: 90th Percentile Response Time of First Arriving Unit, by Hour of Day

Hour	Minutes				Number of Calls
	Dispatch	Turnout	Travel	Response Time	
0	2.0	8.9	6.5	14.3	21
1	1.4	9.0	4.4	13.2	21
2	1.8	9.4	5.6	13.3	11
3	1.3	10.4	9.0	16.1	11
4	2.9	10.4	7.5	16.2	16
5	1.2	9.0	8.5	15.1	11
6	2.4	10.6	6.8	14.8	18
7	2.6	6.7	7.4	12.1	33
8	4.0	10.7	6.4	17.6	39
9	2.6	8.2	5.6	12.6	47
10	2.7	7.9	6.0	12.2	54
11	2.4	8.1	6.5	12.5	59
12	2.3	7.5	5.5	13.1	49
13	2.4	6.8	6.3	11.7	60
14	3.1	6.6	5.9	12.7	60
15	2.8	7.0	5.6	12.7	60
16	2.6	7.6	5.9	12.9	70
17	2.1	6.8	5.3	11.0	43
18	2.3	6.2	6.7	12.7	47
19	2.1	6.8	8.3	13.2	51
20	1.8	6.1	6.3	13.2	31
21	1.7	8.0	6.7	14.4	34
22	2.4	7.9	8.9	13.7	29
23	1.8	8.3	6.0	14.0	23
Total	2.5	8.0	6.3	13.3	898

FIGURE 8-8: Average Response Time of First Arriving Unit, by Hour of Day



Observations:

- Average dispatch time was between 0.9 minutes (3:00 a.m. to 4:00 a.m.) and 2.5 minutes (8:00 a.m. to 9:00 a.m.).
- Average turnout time was between 2.9 minutes (5:00 p.m. to 6:00 p.m.) and 6.1 minutes (1:00 a.m. to 2:00 a.m.).
- Average travel time was between 2.6 minutes (1:00 a.m. to 2:00 a.m.) and 4.6 minutes (5:00 a.m. to 6:00 a.m.).
- Average response time was between 7.6 minutes (3:00 p.m. to 4:00 p.m.) and 11.9 minutes (4:00 a.m. to 5:00 a.m.).
- The 80th percentile response time was between 10.0 minutes (noon to 1:00 p.m.) and 14.3 minutes (8:00 a.m. to 9:00 a.m.).
- The 90th percentile response time was between 11.0 minutes (5:00 p.m. to 6:00 p.m.) and 17.6 minutes (8:00 a.m. to 9:00 a.m.).

Response Time Distribution

Here, we present a more detailed look at how response times to calls are distributed. The cumulative distribution of total response time for the first arriving unit to motor vehicle accident (MVA) calls is shown in Figure 8-9 and Table 8-29. Figure 8-9 shows response times for the first arriving unit to MVA calls as a frequency distribution in whole-minute increments, and Figure 8-10 shows the same for the first arriving unit from the three fire departments to outside and structure fire calls.

The cumulative percentages here are read in the same way as a percentile. In Figure 8-9, the 80th percentile of 10.1 minutes means that 80 percent of MVA calls had a response time of 10.1 minutes or less. In Table 8-29, the cumulative percentage of 62.4, for example, means that 62.4 percent of MVA calls had a response time under 8 minutes.

FIGURE 8-9: Cumulative Distribution of Response Time, First Arriving Unit, MVA

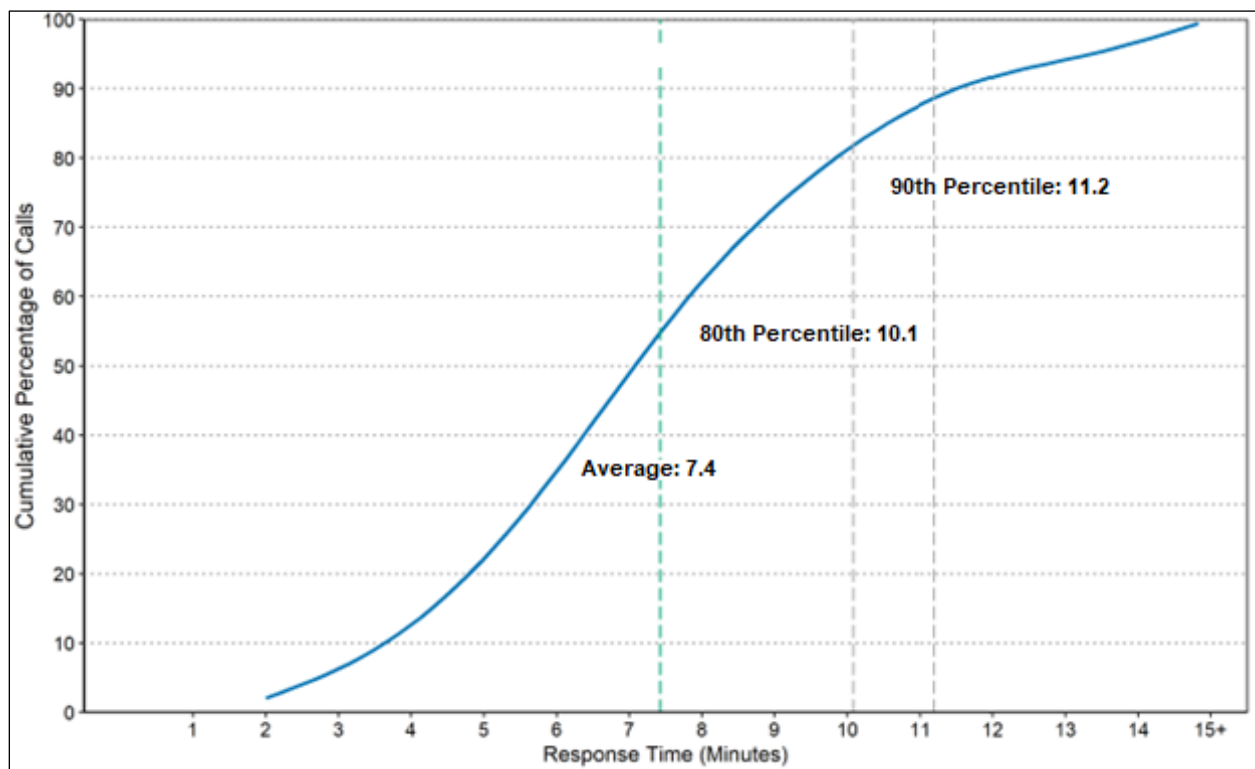


FIGURE 8-10: Cumulative Distribution of Response Time, First Arriving Unit, Outside and Structure Fires

