

# Fire Service Analysis

September  
**2021**



**Williston Fire Department**  
Williston, Vermont



**AP TRITON**  
VISION • INNOVATION • SOLUTIONS

# Contents

**Acknowledgments..... iii**

**Introduction..... iv**

**SECTION I: ASSESSMENT OF CURRENT CONDITIONS..... 1**

**Community & Fire Department Overview .....2**

    The Town of Williston.....2

    The Williston Fire Department .....4

    Other Components of the Local Emergency Services System .....7

**Staffing & Personnel Management..... 9**

    Administrative & Supporting Staffing Levels ..... 10

    Emergency Response Staffing ..... 11

    Indicators for Change..... 17

    Personnel Management..... 19

    Communication ..... 24

    Reporting & Recordkeeping ..... 25

**Introduction to the Stakeholder Interviews .....26**

**Financial Review .....27**

    Financial Projections ..... 31

**Capital Facilities & Apparatus .....33**

    Williston Fire Station ..... 33

    Apparatus & Vehicles Inventory ..... 36

    Capital Medical Equipment..... 39

**Service Delivery & System Performance .....40**

    Temporal Analysis..... 41

    Spatial Analysis ..... 43

    Unit Workload Analysis ..... 46

    Historical System Performance ..... 48

**SECTION II: COMMUNITY RISK .....60**

**Assessment of Community Risk .....61**

    Population ..... 61

    Other Demographics ..... 68

    Physical Hazards ..... 71

    Land Use ..... 81

    Occupancy Types..... 84

**SECTION III: FINDINGS & RECOMMENDATIONS ..... 96**

**Findings ..... 97**

**Recommendations..... 100**

    Financial Recommendations ..... 100

    Staffing Recommendations ..... 100

    General Recommendations ..... 111

**SECTION IV: APPENDICES ..... 122**

**Appendix A: Summary of the Stakeholder Interviews ..... 123**

**Appendix B: Table of Figures ..... 130**

**Appendix C: References ..... 133**

## Acknowledgments

---

The entire AP Triton Team extends its appreciation to the elected officials, business members, and community members of Williston, the Williston Fire Department, and all others who contributed to this study.

### Town of Williston Selectboard

**Terry Macaig**

*Chair*

**Ted Kenney**

*Vice Chair*

**Jeff Fehrs**

**Gordon St. Hilaire**

**Greta D'Agostino**

## Introduction

---

AP Triton, LLC (Triton) was retained by the Town of Williston to conduct a comprehensive analysis of the Williston Fire Department (WFD) with emphasis on the current and future staffing needs of the community and the department. The study involved identifying risks and vulnerabilities within the Town's current staffing structure and identifying staffing models that align with current and future needs. The study includes current necessary and forecasted costs and more. Developing a Fire Service Analysis requires researching, studying, and evaluating many subject areas. This report begins with an overview of both the community and the fire department. Following this overview, the analysis discusses areas such as risk assessment, critical task analysis, agency service-level goals, and distribution and concentration measures. The report analyzes historical performance and concludes with policy and operational recommendations.

The following report represents hundreds of hours of work by Triton's subject matter experts, who approached this project from an unbiased perspective without any pre-conceptions. The study concludes with a myriad of recommendations to improve staffing and programs that will add to the efficiency of the department and enhance overall safety to the community.

---

# Section I: ASSESSMENT OF CURRENT CONDITIONS

---

## Community & Fire Department Overview

The following section consists of a broad overview of the Town of Williston and the Williston Fire Department.

### The Town of Williston

Founded in 1763 and located in Chittenden County along the southern banks of the Winooski River, Williston is a thriving suburb of the City of Burlington, Vermont. The Town encompasses nearly 31 square miles, with less than one square mile comprised of water.<sup>1</sup>

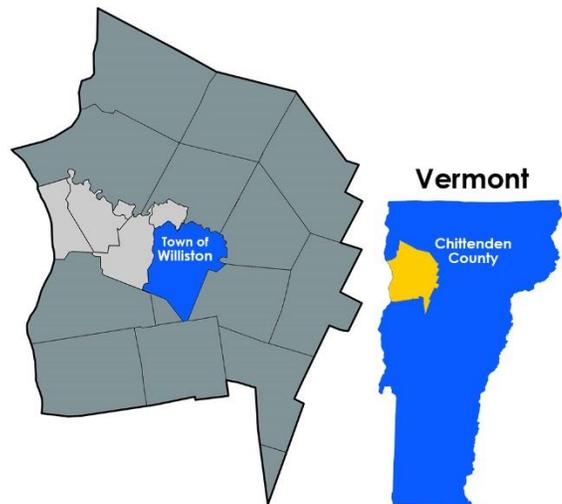
The 2020 estimated resident population of Williston was 10,103 persons.<sup>2</sup> During the daytime hours, the population increases to approximately 23,000 persons.<sup>3</sup> WFD's service area is comprised of 15% urban, 20% suburban, 65% rural areas.<sup>4</sup>

Just over 6% of the population was under the age of 5 years, while 17% of the population was estimated to be age 65 and older. According to Williston's *2016–2024 Comprehensive Plan*, the Town is concerned about its older and aging population, and its shrinking numbers of school-aged individuals. Based on different growth scenarios, the Town's population is expected to increase to between 11,000–12,000 persons by 2030.<sup>5</sup>

In 2019, the community consisted predominately of Caucasians at 92.8% of the population, followed by Asians at 2.2%, and Black or African Americans at 1.8%.<sup>6</sup>

There are an estimated 3,916 households in the Town, with nearly 80% being owner-occupied homes.<sup>7</sup> The median household income was \$94,727, with 6.5% of the population below the poverty level in 2019.<sup>8</sup>

Williston includes a large industrial district, commercial districts, residential districts, and rural farmland. A long stretch of Interstate 89 runs through the Town, and Lake Iroquois has a recreational park and various fishing access sites.

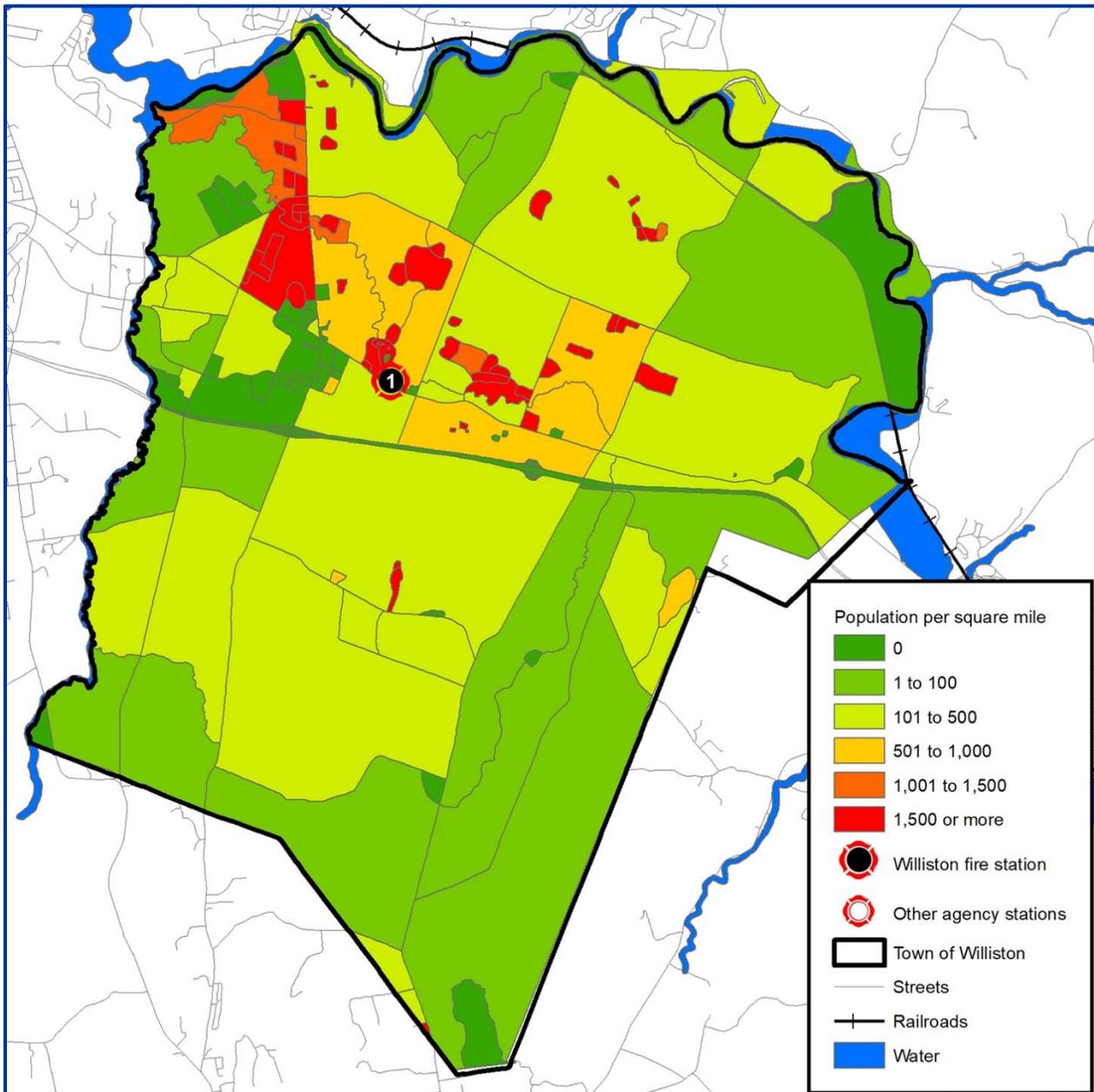


### Governance & Lines of Authority

Williston has a five-member Selectboard elected for staggered terms each March. The Selectboard appoints the Town Manager, who serves as the Chief Administrative Officer of the Town. All department heads—including the Fire Chief—are hired and supervised by the Town Manager.

The next figure illustrates the population density of the Town of Williston.<sup>9</sup>

**Figure 1: Population Density of the Town of Williston**

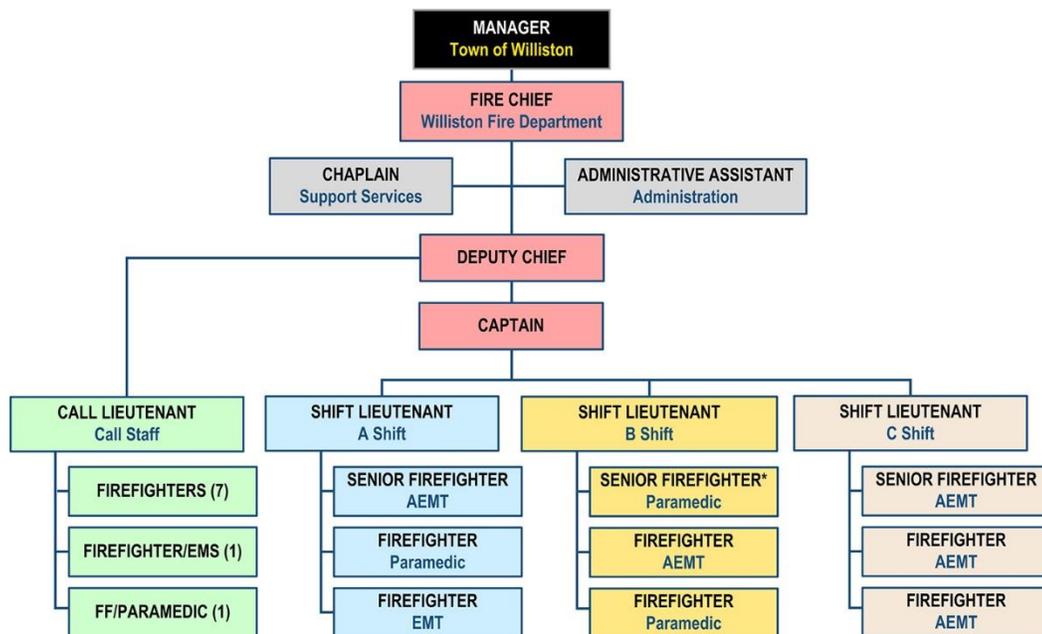


### The Williston Fire Department

The Town of Williston originally relied on adjacent cities and towns for fire protection. Following a major fire at the Williston Academy School, the Williston Volunteer Fire Department was formed in 1949. The Department's first apparatus was a 1930 Maxim pumper, which was purchased by two local residents.

WFD continued to grow from a membership of about 12–15 members to what it is today—a combination department comprised of a full-time Fire Chief, career staff, and on-call personnel. The Fire Chief is under contract to the Town through the end of September 2023. The following figure is an illustration of the current WFD organizational chart.

**Figure 2: Williston Organizational Chart (2021)**



\*Also serves as the Paramedic Coordinator

As shown in the preceding figure, one Deputy Chief (DC) is a direct report to the Fire Chief. The DC oversees Call Lieutenants who are responsible for on-call personnel assigned to fire suppression, fire/EMS, and Emergency Medical Services (EMS).

The Deputy Chief also supervises the Captain who is responsible for the career staff assigned to the three shifts in operations. Each shift has a Shift Lieutenant assigned to supervise the career firefighters.

## General Operations & Services

The Williston Fire Department deploys its apparatus and personnel from a single fire station. The primary services the Department provides are traditional structural and wildland fire suppression, medical first-response (MFR), and emergency medical transport services at both the Basic Life Support (BLS) and Advanced Life Support (ALS) levels. The Town has a current *Insurance Services Office (ISO) Public Protection Classification (PPC®)* rating of 3/3X.

WFD provides limited hazmat incident mitigation at the Operations level. It relies on mutual aid from other departments and the state for incidents of structural collapse and those involving confined space, swiftwater, trench, machinery extrication, high- and low-angle, and other types of rescues.

Minimum daily staffing is three personnel, 24 hours each day. A first-due ambulance (Rescue 1) is deployed from the station with two personnel—at least one of which is a certified Paramedic. In the event it is needed, the first-due engine (Engine 1) is staffed by the third firefighter or Advanced EMT and responds with the ambulance crew. During the day, if the Fire Chief, Deputy Chief, and Captain are available, they will also respond.

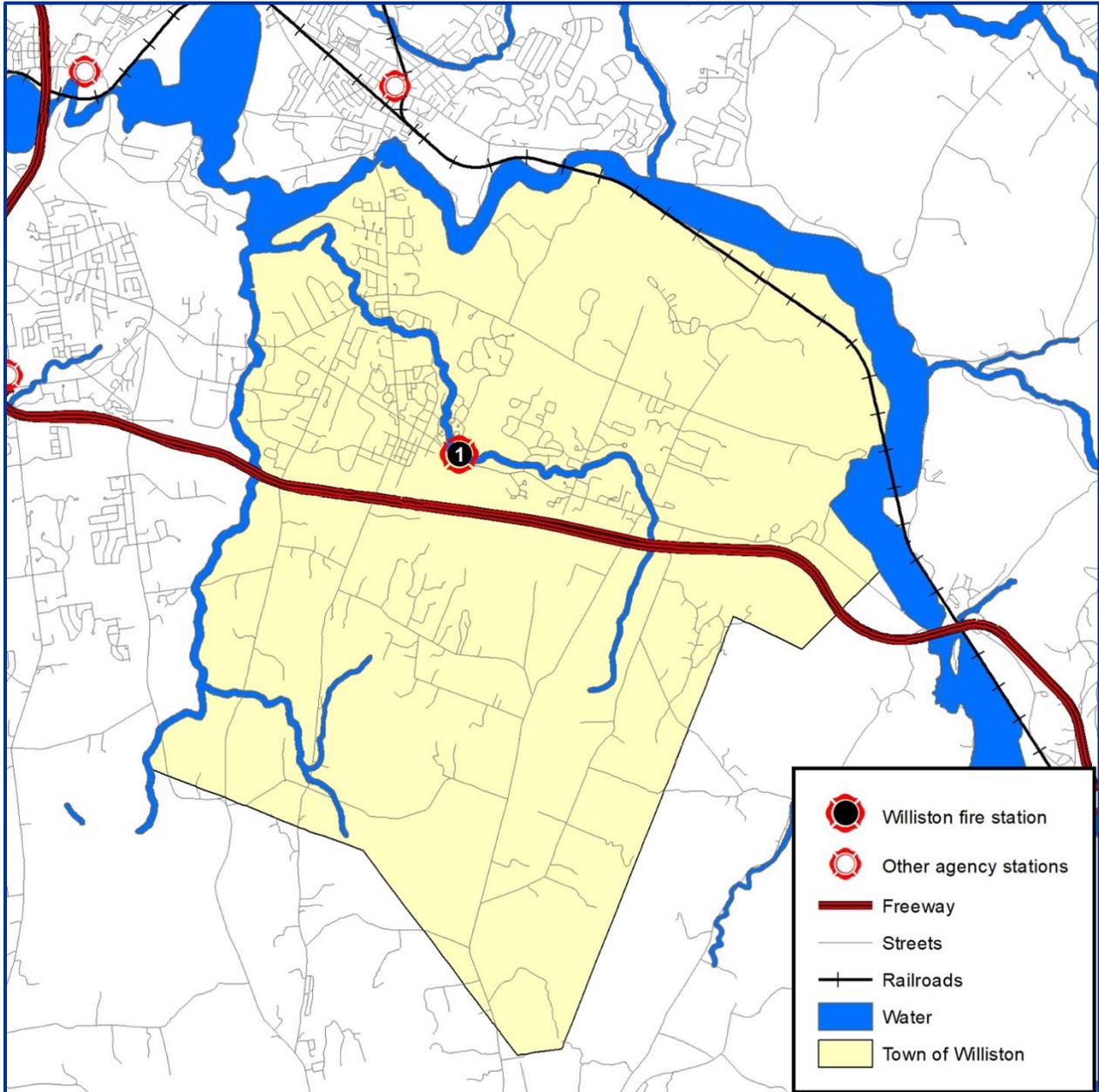
The Call Staff consists of one Lieutenant, Firefighters, Emergency Medical Technicians (EMT), and Firefighter/EMTs. Call Staff are required to ride a certain number of hours with career staff—which is mandatory for individuals that do not reside in Williston. Call Staff that live in the community may respond to the fire station and respond on an apparatus.

### Other WFD Services

The Williston Fire Department conducts plan reviews in addition to public education and prevention programs, certified car-seat installations, and certified American Heart Association (AHA) CPR courses. The Department does not currently conduct fire inspections, code enforcement, or fire and arson investigations.

The following figure is an illustration of the study area (service area) of the Williston Fire Department, which comprises approximately 31 square miles.

**Figure 3: Williston Fire Department Study Area**



## **Other Components of the Local Emergency Services System**

### **Communications & Dispatch**

Emergency communications and dispatch services are provided to WFD by the Shelburne Communications Center (SCC), which is operated by the Town of Shelburne Police Department (SPD).

SCC serves as a regional communications center and functions as both a primary and secondary Public Safety Answering Point (PSAP) and Public Safety Dispatching Point (PSDP). The Center answers 9-1-1 calls for 18 communities within the region and dispatches for 23 fire, EMS, and law enforcement organizations.

SCC's call-takers or Emergency Communications Technicians (ECTs) are trained and certified by the State of Vermont in Emergency Medical Dispatch (EMD). This training enables them to provide pre-arrival instructions to callers in medical emergencies. Information obtained from callers is relayed to the responding fire and EMS crews.

### **Clinical Facility**

The primary clinical facility to which patients are transported is the University of Vermont Medical Center (UVM MC), located 7.5 miles from Williston in Burlington. UVMC is a designated Level 1 Trauma Center, a Stroke Center, and maintains fully equipped catheterization lab capable of Percutaneous Coronary Intervention (PCI). UVMC's on-duty Emergency Physicians provide virtual medical control when necessary.

### **Emergency Management**

The *Chittenden County Regional Planning Commission (CCRPC)*, through its *Local Emergency Planning Committee (LEPC-1)*, is charged with emergency preparedness planning and response to a wide array of incidents in accordance with Vermont statutes.<sup>10</sup> LEPC-1 is comprised of multiple representatives from local municipalities, state agencies, and the Department of Homeland Security.

The Fire Chief is assigned the emergency management function for WFD and the Town of Williston. Within the 2021 Williston Emergency Management Plan, an Emergency Operations Center (EOC) Director and Coordinator have been appointed along with a Public Information Officer (PIO). Because of the size of the state, Vermont activates an EOC for large incidents or events.

### **Mutual Aid Organizations**

The Williston Fire Department has access to a large number of fire departments and other agencies that can provide a wide variety of mutual aid services. These range from career and volunteer fire departments to the Vermont Air National Guard Fire Department. These organizations can provide access to tenders, heavy and light rescues, utility vehicles, and an assortment of command cars.

In addition to fire protection and special operations services, WFD listed six ALS (Paramedic-level Services) transport providers in the region, along with two others that offer transport service by Advanced Emergency Medical Technicians (AEMT).

## Staffing & Personnel Management

Managing personnel to achieve maximum professionalism, efficiency, and personal satisfaction while providing a safe working environment is the basis of an organization's success. Safety, consistency, fairness, and professional growth opportunities are important values for a healthy organizational culture. While meeting today's emergency services challenges, an organization's size and structure should correlate to the specific risks of the community. WFD's personnel are highly skilled, motivated, and committed to providing fire and EMS services for the community. The key to success will be to ensure enough staffing and apparatus are available to mitigate community risk.

Several national organizations recommend standards to address staffing issues. The *Occupational Health & Safety Administration (OSHA) CFR 1910.134, Section (g)(4) Respiratory Protection Standard* and *National Fire Protection Association (NFPA) 1710 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments* or *NFPA 1720 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer and Combination Fire Departments* are frequently cited as authoritative documents. The *Center for Public Safety Excellence (CPSE)* publishes benchmarks on the number of personnel recommended on the emergency scene for various risk levels.

Many areas of the country that have traditionally relied on volunteer and call staffing to provide fire protection and emergency medical services are finding fewer citizens are available or willing to carry the responsibilities required of today's first responder.<sup>11</sup> Along with family considerations, many factors have contributed to the decline in volunteers, including increased calls for service because of population growth, calls for emergency medical services, and rising expectations of citizens that demand sophisticated services. Legislative and legal considerations, along with a higher potential threat of terrorism and active shooter situations, have also impacted first responders.

Staffing and management practices must strike a balance between administration, support staff, and operational services. This section will provide an overview of WFD's current ratio of each area of the organization and encourage recommendations for a staffing model that correlates to the community's needs. The current staffing model for Williston Fire Department supports:

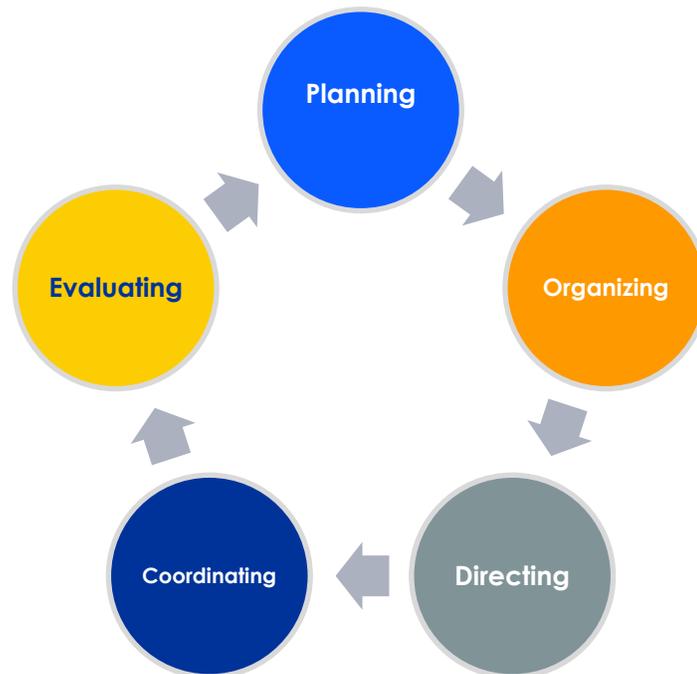
- Administration and Support Personnel—Staffing that provides oversight and support for the operations group.
- Operational Personnel—Emergency response personnel who deliver effective services to the community it serves.
  - Full-time personnel
  - Scheduled Call Personnel
  - Locally-activated Call Personnel

**Administrative & Supporting Staffing Levels**

Every division within a fire department must maintain the appropriate number of personnel and resources to function adequately. A balance of administration and support personnel compared to operational personnel is critical to accomplishing the organization's mission.

Administration and support staffing are responsible for planning, organizing, directing, coordinating, and evaluating each of the divisions and programs within the Fire Department. Often, tasks and functions within the management process occur simultaneously and may include other elements and components as needed. The following figure shows the management process.

**Figure 4: Administrative & Support Staff Management Process**



WFD is managed by two Chief Officers and one Fire Captain who work a 40-hour Monday-Friday work schedule. The Fire Chief and Deputy Fire Chief hold primarily administrative roles within the Department and support response operations. The Fire Chief's responsibilities also include Emergency Management. The Deputy Fire Chief is responsible for career and call staff scheduling as well as day-to-day operations. The Fire Captain holds the position of training officer, conducting in-house training for EMS, firefighting, and technical rescue. Support staff includes an administrative assistant and a volunteer clergy member.

WFD supports a 20% administrative/support staffing to line staffing ratio. The self-sufficiency of WFD chief officers may have reached maximum levels considering these personnel are needed for emergency response and to maintain a workload associated with a dynamically expanding community. As a result, additional full-time equivalents (FTEs) in administrative support may be required. The following figure shows WFD's current administrative and support staffing model.

**Figure 5: WFD Administrative & Support Staffing**

Position Description	No. of Personnel
Fire Chief	1
Deputy Fire Chief	1
Fire Captain	1
Administrative Assistant	1
Volunteer Clergy Member	1

**Emergency Response Staffing**

As a result of population growth, the Town of Williston is transitioning from a rural- to a suburban-sized town. In congruence with that growth, the Fire Department has seen increased demand for services, resulting in a shift from a volunteer department to a combination department staffing model using career and on-call personnel. Currently, the Department is staffed with 12 full-time personnel who work 24 hours a day, utilizing a three-platoon system. Each shift operates with three to four full-time personnel augmented by call staffing personnel.

In recent years, call staff levels have declined considerably. Younger people are no longer joining the WFD call staff force that was once an effective way to provide services to a small town. An aging population, population growth, and increasing demands from the community for service have also been factors in call force reductions, adding more responsibilities to career personnel. Since 2018, WFD's call staffing has declined 54.5% from 22 to the current staffing of 10 personnel. Call staff on the current roster possess various certification levels and training to work in a fire and/or EMS capacity. Some call staff live within 10 miles of the fire station. However, their response travel time can be in excess of 15 minutes. The call staff may request work shifts or respond from home once dispatched.

Industry standards offer guidance for determining the staffing level that will meet service demand. NFPA 1720 *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer (and Combination) Departments* (2020 Edition) provides specific definitions and operational standards for WFD:

- A combination fire department is defined as an organization having emergency service personnel comprising less than 85% majority of either volunteer or career membership.
- Four firefighters must be on the scene to proceed with an interior fire attack. This portion of the standard mirrors the OSHA Regulation "2 In/2 Out" policy (29 CFR 1910.134 (g)(4)) that states for an atmosphere immediately dangerous to life and health (IDLH) such as a structure fire, two personnel can fight the fire but at least two standby persons must be present before entry is made into the structure.
- A fire department should identify minimum staffing requirements to ensure the number of members are available to operate based on the needs of the community.

Within the NFPA 1720 standard, performance objectives to establish an effective response force are set forth based on U.S. Census Bureau criteria. With a population density of 279.7 persons per square mile, Williston is currently classified as a rural area (< 500 people per square mile). However, it is important to note that daytime population increases and continued population growth are transitioning the Town toward a suburban-sized area (500–1,000 people per square mile). The following figure identifies the performance objectives for this standard.

**Figure 6: NFPA 1720 Staffing & Response Times<sup>12</sup>**

Demand Zone	Demographics	Minimum Staff to Respond	Response times (minutes)	Meets Objective (%)
Urban area	> 1,000 people/mi <sup>2</sup>	15	9	90
Suburban Area	500–1,000 people/mi <sup>2</sup>	10	10	80
Rural Area	< 500 people/mi <sup>2</sup>	6	14	80
Remote Area	Travel distance ≥ 8 miles	4	Directly dependent on travel distance	90
Special Risks	Determined by the AHJ	Determined by AHJ based on risk	Determined by AHJ	90

The NFPA 1720 standard indicates WFD can consider adopting more than one performance benchmark within the Town as the most concentrated areas of suburban density are located in the northwest section of Williston. Minimum response staffing criteria in the standard include members of the Department and any automatic aid response from neighboring jurisdictions.

WFD's current staffing levels cannot meet the necessary performance objectives to provide an effective response force for firefighting operations. With 59% of WFD emergency incidents listed as EMS, the priority for WFD staffing is the rescue ambulance. As two personnel are required for the ambulance, WFD's staffing pattern results in only one career staff member on the engine, which falls short of the minimum criterion of four personnel. In addition, Triton notes that even with call staff responding for emergency incidents, WFD averages four personnel per incident, below the NFPA 1720 standard of performance for a rural area.<sup>13</sup>

The following figure depicts WFD emergency response staffing.

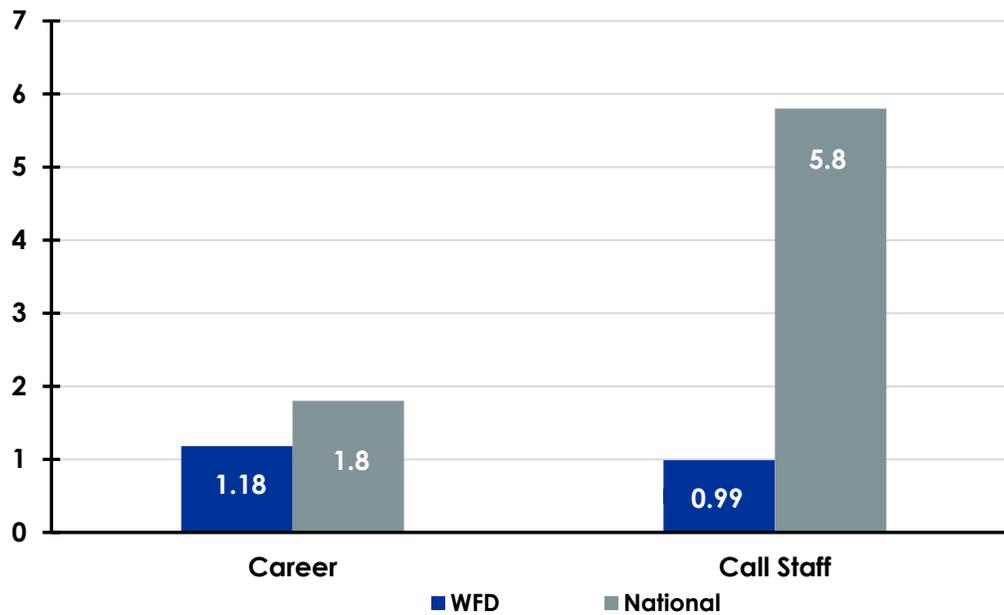
**Figure 7: Williston Fire Department Daily Minimum Staffing**

Apparatus	Staffing
Rescue 1/Ambulance	Two career personnel—ALS Unit
Rescue 2/Ambulance	Not staffed
Engine 1–Type I	One Lieutenant (Driver) and Captain from 0800–1600 Monday–Friday, if available. Call-staff when available.
Engine 2–Type I	Call staff, if available
Engine 3–Tender	Call staff, if available
Ladder 4	Call staff, if available
Car 1	Fire Chief
Car 2	Deputy Fire Chief

The 2018 *United States Fire Department Profile*, published by the NFPA, uses a national average staffing comparison per 1,000 population.<sup>14</sup> Based on a population of 10,103, the career staffing level for WFD is 1.18 per 1,000 population, which falls below the national average of 1.8. Furthermore, considering Williston’s daytime population increases to 23,000, the staffing level decreases even lower to .52 per 1,000 population.