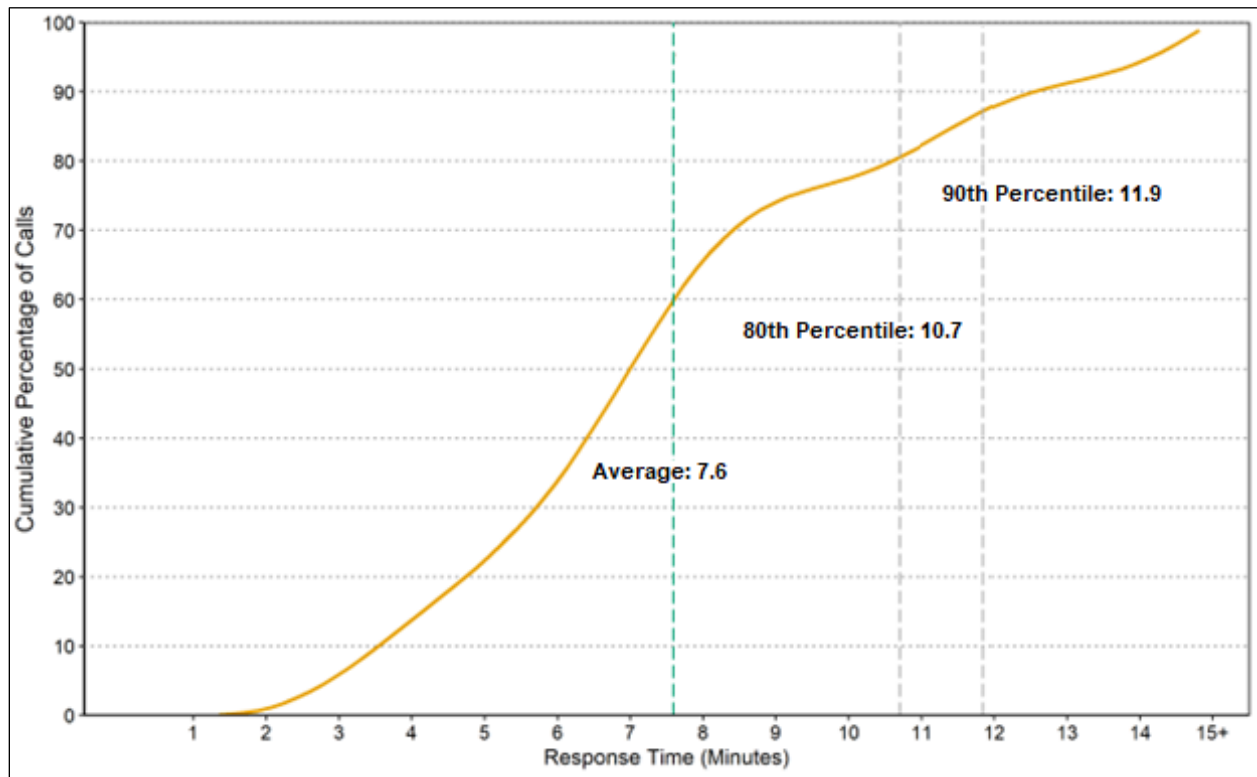


TABLE 8-29: Cumulative Distribution of Response Time, First Arriving Unit, MVA

Response Time (minute)	Frequency	Cumulative Percentage
1	0	0.0
2	2	1.3
3	9	7.0
4	8	12.1
5	14	21.0
6	22	35.0
7	22	49.0
8	21	62.4
9	19	74.5
10	7	79.0
11	16	89.2
12	4	91.7
13	4	94.3
14	2	95.5
15+	7	100.0

TABLE 8-30: Cumulative Distribution of Response Time, First Arriving Unit, Outside and Structure Fires

Response Time (minute)	Frequency	Cumulative Percentage
1	0	0.0
2	0	0.0
3	3	6.5
4	3	13.0
5	5	23.9
6	4	32.6
7	7	47.8
8	10	69.6
9	2	73.9
10	1	76.1
11	2	80.4
12	5	91.3
13	0	91.3
14	0	91.3
15+	4	100.0

Observations:

- For 62 percent of MVA calls, the response time of the first arriving unit was less than 8 minutes.
- For 70 percent of outside and structure fire calls, the response time of the first arriving unit was less than 8 minutes.

ATTACHMENT I: ADDITIONAL PERSONNEL

Table 8-31 illustrates the workload of the units of the Darien Fire Marshal's office between March 1, 2021, and February 28, 2022.

TABLE 8-31: Workload of Fire Marshal Office

Unit ID	Annual Hours	Annual Runs
DFM100	18.2	11
DFM101	10.2	8
DINSP103	22.7	15
DINSP103	0.2	1

ATTACHMENT II: ACTIONS TAKEN

TABLE 8-32: Actions Taken Analysis for Structure and Outside Fire Calls

Action Taken	Number of Calls	
	Outside Fire	Structure Fire
Assistance, other	1	0
Contain fire (wildland)	0	1
Control crowd	1	0
Control traffic	4	0
Establish safe area	3	0
Extinguishment by fire service personnel	11	8
Fire control or extinguishment, other	8	5
Incident command	1	0
Information, investigation & enforcement, other	0	1
Investigate	13	10
Investigate fire out on arrival	2	3
Notify other agencies.	2	1
Refer to proper authority	3	0
Remove hazard	2	1
Salvage & overhaul	6	5
Search	0	1
Standby	1	0
Ventilate	0	10

Note: Totals are higher than the total number of structure and outside fire calls because some calls recorded multiple actions taken.

Observations:

- Out of 33 outside fires, 11 were extinguished by fire service personnel, which accounted for 33 percent of outside fires.
- Out of 23 structure fires, 8 were extinguished by fire service personnel, which accounted for 35 percent of structure fires.

ATTACHMENT III: FIRE LOSS

Table 8-33 presents the number of outside and structure fires, broken out by levels of fire loss. Table 8-34 shows the amount of property and content loss for outside and structure fires inside the Town of Darien between March 1, 2021, and February 28, 2022.

TABLE 8-33: Total Fire Loss Above and Below \$25,000

Call Type	No Loss	Under \$25,000	\$25,000 plus	Total
Outside fire	27	5	1	33
Structure fire	12	8	3	23
Total	39	13	4	56

TABLE 8-34: Content and Property Loss, Structure and Outside Fires

Call Type	Property Loss		Content Loss	
	Loss Value	Number of Calls	Loss Value	Number of Calls
Outside fire	\$56,400	6	\$3,000	2
Structure fire	\$864,600	7	\$229,000	11
Total	\$921,000	13	\$232,000	13

Note: The table includes only fire calls with a recorded loss greater than 0.

Observations:

- 27 outside fires and 12 structure fires had no recorded loss.
- One outside fire and three structure fires had \$25,000 or more in losses.
- Structure fires:
 - The highest total loss for a structure fire was \$650,000.
 - The average total loss for all structure fires was \$47,548.
 - 11 structure fires had content losses with a combined \$229,000 in losses.
 - Out of 23 structure fires, 7 had recorded property losses, with a combined \$864,600 in losses.
- Outside fires:
 - The highest total loss for an outside fire was \$25,000.
 - The average total loss for outside fires with loss was \$9,900.
 - Two outside fires had content losses with a combined \$3,000 in losses.
 - Out of 33 outside fires, 6 had recorded property losses, with a combined \$56,400 in losses.

ATTACHMENT IV: NFPA 1720 ANALYSIS

In this section, we further examine structure fires using the guidelines established in the National Fire Protection Association's standard 1720 (NFPA 1720). Included in these guidelines is a set of standards for the travel time of units responding to a structure fire, where travel time is defined as beginning when the first unit goes en route. Here we only included the engines, brush trucks, ladders, tankers, and rescue units from the three studied fire departments. Table 8-35 shows the NFPA 1720 minimum staff required to respond to a structure fire within a given time and percentile for the urban, suburban, rural, and remote areas of a response district.

TABLE 8-35: NFPA 1720 Staffing for Effective Response Force, Structure Fire, by Demand Zone

Demand Zone	Demographics	Minimum Staff to Respond to Scene	Response Time Standard
Urban Area	>1000 people/mi ²	15	Within 9 minutes, 90 percent of the time
Suburban Area	500-1000 people/mi ²	10	Within 10 minutes, 80 percent of the time
Rural Area	< 500 people/mi ²	6	Within 14 minutes, 80 percent of the time
Remote Area	Travel Distance > 8 miles	4	Directly dependent on travel distance, determined by AHJ, 90 percent of the time

Overall, there were 23 structure fires in the town of Darien between March 1, 2021, and February 28, 2022, of which 17 calls occurred in urban areas and six calls occurred in suburban areas. Table 8-36 breaks down these structure fires by the number of responders from different fire departments.