Call staff available for WFD emergency operations is .99, which is substantially below the national average of 5.8 firefighters per 1,000 population as compared in the following figure.

**Figure 8: Firefighters per 1,000 Population**



**Mutual Aid**

WFD can request support from neighboring fire agencies during major incidents through mutual aid departments. Specifically, two stations are located within a five-mile radius of WFD. These areas include a non-staffed volunteer department 3.7 miles from WFD in Essex Junction and a staffed station in South Burlington. Triton notes neighboring departments are not counted towards performance objectives of minimum staffing as the agreement is not for automatic aid.

Mutual aid agreements allow neighboring departments to respond when the fire department with jurisdiction for the emergency incident requests assistance, such as water supply or more personnel response. An automatic aid agreement provides a dispatch protocol that simultaneously requests a full response from a neighboring department upon receipt of the initial alarm in the same manner as the primary or first due-in Department.

Although WFD can respond with a second engine or on the aerial apparatus, the current call staff does not ensure a trained apparatus operator is available. WFD's staffing constraints are creating an extraordinary dependence on mutual aid to answer initial calls for service.

WFD’s staffing limitations result in fewer apparatus (Fire and EMS) available for initial calls within the Town limits and increases response times, which directly impacts survivability rates for civilians experiencing an emergency. Therefore, more emphasis must be placed on building a system of redundancy to provide service even when the ambulance must transport a patient to the hospital or when there is more than one emergency call occurring in town. Building a system of redundancy is defined as providing services or functions to increase the reliability of the system. System redundancy will save lives and reduce property loss.

The following figure illustrates mutual aid resources available to WFD.

**Figure 9: Mutual Aid Resources**

Department	No. of Engines	No. of Aerials	Other Units	Available Staffing
Essex Junction Fire Department	2	1	Command Vehicle	Volunteer
Essex Town Fire Department	3	0	Tender (Tanker), Command Vehicle	Volunteer
Richmond Fire Department	2	0	Rescue Truck, Tender (Tanker)	Volunteer
Hinesburg Fire Department	3	0	Tender (Tanker)	Volunteer
VT Air National Guard FD	1	0	3 ARFF Units, Tender (Tanker), Rescue Truck	3
South Burlington FD	2	1	Burlington will only send 1 of 3 apparatus available based on closest geographic location to the incident	3
Burlington Fire Department	3	1	Heavy Rescue, Command Vehicle	6
Shelburne Fire Department	1	1	Tender, Marine 4 (RHIB), TAC/Command Unit	Volunteer
Underhill-Jericho FD	3	0	Tender (Tanker), Heavy Rescue	Volunteer
Bolton Fire Department	2	0	Mini-Pumper	Volunteer
Winooski Fire Department	1	1	Command Vehicle	3
Saint Michaels Fire & Rescue	2	0	Utility Vehicle	3
Colchester Fire Department	4	2	Command Vehicle	5
Charlotte Fire Department	3	0	Heavy Rescue, Tender, Marine 2	2
Huntington	2	0	Pumper/Tanker	Volunteer
Milton	2	1	Tender (Tanker)	Volunteer
Georgia	2	1	Tender (Tanker)	Volunteer

In addition to providing mutual aid resources for fire and fire-related incidents, the following agencies are available in the area for EMS transport in addition to WFD.

**Figure 10: EMS Transport (Ambulance) Providers**

EMS Transport Agency	Service Level	City, State
Essex Rescue	Paramedic	Essex Junction, VT
Richmond Rescue	Paramedic	Richmond, VT
South Burlington Fire Department	Paramedic	South Burlington, VT
Saint Michael's Rescue	Paramedic	Colchester, VT
University of Vermont Rescue	A-EMT	Burlington, VT
Colchester Rescue	Paramedic	Colchester, VT
Burlington Fire Department	Paramedic	Burlington, VT
Shelburne Rescue	A-EMT	Shelburne, VT

**Indicators for Change**

Many government and fire service leaders across the country are realizing an evolving progression away from volunteer or predominately volunteer fire departments. As early as 2005, one such study had already recognized a change that is still prevalent today. *The IAFC Volunteer Combination Offices Red Ribbon Report: Leading the Transition in Volunteer and Combination Fire Departments* revealed a list of indicators used to consider staffing changes for volunteer and combination departments:

- **Community Growth**—Growth in services because of more people, more businesses, and increased emergencies and requests for other fire department-based services.
- **Community Aging**—A fire department's ability to recruit new members is directly related to the supply of new, physically capable applicants.
- **Missed Calls**—Emergency calls are unanswered, which results in a serious problem for a fire department and the community.
- **Extended Response Times**
- **Reduced Staffing**
- **Other Considerations**
  - Responsibilities outpace capabilities.
  - Officers filling lower operational positions.

- Mission creep—other assignments are added to essential services, and fire units must respond every time an ambulance is dispatched, or chronic staffing shortages are a problem.
- Too many expectations, too little time—the fire department cannot provide fire prevention, public education, or inspection responsibilities because training and response demands occupy time commitments.
- Volunteers priced out of the community.
- Demographic changes.

WFD staffing levels for on-call staffing have declined, while career staffing levels have remained the same even though the community is growing. Overall, WFD must consider effective methods to increase staffing levels from all available resources to meet industry standards and service demands. Fire department and town officials agree the time has come to increase career staffing within the Department; however, no matter the change considered for the future, WFD should not lose sight of the organization's mission and core values.<sup>15</sup>

These same indicators for change are noted as significant for WFD:

- Staffing levels have become a critical safety factor as less than a minimum of four personnel can respond on fire apparatus to perform required assigned tasks.
- One-to-two-hour turnaround times for call availability on Rescue 1 indicates personnel are often not available for emergency response. These shortages create safety concerns for residents and fire department personnel.
- The Fire Captain must often respond on the engine during assigned hours, working in an administrative as well as an operational response officer's position. Asking this line supervisor to complete so many tasks is severely hampering the quality of administrative duties, including a very important role, fire department training. In addition, WFD is operationally challenged when responding to medium-hazard and high-hazard occupancies such as apartments, schools, nursing homes, mercantile properties, high-rise buildings, and warehouses. These structures pose search and rescue as well as extinguishment challenges, requiring additional personnel to mitigate the fire, additional water supply for extinguishment, and a Unified Command response from town and mutual aid agencies.
- On-duty members who would participate in training are not often available because they are tied up on emergency calls and out of the station.

Another concern is the Department's frequent practice of abandoning vital emergency apparatus at the scene or along the roadway because another firefighter is needed to transport a patient in the ambulance. Even though a Fire Department official can eventually pick up the apparatus, the potential for damage or destruction to occur is too dangerous. In addition, abandonment of this apparatus renders firefighter operations dependent on mutual aid companies, if available, for long periods of time. With a call volume for medical emergencies (59%), the total response time and apparatus abandonment situation occurs frequently.

**Personnel Management**

Public safety agencies excel on the strength of quality personnel to provide a wide array of emergency response services. WFD has demonstrated success in recruiting and hiring career personnel; however, recruiting call staff personnel has proven difficult in recent years. The following section will evaluate the personnel management challenges faced with recruiting and retaining firefighters.

**Recruitment, Retention, & Promotion**

WFD promotes a strong recruitment program for career and call personnel. Career personnel are recruited, as needed, with online and local advertising. Recruitment of call personnel is conducted twice a year; however, recent efforts have been unsuccessful for the most part. The following figure summarizes the Department's hiring process components.

**Figure 11: Hiring Process Components**

Hiring Process Components	WFD Career Personnel	WFD Call Staffing
Recruitment Program	Yes	Yes
Check on Qualifications	Yes	Yes
Reference Check	Yes	Yes
Background Check	Yes	Yes
Physical Standards Established	Yes	In-House Testing
Written Testing	Yes	No
NFPA 1582 Medical exam required	Yes	Yes
Psychological exam required	No	No

Employee benefits packages are attractive to career-oriented firefighters. WFD offers flexible work schedules, paid annual, sick, and FMLA leave, retirement, and other incentives to retain personnel for 20–30 years of service. Base salaries as well must be competitive with surrounding fire departments and offer another recruiting and retention tool.

Call staff are part-time employees of the Department who respond on an as-needed basis. Benefit packages are not available for call staffing personnel. These firefighters receive a stipend per call.

### Promotional Process

WFD has established an excellent promotion process for the positions of Senior Firefighter, Lieutenant, and Fire Captain. When a promotional opportunity is available, WFD follows the process established within the labor agreement contract:

- **Position Announcements** are posted on the Fire Association's bulletin board.
- **Qualifications** for the position are outlined in the job description and must be met by the candidate.
- **Evaluation Process** includes a skills assessment as outlined within the labor agreement contract for each position. The Lieutenant and Captain promotional process outlines a detailed point system. The evaluation process should be improved for senior firefighters to define the total points available for each requirement (skill assessment, report writing, and incident arrival reporting) within this section that determines a score of 70 or more.
- **The Selection Phase** provides for the selection and announcement of the successful candidate.

### Diversity

The capacity of an organization to improve staffing diversity is essential to success as well. Williston and the surrounding area have a diverse population. Future hiring should focus on recruiting women and minorities to reflect the community's demographics. There are three reasons diversity is important to the fire service<sup>16</sup>:

- **Diversity Drives Innovation**—Research demonstrates diverse groups are more productive and reach creative solutions to problems. Diversity enhances performance and productivity.

- Reflecting Community Demographics—Hire good, quality firefighters that reflect the eight dimensions of the community: race, culture and ethnicity, age, religion, social-economic status, disabilities, and sexual orientation or lifestyle. A diverse workforce during non-emergency times may be more responsible during emergency situations.
- Ethical Reasons—WFD provides service to anyone who calls 9-1-1 regardless of the caller's background. Anyone who applies to WFD should know that hiring practices are fair and equitable as well.

### **Policies, Regulations, & Guidelines**

WFD utilizes Standard Operating Guidelines (SOGs) that are available electronically and also on a local hard drive. SOGs and policies are reviewed annually and ongoing, with revisions presented to line staff through a directive.

### **Job Descriptions**

WFD job descriptions for administrative, support staff, and operations positions are available electronically and were created in 2015. Triton notes the job description for Lieutenant reflects this position as an officer's position. The Fire Captain job description should be reviewed to reflect the currently assigned training position.

### **Performance Evaluations**

Performance evaluations are essential to any public safety agency and are critical to the effectiveness of the fire department.<sup>17</sup> Unfortunately, WFD performance evaluations for personnel have not been conducted since 2009. Although job descriptions are in place, developing clear job expectations and an evaluation system will provide consistent, fair-minded management tools for WFD.

Supervisors must evaluate recruit firefighters. Periodic skill performance evaluations should be conducted during the firefighter's one-year probationary period. Although skill performance is important, recruit firefighters should be provided with a written evaluation from a supervisor to reflect adherence to expectations and improvement of overall performance.

### **Compensation**

A wage schedule is posted electronically and through the labor agreement contract for all full-time job positions. The labor agreement contract specifically states compensation for the following:

- Base Salary
- Cost of Living Adjustment as identified by the U.S. Department of Labor CPIU Northeast Urban Consumer Price Index
- Additional pay for AEMT, Firefighter I, Firefighter II, and Paramedic Certifications
- Designated Holidays
- Personal Time
- Vacation Time
- Sick Leave
- Bereavement Leave

### **Labor/Management Relationships**

WFD has created a strong labor/management working relationship with IAFF Local 4611. The current labor contract expires in July 2023. Grievance and arbitration procedures are defined within the tentative labor agreement.

### **Disciplinary Process**

Under the existing WFD organizational structure, the Fire Chief and the Town Manager have the ability to hire, discharge, and promote. WFD's disciplinary policy is available through the SOG manual, personnel policy, and labor contract. Within the policy, an appeals process is clearly defined. The policy highlights the need to use discipline at the lowest level possible.

### **Health, Safety, & Counseling Process**

Firefighters and EMS responders respond to emergency incidents that require extreme physical exertion and often result in adverse physical and emotional health outcomes. Annually, *nearly half* of all firefighter fatalities occur as a result of some type of medical emergency.<sup>18</sup> Developing safe, holistic, and positive approaches to health and wellness can improve these statistics.

### **Health & Wellness Programs**

The demands of the firefighter's job are stressful, random in occurrence, and often physically challenging. Adrenal fatigue, poor sleep habits from shift work and stress, unhealthy eating habits, the extremely physical nature of firefighting and EMS incidents, as well as the harsh environmental conditions under which tasks are performed, increases a firefighter's susceptibility to stress, overexertion, high cortisol levels, and even burnout, cancer, or suicide.<sup>19</sup>

Often, these factors can lead to post-traumatic stress syndrome (PTSD), eating disorders, drug and alcohol problems, and anxiety. To ensure the health and wellness of WFD personnel, various programs have been implemented to create a work environment dedicated to the physical, emotional, and mental health of the firefighter.

WFD provides entry-level physical examinations for firefighters based on NFPA 1582: *Standard on Comprehensive Occupational Medical Programs for Fire Departments*. Annually, Champlain Medical Urgent Care provides an online medical evaluation for each career firefighter, providing follow-up appointments as needed.

While mental health and mental health issues have carried a stigma with them in the past, this is not true today. The Town provides counseling assistance through an Employee Assistance Program (EAP) to assist personnel with mental health wellness. WFD should consider monitoring other programs for mental health awareness:

- Nutrition and exercise
- Suicide awareness
- Peer support
- Mindfulness, meditation, and yoga practice

The components of a wellness program create a system conducive to maintaining healthy and physically fit firefighters. Healthier firefighters reduce workers' compensation costs and lost workdays. The Fire Chief should consider identifying one person to manage a health and wellness program. An example of a wellness program is outlined in the IAFF/IAFC Joint Labor/Management Wellness Fitness Initiative.<sup>20</sup>

## Safety

Firefighting, by the nature of the work, is a dangerous profession. During emergency incidents, reasonable precautions should be taken to limit exposure and provide consistent medical monitoring. Research and data show that job-related exposures cause chronic illnesses, such as cancer and heart disease.

The National Institute for Occupational Safety and Health (NIOSH) concluded that firefighters face a 9% increase in cancer diagnosis and a 14% increase in cancer-related deaths compared to the general population.<sup>21</sup> A cancer prevention program should include:

- Issuing each firefighter and officer two sets of bunker gear.
- Gross decontamination procedures on the emergency scene and at the station.
- Extractor washers and PPE dryers for cleaning bunker gear.
- Standard Operating Guidelines outline the use, decontamination, and cleaning of personal protective equipment (PPE) as well as the need to wear a self-contained breathing apparatus (SCBA) on emergency incidents.

Safety training is a career-long effort. All training programs incorporate firefighter safety considerations into the curriculum. In addition to safety training, town officials and the labor union have created a health and safety committee of four personnel who review safety issues and make recommendations to the Fire Chief. Establishing a safety committee using NFPA 1500 *Standard on Fire Department Occupational Safety and Health Program* will improve the health and safety of personnel.

## **Communication**

The success of an organization is dependent on communication and transmitting ideas at every level of the agency and to the community as a whole. Communication involves the transfer of information from one person to another.

### **Internal Communication**

Internal communications within WFD are accomplished from in-person meetings to several print mediums. The in-person meetings include daily meetings with the Deputy Chief, Fire Captain, and Fire Lieutenants, and on-duty personnel (Monday through Friday). These meetings are led by the Fire Chief.

The Deputy Chief also communicates with in-person meetings for call staff personnel. Other announcements are provided in the form of a directive.

### **External Communication**

External communication is the transmission of information between two organizations and can also occur between a business and another person, such as when customer feedback is received. Effective external communication provides two-way communication used to present a favorable image of an organization or to provide information about products and services to customers.<sup>22</sup> WFD uses external communication for:

- Press releases for upcoming training for the general public.
- Social media and website posts for job openings, public events, fire prevention week, and other fire prevention education information.
- Letters and emails to other organizations.

## **Reporting & Recordkeeping**

Providing the ability to manage and maintain incident reporting, inventory and document control, work orders, permits, training records, and all other documentation critical to a fire department's success requires innovative technology and a robust business management system.

## **Training Records**

Training records have an important function in the administration of a fire service organization. The National Fire Protection Association (NFPA) 1401 *Standard on Fire Service Training Reports and Records* provides compliance guidelines for the management of training records. WFD has created a training record system electronically and maintains all records separately (personnel, exposure, and medical records).

## **Health Records**

Medical records are maintained separately from personnel and training records in the Town's Human Resources Department.

## **Personnel Records**

Personnel records are maintained by the Town's Human Resources Department as part of a physical filing system. These records are kept in a secure filing location. An employee may request, in writing, to review their records at any time.

## Introduction to the Stakeholder Interviews

Triton interviewed 31 stakeholders representing a wide variety of the Fire Department's internal and external stakeholders. The purpose of these interviews was to gain a better understanding of issues, concerns, and options regarding the emergency service delivery system, opportunities for shared services, and expectations from community members.

It is important to note that the information solicited and provided during this process was in the form of "people inputs" (stakeholders individually responding to Triton's questions), some of which are perceptions reported by stakeholders. All information was accepted at face value without an in-depth investigation of its origination or reliability. The project team reviewed the information for consistency and frequency of comment to identify specific patterns and/or trends.

Multiple sources confirmed the observations, and the information provided was significant enough to be included within this report. Based on the information reviewed, the team identified a series of observations, recommendations, and needs and confirmed with multiple sources that all was significant enough to be included within this report.

Stakeholders were identified within the following groups: Elected Officials, Department Heads, Business Community Leaders, Citizens, Rank & File, Chief Officers, and Administrative Staff. The responses have been summarized in Appendix A.

## Financial Review

Williston has experienced slow but steady growth over the past decade, witnessing an average population increase of approximately 150 people each year. Williston's population is now in excess of 10,000 residents, making it the 10<sup>th</sup> largest community in the state. The Town of Williston receives property taxes and sales taxes as its primary source of general fund revenues. Property taxes are received in three equal installments on the 15<sup>th</sup> of August, November, and February. Sales tax is shared 30%/70% with the State of Vermont and the 70% portion is received by the Town on a quarterly basis. A local options sales tax of 1% is collected in addition to the previously stated sales tax. Various fees for services, including ambulance billings of approximately \$360,000 annually account for the remaining \$2,500,000 of the \$11,500,000 of general fund revenue necessary to fund the Town's annual budget.

The annual budget is prepared and submitted to the voters of the community for approval. Significant increases in expenditures that may not be provided for from reserves result in an adjustment to the Town's property tax rate.

The Fire Department is one of several departments of the Town of Williston that is funded through property taxes assessed by the Town. The Town operates on A fiscal calendar year July 1 to June 30 and utilizes fund accounting methodology to account for revenues and expenditures. This methodology recognizes all receipts as revenue and all expenditures as expenses regardless of the typical accounting characterization. Thus, loan proceeds and the repayment thereof would be treated as revenues and expenses, respectively.

For purposes of analysis and presentation of the finances of the Williston Fire Department, Triton classifies revenues and expenses as either recurring or non-recurring. Recurring, as is easily interpreted, denotes items of revenues and expenses that are anticipated on an annual basis and usually quantifiable. Non-recurring items, conversely, are items of receipts and expenditures that may not occur annually or are not easily quantifiable and may include debt proceeds and repayments and capital expenditures.

WFD is staffed with a full-time Fire Chief, Administrative Assistant, and a Deputy Fire Chief. The Fire & EMS division is staffed by 13 full-time equivalents, including a Captain, three Shift Lieutenants, and three Senior Firefighters and six Firefighters, all with various levels of medical certifications. The Deputy Chief also supervises the Call Lieutenant who is responsible for coordinating Call Firefighters.

Salaries have increased an average of just under 7% annually between FY 17 and the approved FY 21 budget. The most significant increase came between FY 18 and FY 19 with a \$123,000 increase which included an increase in staffing. Benefits increased by an average amount of approximately 11%, again with the same significant increase in FY 2019 for the additional staffing. Supplies include EMS supplies and equipment, firefighting supplies and equipment, office supplies and equipment, fuel, utilities, and dues and subscriptions. This category has experienced an average 4.5% increase between FY 17 and FY 21.

The services category includes dispatch costs, training, various insurances, ambulance billing services, maintenance services, fire prevention programs, and various personnel recruiting and recognition programs. Services costs have increased an average of 7% annually over the same five-year time period. Not included in this requirement is debt service for two fire engines, an ambulance, and repairs to the roof of the fire station, which total another \$175,702 in FY 22.

Employees of the Town participate in Groups B and C of the Vermont Municipal Employees Retirement System, a defined contribution plan, requiring employees to contribute 5% of their gross wages which is matched by the Town at a 5 1/8% rate. The fiduciary net position had decreased from 98% in 2015 to 80% in 2020. The Town's contributions to the plan have met the actuarially calculate amounts on an annual basis.

The Department provides paramedic ambulance service which has produced revenues of between \$334,000 and \$371,000 annually. These revenues are used to offset Fire Department costs. The Department fees for other services have produced minimal additional revenues. The Department intended to implement a fire inspection program in FY 21 that was estimated to create \$7,000 of revenue in FY 21. The program was delayed by the COVID pandemic.

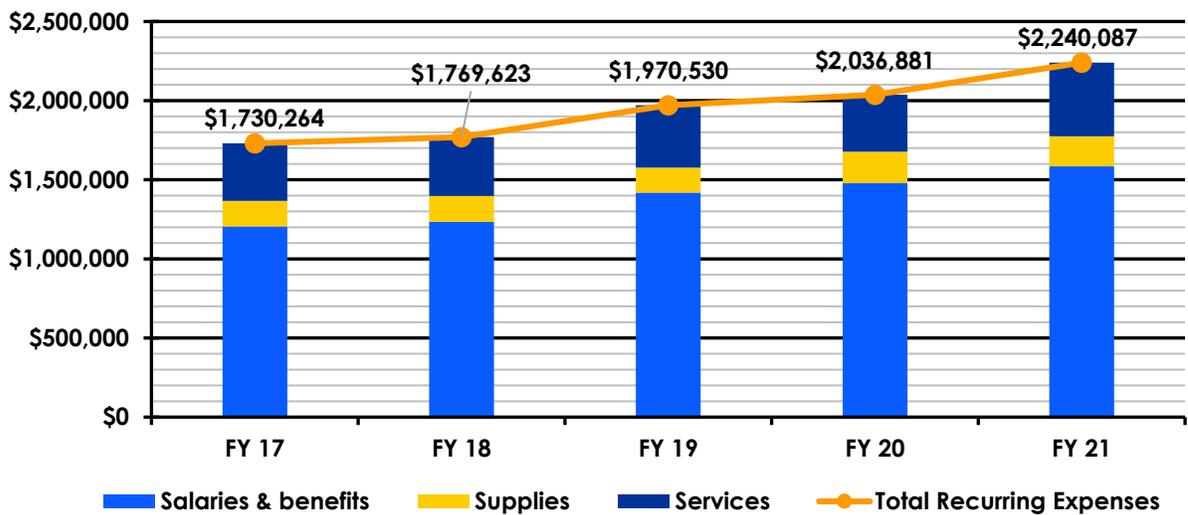
The following figure shows the actual operating costs of the Fire Department from FY 17 through the Approved Budget for FY 21.

**Figure 12: Historical Fire Department Expenses & Revenues<sup>23</sup>**

Revenue/Expenses	FY 17 Actual	FY 18 Actual	FY 19 Actual	FY 20 Actual	FY 21 Approved
Salaries & Wages	914,017	924,321	1,047,357	1,079,896	1,166,527
Benefits	290,893	309,629	371,930	398,352	417,979
<b>Total Salaries &amp; Benefits:</b>	<b>1,204,910</b>	<b>1,233,951</b>	<b>1,419,287</b>	<b>1,478,247</b>	<b>1,584,506</b>
Supplies	162,045	163,556	157,583	198,588	190,680
Services	363,309	372,116	393,660	360,046	464,901
<b>Total Recurring Expenses:</b>	<b>1,730,264</b>	<b>1,769,623</b>	<b>1,970,530</b>	<b>2,036,881</b>	<b>2,240,087</b>
Capital Equipment	—	—	—	23,312	—
<b>Total Non-Recurring Expenses:</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>23,312</b>	<b>—</b>
<b>TOTAL EXPENSES:</b>	<b>1,730,264</b>	<b>1,769,623</b>	<b>1,970,530</b>	<b>2,060,194</b>	<b>2,240,087</b>
Ambulance revenue	339,498	333,831	358,488	371,117	362,710
Other revenues	4,931	9,610	14,569	3,614	18,000
<b>TOTAL REVENUES:</b>	<b>344,429</b>	<b>343,441</b>	<b>373,057</b>	<b>374,731</b>	<b>380,710</b>
<b>(Net) from General Fund:</b>	<b>(1,385,835)</b>	<b>(1,426,183)</b>	<b>(1,597,474)</b>	<b>(1,685,463)</b>	<b>(1,859,377)</b>

The following figure graphically displays the growth of Fire Department expenses between FY 17 and FY 21.

**Figure 13: Graphic Depiction of WFD Expenses (FY 17–FY 21)**



The Fire Department EMS program is subsidized through the collection of Town Selectboard approved ambulance rates. Ambulance revenues are typically based on internal and external fee schedules applied to a payer mix to arrive at the expected revenue. The number of system users from each cost center will determine the total reimbursement that can be realized. However, the percentage of each cost center does not determine the multiplier for the system. The four cost centers are equal (25% each). This does not suggest 25% of the calls for EMS will come from each category.

As the population ages, health begins to deteriorate with time. As a result, this smaller percentage of the population will tend to have a higher percentage of use within the EMS system. United States Census Bureau 2019 estimates indicate approximately 17% of the population is 65 or older and approximately 7% of the population under 65 is reported as disabled.<sup>24</sup> This is shown in the following Williston Payer Mix schedule from 2018 as 68% of the requests for service can be assumed to be derived from 24% of the population.

**Figure 14: Town of Williston Payer Mix**

Payer Type	Count	% Total	% Collections	FY 2020
Commercial	195	24%	47%	\$172,093
Medicare	388	48%	34%	\$125,737
Medicaid	162	20%	10%	\$38,033
Self-Pay	65	8%	9%	\$33,235
Paramedic Intercepts	—	—	—	\$1,000
<b>Totals:</b>	<b>810</b>	<b>100%</b>	<b>100%</b>	<b>\$370,098</b>

The Town's current ambulance fee schedule is the following figure.

**Figure 15: Williston Current Adopted Ambulance Fee Schedule**

Charge Description	Fee
BLS-Non-Emergency	\$600
BLS-Emergency	\$750
ALS 1 – Non-Emergency	\$750
ALS 1 – Emergency	\$950
ALS 2 – Emergency	\$1,295
Mileage	\$19
AEMT Intercept	\$250
Paramedic Intercept	\$250
Hourly Rate per EMT for Standby Fee	\$60
Hourly Rate for Staffed Ambulance	\$161.18
Per Day Rate for UTV w/ Truck and Trailer	\$40.64

**Financial Projections**

The Town Manager and the Selectboard developed the FY 22 budget keeping the proposed property tax rate at the FY 21 level of \$0.2750. The overall Town budget for FY 22 is proposed at approximately \$100,000 less than FY 21. The Fire Department's proposed operating budget for FY 22 is approximately \$2,250,000.

Fire Department revenues consist of ambulance billings and other fees for services. Ambulance revenues have grown at an annual rate of 3% until 2020, when the pandemic had a negative impact on requests for service. The 3% growth factor is applied to the ambulance revenue component after FY 22, but the remaining fees for service are projected to remain static. Ambulance revenue change for FY 22 has been forecast to be a slight decrease from FY 21 as the continued impact of the pandemic continues to create financial challenges for the Town.

Salaries and wages in FY 22 are increased by 1.4% for non-represented employees and increased according to contractual agreements. For represented Fire Department employees, the historic step rate has been 2% which is used for these projections. Retirement contributions are calculated at approximately 7.75% of gross wages, and FICA/Medicare taxes are calculated at 7.65%. Medical and other insurance benefits are forecast to increase at an annual 4.5% factor. Worker's Compensation insurance is forecast to continue to be at approximately 10% of gross wages.

Other operating expenses are forecast to increase by 2% annually. It should be noted that certain expenses may increase or decrease based on available revenues. Examples of these types of expenses may include training costs, purchase of certain firefighting supplies and equipment, and building and equipment maintenance that may be safely deferred into a future fiscal year.

**Figure 16: WFD Projected Expenses & Revenues (FY 22–FY 26)**

Revenue/Expenses	FY 22 Budget	FY 23 Projected	FY 24 Projected	FY 25 Projected	FY 26 Projected
Salaries & Wages	1,199,723	1,221,137	1,242,961	1,265,201	1,287,866
Benefits	461,833	476,240	492,831	510,081	528,021
<b>Total Salaries &amp; Benefits:</b>	<b>1,661,556</b>	<b>1,697,378</b>	<b>1,735,792</b>	<b>1,775,283</b>	<b>1,815,887</b>
Supplies	174,735	178,230	181,794	185,430	189,139
Services	412,698	419,428	427,557	435,846	444,299
<b>Total Recurring Expenses:</b>	<b>2,248,989</b>	<b>2,295,036</b>	<b>2,345,143</b>	<b>2,396,559</b>	<b>2,449,325</b>
Capital Equipment	—	—	—	—	—
<b>Non-Recurring Expenses:</b>	—	—	—	—	—
<b>TOTAL EXPENSES:</b>	<b>2,248,989</b>	<b>2,295,036</b>	<b>2,345,143</b>	<b>2,396,559</b>	<b>2,449,325</b>
Ambulance revenue	360,000	370,800	381,924	393,382	405,183
Other revenues	13,000	13,000	13,000	13,000	13,000
<b>TOTAL REVENUES:</b>	<b>373,000</b>	<b>383,800</b>	<b>394,924</b>	<b>406,382</b>	<b>418,183</b>
<b>(Net Funding) from GF:</b>	<b>(1,875,989)</b>	<b>(1,911,236)</b>	<b>(1,950,219)</b>	<b>(1,990,177)</b>	<b>(2,031,142)</b>

## Capital Facilities & Apparatus

Three basic resources are required to carry out the mission of a fire department successfully:

- Trained firefighters and staff
- Apparatus and equipment
- Fire stations

No matter how competent or numerous the firefighters are, if appropriate capital equipment is not available for use by responders, it would be impossible for the Williston Fire Department to deliver services effectively. The essential capital assets for use in emergency operations are facilities and apparatus (response vehicles). Of course, a fire department's financing ability will determine the level of capital equipment it can acquire and make available for use by emergency personnel. This section of the report is an assessment of the respective capital facilities, vehicles, and apparatus of WFD.

### Williston Fire Station

Fire stations play an integral role in the delivery of emergency services for several reasons. To a large degree, a station's location will dictate response times to emergencies. A poorly located station can mean the difference between confining a fire to a single room and losing the structure, or successfully converting a cardiac arrest victim from ventricular fibrillation to a cardiac rhythm capable of sustaining life.

Fire stations also need to be designed to adequately house equipment and apparatus, as well as meet the needs of the department and its personnel—including administrative support staff where applicable. It is important to research needs based on service demand, response times, types of emergencies, and projected growth before making a station placement commitment.

Consideration should be given to a fire station's ability to support the Department's mission as it exists today and into the future. The activities that take place within a fire station should be closely examined to ensure the structure is adequate in both size and function. Examples of these functions may include the following:

- Residential living space and sleeping quarters for on-duty personnel (all genders)
- Kitchen facilities, appliances, and storage
- The housing and cleaning of apparatus and equipment including decontamination and disposal of biohazards

- Bathrooms and showers (all genders)
- Administrative and management offices, computer stations, and office facilities
- Training, classroom, and library areas
- Firefighter fitness area
- Public meeting space

In gathering information from the Williston Fire Department, Triton requested that they rate the facility based on the criteria in the following figure.