Table 8-37 shows the average and 90th percentile travel times for both the first arriving unit and for the arrival of the full complement. Table 8-38 presents the number and percentage of calls meeting the standards delineated in NFPA 1720.

In this section, travel time is calculated differently than in Tables 8-22 and 8-23. In those tables, an individual unit's en route and arrive timestamps were used to calculate the travel time for that unit, yielding a unit-level travel time. Here, in contrast, NFPA defines travel time as beginning from when the first unit goes en route, even if it is not the same unit that arrived first. Thus, this travel time corresponds to the travel time of an entire call, and not for a specific unit responding to a given call.

TABLE 8-36: Structure Fires, Number of Responders by Agency, and Demand Zone

Demand Zone	Number of Responders by Agency				Number of Calls
	Darien FD	Noroton FD	Noroton Heights FD	Total	
Urban	0	0	5	5	1
	0	0	6	6	1
	0	0	7	7	2
	0	0	9	9	1
	10	0	0	10	1
	0	10	0	10	1
	0	0	0	11	1
	0	0	12	12	1
	0	0	13	13	1
	0	1	13	14	1
	17	0	0	17	1
	0	0	17	17	1
	0	18	0	18	1
	22	0	0	22	1
	23	0	0	23	1
27	0	0	27	1	
Suburban	7	0	0	7	1
	12	0	0	12	1
	15	0	0	15	1
	16	0	0	16	1
	0	3	18	21	1
	28	0	0	28	1
Total					23

TABLE 8-37: Structure Fires: Average, 80th Percentile, and 90th Percentile Travel Times (Minutes) by Response Type and Demand Zone

Response Type	Demand Zone					
	Urban			Suburban		
	80th Percentile	90th Percentile	Calls	80th Percentile	90th Percentile	Calls
First Arriving Unit	3.9	4.6	17	4.5	6.2	6
Full Complement of Personnel*	14.6	15.2	6	11.9	14.5	5

Note: *Full complement of personnel is 15 for urban areas and 10 for suburban areas, respectively.

TABLE 8-38: Number and Percentage of Calls Meeting NFPA 1720

Response Type	Calls Meeting Standard*		Total Calls
	Number of Calls	Percent of Calls	
Urban - Full Complement of 15 Personnel	1	16.7	6
Suburban - Full Complement of 10 Personnel	2	40.0	5

Note: * See Table 8-35 for the response time standards for urban and suburban areas, respectively.

Observations:

Urban Areas

- Of the 17 structure fire calls, six of them had a full arriving complement of at least 15 personnel.
- The average travel time for the first arriving unit was 1.8 minutes, the 80th percentile travel time was 3.9 minutes, and the 90th percentile travel time was 4.6 minutes.
- The average travel time for the full arriving complement of at least 15 personnel was 11.6 minutes, the 80th percentile travel time was 14.6 minutes, and the 90th percentile travel time was 15.2 minutes.
- Of the six structure fire calls that had a full arriving complement of at least 15 personnel, the full complement arrived within nine minutes once, or 17 percent of the time.

Suburban Areas

- Of the six structure fire calls, five of them had a full arriving complement of at least 10 personnel.
- The average travel time for the first arriving unit was 3.3 minutes, the 80th percentile travel time was 4.5 minutes, and the 90th percentile travel time was 6.2 minutes.
- The average travel time for the full arriving complement of at least 10 personnel was 10.2 minutes, the 80th percentile travel time was 11.9 minutes, and the 90th percentile travel time was 14.5 minutes.
- Of the five structure fire calls that had a full arriving complement of at least 10 personnel, the full complement arrived within 10 minutes twice, or 40 percent of the time.

ATTACHMENT V: CALL TYPE IDENTIFICATION

When available, NFIRS data serves as our primary source for assigning call categories. For 1,157 of the 1,183 calls that the three fire departments responded to in Darien, NFIRS incident type codes were used to assign call types for fire, MVA, and canceled calls. For 26 calls that do not have specific NFIRS incident types, we instead used the incident nature description from the computer-aided dispatch (CAD) data to assign a call category. Tables 8-39 and 8-40 show the methods used to identify the category of all 1,183 calls.

TABLE 8-39: Fire Call Type by NFIRS Incident Type Code and Description

Call Type	Incident Type Code	Incident Type Description	Frequency
Canceled	611	Dispatched and cancelled en route	15
	622	No incident found on arrival at dispatch address	13
False Alarm	700	False alarm or false call, other	2
	710	Malicious, mischievous false call, other	1
	711	Municipal alarm system, malicious false alarm	1
	714	Central station, malicious false alarm	3
	715	Local alarm system, malicious false alarm	1
	730	System malfunction, other	4
	731	Sprinkler failure or malfunction	1
	733	Smoke detector activation due to malfunction	35
	735	Alarm system sounded due to malfunction	115
	736	CO detector activation due to malfunction	39
	740	Unintentional transmission of alarm, other	3
	741	Sprinkler activation, no fire - unintentional	1
	743	Smoke detector activation, no fire - unintentional	112
	744	Detector activation, no fire - unintentional	8
	745	Alarm system activation, no fire - unintentional	192
746	Carbon monoxide detector activation, no CO	35	
Good Intent	600	Good intent call, other	5
	631	Authorized controlled burning	2
	641	Vicinity alarm (incident in other location)	1
	650	Steam, other gas mistaken for smoke, other	2
	651	Smoke scare, odor of smoke	25
	652	Steam, vapor, fog, or dust thought to be smoke	1
	661	EMS call, party transported by non-fire agency	1
	671	HazMat release investigation w/no HazMat	6
Hazard	200	Overpressure rupture, explosion, overheat, other	1
	221	Overpressure rupture of air or gas pipe or pipeline	1
	240	Explosion (no fire), other	1
	400	Hazardous condition, other	1
	410	Combustible gas or liquid spills or leaks, other	2
	411	Gasoline or other flammable liquid spill	11
	412	Gas leak (natural gas or LPG)	28

Call Type	Incident Type Code	Incident Type Description	Frequency
	413	Oil or other combustible liquid spill	1
	420	Toxic chemical condition, other.	2
	421	Chemical hazard (no spill or leak)	1
	424	Carbon monoxide incident	14
	440	Electrical wiring/equipment problem, other	5
	442	Overheated motor	1
	444	Power line down	22
	445	Arcing, shorted electrical equipment	8
Motor Vehicle Accident	320*	Emergency medical service incident, other	1
	322	Motor vehicle accident with injuries	143
	323	Motor vehicle/pedestrian accident (MV Ped)	7
	324	Motor vehicle accident with no injuries	15
Outside Fire	100**	Fire, other	1
	131	Passenger vehicle fire	10
	132	Road freight or transport vehicle fire	3
	142	Brush or brush-and-grass mixture fire	7
	143	Grass fire	1
	151	Outside rubbish, trash, or waste fire	1
	154	Dumpster or other outside trash receptacle fire	1
	160	Special outside fire, other	4
162	Outside equipment fire	4	
Public Service	500	Service call, other	20
	510	Person in distress, other	2
	511	Lock-out	18
	512	Ring or jewelry removal	1
	520	Water problem, other	46
	521	Water evacuation	1
	522	Water or steam leak	51
	531	Smoke or odor removal	14
	540	Animal problem or rescue, other	1
	550	Public service assistance, other	12
	551	Assist police or another governmental agency	3
	552	Police matter	1
	553	Public service	8
	561	Unauthorized burning	1
	571	Cover assignment, standby, move up	8
	812	Flood assessment. Excludes water rescue	7
814	Lightning strike (no fire). Includes investigation	1	
Structure Fire	100	Fire, other ⁵	1
	111	Building fire	9
	113	Cooking fire, confined to container	5
	114	Chimney or flue fire, confined to chimney or flue	7

Call Type	Incident Type Code	Incident Type Description	Frequency
	118	Trash or rubbish fire, contained	1
Technical Rescue	352	Extrication of victim(s) from vehicle	5
	353	Removal of victim(s) from stalled elevator	4
	354	Trench/Below-grade rescue	1
	360	Water and ice-related rescue, other	3
	363	Swift-water rescue	2
	365	Watercraft rescue	3
Total			1,157

Note: * Call type was assigned based on the incident nature (MVA) and incident code (MVA5). ** Call type was assigned based on the incident nature (ELECTRICAL FIRE) and incident code (EFO).

TABLE 8-40: Call Type by Incident Nature and Incident Code

Call Type	Incident Nature	Incident Code	Calls
False alarm	CO ALARM	CO6	1
	FIRE ALARM	FA1	10
	FIRE ALARM	FA2	2
Good Intent	ODOR INVESTIGATION	OII	1
Hazard	FLUID LEAK/SPILL	NA	1
	GAS LEAK	GLO	1
	NATURAL GAS LEAK	NGLI	1
Motor Vehicle Accident	29 TRAFFIC ACCIDENT	29-A-1	1
	29 TRAFFIC ACCIDENT	29-B-1	2
	29 TRAFFIC ACCIDENT	29-D-5	1
	MVA	MVA5	3
Outside Fire	FIRE OUT	FOUFR	1
Public Service	LOCKOUT	NA	1
Total			26

- END -

APPENDIX A: STATE OF CONNECTICUT FIREFIGHTER AND OFFICER TRAINING CURRICULUMS

Sec. 7-323I-5a. Fire fighter I and II²³

(a) General

(1) A candidate for fire fighter I certification shall be an active member of a fire department or actively enrolled as a student in an approved course of study at a regional institution accredited by an agency recognized by the United States Department of Education.

(2) A candidate for fire fighter II certification shall be a certified fire fighter I and shall:

(A) be an active member of a fire department; or

(B) be actively enrolled in an approved course of study at a regional accredited institution by an agency recognized by the United States Department of Education; or

(C) document in writing that the candidate has been an active member of a fire department since prior to July 1, 1977.

(3) No person shall be certified to the level of fire fighter I or fire fighter II until all examination requirements of this standard for that level have been fulfilled.

(b) Objectives: The candidate for fire fighter I or fire fighter II certification shall comply with the performance objectives of NFPA 1001, Standard for Fire Fighter Professional Qualifications.

(c) The commission shall certify as a fire fighter I or fire fighter II those candidates who have satisfactorily demonstrated the ability to meet the requirements as prescribed in this section. (Effective October 5, 2018) Notes: The original publication contained a typographical error previously identified and corrected, but through a software error the change was never recorded.

(October 26, 2018)

The next images outline the State of Connecticut Firefighter I curriculum and NFPA 1001 standard objectives that have to be met for successful completion of the course.

23. Regulations of Connecticut State Agencies, Title 7. Municipalities. Fire Fighter Qualification and Certification Policy and Procedures and Regulations.

**Firefighter I Evaluation Skill Sheet**

SS#	Skill Sheet Title	NFPA 1001 Objective Addressed 2019 Edition
FF1 PPE	Donning Personal Protective Clothing	4.1.2, 4.3.2, 4.3.2(A)(B)
FF1 Initiate Emer. Response	Emergency Telephone Procedures	4.2.1, 4.2.1(A)(B)
FF1 Non Emerg. Phone Call	Fire Department Telephone Skills (non-emergency)	4.2.2, 4.2.2(A)(B)
FF1 Radio Size Up	Radio Procedures for Fire Ground Size-Up	4.2.3, 4.2.3(A)(B)
FF1 Radio Operation	Radio Procedures Emergency/Non-Emergency	4.2.3, 4.2.3(A)(B)
FF1 Mayday	Activate Emergency Call for Assistance	4.2.4, 4.2.4(A)(B)
FF1 SCBA Replace Cyl. 1 FF	SCBA – Replacement of Cylinder (one person)	4.3.1, 4.3.1(A)(B)
FF1 SCBA Replace Cyl. 2 FF	SCBA – Replacement of Cylinder (two person)	4.3.1, 4.3.1(A)(B)
FF1 SCBA Donning	Donning SCBA	4.3.1, 4.3.1(A)(B)
FF1 SCBA Inspection	SCBA – Ready for Immediate Use	4.3.1, 4.3.1(A)(B), 4.5.1(A)(B)
FF 1 SCBA Rest. Pass. Vertical	Use of SCBA – Restricted Passage (vertical egress)	4.3.1, 4.3.1(A)(B), 4.3.9, 4.3.9(A)(B)
FF1 SCBA Rest. Pass. Horizontal	Use of SCBA – Restricted Passage (horizontal egress)	4.3.1, 4.3.1(A)(B), 4.3.9, 4.3.9(A)(B)
FF1 SCBA Failure Procedure	SCBA Failure Procedures	4.3.1, 4.3.1(A)(B)
FF1 Apparatus	Safety – Mounting, Riding, Dismounting Apparatus	4.3.2, 4.3.2(A)(B), 4.3.3, 4.3.3(A)(B)
FF1 Scene Control	Deployment – Scene Control Devices	4.3.3, 4.3.3(A)(B), 4.3.2, 4.3.2(A)(B)
FF1 Tools Hand	Identify and Carry Tools	4.3.4, 4.3.4(A)(B)
FF1 Tools Power	Identify and Carry Tools	4.3.4, 4.3.4(A)(B)
FF1 Force Entry Door	Forcible Entry – Door	4.3.4, 4.3.4(A)(B)
FF1 Force Entry Window (Non Dest.)	Window Opening (non-destructive)	4.3.4, 4.3.5(A)(B)
FF1 Force Entry Wall Breach	Forcible Entry – Plaster or Gypsum Partition Walls	4.3.4, 4.3.4(A)(B)
FF1 Trapped w/ Hose	Trapped/Disoriented with Hose	4.3.5, 4.3.5(A)(B)
FF1 Trapped w/o Hose	Trapped/Disoriented without Hose	4.3.5, 4.3.5(A)(B)
FF1 Ladders 24' Raise Single FF	24' Extension Ladder – Carry/Raise/Extend (one person)	4.3.6, 4.3.6(A)(B)
FF1 Ladders 24' Single FF Lower	24' Extension Ladder – Lower/Removal (one person)	4.3.6, 4.3.6(A)(B)
FF1 24'-28' Raise 2 FF	24'/28' Extension Ladder – Carry/Raise/Extend (two person)	4.3.6, 4.3.6(A)(B)
FF1 24'-28' Lower 2 FF	24'/28' Extension Ladder – Lowering/Removal (two person)	4.3.6, 4.3.6(A)(B)
FF1 Ladders 14'/20' Carry/Raise 1 FF	14'/20' Single Ladder – Carry/Raise (one person)	4.3.6, 4.3.6(A)(B)
FF1 Ladders 14'/20' Lower/Remove 1 FF	14'/20' Single Ladder – Lower Removal (one person)	4.3.6, 4.3.6(A)(B)
FF1 Ladders 35' Carry/Raise 3 FF	35' Extension Ladder – Carry/Raise/Extend (three person)	4.3.6, 4.3.6(A)(B)
FF1 Ladders 35' Lower/Remove 3 FF	35' Extension Ladder – Lowering/Removal (three person)	4.3.6, 4.3.6(A)(B)