**Figure 17: Criteria Utilized to Determine Fire Station Condition**

<b>Excellent</b>	Like new condition. No visible structural defects. The facility is clean and well maintained. Interior layout is conducive to function with no unnecessary impediments to the apparatus bays or offices. No significant defect history. Design and construction match the building's purposes. Age is typically less than 10 years.
<b>Good</b>	The exterior has a good appearance with minor or no defects. Clean lines, good workflow design, and only minor wear of the building interior. Roof and apparatus apron are in good working order, absent any significant full-thickness cracks or crumbling of apron surface or visible roof patches or leaks. Design and construction match the building's purposes. Age is typically less than 20 years.
<b>Fair</b>	The building appears structurally sound with a weathered appearance and minor to moderate non-structural defects. The interior condition shows normal wear and tear but flows effectively to the apparatus bay or offices. Mechanical systems are in working order. Building design and construction may not match the building's purposes well. Showing increasing age-related maintenance, but with no critical defects. Age is typically 30 years or more.
<b>Poor</b>	The building appears to be cosmetically weathered and worn, potentially with structural defects, although not imminently dangerous or unsafe. Large, multiple full-thickness cracks and crumbling of concrete on the apron may exist. The roof has evidence of leaking and/or multiple repairs. The interior is poorly maintained or showing signs of advanced deterioration, with moderate to significant non-structural defects. Problematic age-related maintenance and/or major defects are evident. Age is typically greater than 40 years.

The following figure lists the basic features of the Williston Fire Station.

**Figure 18: Williston Fire Station**

<b>Address/Physical Location:</b>		645 Talcott Road, Williston, VT 05495				
	<b>General Description:</b>					
	The Williston Fire Station, constructed in 2007, is a state-of-the-art facility in Excellent condition. It includes quarters for up to eight on-duty personnel, an indoor training facility, and adequate office and meeting space for future staff.					
<b>Structure</b>						
Date of Original Construction	June 2007					
Seismic Protection	Per NFPA code at the time of construction					
Auxiliary Power	200 KW emergency generator					
General Condition	Excellent					
Number of Apparatus Bays	Drive-through Bays	6	Back-in Bays	3		
ADA Compliant	First floor only. Elevator to second floor has yet to be completed.					
Total Square Footage	21,621 sq. ft.					
<b>Facilities Available</b>						
Sleeping Quarters	8	Bedrooms	8	Beds	0	Dorm Beds
Maximum Staffing Capability	8					
Exercise/Workout Facilities	Yes					
Kitchen Facilities	Yes					
Individual Lockers Assigned	Career staff have wardrobes; call staff have lockers					
Bathroom/Shower Facilities	Shower/bath facilities (3)					
Training/Meeting Rooms	Yes (49-person capacity)					
Washer/Dryer	Yes					
<b>Safety &amp; Security</b>						
Station Sprinklered	Complete wet and dry in attic area					
Smoke Detection	Smoke detection in sleeping area only (per code)					
Decontamination/Bio. Disposal	Yes					
Security System	Key fob to doors					
Apparatus Exhaust System	Sensors and exhaust fans					

## Apparatus & Vehicles Inventory

Fire apparatus and medic units (ambulances) are unique and expensive pieces of equipment customized to operate for a specific community and a defined mission. Other than its firefighters, officers, and support staff, the next most important fire department resources are likely the fire apparatus, ambulances, and special operations vehicles.

Apparatus must be sufficiently reliable to transport firefighters and equipment rapidly and safely to an incident scene. Such vehicles must be equipped properly and function appropriately to ensure that the delivery of emergency services is not compromised. For this reason, they are very expensive and offer little flexibility in use and reassignment to other missions. Modern ambulances are complex vehicles that must be sufficiently maintained to ensure that firefighters and EMS providers arrive promptly. And, they must be in a condition to ensure patients are transported safely to the hospital or clinical facility.

The following figure lists the current WFD fleet inventory. As shown, the Department expects delivery of two new apparatus in the summer of 2021. One of these was delivered at the time this report was drafted and the other is expected to be delivered in September.

**Figure 19: Williston Fire Department Apparatus & Vehicles Fleet Inventory (2021)**

Apparatus	Type	Make	Year	Condition	Features
<b>Engines</b>					
Engine 1	Type I	Spartan/Smeal	2018	Excellent	1500 gpm/1000 gal.
Engine 2	Type I	KME	2009	Fair	1500 gpm/750 gal.
<b>Rescues (Ambulances)</b>					
Rescue 1	Type 1	Osage	2019	Good	ALS equipped
Rescue 2	Type 1	Osage	2014	Fair	Reserve ambulance
<b>Utility/Command Units</b>					
Car 1	SUV	Chevrolet	2019	Excellent	Mobile command
Car 2	SUV	Chevrolet	2017	Excellent	Mobile command
Utility 1	Pickup	GMC	2011	Good	Brush tool; towing
None	UTV	Polaris	2014	Good	Patient skid
<b>New Apparatus</b> (delivery expected June/July 2021)					
Engine 3	Tender	Smeal	2021	New	1500 gpm/1500 gal.
Ladder 4	Ladder	Spartan/Smeal	2021	New	1500 gpm/500 gal.

## Apparatus Maintenance & Replacement Planning

No piece of mechanical equipment or vehicle can be expected to last indefinitely. As apparatus age, repairs tend to become more frequent and more complex. Parts may become more difficult to obtain and downtime for repair and maintenance increases. Given that fire protection, EMS, and other emergencies prove critical to a community, downtime is one of the most frequently identified reasons for apparatus replacement.

Because of the expense of fire apparatus, most communities develop replacement plans. To enable such planning, fire departments often turn to the accepted practice of establishing a life-cycle for apparatus that results in an anticipated replacement date for each vehicle. The reality is that it may be best to establish a life-cycle for planning purposes, such as the development of replacement funding for various types of apparatus, yet apply a different method (such as a maintenance and performance review) for determining the actual replacement date, thereby achieving greater cost-effectiveness when possible.

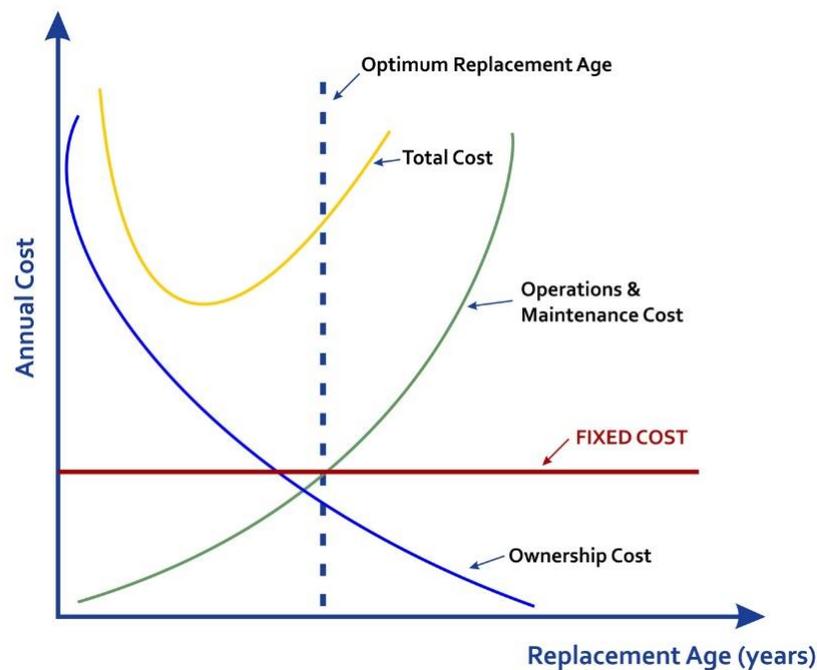
## Economic Theory of Apparatus Replacement

A conceptual model utilized by some fire departments is the *Economic Theory of Vehicle Replacement*. The theory states that, as a vehicle ages, the cost of capital diminishes, and its operating cost increases. The combination of these two costs produces a total cost curve. The model suggests that the optimal time to replace any apparatus is when the operating cost begins to exceed the capital costs. This optimal time may not be a fixed point but rather a range of time.

Shortening the replacement cycle to this window allows an apparatus to be replaced at optimal savings to the fire department. If an agency does not routinely replace equipment in a timely manner, the overall reduction in replacement spending can quickly increase maintenance and repair expenditures. Fire officials, who assume that deferring replacement purchases is a good tactic for balancing the budget, need to understand two possible outcomes that may occur because of that decision:

- Costs are transferred from the capital budget to the operating budget.
- Such deferral may increase overall fleet costs.

The following figure is a graphic representation of the *Economic Theory of Vehicle Replacement*.

**Figure 20: Economic Theory of Vehicle Replacement**

Regardless of its net effect on current apparatus costs, the deferral of replacement purchases unquestionably increases future replacement spending needs and may impact operational capabilities and safe and efficient use of the apparatus.

### Future Apparatus Serviceability

An important consideration for fire departments is the cost associated with the future replacement of major equipment. Apparatus service life can be readily predicted based on factors including vehicle type, call volume, age, and maintenance considerations.

*NFPA 1901: Standard for Automotive Fire Apparatus* recommends that fire apparatus 15 years of age or older be placed into reserve status, and apparatus 25 years or older should be replaced. This is a general guideline, and the standard recommends using the following objective criteria in evaluating fire apparatus lifespan:

- Vehicle road mileage.
- Engine operating hours.
- The quality of the preventative maintenance program.
- The quality of the driver-training program.
- Whether the fire apparatus was used within its design parameters.
- Whether the fire apparatus was manufactured on a custom or commercial chassis.

- The quality of workmanship by the original manufacturer.
- The quality of the components used in the manufacturing process.
- The availability of replacement parts.

It is important to note that age is not the only factor for evaluating serviceability and replacement. Vehicle mileage and pump hours on engines must also be considered. A two-year-old engine with 250,000 miles may need replacement sooner than a 10-year-old one with 2,500 miles.

### **Apparatus Discussion**

As part of this study, Triton provided WFD with an evaluation tool with which to score and rate the condition of its vehicles and apparatus. The tool uses five evaluation components, each with assigned points. The lower the score, the better the condition.

- Vehicle age
- Miles/hours
- Condition (body, rust, accident history, etc.)
- Reliability

WFD's Engine 1 was given a condition rating of "Excellent, while Engine 2 was rated as "Fair." Rescue 1 was rated as "Good," while Rescue 2 was rated as "Fair." With the delivery of a new engine/tender and aerial apparatus, WFD should have a functional and stable fleet.

### **Capital Medical Equipment**

The Williston Fire Department utilizes three full-featured ZOLL® X-Series® monitor/defibrillators, with two manufactured in 2016 and one in 2019. The Department also utilizes the ZOLL® AED Plus, which is an Automated External Defibrillator (AED) designed for general public safety use. WFD maintains 11 of these, with another 11 distributed to the Williston Police Department and in other facilities such as in the Town Hall. Along with these, there are five Physio-Control Lifepak® 500 AEDs.

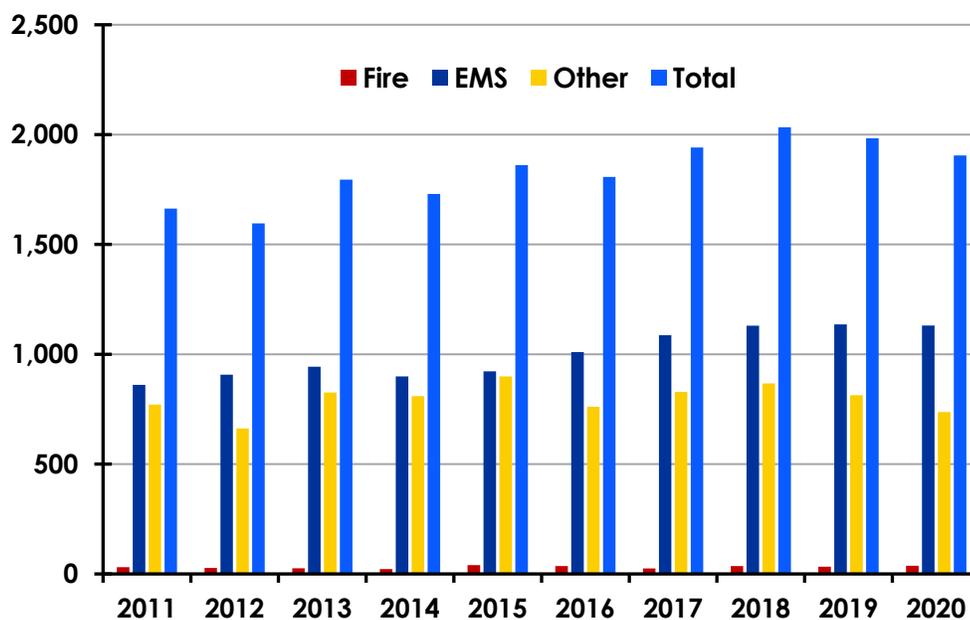
The Department maintains two Stryker PowerPro XT® that operate with the vehicle Power-LOAD® lift assist system in each ambulance. In addition, WFD has two Stryker Stair-PRO® stair chairs.

## Service Delivery & System Performance

System response workload is an important factor in determining the number of resources (stations, apparatus, and personnel) that are needed to provide the desired level of service. Higher service demands can tax resources and can result in diminished response time performance.

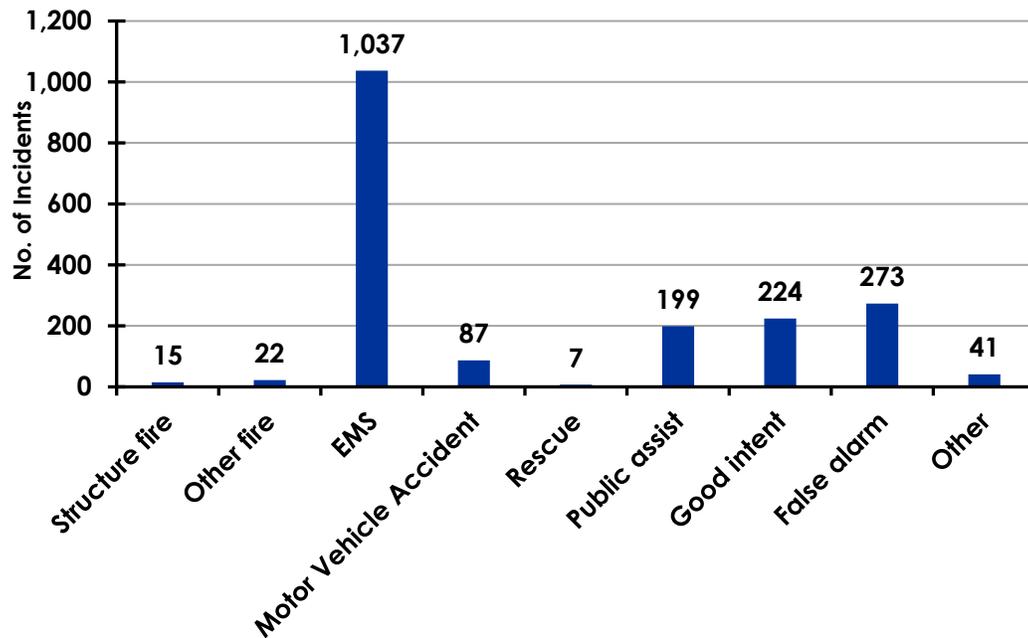
The following figures show response workload for WFD over the past ten years. Total workload has increased primarily driven by an increase in EMS incidents.

**Figure 21: WFD Response Workload History**



The following figure illustrates in more detail the types of incidents WFD served during calendar year 2020. WFD responded to a total of 1,905 incidents. EMS was the most common incident type at 59% of the total.

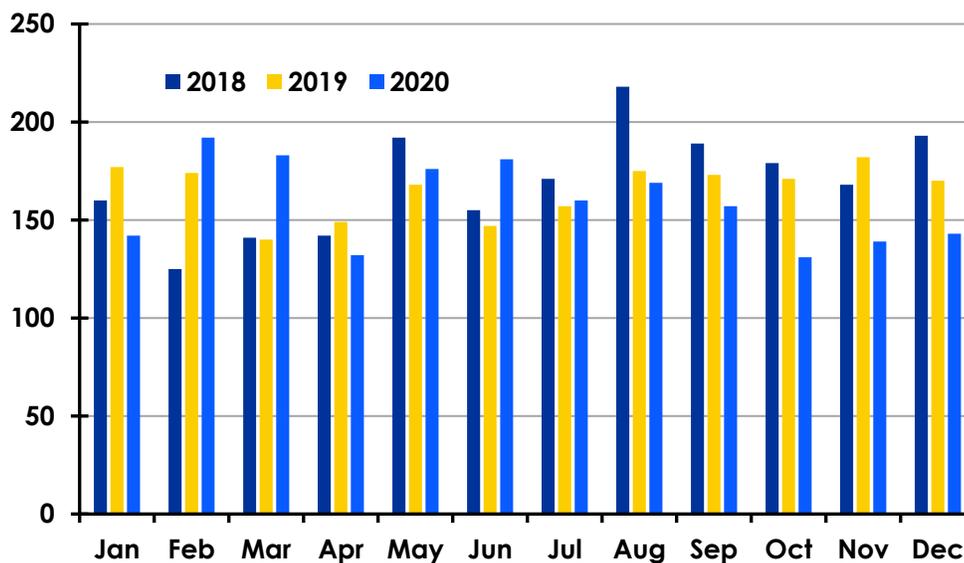
Figure 22: WFD Incidents by Type (2020)



**Temporal Analysis**

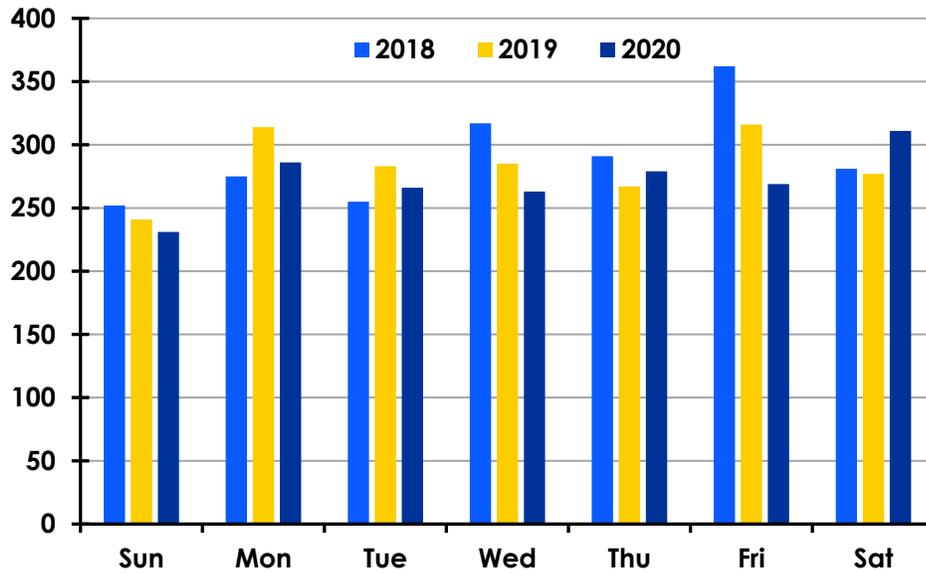
A review of incidents by time reveals when the greatest response demand occurs. The following figures show how activity and demand change for WFD based on measures of time. The following figure shows response activity by month. There is some variation in workload by month.

Figure 23: WFD Response Workload by Month



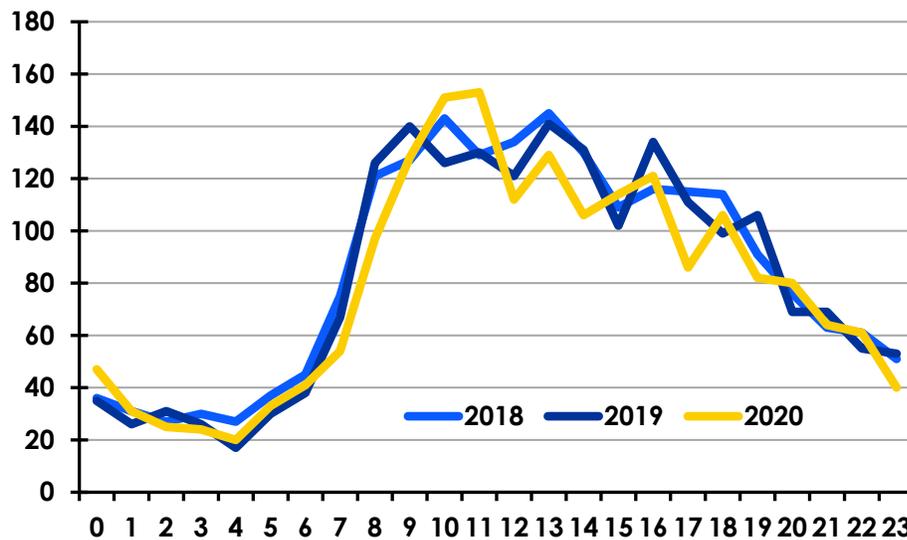
Next, response workload is compared by day of the week. Again, there is some variation in response workload by weekday.

**Figure 24: WFD Response Workload by Day of Week**



Incident activity by hour of the day always shows significant variation. Response workload directly correlates with the activity of people, with workload increasing during daytime hours and decreasing during nighttime hours.

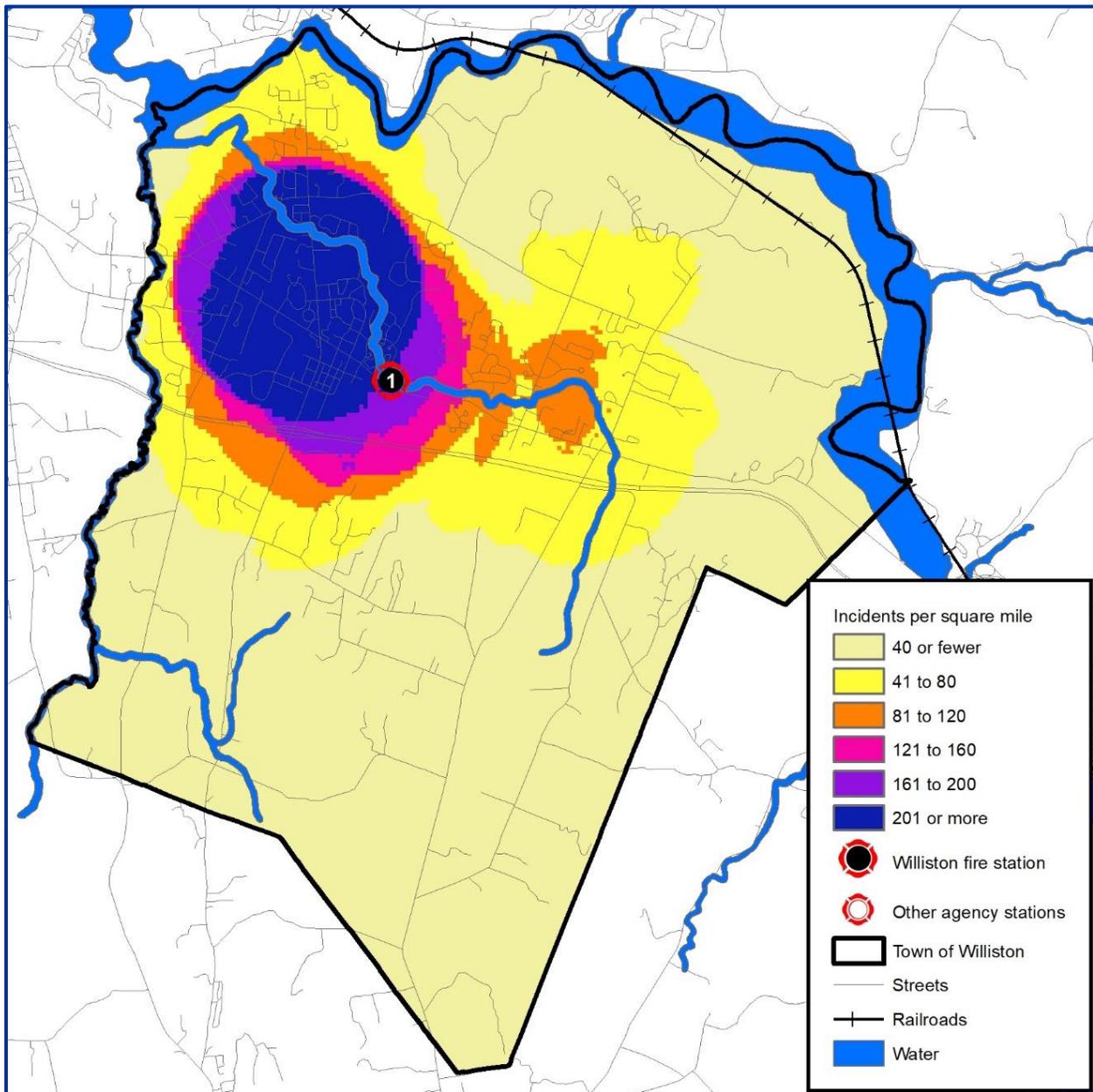
**Figure 25: WFD Response Workload by Hour of Day**



### Spatial Analysis

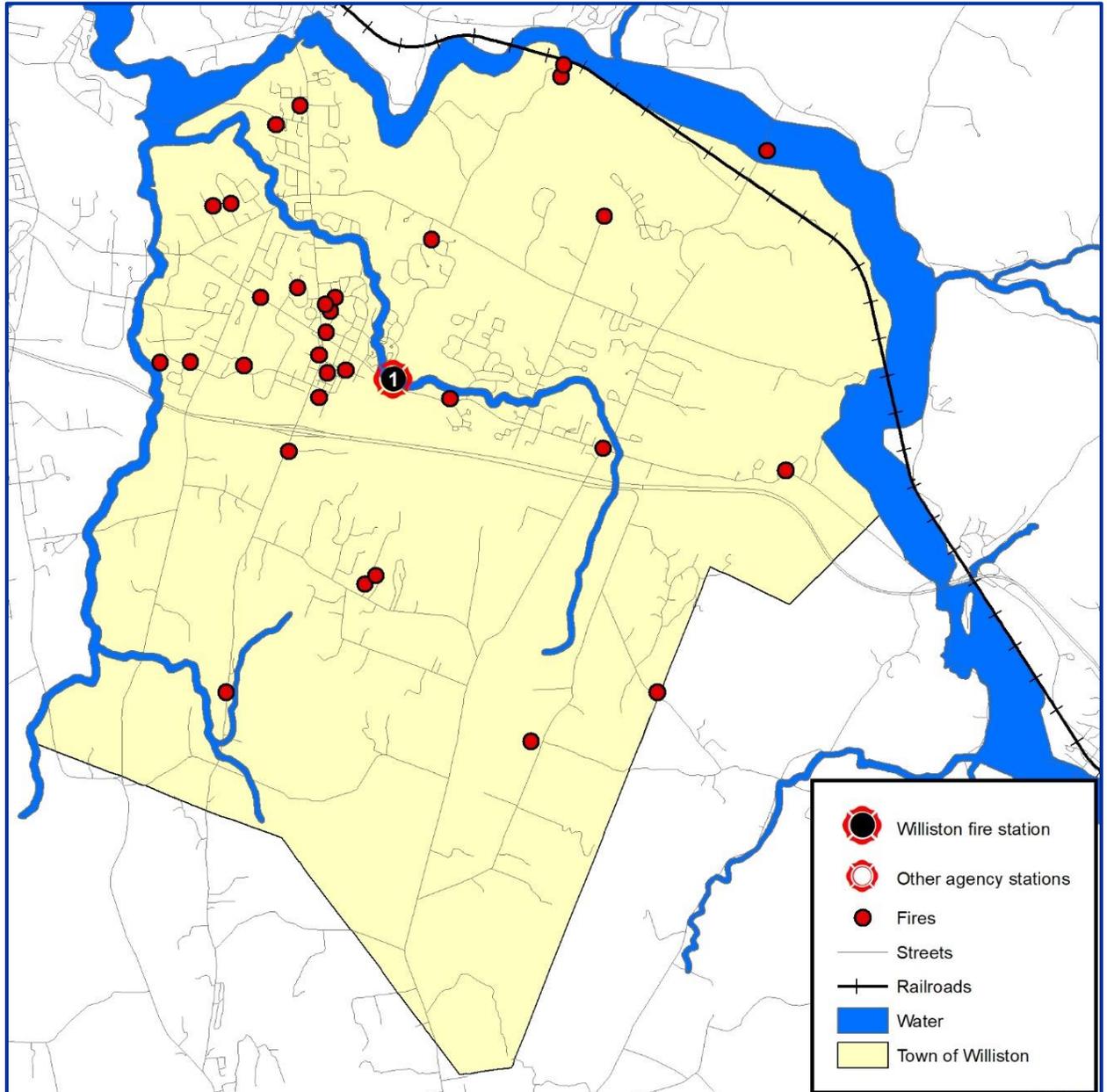
Incident activity varies greatly across an agency's service area. Typically, the greater the population, the greater the number of incidents in any given area. The following figure illustrates the geographic distribution of incidents for the year 2020.

**Figure 26: Incidents per Square Mile—All Incidents (2020)**



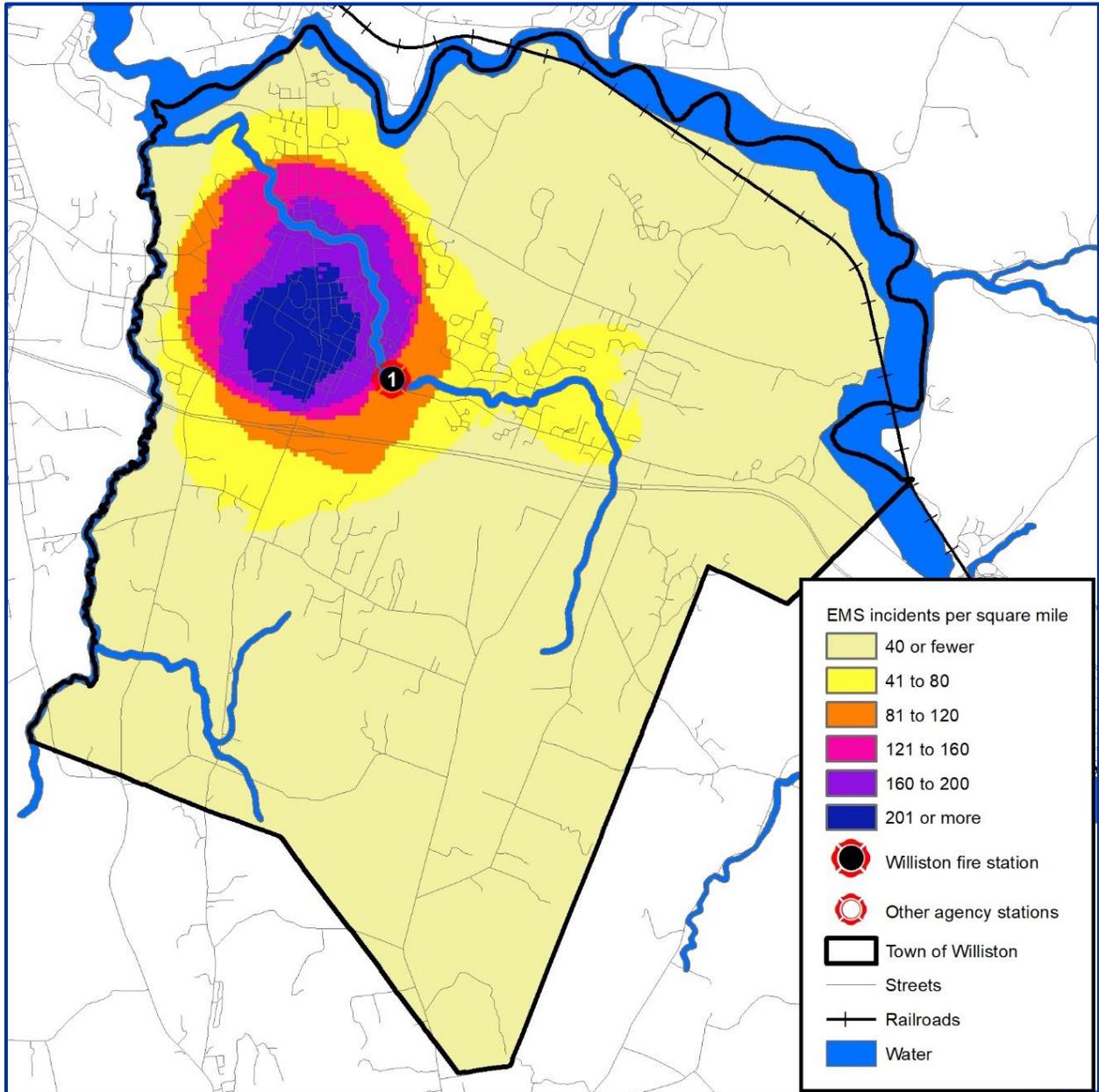
Service demand varies by area based on incident types. The following figure displays the fire incidents occurring within the Town in 2020. Fire incidents are also concentrated in areas of higher population density.