**Firefighter I Evaluation Skill Sheet**

FF1 Car Fire	Fire Suppression – Vehicle Fires	4.3.7, 4.3.7(A)(B)
FF1 Fire Attack Class A	Fire Suppression – Piles/Stacks/Dumpster/Storage Container of Class A Combustibles	4.3.8, 4.3.8(A)(B)
FF1 Master Stream	Deploy Master Stream Device (two person)	4.3.8, 4.3.8(A)(B)
FF1 Rescue Downed FF w/ Func. SCBA	Rescue a Downed Firefighter w/ Functioning SCBA	4.3.9, 4.3.9(A)(B), 4.3.1, 4.3.1(A)(B)
FF1 Rescue FF w/o Func. SCBA	Rescue a Downed Firefighter w/ Non-Functioning SCBA	4.3.9, 4.3.9(A)(B), 4.3.1, 4.3.1(A)(B)
FF1 Ladders Rescue Conscious Victim	Removal Over Ladder (conscious person)	4.3.9, 4.3.9(A)(B), 4.3.6, 4.3.6(A)(B)
FF1 Ladders Unconscious Victim	Removal Over Ladder (unconscious person)	4.3.9, 4.3.9(A)(B), 4.3.6, 4.3.6(A)(B)
FF1 Search Primary	Conduct a Primary Search	4.3.9, 4.3.9(A)(B)
FF1 Search Secondary	Conduct a Secondary Search	4.3.9, 4.3.9(A)(B)
FF1 Search Carries	Drags and Carries	4.3.9, 4.3.9(A)(B)
FF1 Fire Attack Interior	Fire Suppression – Interior Structure, Above Grade, Grade Level, Below Grade	4.3.10, 4.3.10(A)(B)
FF1 Fire Attack Interior	Hose Deployment	4.3.10, 4.3.10(A)(B), 4.3.8, 4.3.8(A)(B)
FF1 Fire Attack Interior	Hoseline Advancement	4.3.10, 4.3.10(A)(B), 4.3.8, 4.3.8(A)(B)
FF1 Hose Ladder Ops	Charged Hoseline Operation from Ground Ladder (2person)	4.3.10, 4.3.10(A)(B)
FF1 Hose Nozzle Use	Use of Nozzle	4.3.10, 4.3.10(A)(B), 4.3.13, 4.3.13(A)(B), 4.3.8, 4.3.8(A)(B)
FF1 Hose Replace Length	Replace Burst Section of Hose	4.3.10, 4.3.10(A)(B)
FF1 Hose Add Length	Adding a Length of hose	4.3.10, 4.3.10(A)(B)
FF1 Hose Couple/Uncouple	Coupling and Uncoupling Hose (one person)	4.3.10, 4.3.10(A)(B)
FF1 Hose Couple/Uncouple 2FF	Coupling and Uncoupling Hose (two person)	4.3.10, 4.3.10(A)(B)
FF1 Standpipe Operation	Standpipe Operation	4.3.10, 4.3.10(A)(B)
FF1 Hose Drain	Hose Section Drain and Carry	4.3.10(A)(B), 4.5.2(A)(B)
FF1 Hose Removal	Remove Hose from Upper Floors	4.3.10, 4.3.10(A)(B), 4.3.14, 4.3.14(A)(B)
FF1 Hose Remove from Bldg.	Remove hose from Building to Minimize Water Damage	4.3.10, 4.3.10(A)(B), 4.3.14, 4.3.14(A)(B)
FF1 Ladders Work from Ladder	Working Safely from Ground Ladders	4.3.11, 4.3.11(A)(B), 4.3.6, 4.3.6(A)(B)
FF1 Vent. Window	Window Opening (destructive)	4.3.11, 4.3.11(A)(B), 4.3.6, 4.3.6(A)(B)
FF1 Vent. Hydraulic	Hydraulic Ventilation	4.3.11, 4.3.11(A)(B)
FF1 Vent. Neg. Pressure	Negative Pressure Ventilation	4.3.11, 4.3.11(A)(B)
FF1 Vent. Pos. Pressure	Positive Pressure Ventilation	4.3.11, 4.3.11(A)(B)
FF1 Ladders Roof Ladder Deployment	Roof Ladder Deployment	4.3.12, 4.3.12(A)(B), 4.3.6, 4.3.6(A)(B)
FF1 Ladders Roof Ladder Removal	Roof Ladder – Lower/Removal (two person)	4.3.12, 4.3.12(A)(B), 4.3.6, 4.3.6(A)(B)
FF1 Ladders Climb with Tool	Ladder Climb with tool	4.3.12, 4.3.12(A)(B), 4.3.11, 4.3.11(A)(B), 4.3.6, 4.3.6(B)

**Firefighter I Evaluation Skill Sheet**

FF1 Vet. Determine Roof Integrity	Determining Roof Integrity	4.3.12, 4.3.12(A)(B)
FF1 Vent. Flat Roof	Roof Ventilation – Flat	4.3.12, 4.3.12(A)(B)
FF1 Vent. Pitched Roof	Roof Ventilation – Pitched	4.3.12, 4.3.12(A)(B)
FF1 Overhaul	Expose Hidden Fire	4.3.13, 4.3.13(A)(B), 4.3.10, 4.3.10(A)(B)
FF 1 Salvage Cover Deploy 2 FF	Salvage Cover Deployment (two person)	4.3.14, 4.3.14(A)(B)
FF1 Salvage Water Catchall	Construction and Use of Water Catchall	4.3.14, 5.3.14(A)(B)
FF1 Salvage Water Chute	Construction and use of Water Chute	4.3.14, 4.3.14(A)(B)
FF1 Salvage Water Removal	Routing/Removal of Water and Debris (vertical) Upper Floors	4.3.14, 4.3.14(A)(B)
FF1 Salvage Water Removal	Routing/Removal of Water and Debris (horizontal)	4.3.14, 4.3.14(A)(B)
FF1 Salvage Water Removal Below Grade	Routing/Removal of Water and Debris (below grade)	4.3.14, 4.3.14(A)(B)
FF1 Salvage Close Bldg.	Closes up a Building	5.3.14, 4.3.14(A)(B)
FF1 Overhaul	Separate and Remove Charred Material	4.3.14, 4.3.14(A)(B), 4.3.13, 5.3.13(A)(B)
FF1 Sprinkler Wedging	Stop Water Flow from Sprinkler	4.3.14, 4.3.14(A)(B)
FF1 W.S. Drafting	Drafting (static source) Four Person	4.3.15, 4.3.15(A)(B)
FF1 W.S. Hand Lay	Hydrant to Pumper Connection	4.3.15, 4.3.15(A)(B)
FF1 W.S. Forward Lay	Hydrant Connection (forward lay)	4.3.15, 4.3.15(A)(B)
FF1 W.S. Reverse Lay	Hydrant Connection (reverse lay)	4.3.15, 4.3.15(A)(B)
FF1 Siamese Connection	Sprinkler/Standpipe (Siamese) FDC	4.3.15, 4.3.15(A)(B)
FF1 Port. Exting.	Extinguish Class A/B/C Fires	4.3.16, 4.3.16(A)(B)
FF1 Scene Lighting	Safety Procedures for Lighting Equipment	4.3.17, 4.3.17(A)(B)
FF1 Utility Control	Control Utility Service	4.3.18, 4.3.18(A)(B)
FF1 Ground Cover Fire	Donning Ground Cover Personal Protective Equipment	4.3.19, 4.3.19(A)(B)
FF1 Ground Cover Fire	Tool and Appliances for Simple Ground Cover Hose Lay	4.3.19, 4.3.19(A)(B)
FF1 Ground Cover Fire	Use of Hand Tools while Building a Fire Control Line	4.3.19, 4.3.19(A)(B)
FF1 Ropes & Knots	Tie Knots and Hoist Tools	4.3.20, 4.3.20(A)(B)
FF1 Ropes & Knots	Knot Selection and Tying	4.3.20, 4.3.20(A)(B)
FF1 Air Monitoring	Use of Air Monitoring Equipment	4.3.21, 4.3.21(A)(B)
FF1 Ladder Maintenance	Cleaning/Maintaining/Inspecting Department Ladders	4.5.1, 4.5.1(A)(B)
FF1 SCBA Inspection	Maintenance/Use SCBA	4.5.1, 4.5.1(A)(B)
FF1 Salvage Cover Maintenance.	Inspection/Maintenance of Salvage Cover	4.5.1, 4.5.1(A)(B)
FF1 Rope Maint.	Rope Maintenance	4.5.1, 4.5.1(A)(B)
FF1 Hose Storage	Hose Storage	4.5.2, 4.5.2(A)(B)
FF1 Hose Rolls	Hose Rolls	4.5.2, 4.5.2(A)(B)
FF1 Hose Load Attack	Hose Bed Attack	4.5.2, 4.5.2(A)(B)