Figure 27: WFD Fire Incidents (2020)



Emergency medical incidents also occur in greater concentration in areas of higher population density. The following figure displays emergency medical incidents per square mile during 2020.

**Figure 28: WFD Incidents per Square Mile—EMS Incidents (2020)**



## Unit Workload Analysis

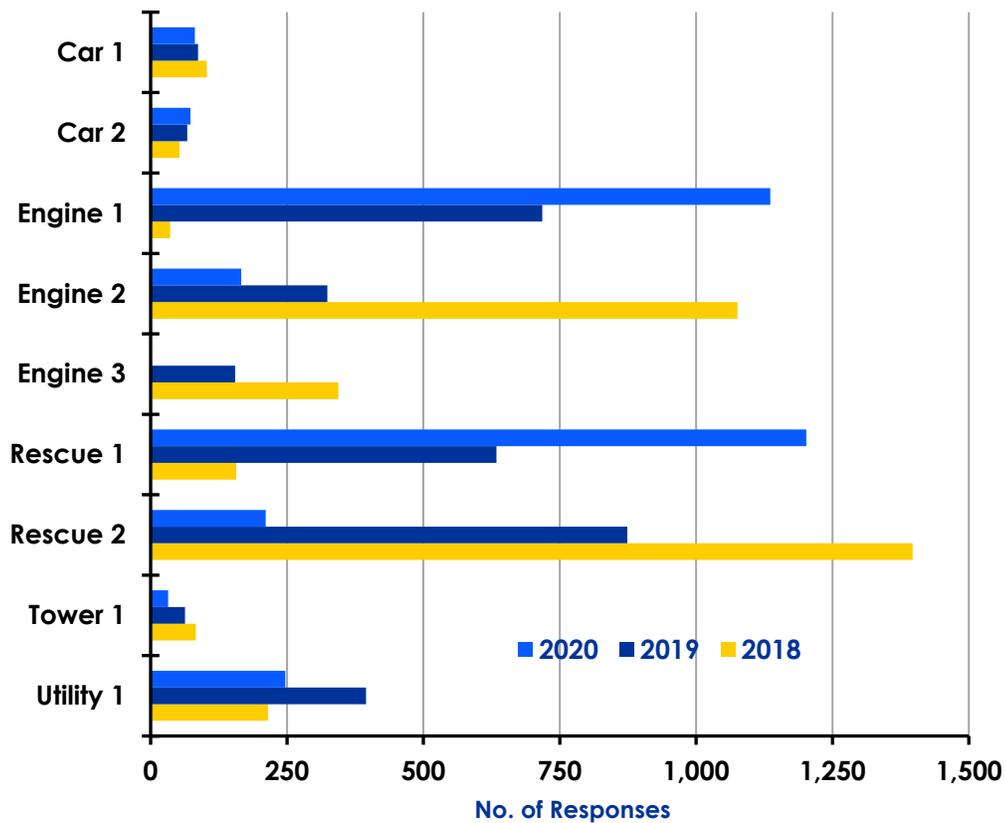
Response unit workload impacts response performance. The greater the utilization of a response unit, the greater the likelihood it will be unavailable for an incident in its primary service area. Although fire stations and response units may be distributed in a manner to provide quick response, that level of performance can only be obtained when the response unit is available in its primary service area.

Because of the dispatch center's limited collection of individual unit data, especially capturing unit status changes for all units on an incident, little information can be provided about the existing unit workload. Engine 1 and Engine 2, along with Rescue 1 and Rescue 2, switched roles as primary response units in 2020.

## Response Unit Workload

The workload on individual response units for the past three years is shown in the following figure. Individual response unit workload can be greater than the workload in its home station area. Many incidents, such as structure fires, require more than one response unit. Based on number of responses, no unit appears overutilized.

Figure 29: WFD Responses by Unit



Because of limitations in the data provided for this study, additional analysis of individual unit workload could not be conducted, including determining unit hour utilization. However, a reasonable estimate of unit hour utilization can be made for the department's ambulance.

Unit hour utilization is calculated by dividing the total time a unit is committed to all incidents during a year divided by the total time in a year. It describes the percentage of time a unit is not available for response since it is already committed to another incident. The larger the percentage, the greater a unit's utilization and the less available it is for assignment to an incident.

Monitoring unit hour utilization is important for those fire agencies using percentile-based performance standards. When performance is measured at the 90<sup>th</sup> percentile, a response unit with greater than 10% utilization will not be able to provide on-time response to its 90<sup>th</sup> percentile target even if response is its only activity.

The following figure describes the approximate unit hour utilization for the ambulance. It uses combined data from Rescue 1 and Rescue 2.

**Figure 30: Unit Hour Utilization—Rescue 1 & Rescue 2 Combined**

Description	2018	2019	2020
Total minutes committed to an incident	36,674	35,324	32,896
Unit hour utilization	7.0%	6.7%	6.3%

### Historical System Performance

Data for incidents occurring between January 1, 2018, and December 31, 2020, was evaluated in detail to determine the current response performance of each agency. Data was sourced from agency incident records and the dispatch center's computer-aided dispatch system.

Only priority incidents occurring within the Town of Williston are included. Priority incidents are those to which the fire department responded "Code 3" (using warning lights and sirens). Non-emergency public assistance requests were excluded. Performance is reported based on the type of incident as dispatched. Three categories are used to report performance:

- Fire—Responses to a report of a possible fire.
- Emergency medical—All emergency medical incidents.
- Other—Any other incident to which the fire department responded with lights and sirens.

Six phases of incident response are typically included in the evaluation:

1. **Call answer time**—The time from the phone ringing at the 9-1-1 center until it is answered.
2. **Dispatch time**—The time from call received until response units are notified of the emergency.
3. **Turnout time**—The time from when response crews are notified until they have initiated movement towards the incident.
4. **Travel time**—The time from when response crews begin movement towards the incident until arrival.

5. **Response time**—The time from the initial notification of response personnel until arrival at the incident (turnout time plus travel time).
6. **Received to arrival time**—The time from when the phone is answered at the dispatch center until the arrival of response personnel at the incident (dispatch time plus turnout time plus travel time).

Each phase of the incident response sequence that could be evaluated was to determine current performance. In keeping with national guidance, all response time elements are reported at a given percentile. Percentile reporting is a methodology by which response times are sorted from least to greatest, and a “line” is drawn at a certain percentage of the calls to determine the percentile. The point at which the “line” crosses the 90th percentile, for example, is the percentile time performance. Thus, 90% of times were at or less than the result. Only 10% were longer.

Percentile differs greatly from average. Averaging calculates response times by adding all response times together and then dividing the total number of minutes by the total number of responses (mean average). Measuring and reporting average response times is not recommended. Using averages does not give a clear picture of response performance because it does not clearly identify the number and extent of events with times beyond the stated performance goal.

What follows is a detailed description and review of each phase of the response time continuum.

### Detection

The detection of an emergency may occur immediately if someone happens to be present or if an automatic system is functioning. Otherwise, detection may be delayed, sometimes for a considerable period. The time for this phase begins with the inception of the emergency and ends when the emergency is detected and reported. It is largely outside the control of the fire department and not a part of the event sequence that is reliably measurable.

## Call Processing

Most emergency incidents are reported by telephone to the 9-1-1 center. Dispatch center personnel must quickly elicit accurate information about the nature and location of the incident. A citizen well-trained in how to report emergencies can reduce the time required for this phase. The dispatcher must identify the correct units based on incident type and location, dispatch them to the emergency, and continue to update information about the emergency while the units respond. This phase begins when the 9-1-1 call is answered at the primary public safety answer point (PSAP) and ends when response personnel are notified of the emergency. This phase, which has two parts, is labeled "call processing time."

Shelburne Communications Center (SCC) is the primary 9-1-1 call answer point for the Williston Fire Department. It answers the 9-1-1 call, queries the call to determine nature and location, and then dispatches response units.

*National Fire Protection Association Standard 1221* recommends that 9-1-1 calls be answered within 15 seconds, 90% of the time (within 20 seconds, 95% of the time). SCC did not provide the data necessary for Triton to evaluate the time it takes to answer calls.

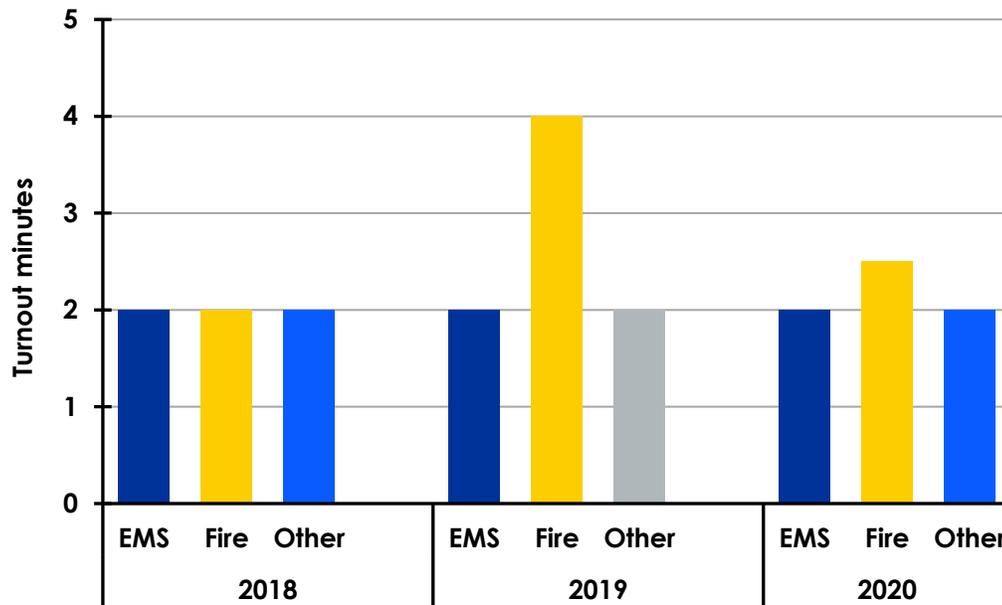
The second part of call processing time, dispatch time, begins when the call is answered and ends when response units are notified of the incident.

Data provided for this study did not include the time the call was received at the dispatch center. Because that data is not available, call processing time cannot be calculated.

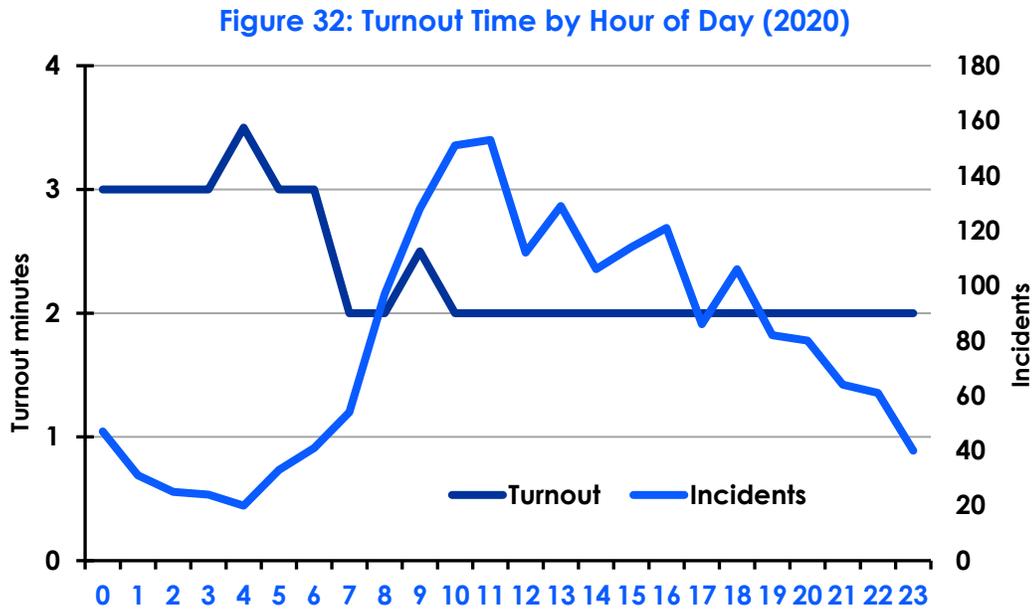
### Turnout Time

Turnout time begins at notification of an emergency in progress by the dispatch center and ends when personnel and apparatus begin movement towards the incident location. Personnel must don appropriate equipment, assemble on the response vehicle, and begin travel to the incident. Training and fire station design can minimize the time required for this step. The following figure lists turnout time for specific incident types based on the first unit to go en route to the incident following dispatch.

**Figure 31: Turnout Times by Type & Year**



Turnout time can vary by time of day and response workload. The following figure shows the variation for calendar year 2020.

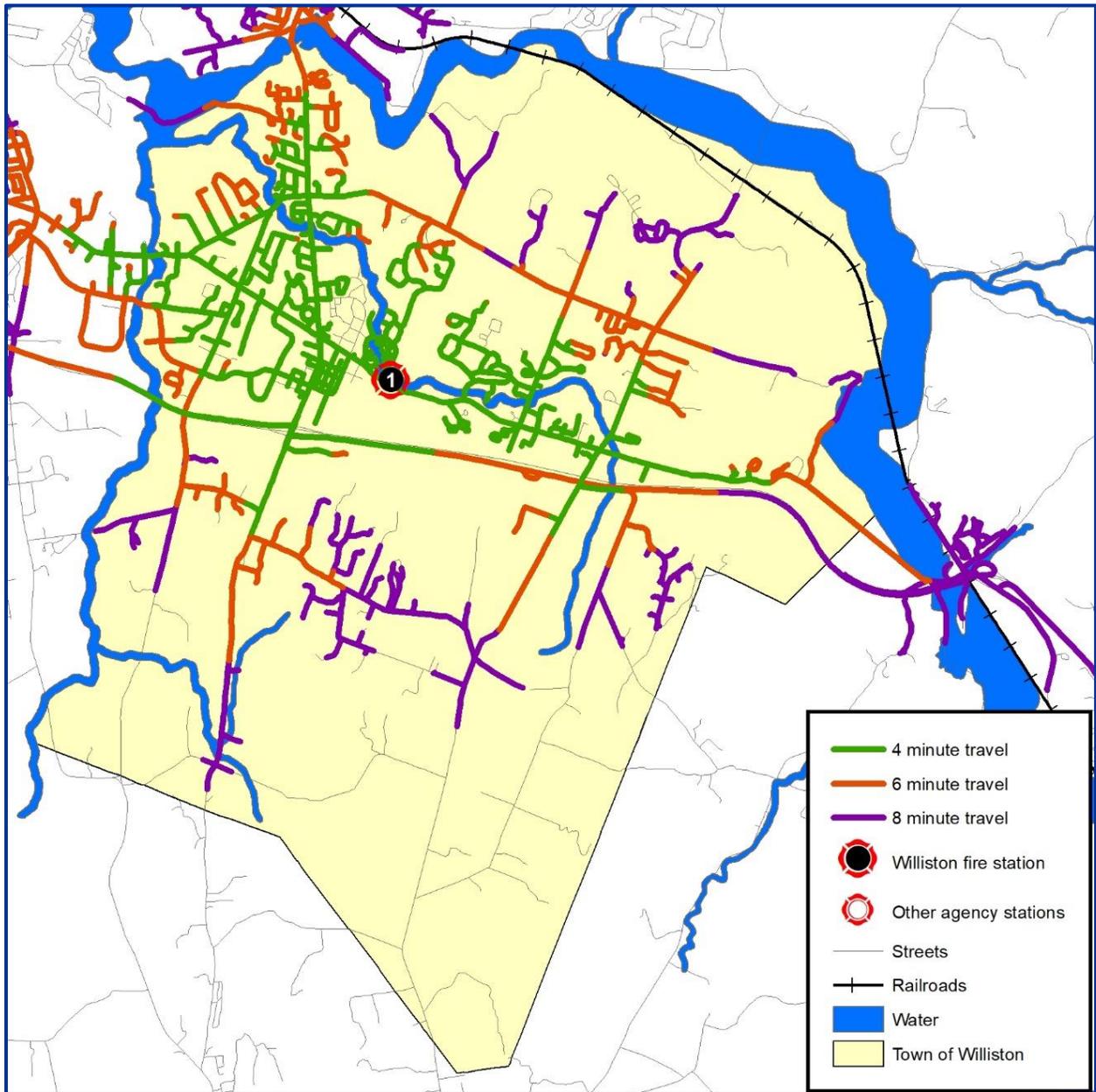


**Distribution & Initial Arriving Unit Travel Time**

Travel time is typically the longest of the response phases. The distance between the fire station and the location of the emergency influences response time the most. Other factors include the quality and connectivity of streets, traffic, topography, and environmental conditions.

The following figures illustrate the street segments that can be reached from the Williston Fire Station in four, six, and eight minutes of travel time. It is based on posted road speeds modified to account for turning, stops, and acceleration. Much of the agency’s service areas are beyond four minutes travel time. Some area remains outside even the eight-minute coverage. However, the areas of greatest incident activity are all within the four-minute travel coverage area.

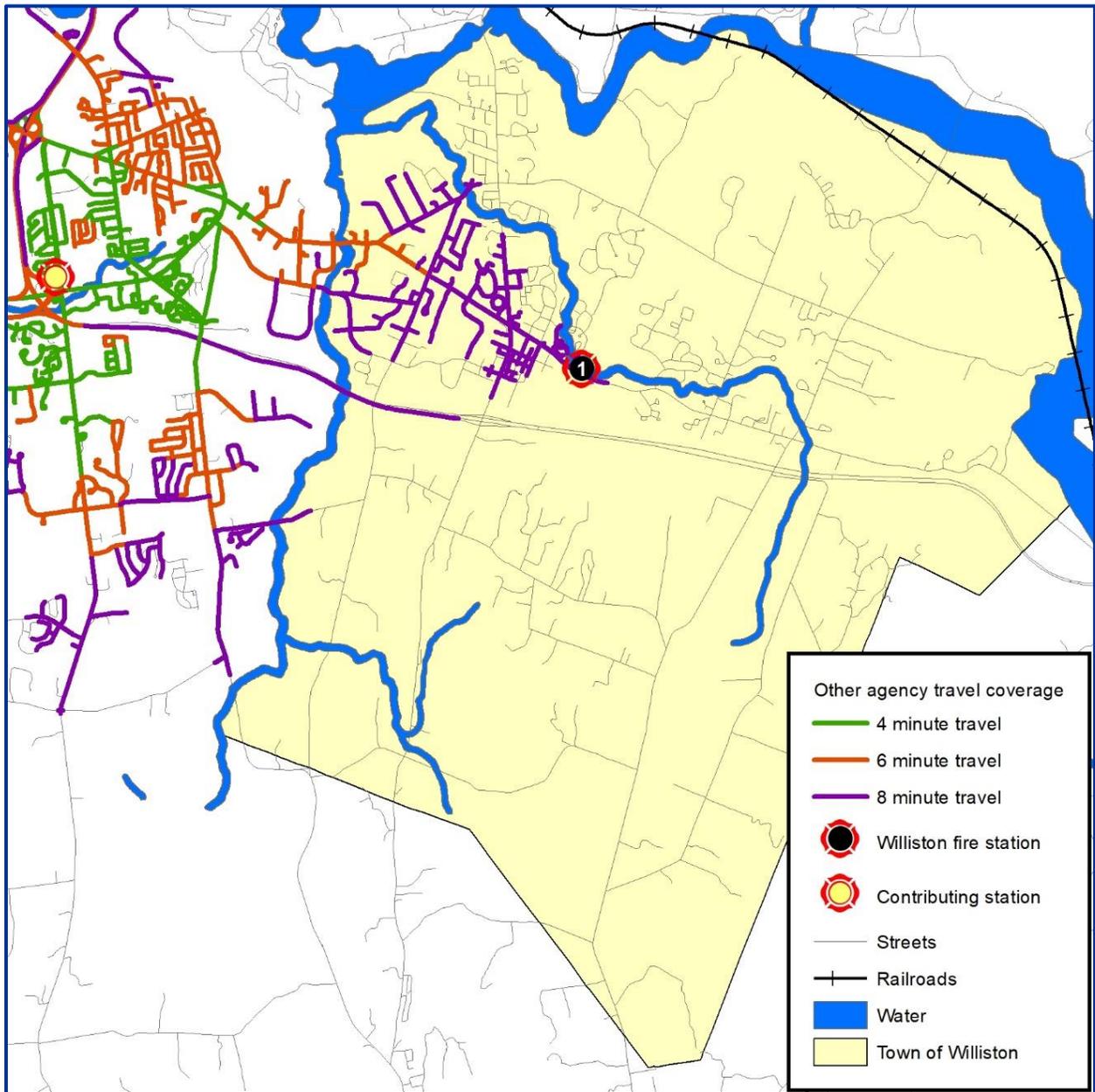
Figure 33: WFD Travel Coverage



Seventy-one percent of all priority incidents during 2020 were within four travel minutes of the WFD station. Eighty percent were within six travel minutes, and 87% were within eight travel minutes of the WFD station.

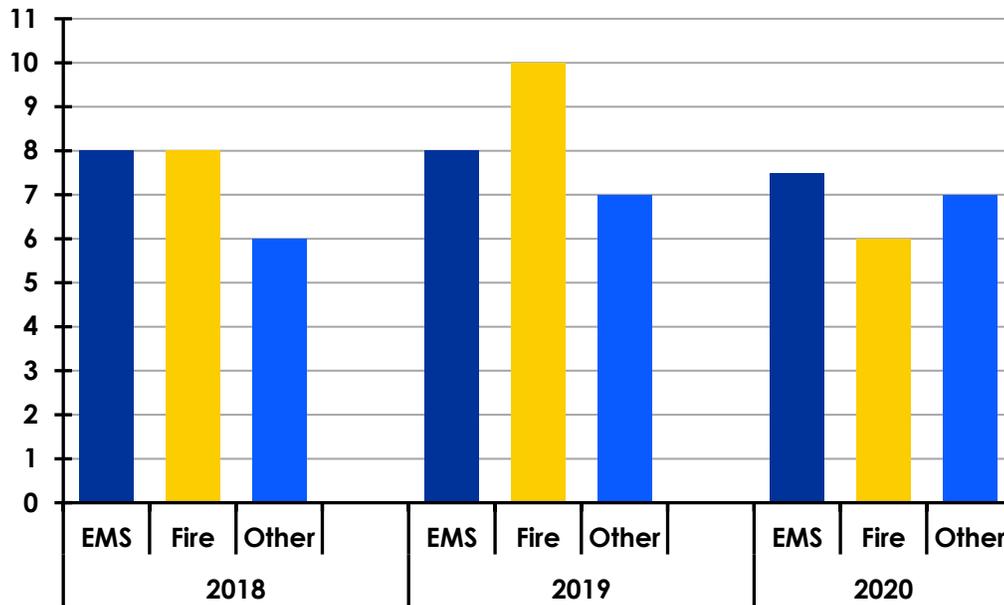
There is only one staffed adjacent agency station that can provide coverage within the Town of Williston. The following map shows four, six, and eight-minute coverage from the South Burlington, Dorset Street station.

Figure 34: South Burlington Station Travel Coverage



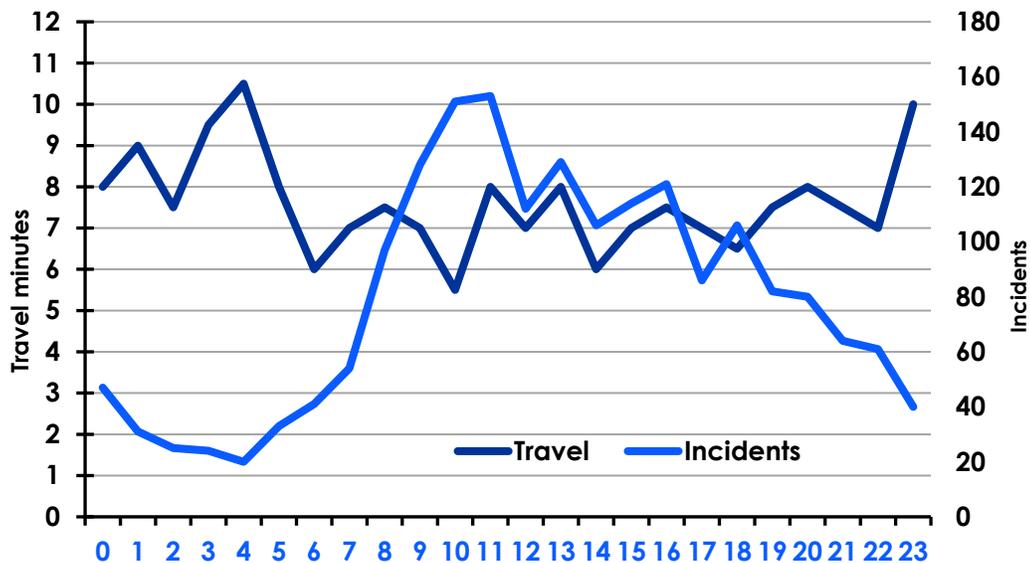
The following figure lists travel time for all priority incidents as well as specific incident types.

**Figure 35: WFD Travel Time by Type & Year**



Travel time can vary by time of day and response workload. The following figure shows the variation for calendar year 2020.

**Figure 36: WFD Travel Time by Hour of Day (2020)**

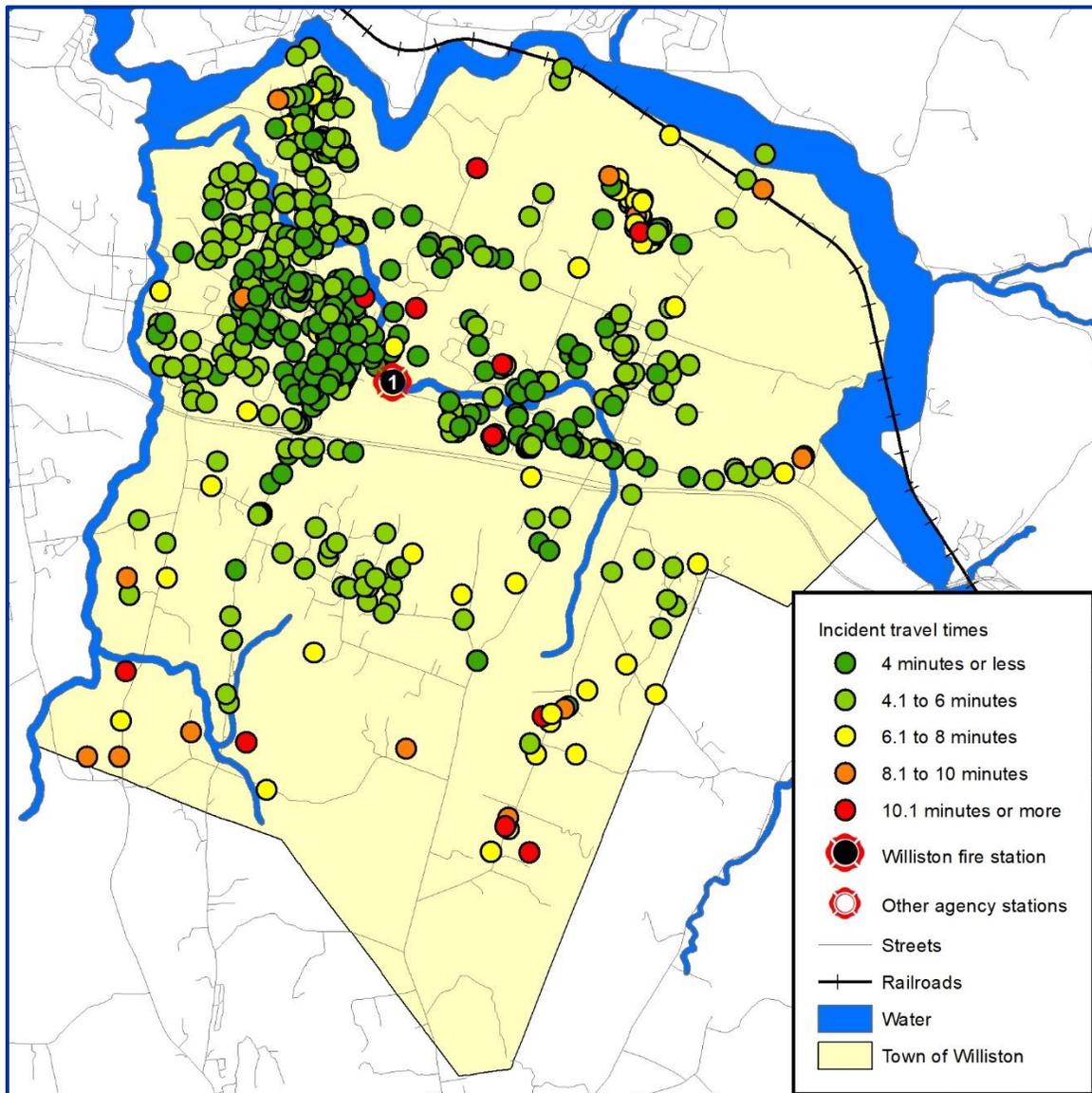


### Travel Time Performance by Area

Travel time performance by region is variable and influenced by factors such as individual response unit workload and the size of the station response area, and the street system serving it. Connected, grid patterned, street systems provide faster response times than do areas with meandering streets and numerous dead ends.

The following figure illustrates all priority incidents during calendar 2020 color-coded by each incident's travel time. Better performance is generally noted near fire stations with progressively longer response times for those incidents more distant from the stations.

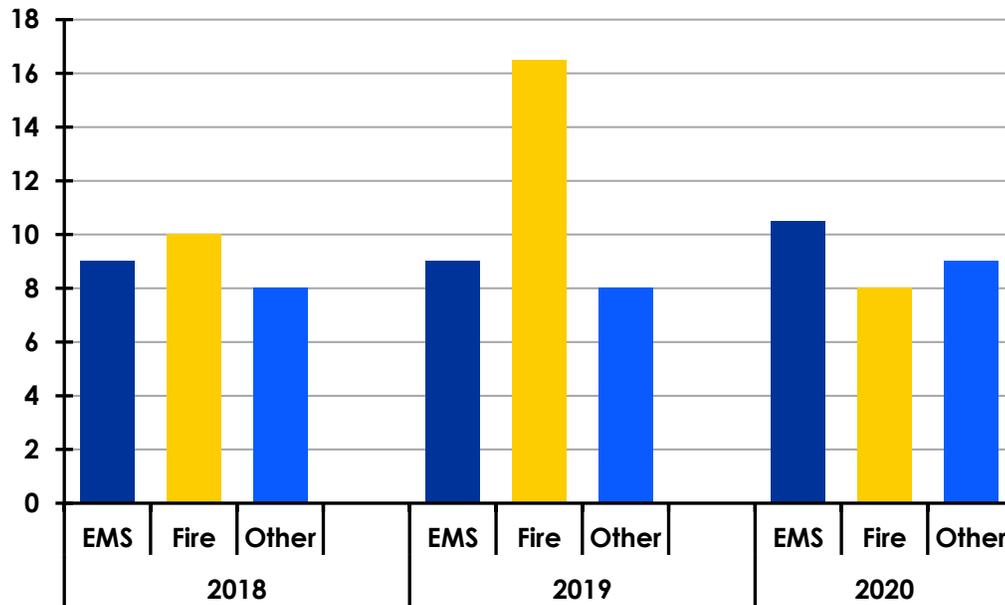
**Figure 37: WFD Travel Time by Area (2020)**



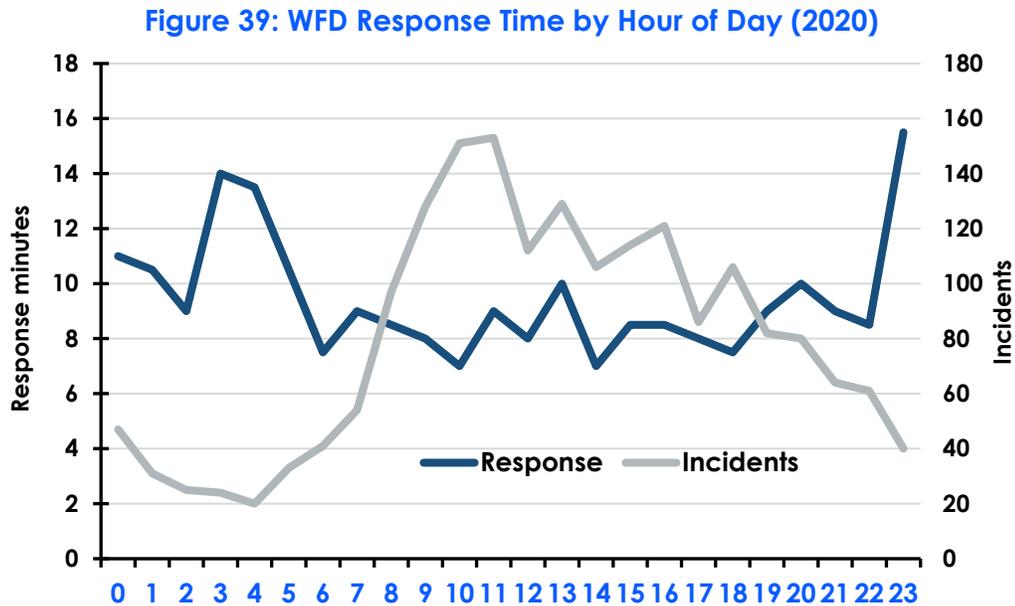
### First Arriving Unit Response Time

Response time is the period between the notification of response personnel by the dispatch center until arrival of the first fire department response unit at the emergency. The following figure illustrates response time for specific incident types.

**Figure 38: WFD Response Times by Incident Type**



Response time can vary by time of day and response workload. The following figure shows the variation for calendar year 2020.



**First Arriving Unit Received to Arrival Time (Total Response Time)**

From the customer's standpoint, response time begins when the emergency occurs. Their first contact with emergency services is when they call for help, usually by dialing 9-1-1. Received to arrival time combines call processing, turnout, and travel time.

Because the data provided did not include the time the call was received at the dispatch center, received to arrival time could not be calculated.

**Concentration & Effective Response Force Capability Analysis**

Effective Response Force (ERF) is the number of personnel and apparatus needed to effectively mitigate an emergency incident. The number of personnel and the number and type of apparatus needed depends on the specific type of emergency. This resource need is based on the specific tasks and activities that need to be completed early in emergency event mitigation.

WFD has identified the minimum complement of firefighters needed for common incident types. For example, a low-rise structure fire (home, small commercial building) requires 15 firefighters on the initial alarm to effectively mitigate the incident. This is in keeping with national recommendations.

WFD cannot provide this level of resource on its own. It is dependent on outside agency assistance. Response time information from two neighboring agencies for incidents in Williston was reviewed. With rare exceptions, response times exceeded targets.

Thus, outside agencies, except for the South Burlington Dorset Street station, are too far away to provide effective assistance. In addition, the closer stations are dispatched by other dispatch centers creating an additional delay because of the need to transfer information to the other center.

**Incident Concurrency**

The frequency of concurrent incidents impacts response time performance. The greater the number of concurrent incidents, the less available response units are.

The following figure shows the number of times during 2018–2020 that one or more incidents occurred concurrently for each agency.

**Figure 40: Incident Concurrency**

No. of Incidents	2018	2019	2020
One Incident	1,791	1,762	1,746
Two Incidents	219	198	148
Three Incidents	20	22	9
Four Incidents	3	1	2

**Unit Concurrency**

The number of times one or more response units from an agency are committed to incidents at the same time is also an important measure. Since status change times are not recorded for all units on an incident, unit concurrency cannot be calculated.

---

## Section II: COMMUNITY RISK

---

## Assessment of Community Risk

Fire departments should be prepared to provide consistent service and resources (personnel, equipment, and apparatus) to meet the demands of risk identified as potential community impact. Community resilience occurs when improved planning, mitigation, and recovery capabilities are developed to prevent, reduce, or even eliminate identified risks, reducing consequences for first responders, residents, and property loss.

NFPA 1300, *Standard on Community Risk Assessment and Community Risk Reduction Plan Development* (2020), defines community risk as the risk that pertains to the community, including the aggregate potential of loss or damage to critical infrastructure, individual properties, or stakeholders that could have a significant detrimental impact on the overall community.

Risk is a measure of the probability and severity of adverse effects that result from exposure to a hazard. Community hazards are identified through demographics, land use and zoning, occupancy types, and the storage and processing of hazardous materials. Target hazards may create special risks that will affect how an organization will respond. Risk management is defined in NFPA 1500, *Standard on Fire Department Occupational Safety, Health, and Wellness Program* and NFPA 1250, *Recommended Practice in Fire and Emergency Service Organizational Risk Management* and contains five tasks:

- Risk Identification
- Risk Evaluation
- Establishment of Priorities for Action
- Risk Control
- Risk Management<sup>25</sup>

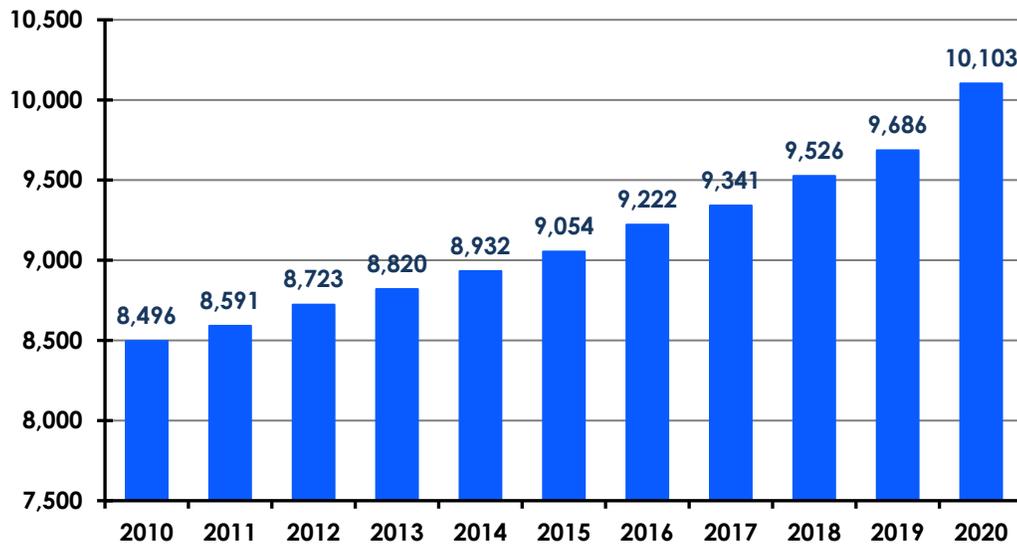
### Population

Williston is no longer considered a rural farming town but a modern urban area with primarily residential, mixed-use, and commercial occupancies along primary thoroughfares. The town's population has increased 16.2%, from 8,698 to 10,103 since the U.S. Census in 2010. As Williston emerges as a center for employment, residential and commercial growth will increase. An additional residential zoning parcel, the Gateway Zoning District West, was added to accommodate residential development in the last four years.

Williston's 2016–2024 Comprehensive Plan estimates a population of up to 12,000 by the year 2030. Population projections suggest that Williston will continue to grow faster than the rest of the state, with an estimated housing increase from 3,200 to almost 7,000 and commercial and industrial space expansion by another 25%.<sup>26</sup>

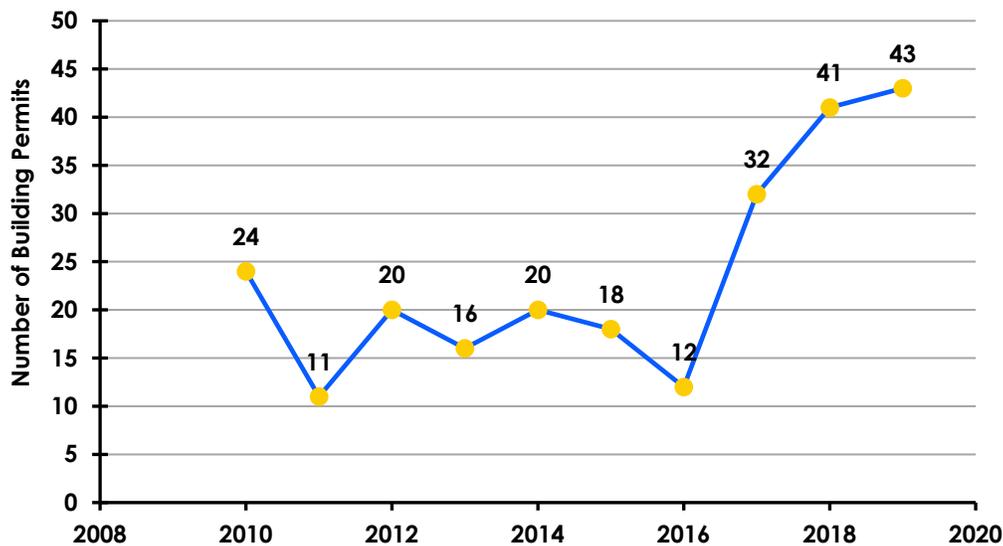
The following figure shows population growth from 2010–2020 in a linear fashion.

**Figure 41: Williston Population (2010–2020)**



Another indication of population growth is an increase in the number of building permits for single-family dwellings. City-Data.com reported an increase from 12 permits in 2016 to 43 in 2019. The following figure shows the annual single-family home building permit requests.

**Figure 42: Number of Building Permits for Single-Family Dwellings by Year**



**At-Risk Populations**

Driven by National Fire Incident Reporting System (NFIRS) data, various types of residents are at higher risk of injury or death from fires and other incidents. The National Fire Protection Association (NFPA) has derived patterns of higher risk of injury or death from fires and fire-related hazards for identified groups, as indicated below.<sup>27</sup>

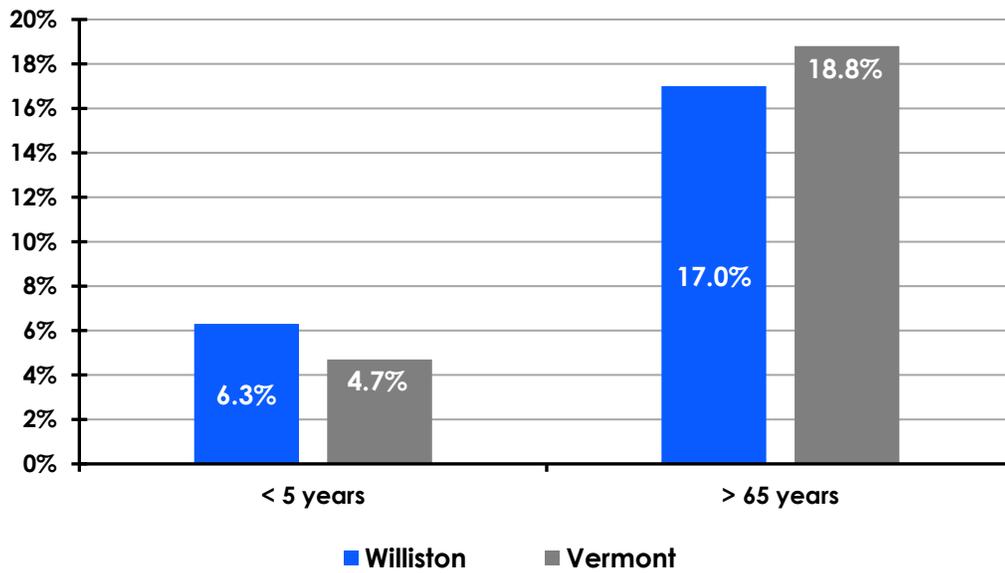
- Children under five years of age
- Older adults over 65 years of age
- People with disabilities
- People with a language barrier
- Residents in low-income communities

Town of Williston data from the 2019 U.S. Census American Community Survey 5-year Estimate identified several groups in the above categories that are more likely to need emergency services, specifically EMS services, than other populations.<sup>28</sup>

**Age**

The population's median age is 39.6 years old, and with 17% of the Town's residents over the age of 65, WFD is challenged with an aging population. As a result, additional EMS services will potentially be necessary to meet the demands of the area. The following figure shows the population size for these at-risk age groups.

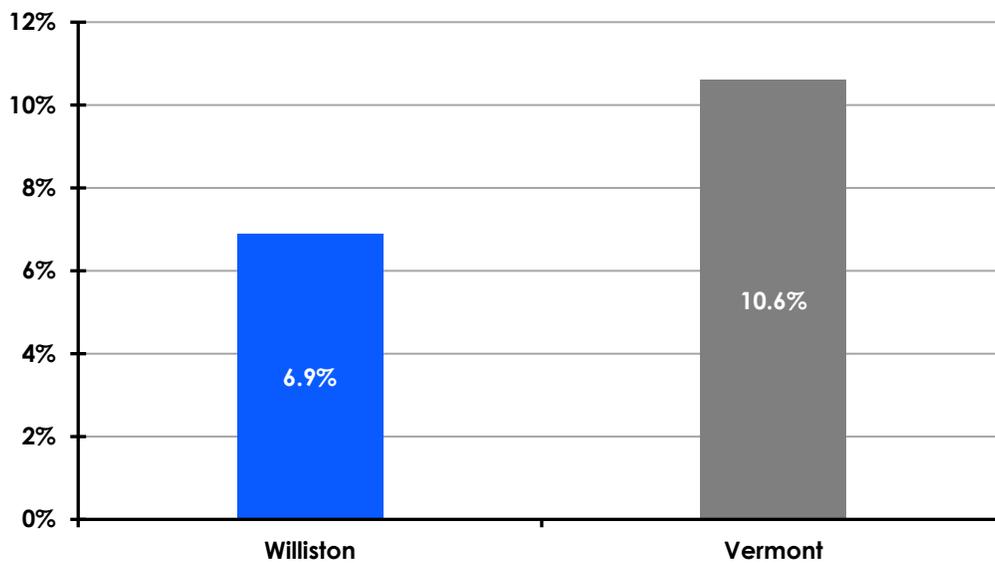
Figure 43: At-Risk Age Groups in Williston



**Disabilities**

Persons with disabilities are at risk of self-evacuation from a building during a fire or other emergency. In addition, a resident with a disability may create additional demand for services, especially as age becomes a factor. In Williston, 6.9% of the population has a disability, slightly lower than the state at 10.6%.

Figure 44: Persons with Disabilities under the Age of 65

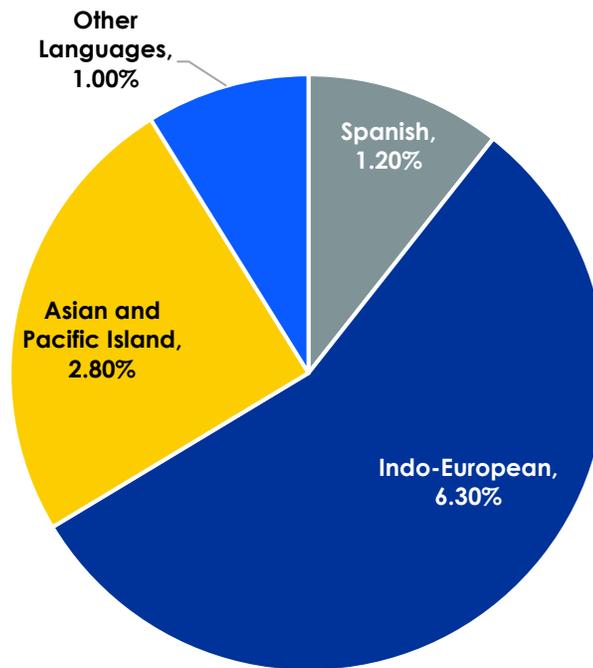


### Language Barrier

Of the total population, 1,024 residents are considered by the U.S. Census to speak a language other than English.<sup>29</sup> Indo-European languages comprise 6.3% of this population, which are of European origin, including Iranian (Iran and Afghanistan), Greek, Dutch, Slavic, and German.<sup>30</sup> Asian and Pacific Island languages are also spoken in the area (2.8%), which include Vietnamese, Chinese, Korean, and Hindi.

Residents with language barriers are at increased risk for communication difficulties for public safety personnel. Communication challenges include not understanding instructions from a PSAP dispatcher or how smoke alarms operate. The following figure shows the percentage of each language category.

**Figure 45: Persons that Speak a Language Other than English**

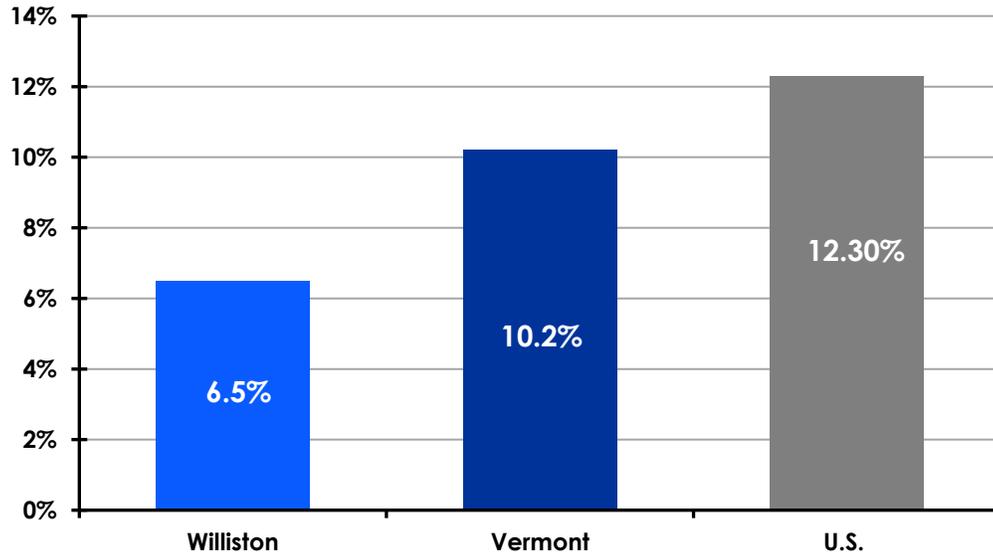


### Low-Income Population

While low income alone does not create significant risks, citizens living in low-income housing or rental properties often experience a combination of high-risk categories: limited income, limited access to health care, and homes with no smoke alarms or improper electrical wiring.

The Williston Fire Department service area includes a population below the poverty line of 6.5% and an unemployment rate of 2.4% (2020). Although significant, the rate is lower than the State of Vermont (10.2%) and the U.S. (12.3%).

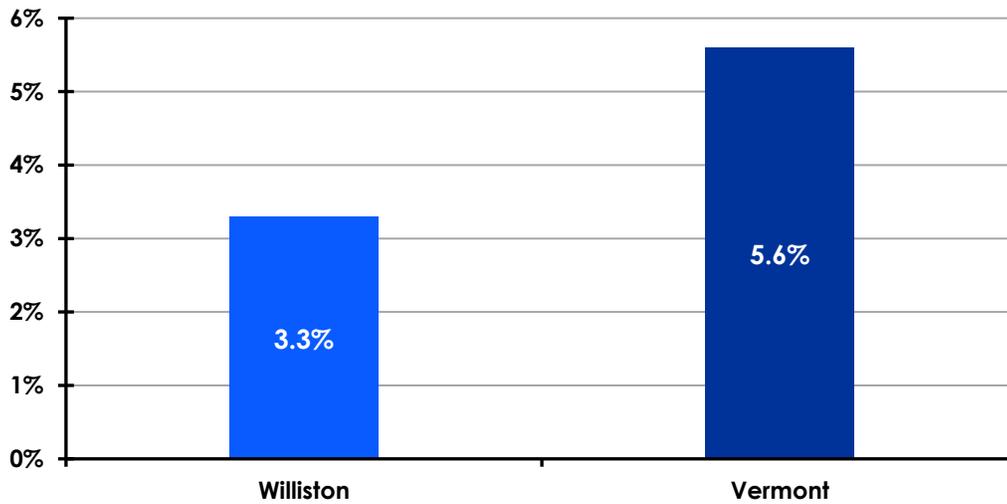
**Figure 46: Low-Income Population**



**Population without Health Insurance**

Health care for the population without insurance comprises lower to middle-income families who have difficulty paying for medical services. EMS services are requested more often as a primary caregiver and for the treatment of chronic illnesses. The following figure shows the population in this group for Williston and the state. The population is low at 3.3% for the Town but should be noted.

**Figure 47: Population Without Health Insurance**



**Race & Ethnicity**

As a definition, race is considered a person's identification with a social group such as White, African American, or Asian. However, ethnicity identifies someone based on their nationality, religion, language, or culture. The following figure shows the race and ethnicity composition of the Town.

**Figure 48: Race & Ethnicity for the Town of Williston**

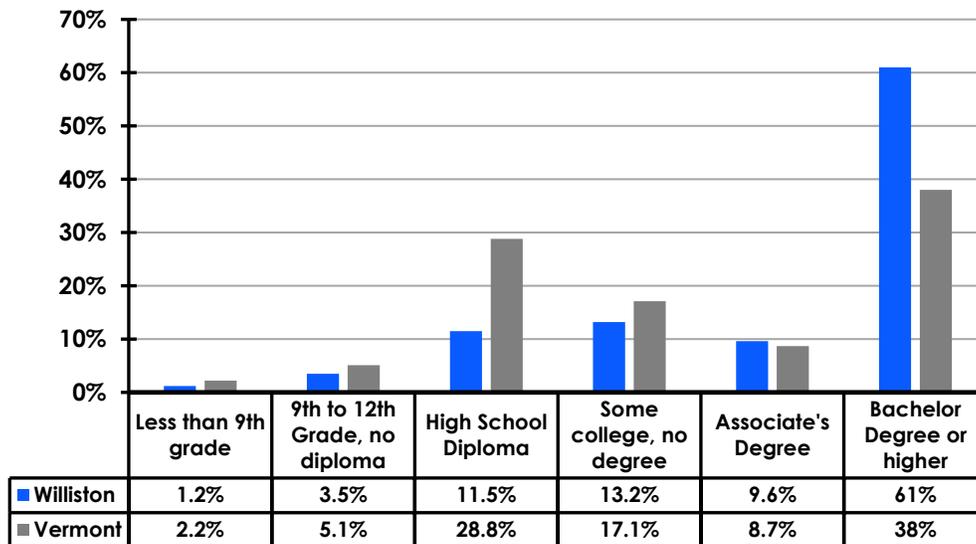
Race & Ethnicity	Williston	Vermont
White alone	92.8%	94.2%
Black or African American alone	1.8%	1.4%
Hispanic or Latina	0.9%	1.9%
American Indian & Alaskan Native alone	0.0%	0.3%
Asian alone	2.2%	1.7%
Native Hawaiian & Other Pacific Islander alone	0.6%	0.1%
Some other race alone	1.0%	0.4%
Two or more races	1.7%	2.0%

## Other Demographics

### Education Levels

Although education attainment is not an at-risk population, these levels most likely will determine whether a person will be regarded in other at-risk groups. For example, people with no high school diploma are often found in low-income and without health insurance risk groups. Of Williston's population over 25 years of age, 4.7% have less than a high school diploma. Statistically, Williston has reduced risk in relation to higher education levels as 61% of the population has a bachelor's degree or higher education level compared to 46.7% for the state.

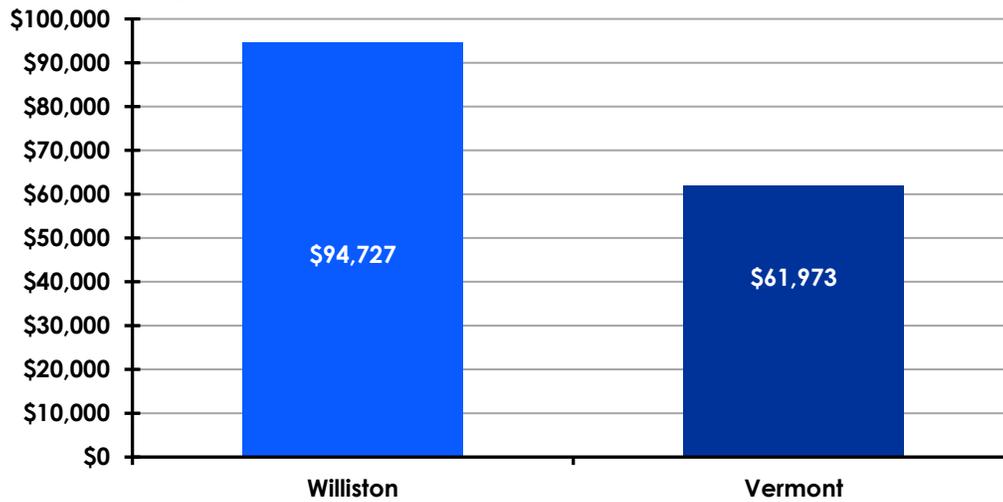
**Figure 49: Education Levels of the Population Over 25 Years of Age**



### Median Household Income

The median household income is \$94,727 in Williston and is higher than the state's average of \$61,973.

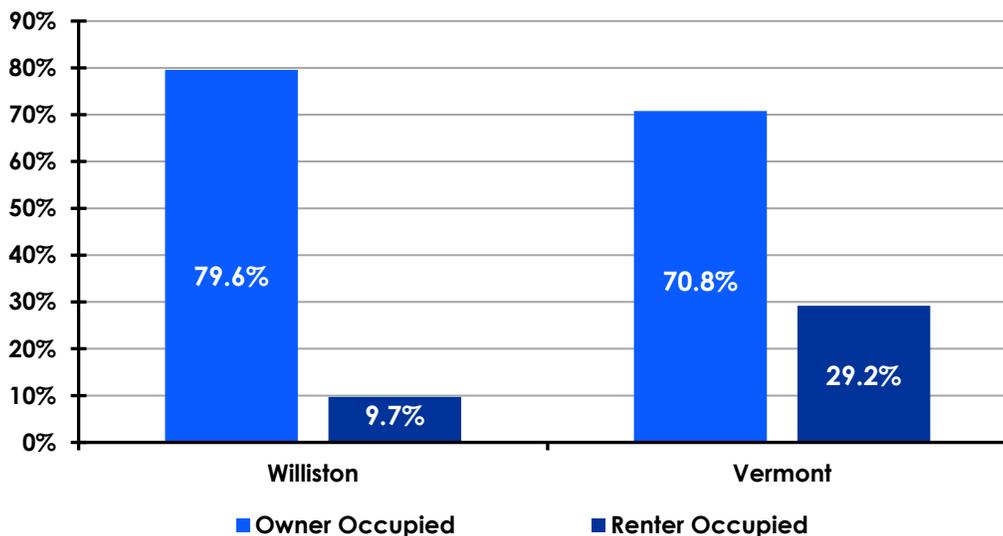
**Figure 50: Median Household Income for Williston & Vermont**



### Housing Types

A higher owner-occupied type of housing provides tangible evidence that the population is relatively stable and has a lower potential for life safety risk. The following figure shows owner-occupied and rental-occupied housing for Williston and Vermont.

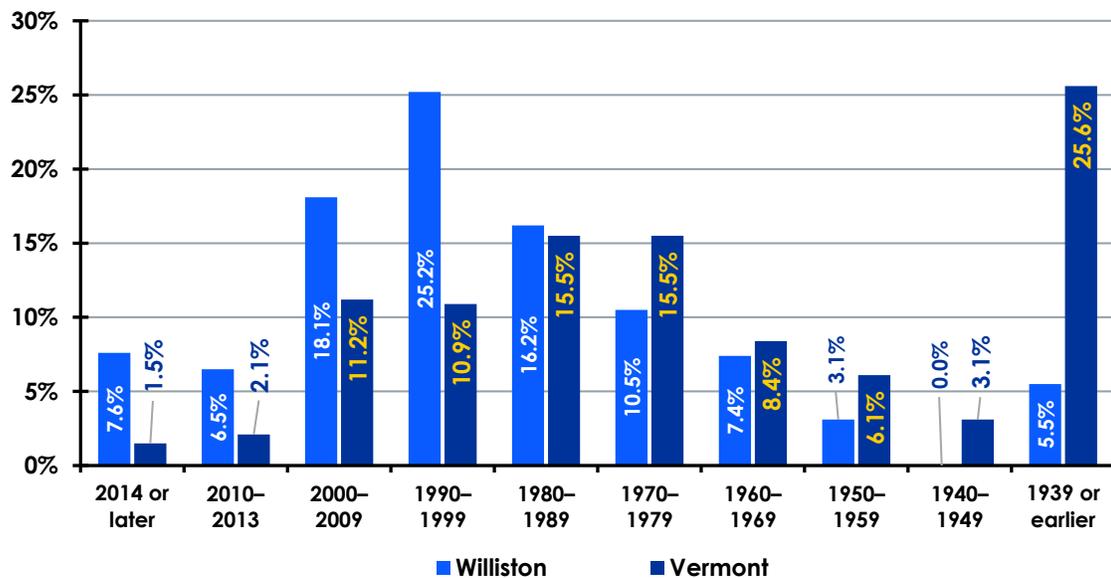
**Figure 51: Owner & Rental-Occupied Housing**



### Age of Housing

As shown in the following figure, 77.4% of homes were constructed between 1960 and 2009. Homes built in these years have fewer life safety code requirements for electrical receptacles, electrical panels, and smoke alarms.

Figure 52: Age of Housing in Williston



### Electrical Safety Construction

According to the NFPA, electrical arcing is the source of ignition in more than 30,000 fires annually.<sup>31</sup> Electrical wiring in many older homes and apartments was not designed to carry the electrical loads placed upon it by modern appliances.<sup>32</sup> Also, older homes did not require *National Electrical Life Safety Code* features that prevent electrical fires or death or injury from electrical shock compared to homes built prior to 2008.<sup>33</sup> These features include:

- Ground Fault Circuit Interrupters (GFCI) in areas where water may come in contact with an electrical power source.
- Arc Fault Circuit Interrupters (AFCI) to detect electrical faults and shut down power to a circuit.
- Tamper-Resistant Outlets to protect children from sticking objects into a receptacle.

**Smoke Alarms**

Over 80% of fire deaths occur in the home.<sup>34</sup> In 2011, a United Laboratories (UL) publication noted that home fires have changed in the last few decades, as shown in the following figure.