State of Connecticut

COMMISSION ON FIRE PREVENTION AND CONTROL

Firefighter I Evaluation Skill Sheet



FF1 Hose Load Supply	Hose Bed Supply	4.5.2, 4.5.2(A)(B)
FF1 Hose Maint.	Cleaning/Maintaining/Inspecting Hose	4.5.2, 4.5.2(A)(B)
FF1 Hose Maint.	Cleaning/Maintaining/Inspecting Hose Couplings	4.5.2, 4.5.2(A)(B)

Rev 3/2020

Release Date

Sec. 7-323l-8a. Fire officer I, II, III and IV (a) General²⁴

(1) A candidate for fire officer I, fire officer II, fire officer III or fire officer IV certification shall be an active member of a fire department.

(2) A candidate for fire officer I shall be a certified fire service instructor I or shall document in writing that the candidate has been an active member of a fire department since prior to July 1, 1977.

(3) A candidate for fire officer II shall be a certified fire officer I or shall document in writing that the candidate has served continuously as a fire officer since prior to July 1, 1986.

(4) A candidate for fire officer III shall be a certified fire officer II.

(5) A candidate for fire officer IV shall be a certified fire officer III.

(6) No person shall be certified to the level of fire officer I, fire officer II, fire officer III or fire officer IV until all examination requirements of this standard for that level have been fulfilled.

(b) Objectives: The candidate for certification to the level of fire officer I, fire officer II, fire officer III or fire officer IV shall comply with the performance objectives of NFPA 1021, Standard for Fire Officer Professional Qualifications.

(c) The commission shall certify as a fire officer I, fire officer II, fire officer III or fire officer IV those candidates who have satisfactorily demonstrated the ability to meet the requirements as prescribed in this section.

(Effective October 5, 2018)

The next images outline the State of Connecticut Officer I curriculum and NFPA 1021 standard objectives that have to be met for successful completion of the course.

24. Regulations of Connecticut State Agencies, Title 7. Municipalities. Fire Fighter Qualification and Certification Policy and Procedures and Regulations.



Skill Sheet #: FO1-1		Primary Task: Planning, Assigning, Coordinating – Emergency Operations	
Objective(s):	4.2.1, 4.2.1(A)(B), 4.2.6, 4.2.6(A)(B)	NFPA Standard:	1021
Performance Evaluation Sheet			
Tasks:			
		1st	2nd
1.	Determines tasks/objectives to be accomplished		
2.	* Determines priority of actions required		
3.	Prepares a plan for implementation of activities		
4.	Assigns responsibilities to subordinates using clear, concise instructions		
5.	Coordinates efforts of subordinates in multi-task objectives		
6.	Evaluates/reviews results		
7.	Considers safety aspects as required		
* Critical Step	Failure of this step mandates failure on the entire objective	Safety is PARAMOUNT	Total number steps candidate must complete to pass 5

NFPA 1021, 2020 edition 12/2021

Skill Sheet #: FO1-2		Primary Task: Planning, Assigning, Coordinating – Non-Emergency Operations	
Objective(s):	4.2.2, 4.2.2(A)(B), 4.2.6, 4.2.6(A)(B)	NFPA Standard:	1021
Performance Evaluation Sheet			
Tasks:			
		1st	2nd
1.	Determines tasks/objectives to be accomplished		
2.	*Determines priority of actions required		
3.	Prepares a plan for implementation of activities		
4.	Assigns responsibilities to subordinates using clear, concise instructions		
5.	Coordinates efforts of subordinates in multi-task objectives		
6.	Evaluates/reviews results		
7.	Considers safety aspects as required		
* Critical Step	Failure of this step mandates failure on the entire objective	Safety is PARAMOUNT	Total number steps candidate must complete to pass 6

NFPA 1021, 2021 edition 12/2021



Skill Sheet #: FO1-4		Primary Task: Recommend Action – Personnel Issue	
Objective(s):	4.2.4, 4.2.4(A)(B), 4.2.5, 4.2.5(A)(B)	NFPA Standard:	1021
Performance Evaluation Sheet			
Tasks:			
		1st	2nd
1.	Identifies department policies and procedures for dealing with member-related issue(s) and/or problem(s)		
2.	Describes indicators of member-related issues(s) and/or problem(s)		
3.	Researches and/or identifies appropriate resources for member assistance		
4.	*Recommends action(s), referral(s) in accordance with department policies and procedures		
* Critical Step	Failure of this step mandates failure on the entire objective	Safety is PARAMOUNT	Total number steps candidate must complete to pass 3

NFPA 1021, 2020 edition 12/2021

Skill Sheet #: FO1-3		Primary Task: Direct Unit Training	
Objective(s):	4.2.3, 4.2.3(A)(B)	NFPA Standard:	1021
Performance Evaluation Sheet			
Tasks:			
		1st	2nd
1.	* Identifies fire company training policies and procedures for safe training evolutions		
2.	Reviews proposed training evolution to confirm compliance with safety plan		
3.	Identifies and assigns roles and responsibilities for performing training evolution		
4.	*Communicates clear directions to participating members during training evolution		
5.	Provides coaching and/or performance-related feedback to facilitate learning		
* Critical Step	Failure of this step mandates failure on the entire objective	Safety is PARAMOUNT	Total number steps candidate must complete to pass 4

NFPA 1021, 2020 edition 12/2021



Skill Sheet #: FO1-5		Primary Task: Apply Human Resource Policy	
Objective(s) : 4.2.4, 4.2.4(A)(B), 4.2.5, 4.2.5(A)(B), 4.4.1, 4.4.1(A)(B)		NFPA Standard: 1021	Candidate #
Performance Evaluation Sheet			
Tasks:			
		1st	2nd
1. Identifies department policies and procedures for dealing with human resources issues			
2. Describes human resources issues which may require intervention at the company officer level			
3. Initiates action in accordance with department policies and procedures			
4. * Documents actions in accordance with department policies and procedures			
* Critical Step Failure of this step mandates failure on the entire objective		Safety is PARAMOUNT	Total number steps candidate must complete to pass 3