**Figure 53: Changing Residential Fire Dynamics<sup>35</sup>**

Changing Fire Dynamics	Effects on Residential Homes
Larger Homes	<ul style="list-style-type: none"> <li>• Faster Fire Propagation</li> <li>• Short Time to Flashover</li> <li>• Rapid Changes in Fire Dynamics</li> <li>• Shorter Escape Times</li> <li>• Shorter Time to Collapse</li> </ul>
Decreased Failure Times for Windows and Doors	
Open Floor Plans (Home Geometry)	
Increased Fuel Loads from the Construction of Contents	
New Construction Materials	

Rapid fire spread, which reduces an occupant's escape time, is exacerbated by the use of building contents that were once made from natural fibers to more flammable synthetic materials such as plastics and textiles.<sup>36</sup>

Smoke alarms are the most affordable device for alerting occupants early enough to improve their chance of escaping from a fire. NFPA 101 Life Safety Code and other codes have required smoke alarms in new construction to be hardwired with battery backups. An American Housing Survey in 2011 revealed that three out of five (61% ) respondents who reported having smoke alarms said their alarms were powered by batteries only.<sup>37</sup>

The National Fire Protection Association (NFPA) best practice for smoke alarm replacement in any home is 10 years. Installing a home fire sprinkler system increases the levels of fire protection. The death rate is lowest in homes with sprinklers and hardwired smoke alarms.

**Physical Hazards**

Natural, technological, and human-related characteristics impact the transportation systems, area land use, geography and topography, climate, and building structure features of Williston. According to Annex 17 of the 2017 Chittenden County Multi-Jurisdictional All-Hazards Mitigation Plan, the top three hazards by risk include:

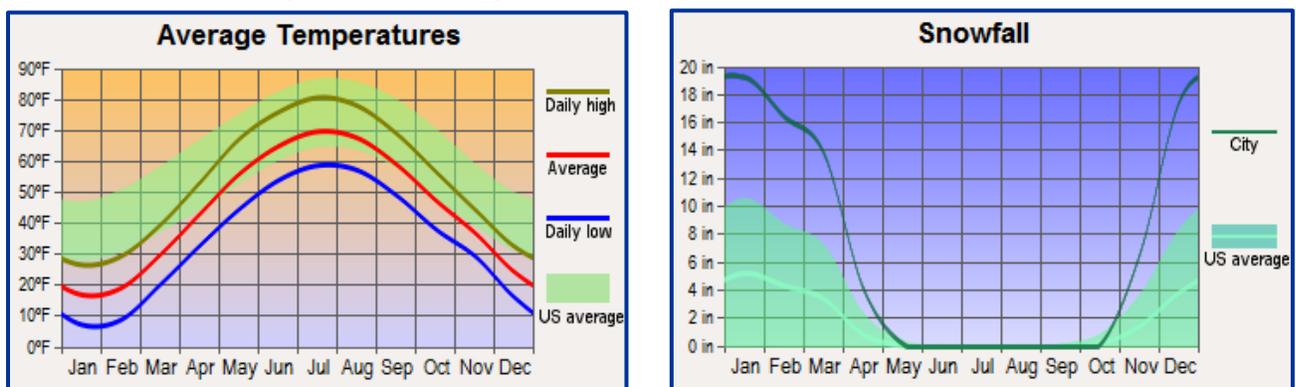
- Natural Hazards: Severe winter storms, severe rainstorms, and extreme temperatures
- Technological Hazards: Hazardous materials incident, major transportation incident, and telecommunications failure
- Societal Hazards: Epidemics, crime, and terrorism

Increases in natural disaster duration, intensity, and severity are exacerbated by changes in population, land use, and weather patterns, highlighting one of the most critical emergency management challenges facing the United States. Investing in pre-disaster infrastructure and community actions to reduce natural hazard impacts provides community resiliency and a significant risk reduction.

### Extreme Temperatures & Severe Winter Storms

Weather conditions throughout the year impact WFD. Williston is bordered to the north by the Winooski River and the Essex #19 Dam. The average annual rainfall is 33.8 inches, and typical snowfall averages can be up to 75.3 inches. Elevation in Williston is 240 feet. Serious fires are more likely to occur during periods of severe cold because of the use of heating systems. Cold weather conditions will affect firefighters, especially their physiological processes. When working winter incident operations, rehabilitation areas must be provided to reduce the risk of hypothermia. The following figure from City-Data.com shows the average temperatures and snowfall for the area.

**Figure 54: Average Temperatures & Snowfall for Williston**



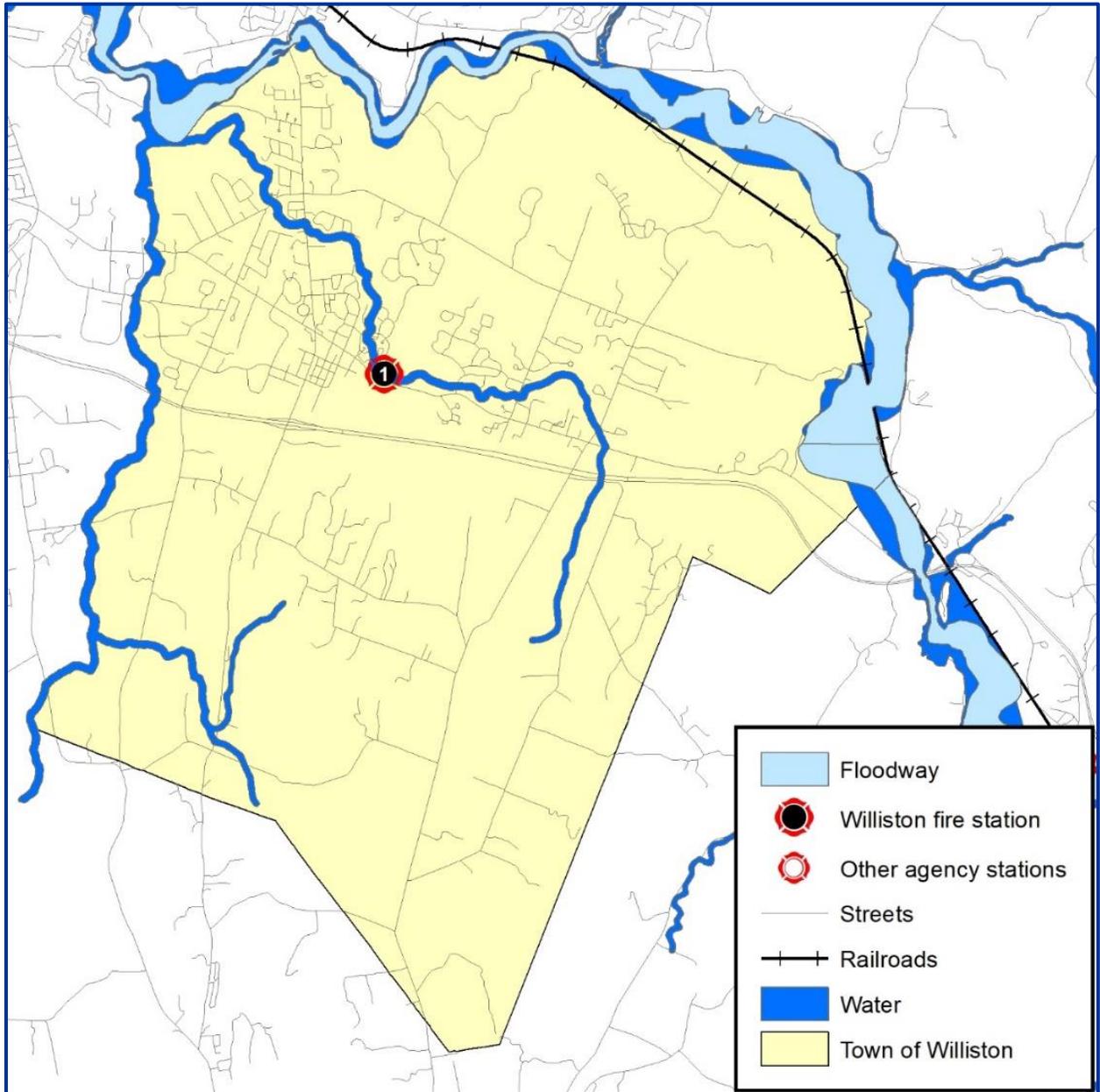
### **Severe Rainstorms & Flooding**

Williston is advantageously located on the highest elevation in Chittenden County. Based on the 100-year floodplain, portions of the shoreline only are designated as flood areas: the Winooski River, Allen Brook, Muddy Brook, Lake Iroquois, and a good portion of the shoreline of Lake Champlain. Severe rainstorms, however, occur with regular frequency and tend to affect the entire town, contributing recently to severe infrastructure damage in some areas that had never been impacted prior to 2017.

Intense rainstorms and flooding cause temporary closures of roads and bridges from debris, temporary losses of power and telecommunications, temporary isolation of vulnerable residents, and damage to public infrastructure.

Williston's floodway is shown in the following figure.

**Figure 55: Floodway for Williston**

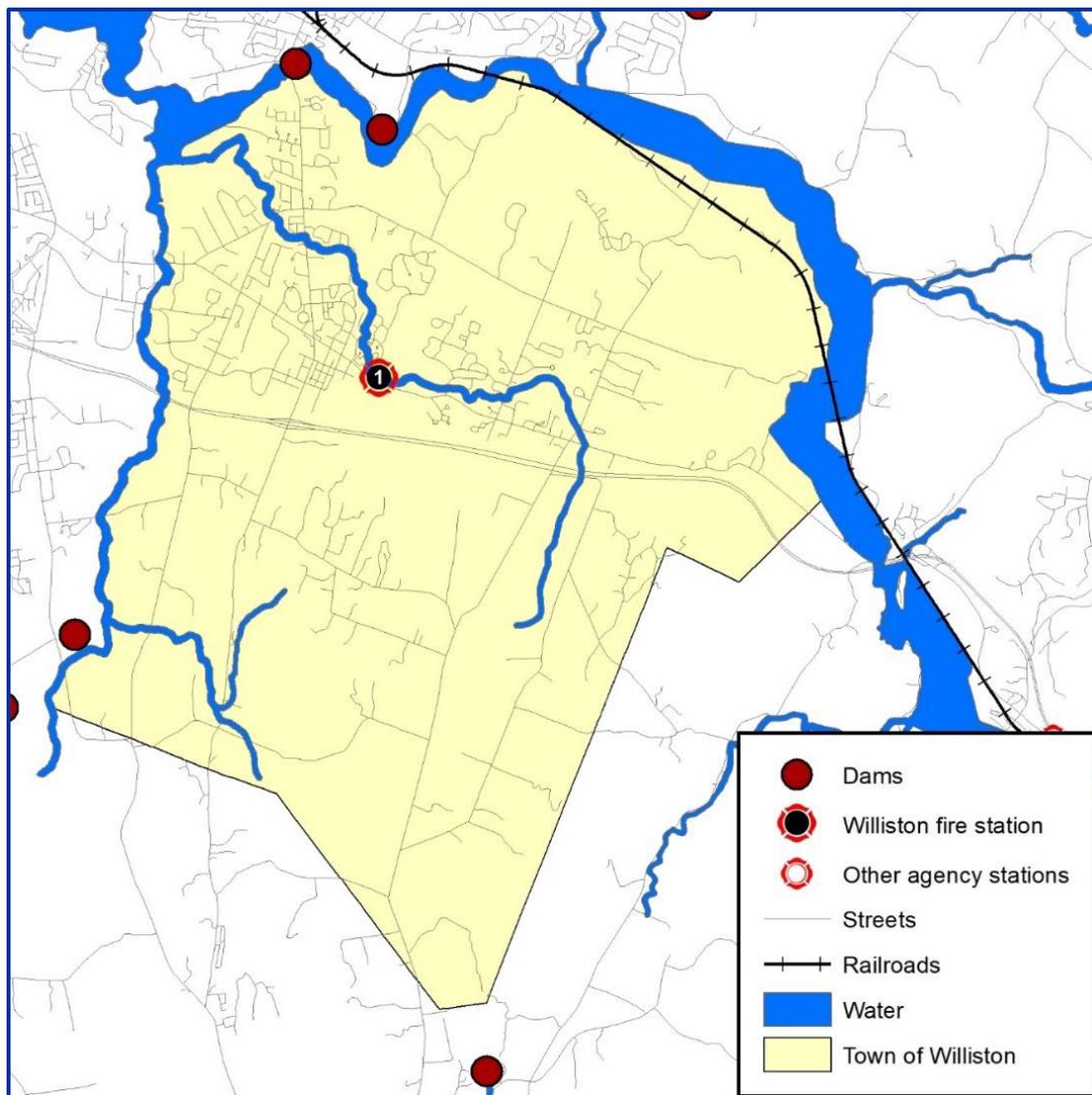


### Dam Failure

Some areas of Williston are downstream from the Essex Dam #19, located to the west at River Mile 17.6 of the Winooski River, near Essex Junction and Overlook Park. Essex Dam is the only high-hazard dam in the county and is a hydroelectric project owned by Green Mountain Power Corporation (GMP). Located east on the river is the IBM Lagoon Dam owned privately by Global Foundries U.S. 2, LLC. The 16-foot dam covers two acres and has a low hazard potential for dam failure.

Overall, continued watershed mitigation projects and elevation levels in the area significantly reduce the risk of a flood event due to dam failure. The following figure shows dams located in Williston.

**Figure 56: Dams Located in Williston**



## Hazardous Substances & Processes

A significant presence of reported hazardous material and petroleum storage sites are located within the Town limits, with some sites containing both types of products. Triton notes the 2017 Hazard Mitigation Plan (Annex 17) states there is a slightly higher vulnerability to these incidents compared to the county as a whole.

In the event of a spill, leak, or fire at a facility, fire personnel will be required to use specialized personal protective clothing, air monitoring systems, and equipment to manage an event. Mitigating these incidents is often lengthy, involving state and federal resources to assist with fire extinguishment, air monitoring, and cleanup efforts. Water supply capabilities will require high flow capacities for extended periods.

WFD must develop pre-fire plans for these facilities and identify all stationary containers/buildings to ensure NFPA 704 Identification Placards are visible. If any hazardous materials exceed the limits established by the Environmental Protection Agency (EPA), the company is required to file a Tier II report per chemical. These reports are provided to local jurisdictions, local emergency planning committees, and the State's Emergency Response Commission as required by the Emergency Planning and Community Right-to-Know Act of 1986, also known as SARA Title III. These thresholds require submission:

- Ten thousand pounds of hazardous chemicals.
- Lesser of 500 pounds or the threshold planning quantity for extremely hazardous chemicals.

Local businesses such as garages, hardware stores, and agricultural facilities also contain smaller amounts of hazardous substances. Minimal quantities do not require reporting.

Transportation of hazardous materials occurs daily in Williston. The primary route is Interstate 89 that passes through the south portion of the Town. Route 2A is the north/south connector route to Colchester and Canada, and Route 2 travels through Williston on an east/west connector route. The following are traffic counts from the Vermont Agency of Transportation for main intersections in Williston from 2015–2020.<sup>38</sup>

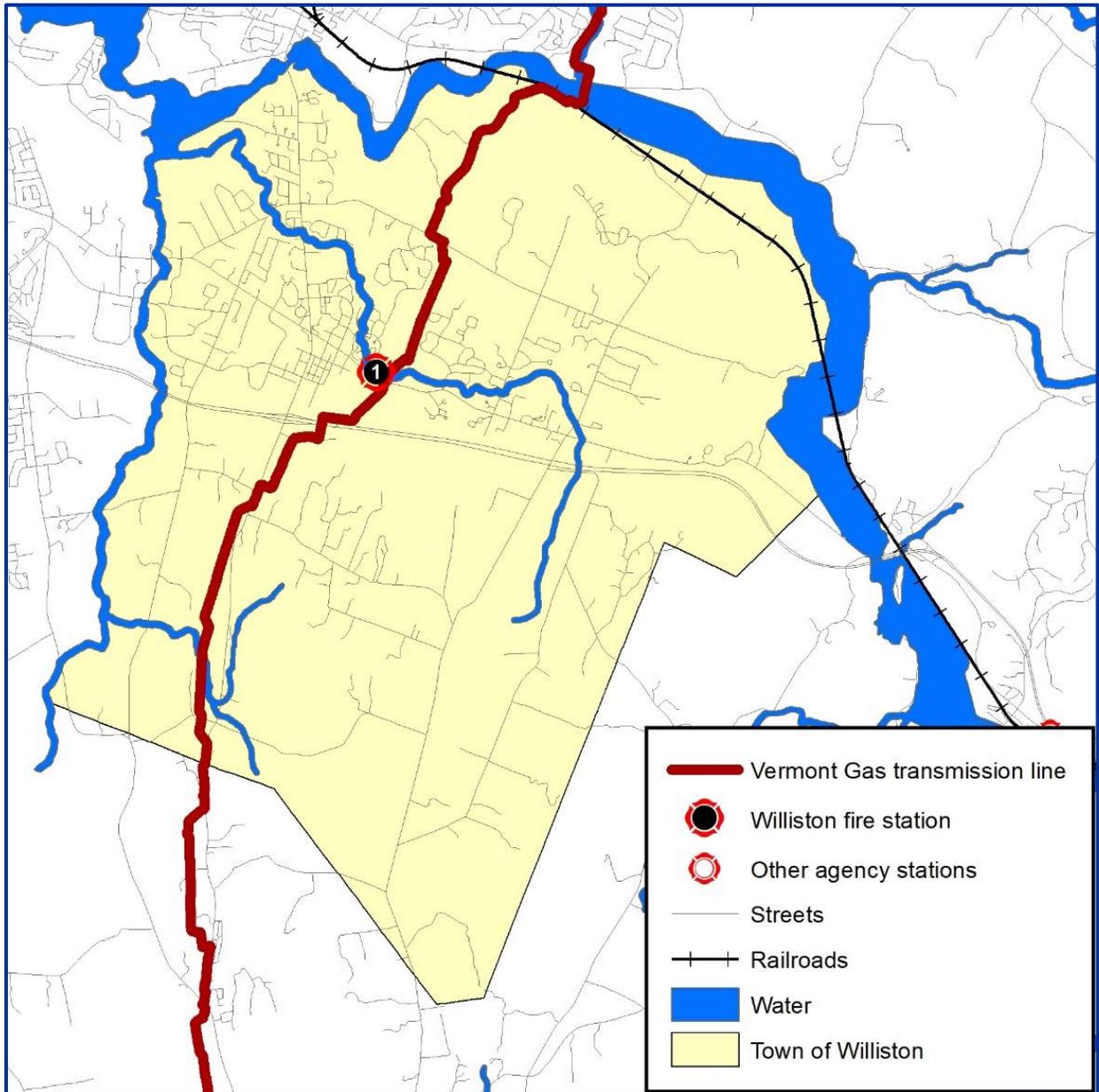
**Figure 57: Main Intersection Traffic Counts for Williston**

Location	Average Daily Traffic Count
U.S. Route 2 (Williston Road) East of Industrial Ave.	11,456
VT-2A just North of Marshall Avenue	16,365
Interstate 89 at Williston Ramp	26,896

**Natural Gas Lines**

Vermont's natural gas is transported from Canada via the TransCanada Pipeline, operating 750 miles of underground natural gas pipelines under Chittenden and Franklin Counties. In 2014, Vermont Gas constructed the 41-mile pipeline, known as the Addison Rutland Natural Gas Project, in Williston to bring natural gas from Colchester to Middlebury and Vergennes through an underground high-pressure pipeline. The pipeline passes through Essex, Williston, St. George, and Hinesburg. The following figure shows the location of the pipeline.

Figure 58: Vermont Natural Gas Transmission Line



## Transportation Networks

Williston has an elevated risk for transportation incidents, including accidents involving a large number of vehicles, boat or rail incidents, or road infrastructure failure. Interstate 89, major artery highways, and the proximity of Burlington Airport are discussed in the next section. Future transportation opportunities involve working with Green Mountain Transit (GMT) to connect residential areas of Williston to the Taft Corners commercial area.

## Roadways

Roadway incidents in the area can cause temporary closures of roads and bridges during cleanup. Dense concentrations of the population are along the following routes:

- VT Route 2A (Essex Road)
- U.S. Route 2 between U.S. Route 2 and Mountain View Road
- Meadow Ridge Road and Old Creamery Road
- Commercial and industrial development is located north of Interstate 89 in the northwest portion of Williston and the surrounding intersection of U.S. Route 2 and VT Route 2A (known as Taft Corners)

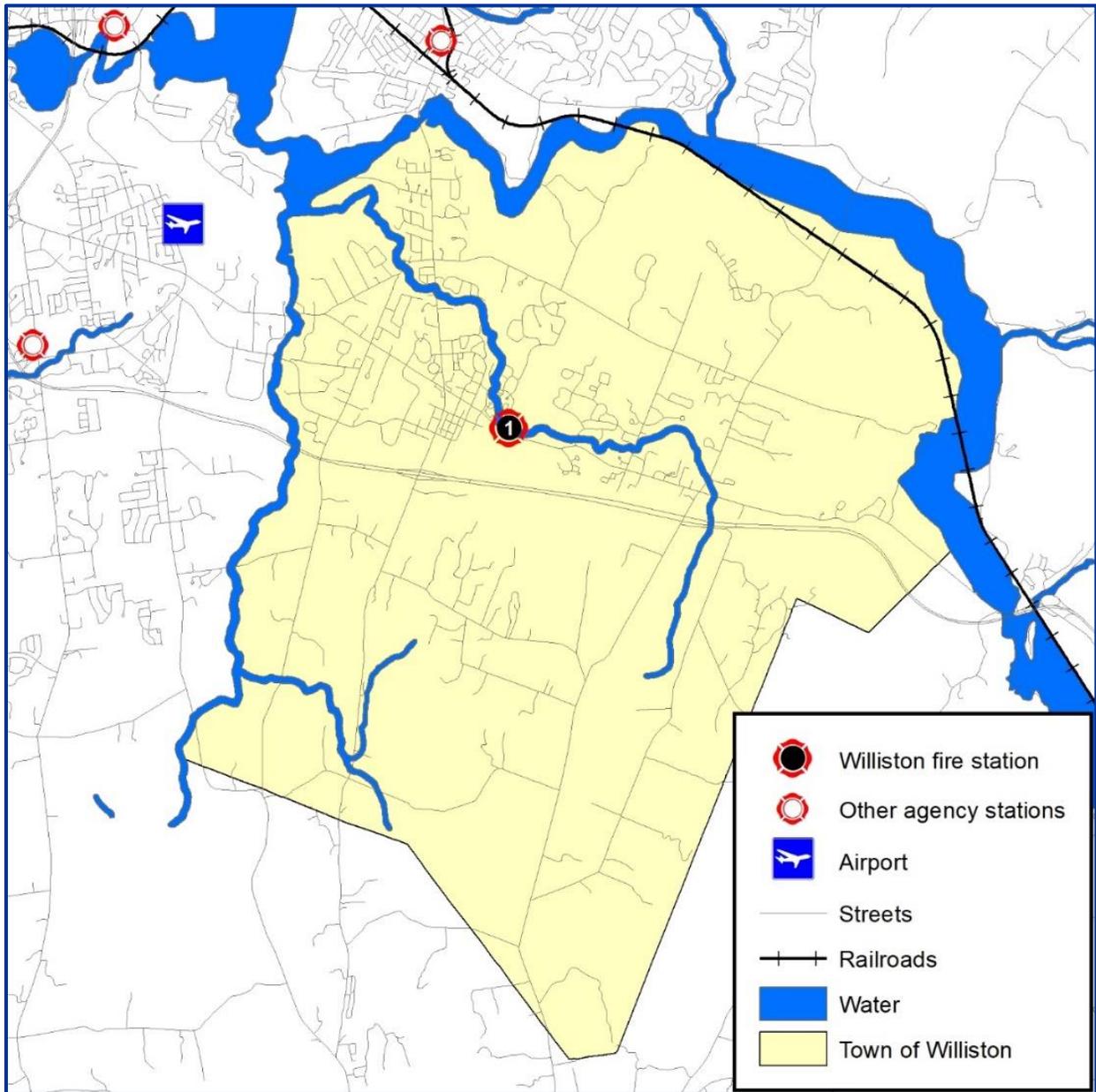
Interstate 89 is considered a major regional arterial road while U.S. Rt. 2 and VT Rt. 2A also serve as north/south traffic routes. A significant amount of road traffic occurs in the area as the daytime population increases to 23,000 people.

Major transportation incidents can occur anywhere within the Town limits, leading to civilian injury or death and increase the risk of first responders being struck by a vehicle while mitigating an accident on a roadway.

## Airports

Just five miles from Williston, the closest major airport is Burlington International Airport (BTV/KBTV), a medium-sized domestic airport that receives 662 flights annually. Williston is located directly in the flight path of the BTV Runway 15/33. Also, since the arrival of twenty next-generation F-35A advanced stealth fighter jets in 2019 to the Air National Guard Base (158<sup>th</sup> Fighter Wing), military flights have increased, and the intensified noise impact of the jets, which at times can register over 100 decibels during takeoffs, is significantly apparent over Williston.<sup>39</sup> The following figure shows the location of the airport.

Figure 59: Burlington International Airport (BTV/KBTV)



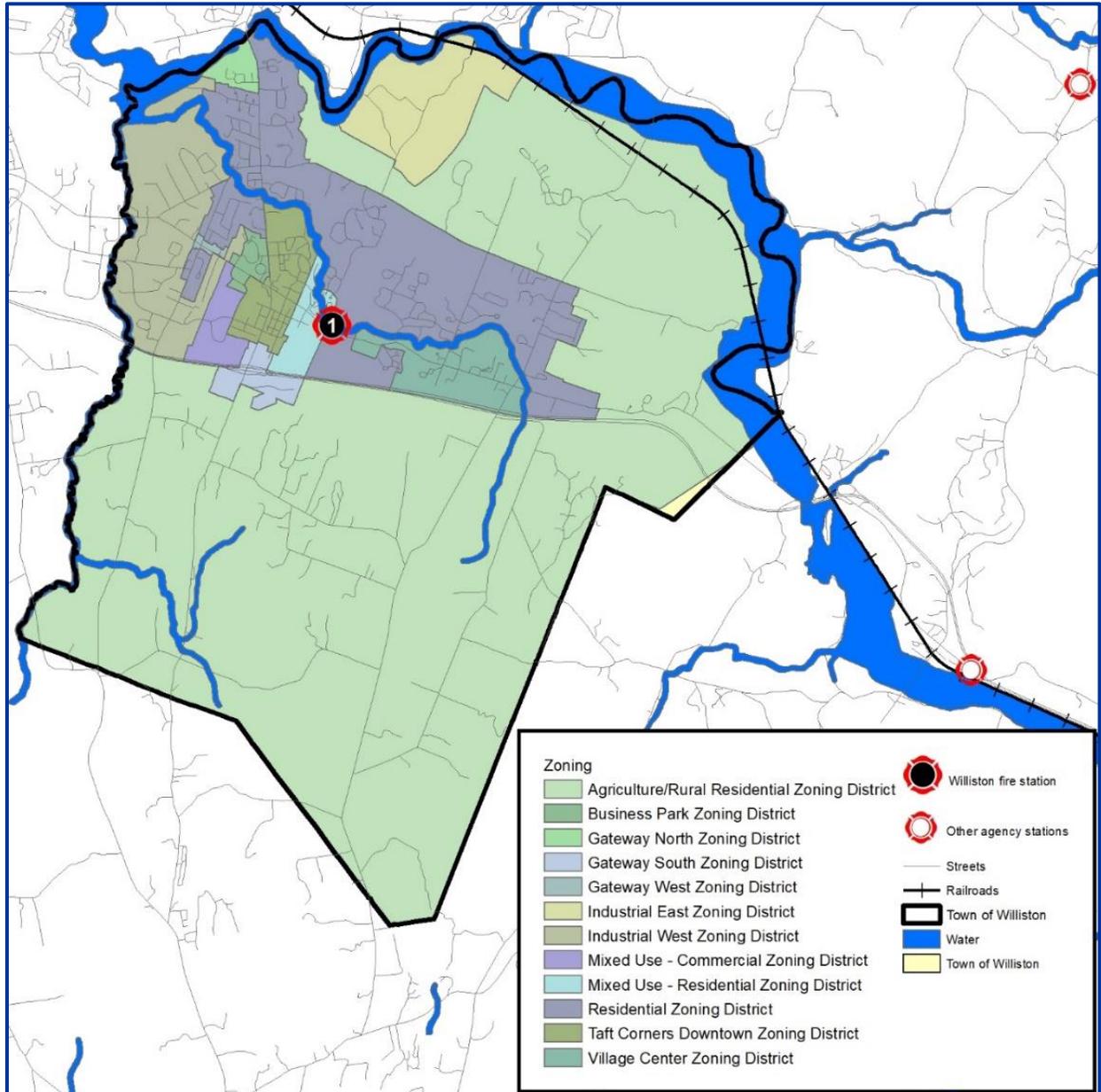
## Land Use

Land use classification of properties within a geographical area maintains the direction of community growth. Land use regulations provide attractive social and environmental outcomes to manage development effectively. Williston is an incorporated town, with zoning districts created under the Town's governing jurisdiction. Within the 2016–2024 Comprehensive Plan, land use is clearly defined with a vision to balance livable suburban growth with rural character and conservation:

- Encourage and support a mixed-use development and the construction of planned infrastructure in Taft Corners and Growth Center.
- Encourage and support the use of mass transit and non-motorized modes of transportation.
- Maintain Williston Village as a historic physical and cultural center.
- Maintain five commercial zoning districts: Business Park, Gateway, Taft Corners, Mixed-Use Residential (East of Maple Tree Place), and Mixed-Use Commercial (between Williston's industrial and commercial areas).
- Maintain the rural areas in Williston outside of the sewer area and protect open space resources.
- Industrial lands will continue as part of the industrial center and the site of a proposed regional landfill.

Residential zoning districts are shown in the following figure.

**Figure 60: Williston Zoning Districts**

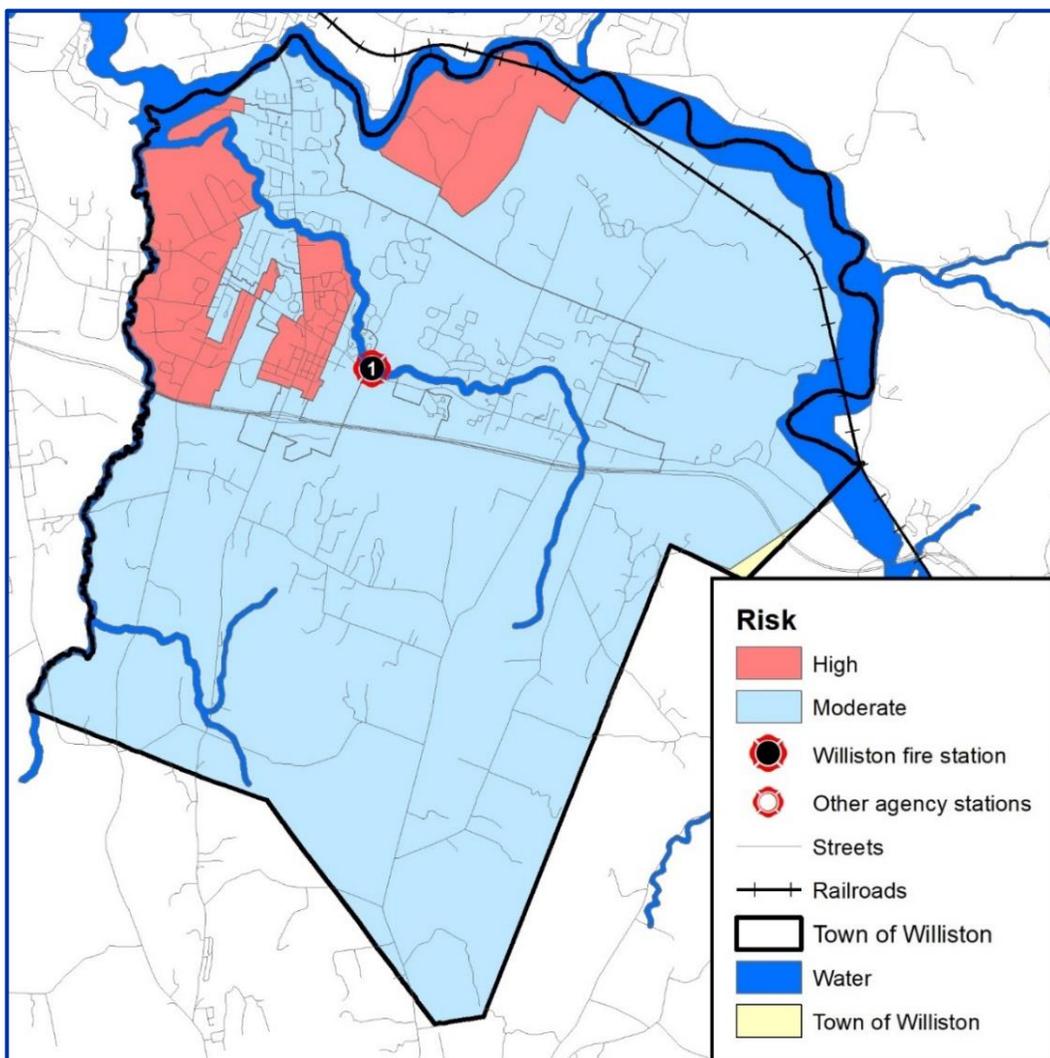


Zoning areas, such as residential, commercial, or industrial, may vary in size and type within each category with a mixture of low-, moderate-, and high-risk properties.