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Skill Sheet #: Fo1-6		Primary Task: Coordinate Projects, Tasks	
Objective(s) : 4.2.5, 4.2.5(A)(B), 4.2.6, 4.2.6(A)(B)		NFPA Standard: 1021	Candidate #
Performance Evaluation Sheet			
Tasks:			
		1st	2nd
1. Identifies member roles and job responsibilities			
2. Develops a plan for assigning and completing projects/tasks			
3. * Prioritizes projects/tasks; assigns specific duties			
4. Describes selected method to hold members accountable for task completion			
5. Identifies procedures for addressing consequences of non-compliance			
* Critical Step Failure of this step mandates failure on the entire objective		Safety is PARAMOUNT	Total number steps candidate must complete to pass 4

NFPA 1021, 2020 edition 12/2021



Skill Sheet #: FO1-7		Primary Task: Initiate Action: Community Need	
Objective(s) : 4.3.1, 4.3.1(A)(B)		NFPA Standard: 1021	Candidate #
Performance Evaluation Sheet			
Tasks:			
		1st	2nd
1. Identifies community need; confirms specifics and validity			
2. Describes departmental policies concerning community relations outreach			
3. Maintains courteous and professional demeanor			
4. Researches feasible solutions to address need			
5. * Recommends proposed actions, documenting communication in accordance with departmental policies and procedures			
* Critical Step Failure of this step mandates failure on the entire objective		Safety is PARAMOUNT	Total number steps candidate must complete to pass 4

NFPA 1021, 2020 edition 12/2021

Skill Sheet #: FO1-8		Primary Task: Response to Citizen Concern	
Objective(s) : 4.3.2, 4.3.2(A)(B)		NFPA Standard: 1021	Candidate #
Performance Evaluation Sheet			
Tasks:			
		1st	2nd
1. Identifies and validates concern			
2. Describes departmental policies and procedures for handling public inquiries			
3. Maintains courteous and professional demeanor			
4. * Responds to the concern promptly with correct information or makes appropriate referral in accordance with department policies and procedures			
5. Completes appropriate departmental documentation			
* Critical Step Failure of this step mandates failure on the entire objective		Safety is PARAMOUNT	Total number steps candidate must complete to pass 4

NFPA 1021, 2020 edition 12/2021



Skill Sheet #: FO1-9		Primary Task: Response to Public Inquiry	
Objective(s) : 4.3.3,4.3.3(A)(B)	NFPA Standard: 1021	Candidate #	
Performance Evaluation Sheet			
Tasks:			
	1st	2nd	
1. Identifies and validates inquiry			
2. Describes departmental policies and procedures for handling public inquiries			
3. Maintains courteous and professional demeanor			
4. * Responds to the inquiry promptly with correct information or makes appropriate referral in accordance with department policies and procedures			
5. Completes appropriate departmental documentation			
* Critical Step	Failure of this step mandates failure on the entire objective	Safety is PARAMOUNT	Total number steps candidate must complete to pass 4

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Skill Sheet #: FO1-10		Primary Task: Implement a New Department Policy	
Objective(s) : 4.4.1, 4.4.1(A)(B)	NFPA Standard: 1021	Candidate #	
Performance Evaluation Sheet			
Tasks:			
	1st	2nd	
1. States objective clearly			
2. * Interprets policy objective			
3. Reviews policy to determine need for any revisions, clarification			
4. Schedules formal presentation of policy for all members			
5. * Explains policy accurately and appropriately, with assurance received that members understand intent and content			
* Critical Step	Failure of this step mandates failure on the entire objective	Safety is PARAMOUNT	Total number steps candidate must complete to pass 4

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Skill Sheet #: FO1-11		Primary Task: Execute Administrative Functions	
Objective(s) : 4.4.2, 4.4.2(A)(B)	NFPA Standard: 1021	Candidate #	
Performance Evaluation Sheet			
Tasks:			
	1st	2nd	
1. Describes department policies and procedures for report completion and forms management			
2. * Identifies criteria for acceptable reports, logs and file management functions			
3. Drafts acceptable report/log/form (or reviews existing written report/log/form for acceptability) in accordance with department policies and procedures			
4. Describes department's record management system and its operation			
5. Completes (or describes steps to complete) an electronic report/log/form in accordance with department policies and procedures			
6. * Demonstrates the ability to discern and differentiate among reports for completeness			
7. Demonstrates or describes the steps necessary for proper forms and record management in accordance with department policies and procedures			
* Critical Step	Failure of this step mandates failure on the entire objective	Safety is PARAMOUNT	Total number steps candidate must complete to pass 5

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Skill Sheet #: FO1-12		Primary Task: Prepare a Budget Request	
Objective(s) : 4.4.3, 4.4.3(A)(B)	NFPA Standard: 1021	Candidate #	
Performance Evaluation Sheet			
Tasks:			
	1st	2nd	
1. Identifies need			
2. Describes departmental budgeting policies and procedures			
3. *Provides sufficient data for purchase request/budget submittal			
4. Demonstrates ability to complete required written (or electronic) forms and reports required for a budget request			
* Critical Step	Failure of this step mandates failure on the entire objective	Safety is PARAMOUNT	Total number steps candidate must complete to pass 3

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Skill Sheet #: FO1-13 Primary Task: Fire Department Organization	
Objective(s) : 4.4.4, 4.4.4(A)(B)	NFPA Standard: 1021 Candidate #
Performance Evaluation Sheet	
Tasks:	
	1st 2nd
1. Diagrams the organizational chart of his/her department	
2. * Describes the chain of command and job responsibilities within the department	
3. Describes the basic principles of the organization and its mission statement	
4. Presents all written descriptions and verbally communicates each management component accurately in a clear, concise manner	
* Critical Step Failure of this step mandates failure on the entire objective	Safety is PARAMOUNT Total number steps candidate must complete to pass 3

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Skill Sheet #: FO1-14 Primary Task: Prepare A Concise Report	
Objective(s) : 4.4.5B, 4.4.2	NFPA Standard: 1021 Candidate #
Performance Evaluation Sheet	
Tasks:	
	1st 2nd
1. Produces a report that is clear and concise	
2. Uses proper spelling, grammar and punctuation	
3. Uses proper format for the purpose, in accordance with department policy	
4. *Produces a report that contains correct, appropriate information relating to the topic	
* Critical Task Failure of this task mandates failure on the entire objective	Safety is PARAMOUNT Total number tasks candidate must complete to pass 3

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Skill Sheet #: FO1-15 Primary Task: Collecting Incident Response Data	
Objective(s) : 4.4.5, 4.4.5(A)(B)	NFPA Standard: 1021 Candidate #
Performance Evaluation Sheet	
Tasks:	
	1st 2nd
1. Identifies the goals and mission of the fire department	
2. Locates the data collection reports for fire department	
3. Describes each of the data collection tools	
4. Demonstrates the use of the data collection reports in an oral and/or written presentation	
5. *Describes the need for an accurate and timely incident response report	
* Critical Step Failure of this step mandates failure on the entire objective	Safety is PARAMOUNT Total number steps candidate must complete to pass 4