- *Low Risk:* Areas zoned for agricultural purposes, open spaces, low-density residential, and other low-intensity use.
- *Moderate Risk:* Areas zoned for medium-density single-family properties, small commercial and office uses, low-intensity retail sales, and similarly sized business activities.
- *High Risk:* Higher intensity business districts, mixed use areas, high-density residential, industrial, storage facilities, and large mercantile centers.

Based on these risk criteria, the following figure shows relative fire risk in Williston.

**Figure 61: Relative Fire Risk in Williston**



Incidents at moderate and high risk occupancies can result in operational demands that exceed WFD's staffing capabilities.

## Occupancy Types

Types of occupancies will vary from small business, mercantile, and assembly buildings to large manufacturing facilities. Each one poses some type of risk for emergency responders that must be identified and evaluated. Multi-story and large square footage buildings create additional challenges to fire department personnel, i.e., evacuations, search and rescue operations, fire floor extinguishment, and establishment of a secondary means of egress on upper floors with ground and aerial ladders. The number of personnel needed to mitigate such a significant incident can far exceed staff availability and require assistance from mutual aid departments in the area. Current pre-incident plans should be completed for these occupancies and reviewed annually or when there is a change of occupancy.

### Assembly

An assembly occupancy is considered high risk because of the number of people allowed to gather for worship, entertainment, or special events in a specific location, either inside or for special outdoor events and festivals. In recent years, emergency responders have planned for fire as well as active shooter incidents in these facilities. An assembly occupancy may require numerous personnel and resources based on the severity of the incident.

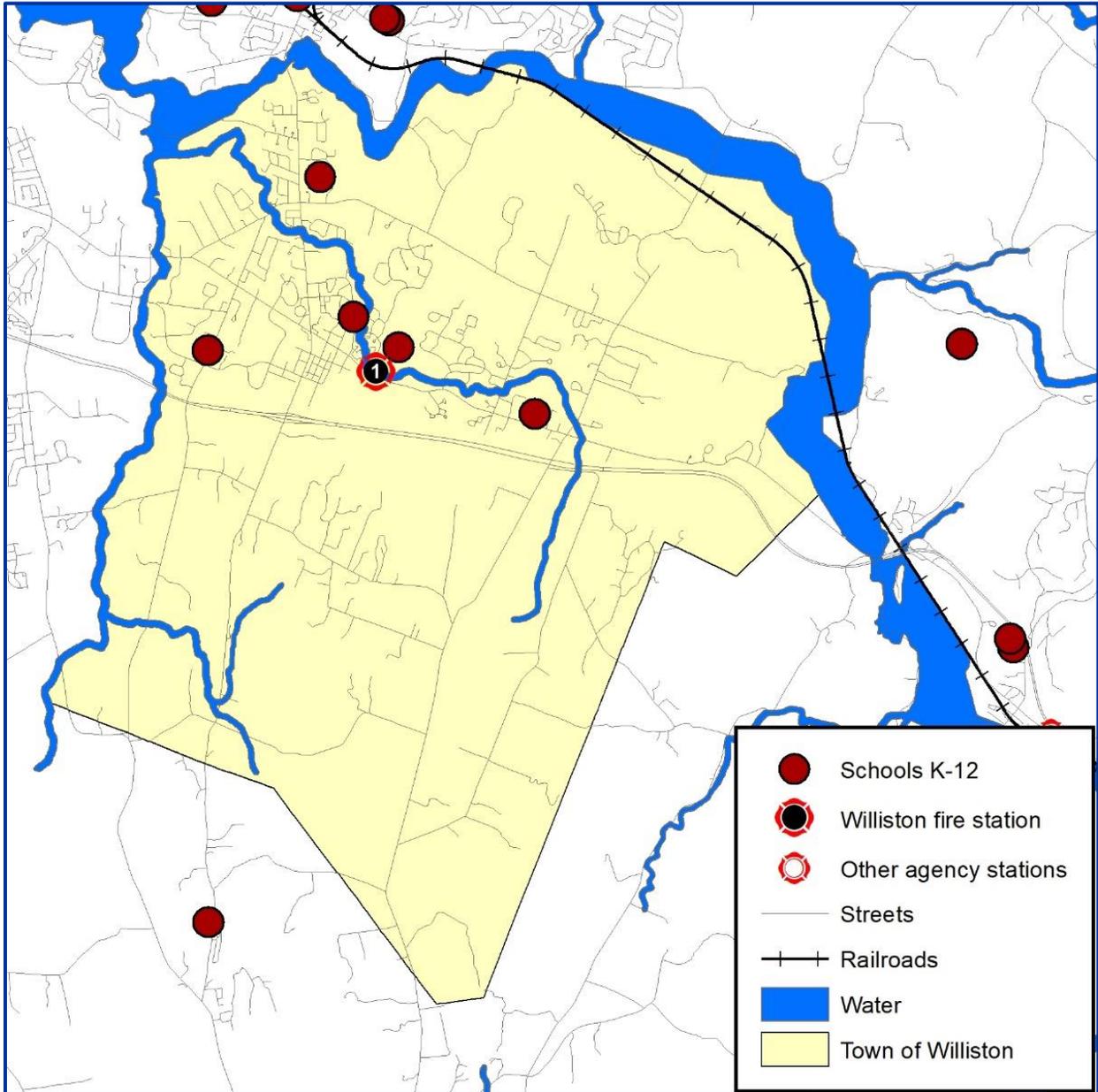
### Schools

Schools create special risks because of the large number of students in a specific location. An NFPA study on Structure Fires in Schools revealed an estimated 3,230 fires occurred on school properties through the United States from 2014 to 2018, causing \$37 million in property damages per year.<sup>40</sup> Fires in these structures were often intentionally set or occurred because of cooking materials.

### Kindergarten through High School

The Williston School District operates public schools, providing education for students from kindergarten through high school. The following image shows school locations.

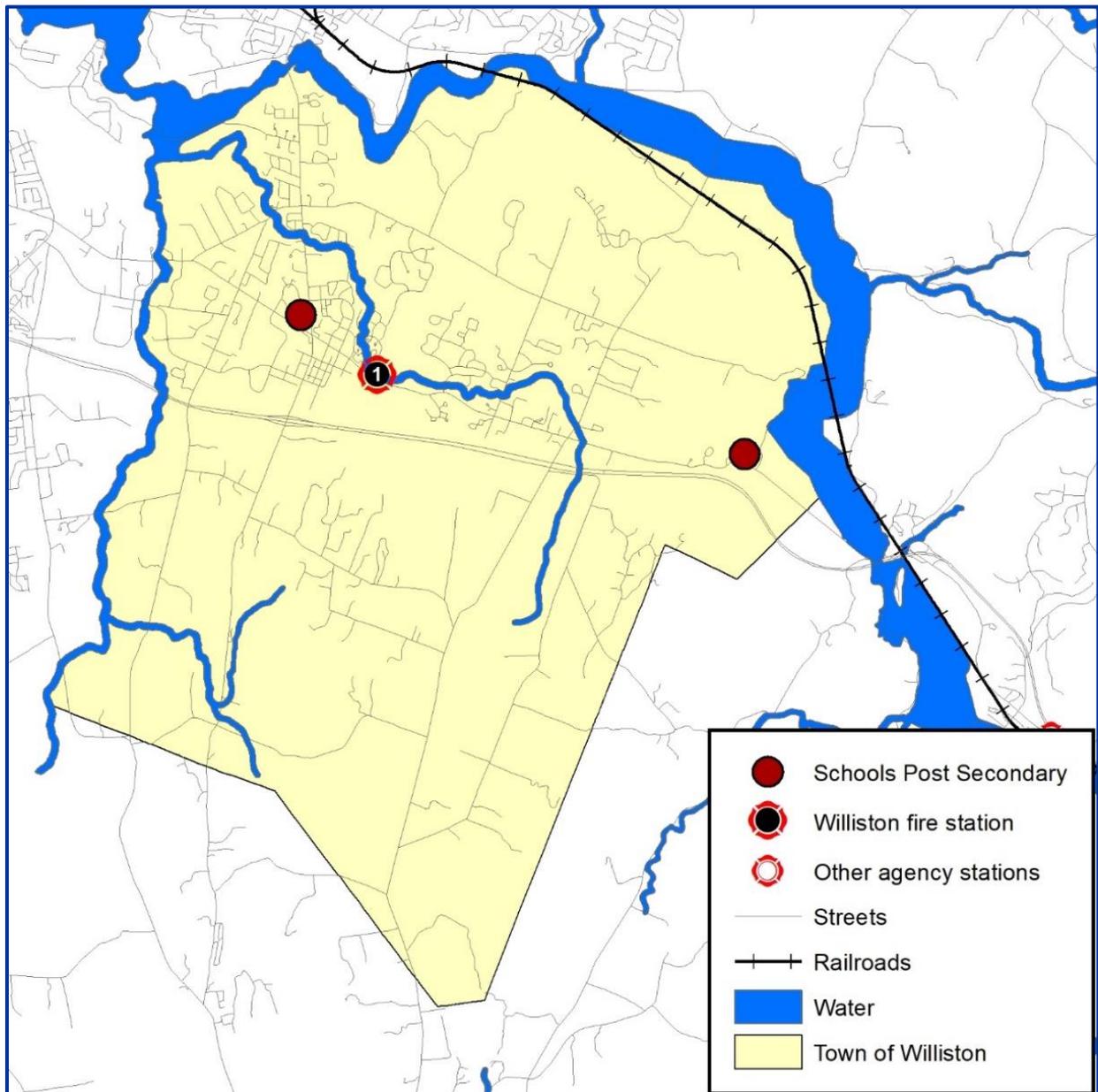
Figure 62: K-12 Locations



### College and Specialty Training Center

Vermont Technical and the New England Training & Sending Center for Church Planting Revitalization (NETS) are important secondary education resources for the workforce as 61% of the population has an associate's degree or higher. The U.S. Fire Administration report on-campus fire fatalities in residential buildings (2000–2015) stated that off-campus housing saw a high rate of fatalities, approximately seven per year. The report also revealed that smoking and alcohol are often the cause of these fires, and smoke alarms are either missing or tampered with (disconnected or the battery removed).<sup>41</sup>

Figure 63: College and Specialty Training Center



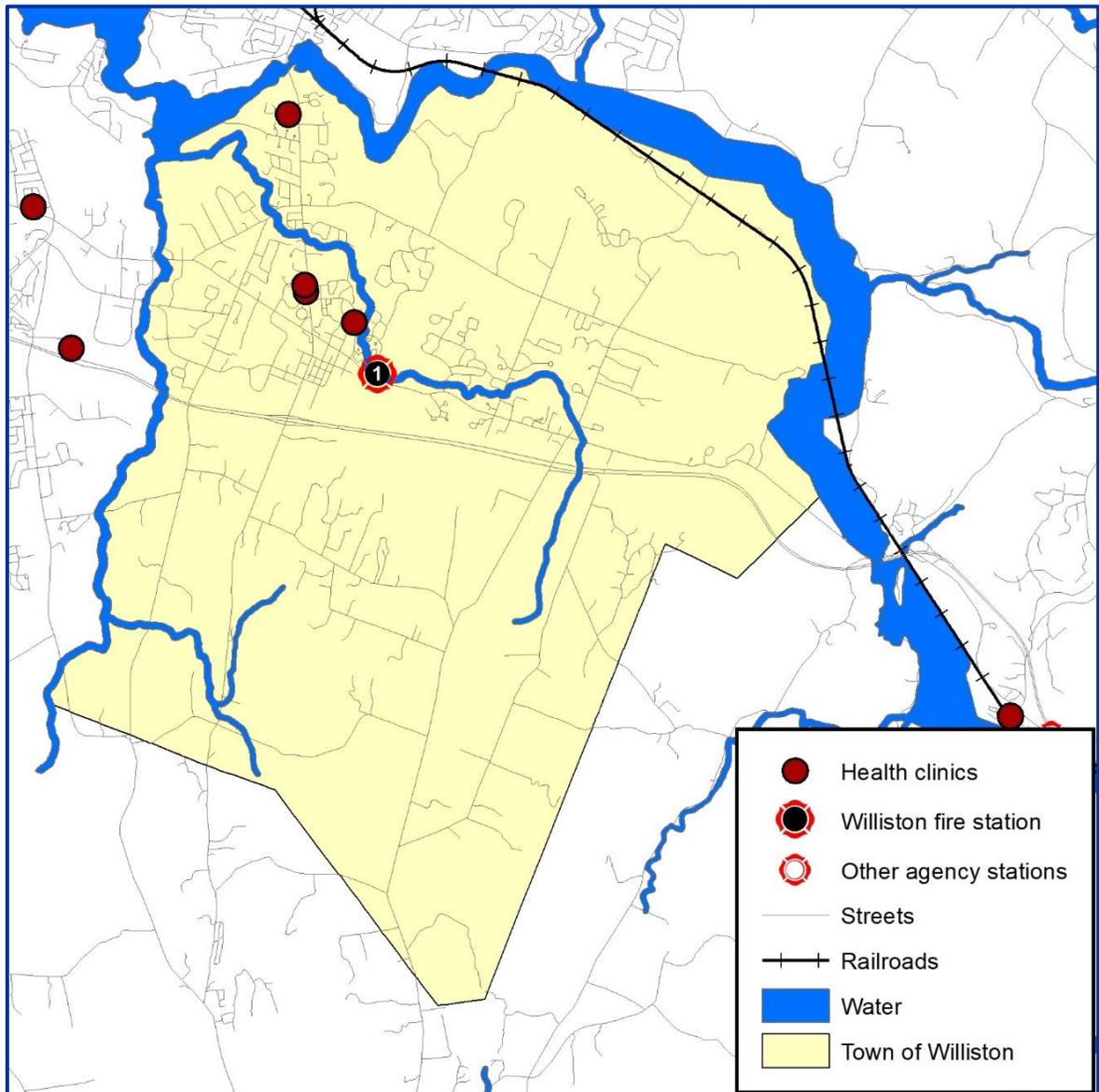
### Hospitals & Medical Facilities

The University of Vermont Medical Center (UVMMC) in Burlington is the main hospital for residents in Williston. Health care clinics and long-term care facilities are located throughout the Town.

### Health Clinics

Four primary health centers provide patient care within the Williston area for a wide range of primary care services.

**Figure 64: Primary Health Care Clinics in Williston**

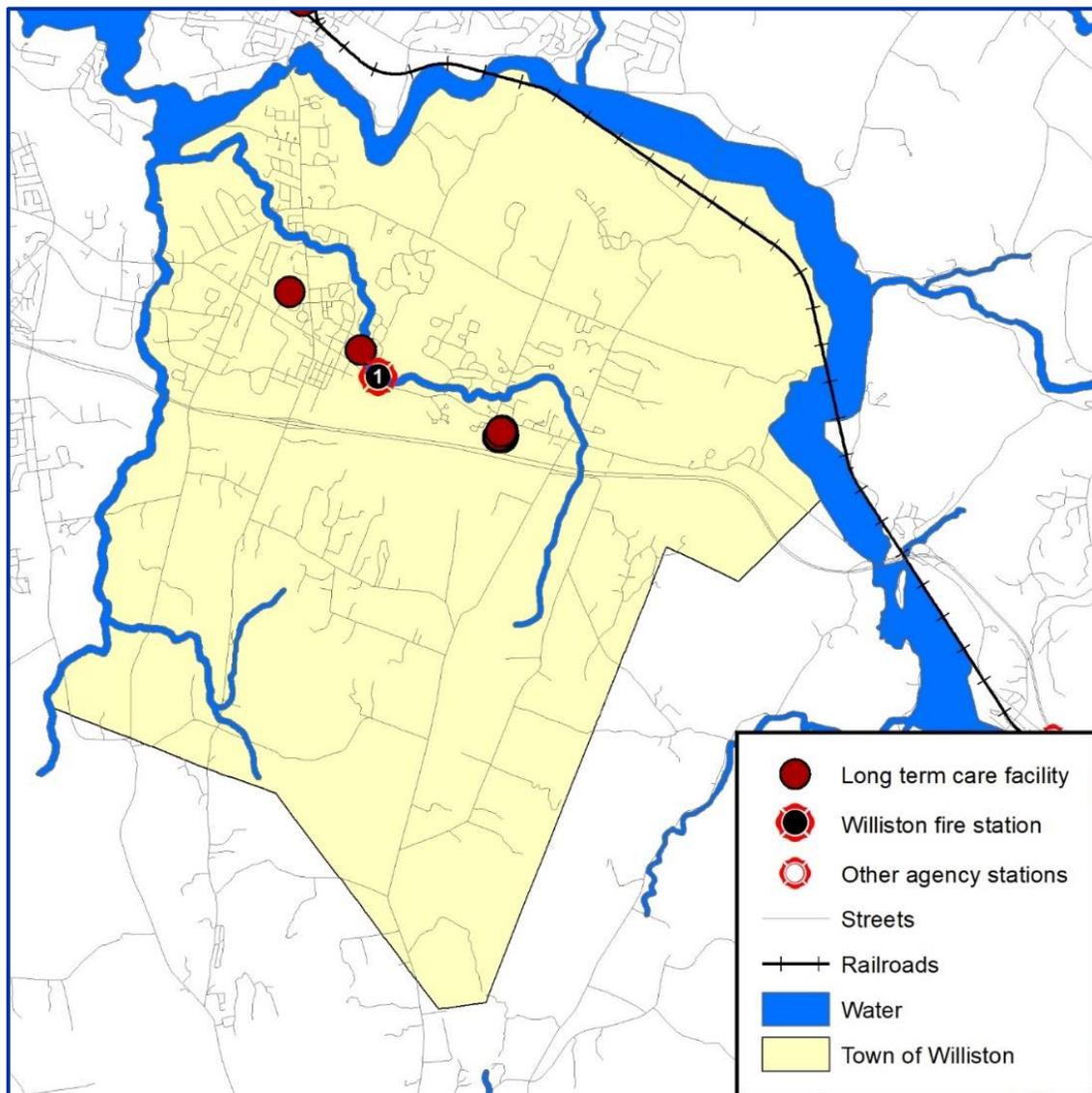


### Long-Term Care Facilities

As the population of Williston ages, additional long-term care facilities will be needed to provide services for residents, especially for the baby-boomer population, currently 56–74 years old.

Special life safety risks require WFD to create pre-fire plans for these facilities and become familiar with the building's fire protection system as memory care areas are often secured and other areas are compartmentalized to reduce fire spread. WFD will often be called for EMS incidents, possibly due to a medical condition or a fall. The following figure shows the current facilities available in Williston.

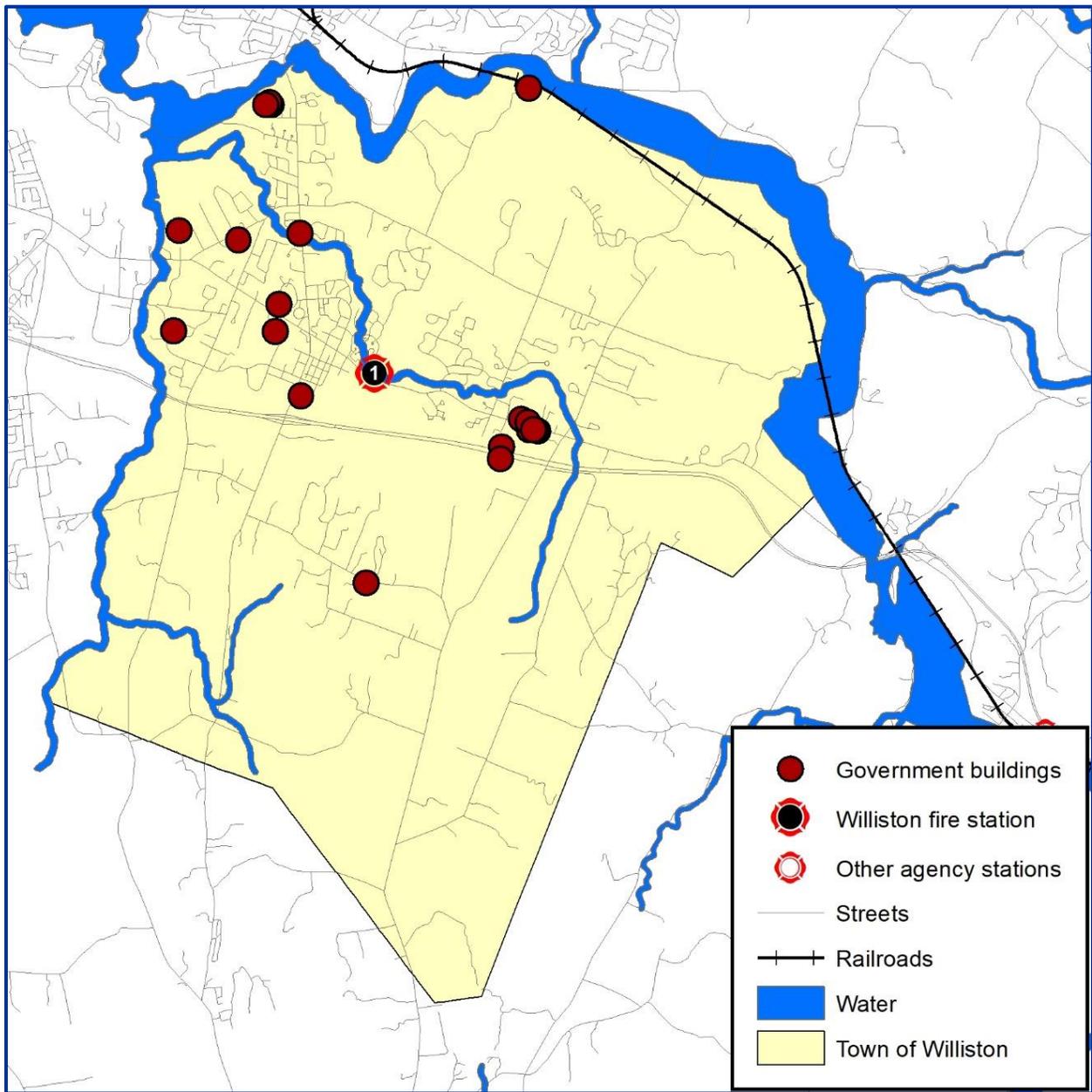
**Figure 65: Long-Term Care Facilities in Williston**



### Government Buildings

Government buildings are strategically located through the Town to provide all types of governmental services for the community. The Town's goal is to meet service demand by investing in new facilities that provide accessible, high-quality municipal services and accommodate future growth. The following figure shows the location of government buildings.

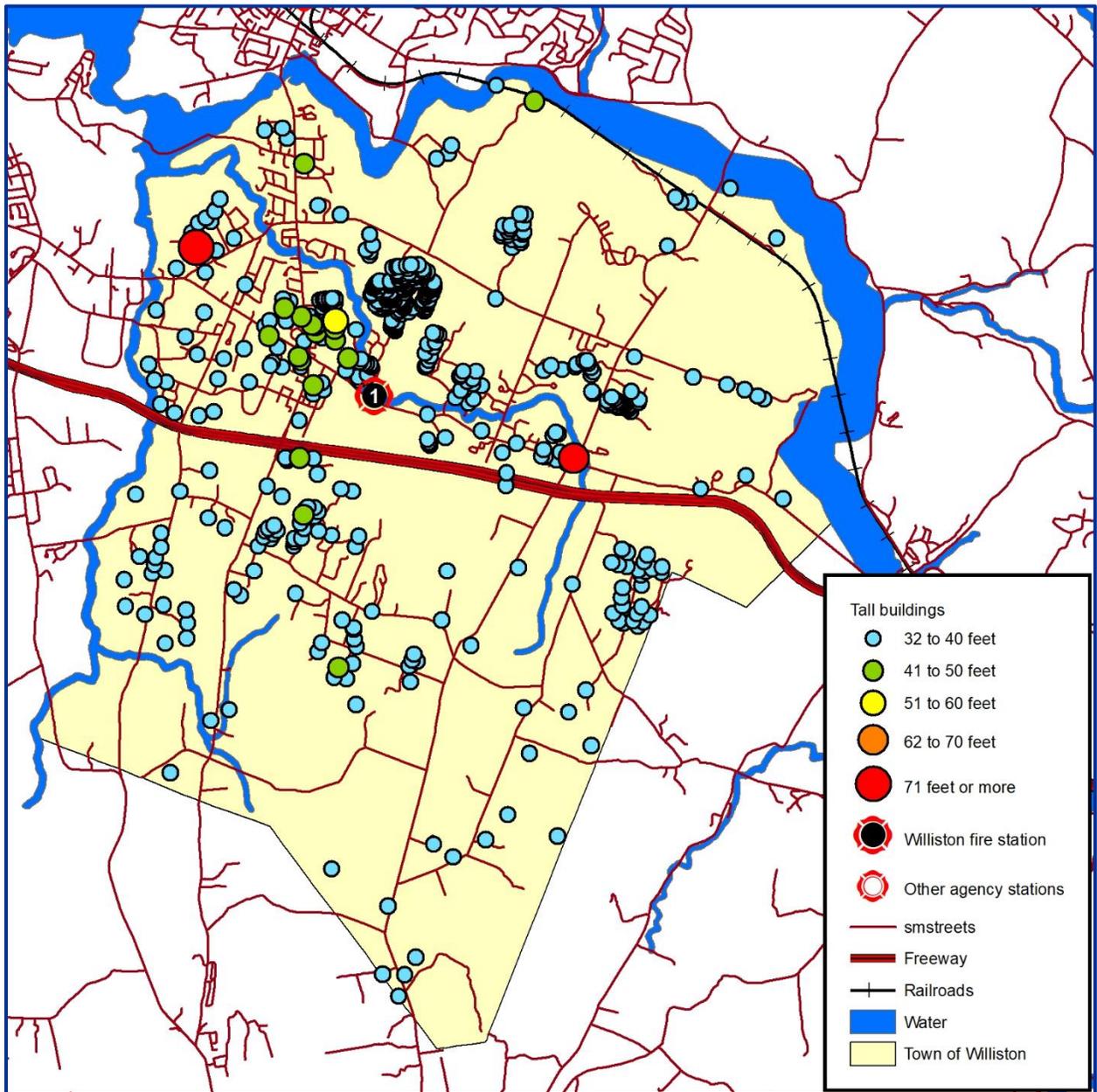
Figure 66: Government Buildings in Williston



### **Buildings 32 feet in Height or Greater**

As the height of a building increases, additional firefighters and aerial ladder apparatus are required to gain access to upper floors and roof tops, perform search and rescue operations and place safety officers in strategic locations. Fires of this magnitude require additional personnel above those required under NFPA 1710 and NFPA 1720 for a 2,000 square foot single-family dwelling. The Insurance Service Office (ISO) provides credit towards rating for all ladder trucks within 2.5 miles of a fire station. During the most recent ISO review, WFD received a maximum 4 of 4 credits since the ladder truck responds from Station 1, near the commercial and industrial area of Williston.

Figure 67: Buildings 32-Feet in Height or Greater



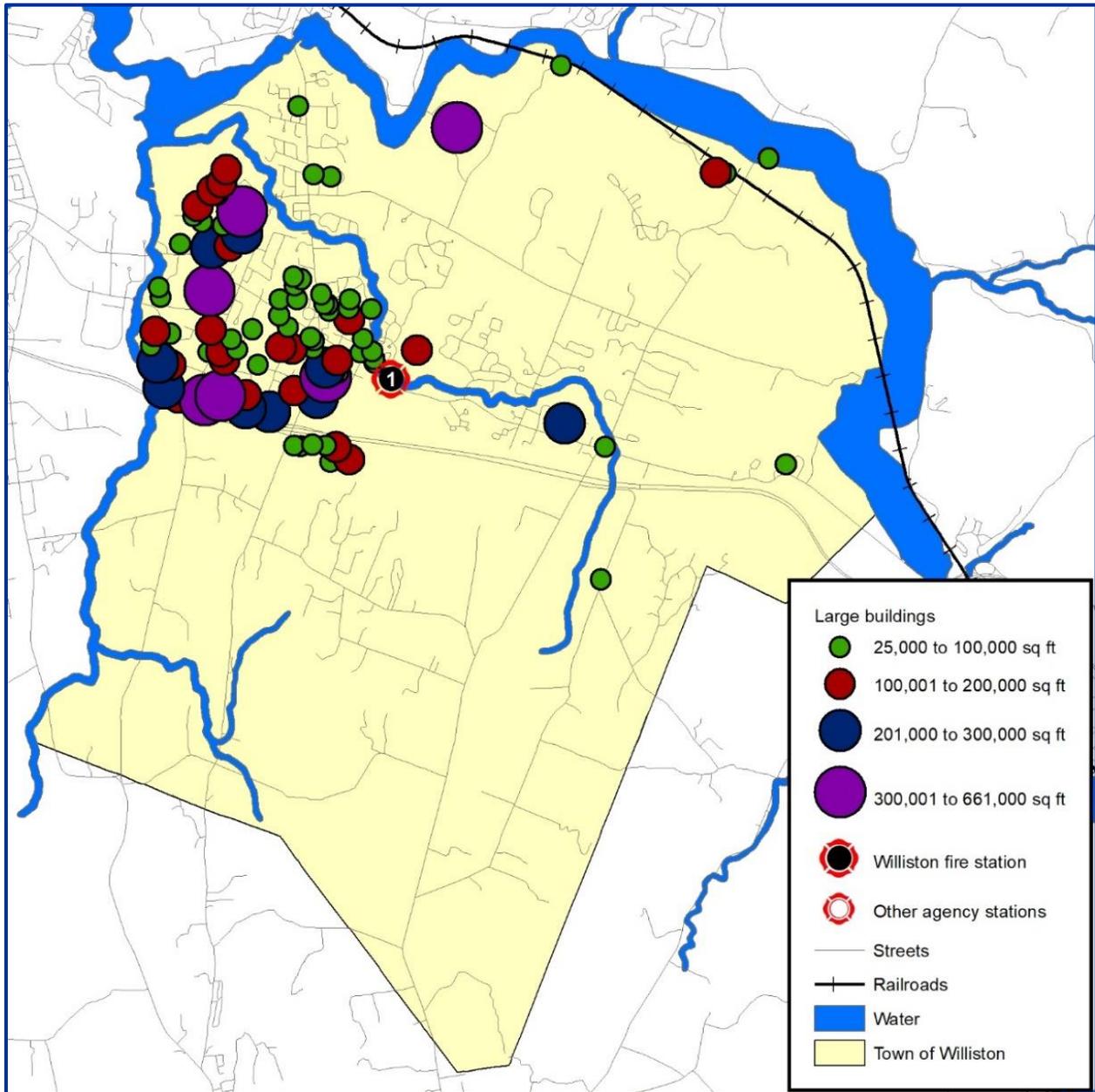
### **Multi-Family Housing**

Multi-family housing properties create a high risk of fire because of numerous kitchens, furnaces, hot water heaters, and other causes of residential fires. Occupants often have difficulties evacuating the building. Life safety in multifamily housing is influenced by the design of the building, its fire protection features, and by the contents and building maintenance.<sup>42</sup>

### **Large Square Footage Buildings**

Large buildings, such as warehouses, strip malls, and large box stores, are constructed under NFPA 101 Fire Code as mercantile facilities or industrial/storage occupancies. Often these buildings have a steel frame construction and large, open areas, placing firefighters in very dangerous situations. When the building is exposed to fire, a significant volume of water is needed to extinguish these fast-moving fires. Substantially more personnel are necessary to advance larger diameter hose lines longer distances into the building, to assemble a rapid intervention crew, or to set up defensive operations.