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Skill Sheet #: FO1-16 Primary Task: Fire Inspection Procedures	
Objective(s) : 4.5.1, 4.5.1(A)(B)	NFPA Standard: 1021 Candidate #
Performance Evaluation Sheet	
Tasks:	
	1st 2nd
1. Wears appropriate identification	
2. Reviews and accurately describes fire detection and protection systems pertaining to the occupancy	
3. Identifies fire and life safety hazards	
4. Identifies markings, identification and storage requirements of all hazardous materials	
5. Describes considerations for securing incident scene and preserving evidence	
6. * Produces an accurate, clear, concise report of findings and recommended actions, using appropriate forms in accordance with department policies and procedures	
* Critical Task Failure of this task mandates failure on the entire objective	Safety is PARAMOUNT Total number tasks candidate must complete to pass 5

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Skill Sheet #: FO1-17		Primary Task: Incident Scene Security	
Objective(s) : 4.5.3, 4.5.3(A)(B)	NFPA Standard: 1021	Candidate #	
Performance Evaluation Sheet			
Tasks:			
	1st	2nd	
1. Secures fire ground: Enforces and secures scene via police, fire officer, fire marshal, firefighter, etc.			
2. * Isolates the area(s) of origin			
3. Limits personnel from entering area after conclusion of fire suppression activities a. Documents those who have need to enter			
4. Secures potential evidence by limiting access/securing area			
* Critical Step	Failure of this step mandates failure on the entire objective	Safety is PARAMOUNT	Total number steps candidate must complete to pass 3

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Skill Sheet #: FO1-18		Primary Task: Develop Initial Action Plan	
Objective(s) : 4.6.1, 4.6.1(A)(B), 4.6.2	NFPA Standard: 1021	Candidate #	
Performance Evaluation Sheet			
Tasks:			
	1st	2nd	
1. Reviews size-up information			
2. Identifies strategic goals/priorities a. Life Safety b. Incident Stabilization c. Property Conservation			
3. * Formulates tactical objectives			
4. Identifies/allocates available resources			
* Critical Step	Failure of this step mandates failure on the entire objective	Safety is PARAMOUNT	Total number steps candidate must complete to pass 3

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Skill Sheet #: FO1-19		Primary Task: Implement Incident Action Plan	
Objective(s) : 4.2.1, 4.2.1(A)(B), 4.6.2, 4.6.2(A)(B)	NFPA Standard: 1021	Candidate #	
Performance Evaluation Sheet			
Tasks:			
	1st	2nd	
1. Describes content elements of available preplans			
2. Communicates present incident status			
3. Verifies available resources			
4. Determines continued appropriateness of current action mode			
5. Utilizes departmental incident command system, transfers command as appropriate			
6. *Ensures personnel accountability			
7. Determines tasks/objectives to be accomplished by crew			
8. *Determines priority sequence of actions required			
9. Assigns appropriate emergency action responsibilities to subordinates clearly/concisely			
10. Coordinates teamwork of crew			
11. Continually evaluates situation, revises as needed			
12. Considers safety aspects, takes immediate corrective action			
* Critical Step	Failure of this step mandates failure on the entire objective	Safety is PARAMOUNT	Total number steps candidate must complete to pass 9

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Skill Sheet #: FO1-20		Primary Task: Develop and Conduct a Post Incident Analysis	
Objective(s) : 4.6.3, 4.6.3(A)(B)	NFPA Standard: 1021	Candidate #	
Performance Evaluation Sheet			
Tasks:			
	1st	2nd	
1. Identifies department policies and procedures for post-incident analysis and reporting			
2. Describes structural, environmental and resources considerations affecting firefighting activities			
3. *Identifies and evaluates critical elements/actions concerning the incident			
4. Provides appropriate information on forms/reports as required by department policy			
5. Describes procedures for processing post-incident reports in accordance with department policy			
* Critical Step	Failure of this step mandates failure on the entire objective	Safety is PARAMOUNT	Total number steps candidate must complete to pass 4

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Skill Sheet #: FO1-21		Primary Task: Safety Plan Implementation	
Objective(s) : 4.7.1, 4.7.1(A)(B)	NFPA Standard: 1021	Candidate #	
Performance Evaluation Sheet			
Tasks:			
	1st	2nd	
1. Defines objective safety policy to alleviate potential concern(s)			
2. * Outlines action to be taken (e.g., in-service training, motivation, equipment)			
3. Defines individual roles and responsibilities			
4. Defines appropriate timeframe to accomplish task			
5. Lists enforcement/control procedures			
6. Identifies consequences of non-compliance			
7. References appropriate laws, standards and regulations			
* Critical Step	Failure of this step mandates failure on the entire objective	Safety is PARAMOUNT	Total number steps candidate must complete to pass 5

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Skill Sheet #: FO1-22		Primary Task: Development of Accident Report / Investigation	
Objective(s) : 4.7.2, 4.7.2(A)(B)	NFPA Standard: 1021	Candidate #	
Performance Evaluation Sheet			
Tasks:			
	1st	2nd	
1. Outlines departmental procedure for initiation of accident reporting system			
2. * Investigates accident/gathers facts for written report			
3. Submits departmental forms with all information complete			
4. Submits information through organizational chain of command			
5. Indicates/suggests where/if departmental policy requires revision			
6. Submits recommended changes for revision/improvement			
* Critical Step	Failure of this step mandates failure on the entire objective	Safety is PARAMOUNT	Total number steps candidate must complete to pass 5

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Skill Sheet #: FO1-23		Primary Task: Department Physical Fitness	
Objective(s) : 4.7.3, 4.7.3(A)(B)	NFPA Standard: 1021	Candidate #	
Performance Evaluation Sheet			
Tasks:			
	1st	2nd	
1. Locates and describes the intent of NFPA 1500, Chapter 10			
2. Describes the fire department's health and safety policies			
3. Locates and identifies death and injury statistics from national, state or locally recognized authority or agency			
4. Advocates for an aspect of a fire service-related health and wellness program			
5. * Delivers a two (2) minute presentation on an aspect of a fire service-related health and wellness program			
* Critical Step	Failure of this step mandates failure on the entire objective	Safety is PARAMOUNT	Total number steps candidate must complete to pass 4

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Skill Sheet #: FO1-24		Primary Task: Initial Investigation, Origin and Cause Determination	
Objective(s) : 4.5.1, 4.5.1(A)(B), 4.5.3	NFPA Standard: 1021	Candidate #	
Performance Evaluation Sheet			
Tasks:			
	1st	2nd	
1. Records pertinent information from first-in fire/police personnel and witnesses relative to fire and smoke conditions, locations and circumstances			
2. Makes a preliminary determination as to the cause and origin of the fire incident			
3. * Determines the need to identify potential evidence			
4. * Determines the need to secure the incident scene to protect potential evidence from damage or disruption			
5. Determines the need to summon a qualified/trained fire investigator			
* Critical Step	Failure of this step mandates failure on the entire objective	Safety is PARAMOUNT	Total number steps candidate must complete to pass 4

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State of Connecticut
 COMMISSION ON FIRE PREVENTION AND CONTROL
Fire Officer I



Skill Sheet #: FO1-25		Primary Task: Pre-Incident Plan	
Objective(s) : 4.5.2, 4.5.2(A)(B)	NFPA Standard: 1021	Candidate #	
Performance Evaluation Sheet			
Tasks:			
		1st	2nd
1. Identifies department pre-incident plan format			
2. Records property name, address, owner, and emergency contact numbers accurately			
3. Reports occupancy type and capacity			
4. Identifies utilities present, shutoff methods and locations			
5. *Reports type of construction			
6. Identifies building materials			
7. Identifies special hazards			
8. Identifies fixed fire protection systems present			
9. Develops or identifies plan that is clear, legible, neat and usable at an emergency scene			
* Critical Step	Failure of this step mandates failure on the entire objective	Safety is PARAMOUNT	Total number steps candidate must complete to pass 8

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