Figure 68: Buildings in Williston Larger than 25,000 Square Feet



### Fire-Flow Data

Multiple factors, such as the construction type, square footage of the building, and fire protection systems, determine a building's fire flow. Fire flow is the quantity of water available for fire protection purposes above that required for other purposes. The ISO split classification for Williston is a 3/3x, with the most recent rating in 2015.

The ISO provides 40 points when reviewing the water supply system for fire suppression purposes. WFD achieved the following score, as shown in the following figure.

**Figure 69: WFD ISO Water Supply Points Earned (2015)**

Criteria	ISO Maximum Pts	WFD Pts Earned
Credit for Supply System	30 Points	25.85 Points
Hydrant Size, Type & Installation	3 Points	3 Points
Inspection & Flow Testing of Hydrants	7 Points	5.4 Points
<b>Credit for Water Supply</b>	<b>40 Points</b>	<b>34.25 Points</b>
Divergence Factor		-5.43 Points

From the 2015 ISO Report, WFD received 34.25 out of 40 points for water supply. The divergence score reduced this overall grade by 5.43. The divergence factor reduces the water supply score based upon the disparity between the effectiveness of the fire department category and the water supply category. Four factors were relevant to the divergence score for WFD: deployment analysis, company personnel, training, and the water supply system. Fire District 1, a private water district on Porterwood Drive which provides potable water only to a development of 82 homes, was acknowledged but not rated by ISO officials in this report. The two hydrants located in the area do not have adequate water flows for fire suppression capabilities.

### Critical Infrastructure

Critical infrastructure and key resources are needed to provide essential services for the economy and people in every community. Critical infrastructure is a structure "whose assets, systems, and networks, whether physical or virtual, are considered so vital to the United States that their incapacitation or destruction would have a debilitating effect on security, national economic security, national public health or safety, or any combination thereof." U.S. Homeland Security defines 16 critical infrastructure sectors as shown:

- Chemical
- Commercial Facilities
- Communications
- Critical Manufacturing
- Dams
- Defense Industrial Base
- Emergency Services
- Energy
- Financial Services
- Food and Agriculture
- Government Facilities
- Healthcare and Public Health
- Information Technology
- Nuclear Reactors, Materials, & Waste
- Transportation Systems
- Water and Wastewater Systems

### **Water & Wastewater Systems**

Town of Williston Water & Sewer Division operates and maintains the water and sewer services for Williston. In the past, Williston's growth has at times exceeded the capabilities of services and infrastructure. Williston has set a future residential growth target of 80 new homes per year.<sup>43</sup> An adequate water supply and looped hydrant system with appropriate-sized mains must provide sufficient fire flow for extinguishing fires. The Town's planned improvements to the municipal water supply should be adequate for the next 10-15 years.

### **Energy**

In conjunction with the comprehensive plan, the Williston 2020 Energy Plan calls for a land-use policy that embraces smart and sustainable growth, allowing a permitting process for ground-mounted solar projects.

---

## **Section III: FINDINGS & RECOMMENDATIONS**

---

## Findings

- The Town of Williston, through conservative financial practices, has accumulated a very healthy unrestricted governmental fund balance of approximately 43% of annual expenses.
- Eighty-three percent (83%) of the population is under the age of 65, and approximately 93% of the population is white as of July 1, 2019.
- Ninety-five percent (95%) of the population over 25 has a high school diploma, and 61% of the population over 25 has a bachelor's degree or higher.
- The daytime population increases to 23,000 people daily, and continued population growth is progressing the Town toward a suburban-sized area (500–1,000 people per square mile).
- The ambulance fee schedule was revised in FY 2021 to remain consistent with other area EMS providers.
- Inadequate staffing levels are compromising firefighter and civilian safety.
- The Department does not charge a First Responder Fee for fire apparatus response to medical emergencies.
- With limited administrative support staff, chief officers have reached maximum levels of workload capabilities.
- The Fire Captain provides command and operation staffing duties, significantly reducing productivity for training and other job duties.
- According to the most Recent Agreement between the Town of Williston and the Williston Professional Firefighters, IAFF Local 4611, compensation contains incentives for additional firefighter certifications to increase professionalism and capability.
- Call staff levels have declined by 54.5% since 2018. Several members of the call staff live in excess of 15 minutes from the fire station.
- Call staff recruiting efforts are facilitated via the department website and social media; however, the applications are reviewed twice a year.
- WFD has an established promotional process outlined in the labor/management agreement contract.
- WFD's Standard Operating Guidelines are available electronically and reviewed annually.
- The Department's daily staffing for paid personnel averages three per day, with two of these personnel, needed to staff the ambulance.

- The Department is not meeting the NFPA 1720 standard performance objective for an effective response force even at the rural area demand zone.
- Based on population, paid staffing levels are 1.18 per 1,000 population and .52 per 1,000 population during the workweek. The national average is 1.8 per 1,000.
- Call staff levels are .99 per 1,000 population, well below the 5.8 national average.
- The Department frequently abandons vital emergency apparatus at the scene or along the roadway to transport a patient to the hospital in the ambulance.
- Transport turnaround time for the ambulance can be 1–2 hours.
- There are no automatic aid agreements with neighboring departments, only mutual aid.
- WFD's staffing constraints are placing an extraordinary dependence on mutual aid
- The Department possesses a significant list of indicators for change that include community growth, an aging population, missed calls, extended response times, and reduced staffing levels. Officers, including Chief Officers and the Fire Captain, are also filling lower operational positions for an adequate response.
- Job descriptions for the Fire Captain do not detail training responsibilities.
- Call-staff job descriptions are not updated, developed, or formally adopted by the Town.
- The data collected by Shelburne Communications Center is insufficient to allow WFD to evaluate response performance in the detail required. Most particularly, status change times are only recorded for the first unit to arrive at an incident.
- Response workload has increased 14% over the past 10 years, primarily driven by an increase in EMS incidents. Workload has decreased slightly over the past three years due to a drop in “other” non-fire call types.
- EMS incidents are the most common response type at 59% of the total.
- There is substantially more response workload during the day than at night.
- Response workload is the greatest around and to the northwest of the WFD fire station.
- No WFD response unit appears to be overutilized based on response workload.
- WFD has not established response performance goals.
- Response time data provided for this study was only to the nearest minute. This creates inaccuracy in the response performance analysis.

- Response personnel turnout times exceed national standards.
- Most of the urbanized area of the Town of Williston is within four travel minutes of the WFD fire station. There are some rural areas beyond eight travel minutes.
- WFD cannot provide an effective response force with sufficient firefighters and apparatus as recommended by national standards.

## Recommendations

### Financial Recommendations

#### **Recommendation 1: Evaluate Department costs to develop a First Responder Fee for fire apparatus response to medical calls.**

**Description:** WFD should conduct a rate study that accounts for the true cost of services and establish a rate for First Response that maximizes the reimbursement and reduces subsidizing from the tax base. Apply the same rate for treat and non-transport as those accounts for the response and any uses of medical supplies

**Outcomes:** Development and implementation of a First Responder Fee will compensate the Department for the cost of providing medical first response services with fire apparatus and personnel.

**Estimated Financial Cost/Savings:** A third-party study may cost up to \$15,000, or the study may be completed by Department staff.

### Staffing Recommendations

#### **Recommendation 2: Consider adopting NFPA 1720 benchmark objectives.**

**Description:** As a combination (career/volunteer) Department, adopt NFPA 1720 as a response objective for incidents. NFPA standard 1720 is appropriate for a system that is dependent upon paid-on-call augmentation.

Adoption of NFPA 1720 response objectives will provide the Department with a set of performance goals to measure outcomes while clearly stating expectations for the organization's performance.

**Outcomes:** Adopting benchmark performance objectives based on criteria set forth in accordance with NFPA 1720 will deliver a measurement and comparison tool to achieve quality service for the community.

**Estimated Financial Cost/Savings:** Staff time to review NFPA 1720 and develop a measurement system to compare performance against the standard.

#### **Recommendation 3: Immediately increase staffing levels by three additional paid firefighters per shift (nine total personnel), bringing minimum staffing levels to six career personnel per shift.**

**Description:** Triton's interviews with the Fire Department and Town officials confirmed the decline in call staffing and the shift from a U.S. Census rural to suburban population were significant indicators that demonstrated a need to increase paid staffing levels as a priority.

WFD should establish daily minimum staffing of four personnel for the engine company and two personnel for the ambulance per shift. WFD could potentially work down to five personnel per shift, allowing for one leave position per shift, possibly using call staff personnel to fill leave positions.

**Outcomes:** Immediately adding paid staffing will create a minimum effective response force for firefighting operations in rural areas.

The current fire station configuration can accommodate up to eight personnel per shift and could be reconfigured to house additional personnel in the future.

**Estimated Financial Cost/Savings:**

**Figure 70: Costs of Additional Nine Firefighter Positions**

Description	Factor	Costs
<b>Firefighter II/EMT</b>		
<b>Compensation at Step 1</b>		<b>43,600</b>
FICA/Medicare	0.0765	3,335
Retirement	0.1000	4,360
Medical insurance (estimate)	0.2500	10,900
Workers Compensation	0.1000	4,360
<b>Benefits</b>		<b>22,955</b>
<b>Wages &amp; Benefits</b>		<b>66,555</b>
Training		250
Certifications		100
NFPA Physical Exams		450
<i>Total Other Annual costs</i>		<i>800</i>
<b>Total annual costs per position</b>		<b>67,355</b>
Number of Recommended Positions		9
<b>Total Year 1 Annual Costs</b>		<b>606,195</b>
Turnout Gear (Replaced Every 10 Years)		4,500
Number of Sets		9
<b>Initial Start-up costs</b>		<b>40,500</b>

**Recommendation 4: Designate the Lieutenant position to perform officer duties and create a driver/operator position.**

**Description:** A designated company officer should be available on the engine company daily to direct firefighters and establish incident command. If an officer is not available, a senior firefighter/driver should temporarily be placed in a supervisory position.

**Outcomes:** A company officer is a decision-maker, communicator, and leader. The company officer arranges training for fire crews, supervises line firefighters on the fire ground and other emergency incidents, and implements department policies. In addition, a company officer enhances crew continuity and mentorship.

**Estimated Financial Cost/Savings:** The current compensation schedule in the labor agreement is compressed between the firefighters, senior firefighters, and lieutenants. Absent a modification to the compensation schedule.

**Recommendation 5: Determine a predefined level of call staff necessary to meet service demand.**

**Description:** Predetermine the number of call staff personnel needed to augment staffing levels during peak hours of utilization.

**Outcomes:** Additional call staff will provide staffing levels that meet or exceed the NFPA 1720 recommended for effective response force. Consist call staffing can be used in conjunction with career staffing to meet effective response force needs, however, call staffing. Additional call staffing will deliver enhanced staffing levels to mitigate multi-alarm incidents.

**Estimated Financial Cost/Savings:** Cost to make this determination will be staff time to evaluate the appropriate deployment model.

**Recommendation 6: Call staff job descriptions should be developed and/or updated and formally adopted.**

**Description:** Call staff job descriptions have not been updated and developed to the duties and responsibilities of each position.

**Outcomes:** Updated and adopted job descriptions will provide call staff personnel with job responsibilities and align to provide a potential pool of qualified candidates during recruitment for paid positions.

**Recommendation 7: Improve recruitment and retention efforts for call staffing.**

**Description:** Designate a Recruitment and Retention Officer to improve recruiting efforts. Incentives for call staffing recruitment should be considered for recruitment efforts.

Note: Assistance to Firefighter SAFER Grant for recruitment and retention are available to hire a recruitment and retention officer and provide training for current call staff personnel.

**Outcomes:** Call staffing personnel to provide a potential pool of qualified candidates during recruitment for paid positions.

**Estimated Financial Cost/Savings:** The newly created position of recruitment/retention officer is forecast to be a lieutenant-level position with reasonable additional certification levels. With the minimum staffing levels of the Department, this position is projected to provide the leadership for recruiting and retaining paid-on-call firefighters as well as provide services to the community as a responder.

**Figure 71: Cost of Recruitment/Retention Lieutenant**

Description	Factor	Costs
<b>Lieutenant</b>		
<b>Compensation at Step 1</b>		<b>48,405</b>
FICA/Medicare	0.0765	3,703
Retirement	0.1000	4,841
Medical insurance (estimate)	0.2500	12,101
Workers Compensation	0.1000	4,841
<b>Benefits</b>		<b>25,485</b>
<b>Wages &amp; Benefits</b>		<b>73,890</b>
Training		250
Certifications		100
NFPA Physical Exams		450
<i>Total Other Annual costs</i>		<i>800</i>
<b>Total annual costs per position</b>		<b>74,690</b>
Turnout Gear (Replaced Every 10 Years)		4,500

**Recommendation 8: Review and modify Mutual Aid Agreements to Automatic Aid Agreements with those surrounding departments that can meet the NFPA 1720 suburban response time criteria.**

**Description:** Automatic Aid Agreement changes will provide additional personnel that can be considered as part of the effective response force as defined under NFPA 1720. These agreement changes will also aid in providing additional response needs while the ambulance is performing EMS transport duties.

**Outcomes:** Mutual Aid companies within the five-mile radius would provide an additional three or more personnel to support fireground operations. Automatic Aid Agreements would result in the dispatch of resources more efficiently and would provide additional contingencies for service demand.

Note: these departments may not always be readily available for service. In the future, WFD will need to consider transitioning to a staffing pattern that can provide adequate staffing on initial response.

**Estimated Financial Cost/Savings:** Staff time to review current agreements, determine potential agencies with which to partner, and negotiate acceptable agreements.

**Recommendation 9: Consider adding 12 personnel to staff the aerial apparatus, four personnel per shift, within the next 1–3 years, increasing minimum staffing to 10 personnel per shift to stabilize scheduling and provide consistent operational effectiveness.**

**Description:** Triton's risk analysis has identified over 20 buildings in Williston that range from four to seven stories in height; in addition, there are over 75 buildings that range in size from 25,000 to 660,000 square feet. Per ISO, the needed fire flow demand for these buildings ranges from 500 to 6,000 gallons per minute. The buildings include target hazards such as high-occupancy and large square footage buildings that warrant the establishment of reliable truck company operations to perform specific tasks that include search and rescue, utility control, forcible entry, ventilation, and aerial operations for water delivery and rescue, lighting operations, overhaul, and salvage work.

WFD should consider increasing paid staffing to a minimum of four personnel on a truck company to improve response capabilities to these medium-to-high-density buildings. The staffing levels would be increased to 10, allowing WFD to work down to eight personnel per shift to allow for leave considerations.

**Outcomes:** Providing truck company personnel and apparatus to the community has the potential to prevent loss of lives and fire loss in target hazards as well as residential structures. Successful extinguishment of a fire reduces direct and indirect costs from property loss and business interruptions.

**Estimated Financial Cost/Savings:**

**Figure 72: Cost of Staffing the Aerial Truck**

Description	Factor	Costs
<b>Compensation at Step 1 as of Current Compensation Schedule</b>		
Lieutenant		49,360
Senior FF/Engineer/Operator		46,687
Firefighter II/EMT		43,600
Firefighter II/EMT		43,600
<b>Total Wages per Shift</b>		<b>183,247</b>
FICA/Medicare	0.0765	14,018
Retirement	0.1000	18,325
Medical insurance (estimate)	0.2500	45,812
Workers Compensation	0.1000	18,325
<b>Benefits</b>		<b>96,480</b>
<b>Wages &amp; Benefits per Shift</b>		<b>279,727</b>
Training	250	1,000
Certifications	100	400
NFPA Physical Exams	450	1,800
<i>Total Other Annual costs</i>	<i>800</i>	<i>3,200</i>
<b>Total annual costs per position</b>		<b>282,927</b>
Number of Recommended Positions		3
<b>Total Year 1 Annual Costs</b>		<b>848,781</b>
Turnout Gear (Replaced Every 10 Years)		4,500
Number of Sets		12
<b>Initial Start-up costs</b>		<b>54,000</b>

**Recommendation 10: Consider additional career staffing for a second engine company and shift supervisor in the next 3–5 years to enhance crew effectiveness and safety.**

**Description:** Establishing a second engine company will provide redundancy for simultaneous calls and implement additional safety measures during firefighting operations.

**Outcomes:** A second engine company can provide a secondary hose line for fire attack, provide an incident safety officer, or establish a rapid intervention team. These personnel would increase minimum staffing to 14 personnel per shift, providing the Department the ability to work down to 12 personnel if needed. These staffing levels will be necessary if population density increases to urban criteria levels as described in the NFPA 1720 standard.

**Estimated Financial Cost/Savings:** The costs for this projection are based on the current compensation schedule but would likely be a minimum of 10% higher due to cost-of-living increases.

**Figure 73: Cost of Staffing an Additional Engine Company in Today's Dollars**

Description	Factor	Costs
<b>Compensation at Step 1 as of Current Compensation Schedule</b>		
Shift Supervisor (estimated)		55,000
Lieutenant		49,360
Senior FF/Engineer/Operator		46,687
Firefighter II/EMT		43,600
Firefighter II/EMT		43,600
<b>Total Wages per Shift</b>		<b>238,247</b>
FICA/Medicare	0.0765	18,226
Retirement	0.1000	23,825
Medical insurance (estimate)	0.2500	59,562
Workers Compensation	0.1000	23,325
<b>Benefits</b>		<b>125,438</b>
<b>Wages &amp; Benefits per Shift</b>		<b>363,685</b>
Training	250	1,000
Certifications	100	400
NFPA Physical Exams	450	1,800
<i>Total Other Annual costs</i>	<i>800</i>	<i>3,200</i>
<b>Total annual costs per position</b>		<b>366,885</b>
Number of Recommended Positions		3
<b>Total Year 1 Annual Costs</b>		<b>1,100,655</b>
Turnout Gear (Replaced Every 10 Years)		4,500
Number of Sets		12
<b>Initial Start-up costs</b>		<b>54,000</b>

**Recommendation 11: Consider applying for an Assistance to Firefighters Grant (AFG) Staffing for Adequate Fire and Emergency Response (SAFER) grant in 2021 or 2022 to staff the truck company and a second engine company.**

**Description:** The Assistance to Firefighters Grant Program (AFG) Staffing for Adequate Fire and Emergency Response (SAFER) is available annually. The grant allows a fire department to apply for hiring entry-level firefighter positions for three years, potentially covering the cost of salary and benefits up to 100%. The Department would be responsible for training and equipment costs. AFG awards are distributed by September 30<sup>th</sup> of each year and allow up to 180 days to hire and implement the project.

**Outcomes:** If awarded a SAFER Grant, WFD will provide Town officials a more reasonable time frame to identify additional revenue sources for future improvement of staffing levels.

**Estimated Financial Cost/Savings:** Assuming the SAFER Grant program remains at 100% of related staffing costs, reimbursement to the Department would be in excess of \$848,000 each year. *Grant Writer costs on the high end are \$2,500. Management costs may need to be considered if the Department does not have the staffing to prepare reports and request reimbursements on a timely basis.*

**Recommendation 12: Consistent with the National Incident Management System's (NIMS) requirements, WFD should identify and ensure a fully qualified incident commander is in place at every emergency incident.**

**Description:** NFPA 1720 standard states, "one member should be only responsible for all incident activities, including the development of strategies and tactics and the ordering and the release of resources."

WFD should consider providing a designated officer for each platoon who is responsible for company operations on a strategic level. These officers are responsible for establishing incident command, setting priorities, and directing initial operations until relieved by a higher ranking and qualified officer

**Outcomes:** An incident commander determines strategies and tactics on an emergency incident based on a working knowledge of the National Incident Management System. Personnel can be managed more effectively and improve safety on the fireground.

**Estimated Financial Cost/Savings:** Cost of training and staff time. The Department should plan for capital and operating costs of an appropriate staff vehicle with appropriate equipment and technology to effectively and efficiently implement an incident command system on any and all types of emergency responses.

**Recommendation 13: WFD should increase staffing levels for command staffing and administrative support services.**

**Description:** Due to the lack of sufficient command staff and administrative support, the Department struggles to maintain compliance with performance goals, industry standards, and workload. Although the Town provides human resources and payroll support, additional responsibilities for quality control/assurance and reporting purposes should be provided within the fire department. These tasks include tracking training hours, fire education scheduling and reporting, budgeting, and data analysis to improve services for the community.

Chief officers are being tasked with administrative as well as operational workload, reducing productivity. In addition, responsibility for Emergency Management, Fire Marshal, and Fire Prevention duties are also assigned to Chief Officers.

WFD should consider additional command and administrative support staff to include:

- A Fire Marshal to transition fire/arson investigation, fire inspections, and public fire education at the local level.
- A Community Risk Reduction Analyst for public education and a Community Risk Reduction program.
- A Fire Training Officer to develop a departmental training program.
- An additional administrative support person for the Assistant Fire Chief, Training Officer, and Fire Marshal.

**Outcomes:** Workload reductions of day-to-day operations will allow more time for strategic planning and goal setting, allowing chief officers to set objectives to reduce community risk and prepare for population growth.

**Estimated Financial Cost/Savings:**

**Figure 74: Cost of Increasing Support Staff Positions**

Description	Factor	Costs
<b>Compensation at Step 1 as of Current Compensation Schedule</b>		
Fire Marshal (Captain Rank)		49,892
Community Risk Reduction Analyst (Lieutenant Rank)		48,405
Training Officer (Captain Rank)		49,892
Administrative Assistant		37,918
<b>Total Wages per Shift</b>		<b>186,107</b>
FICA/Medicare	0.0765	14,237
Retirement	0.1000	18,611
Medical insurance (estimate)	0.2500	46,527
Workers Compensation	0.1000	18,611
<b>Benefits</b>		<b>97,985</b>
<b>Wages &amp; Benefits per Shift</b>		<b>284,092</b>
Turnout Gear (Replaced Every 10 Years)		4,500
Number of Sets		3
<b>Initial Start-up costs</b>		<b>13,500</b>

## General Recommendations

### Recommendation 1: Plan for facility remodel/expansion to maintain a high degree of safety, efficiency, long-term sustainability, and effectiveness.

**Description:** Goals for staffing will require additional office and fire station accommodations. WFD should plan and direct funding for additional administrative and support staffing as well as operational personnel (full-time and call staffing).

Should remodel or expansion of the existing station site not be possible, an additional station location should be considered for relocating utilizing GIS analysis. Planning should begin immediately in order to address facility shortfalls within five years.

**Outcomes:** Additional facility accommodations will improve the safety and health of firefighters. Administrative offices will provide accommodations for support staff functions.

#### **Estimated Financial Cost/Savings:**

- Costs are approximated to be as follows:
  - Remodel and/or expansion of existing station—\$325 to \$425 per square foot.
  - New station construction—\$425 to \$525 per square foot.
  - These approximations do not include furnishings and/or equipment.

### Recommendation 2: Adopt response performance goals to guide service delivery improvement.

**Description:** A community's desired level of service is a uniquely individual decision. No two communities are exactly alike. Performance goals must be tailored to match community expectations, community conditions, and the ability to pay for the resources necessary to attain the desired level of service.

Levels of service and resource allocation decisions are the responsibility of the community's elected officials, in this case, the Williston Town Council. The policy-making body must carefully balance the needs and expectations of its citizenry when deciding how to allocate money to all the services it provides.

Improving WFD's current response performance will be difficult to achieve without the addition of many new resources, including response personnel and vehicles. The cost will be significant.

As WFD adds additional staffing, Triton recommends adopting the following as fire and life safety response performance goals. These goals align directly with nationally recommended standards. These are not levels of service that must be achieved immediately but, instead, are targets for achievement when resources are available to do so. Further, the adoption of goals allows WFD management to regularly report progress on the achievement of these goals, conditions that impede progress, and resources needed to improve service.

### Call-Processing Performance Goal

The first phase of overall response time is call processing time. This phase begins when the call is received at the PSAP center and ends when response resources are notified of an emergency. There are two components: answer time and dispatch time.

### Recommended Call Processing Goal

- 9-1-1 calls will be answered at the primary PSAP within 15 seconds, 90% of the time.
- Response resources shall be notified of a priority incident within 60 seconds from receipt of the call at the dispatch center 90% of the time.
  - **Exceptions:** These call types shall be processed and dispatched within 90 seconds, 90% of the time:
    - Calls requiring emergency medical dispatch questioning
    - Calls requiring language translation
    - Calls requiring the use of TTY/TTD devices
    - Calls of criminal activity
    - Hazardous materials and technical rescue incidents
  - **Current Performance:** Unknown due to lack of reliable data from Shelburne Communications Center

### Turnout Time Performance Goal

Turnout time is one area over which the fire department has total control and is not affected by outside influences. Turnout time, or the time between when the call is received by the response units (dispatched) and when the unit is en route to the incident location (responding), affects overall response times. Reducing this time component reduces total response time.

The National Fire Protection Association Standard 1710 recommends turnout time performance of 80 seconds or less for fire and special operations response and 60 seconds or less for all other priority responses.

### Recommended Turnout Goal

- Response personnel shall initiate the response of a unit capable of mitigating an incident to a priority fire and special operations incident 80 seconds from notification, 90% of the time.
  - **Current performance:** Within 2 minutes, 30 seconds, 90% of the time.
- Response personnel shall initiate a response to all other priority incidents within 60 seconds from notification 90% of the time.
  - **Current performance:** Within 2 minutes, 90% of the time.

### Response Time for the First-Due Unit Goal

The time required to deliver the first response unit capable of intervening in the emergency includes both turnout time and travel time, but not call processing time. When the recommended standards for turnout time and travel time are combined, response time should be within 5 minutes, 20 seconds, 90% of the time for fire and special operations incidents, and within 5 minutes, 90% of the time for all other priority incidents.

### Recommended First-Due Response Time Goal

- The first response unit capable of initiating effective incident intervention shall arrive at a priority fire or special operations incident within 7 minutes, 20 seconds from notification of response personnel, 90% of the time.
  - **Current performance:** Within 12 minutes, 90% of the time.
- The first response unit capable of initiating effective incident intervention shall arrive at all other priority incidents within 7 minutes from notification of response personnel, 90% of the time.
  - **Current performance:** Within 10 minutes, 90% of the time.

### Effective Response Force Performance Goal

A fire department's resource *concentration* is the spacing of multiple resources close enough together so that an initial "Effective Response Force" (ERF) can be assembled on the scene of an emergency within the specific time frame identified in the community's performance goals for that risk type. An initial effective response force is defined as that which will be most likely to stop the escalation of the emergency.

The minimum ERF for low-rise structure fires is identified as the arrival of at least 15 firefighters on an appropriate mix of apparatus. This initial ERF does not necessarily represent the entire alarm assignment, as additional units may be assigned based on long-term incident needs and risks. Additional engines, ladders, or other specialty companies are assigned to higher risk responses to accomplish additional critical tasks that are necessary beyond the initial attack and containment.

### Recommended Effective Response Force Goal

- The full effective response force shall arrive at a moderate-risk structure fire within 9 minutes, 20 seconds of notification of response personnel, 90% of the time.
  - Current performance: Unattainable **Outcomes:** The desired level of service is clearly identified for future planning and resource acquisition.
- Estimated Financial Cost/Savings: No cost to establish the goals.

### Recommendation 3: Improve the quality and quantity of incident data/

**Description:** Evaluating response performance was difficult for this project. Shelburne Communications Center (SCC) only collects status change information for the first arriving unit. This is very insufficient to conduct a full assessment of response performance. Time data provided for this project was to the nearest minute rather than second. This creates some inaccuracy in the analysis.

SCC should be expected to record accurate status change information for all units on a response. Data should be as detailed as possible to ensure the ability to conduct accurate performance analysis. WFD should regularly evaluate data to better understand its response capability and the performance of the dispatch center.

Data, as was done in this report, should be integrated with geographic information systems software to provide a spatial evaluation of workload and performance. Until data collection and analysis are substantially improved, it will be difficult to determine what resource changes and/or additions will be needed to provide service at the desired level.

**Outcome:** A more detailed analysis of WFD's level of service and performance can be completed, improving decision making.

**Estimated Financial Cost/Savings:** *Dependent on changes needed to computer systems, dispatch procedures, and others.*

**Recommendation 4: Improve WFD response unit turnout times.**

**Description:** National guidance suggests turnout time should be within 80 seconds, 90% of the time for fire and special operations incidents, and within 60 seconds, 90% of the time for all other priority incidents. WFD response crew turnout times currently are longer.

A review of station configuration, alerting systems, and other factors should be conducted to identify and remove any obstacles to prompt initiation of response.

Crew performance must also be addressed. Personnel should be provided regular reports of turnout time performance. Performance standards should be adopted and enforced.

**Outcomes:** Overall response times to emergencies decrease.

**Cost to Implement:** *Dependent on changes needed.*

**Recommendation 5: Develop Community Risk Reduction Programs that target the population that uses English as a second language.**

**Description:** Fire safety messages and other fire prevention education programs should target immigrant populations that include Vietnamese, Hispanic, and other Indo-European countries within the Williston Fire Department service area to reduce socioeconomic risks for fire injury or death for this population. The Vermont Division of the U.S. Committee for Refugees and Immigrants can also be contacted for assistance with language translation of fire safety materials.<sup>44</sup>

**Outcomes:** Risk reduction for targeted population relative to fire and fire-related hazards and a reduction property loss in at-risk residential homes.

**Estimated Financial Cost/Savings:** Media and printing costs annually to provide educational materials for distribution to the public. The cost of staff time to post messages, contact community partners, and participate in community events.

**Recommendation 6: Continue to provide an aggressive campaign for smoke alarm replacement, home safety inspections, and home fire sprinkler systems.**

**Description:** Partner with community organizations such as the American Red Cross to target homes for smoke alarm installation and home fire safety inspections. Consider requiring home fire sprinkler systems for large square footage homes through town ordinance.

**Outcomes:** These programs can reduce risk and loss of lives in the event of a fire in Single and multi-family residential structure fires.

**Estimated Financial Cost/Savings:** Savings include a reduction in property losses in relation to these high-risk structures. The cost of fire includes direct loss of structure and indirect losses that include missed work, temporary housing, loss of family heirlooms.

**Recommendation 7: Review and develop contingency plans for areas prone to flooding.**

**Description:** Rainfall and snowfall totals create flooding during the spring season, which can cause localized flooding. Stormwater management will need to be updated and addressed annually. Hazard Mitigation Action Plan should reflect continuous improvement planning for flood mitigation efforts.

**Outcomes:** Potential to qualify for Flood Hazard Mitigation and Building Resilience in Communities (BRIC) Grants. This grant provides opportunities for pre-mitigation efforts, enhancing community resilience.

**Estimated Financial Cost/Savings:** Staffing and contractual costs for planning and grant programs that improve pre-mitigation efforts in Williston and Chittenden County.

**Recommendation 8: Consider providing an NFPA 1582 annual physical examination and cancer screening for every Firefighter and Chief Officer.**

**Description:** Annual physicals and cancer screening, combined with early detection testing for major diseases such as heart disease, stroke, cancer, diabetes, and aneurysms before they reach a life-threatening level, can improve the firefighter's health and wellness.

**Outcomes:** Improved firefighter health and wellness can reduce workers' compensation and medical insurance expenditures for the Town.

**Estimated Financial Cost/Savings:** \$450–\$550 per employee for an NFPA compliant physical.

Note: Consider reviewing NFPA 1582 *Standard on Comprehensive Occupational Medical Programs for Fire Departments* and the IAFC guide "A Fire Department's Guide to Implementing NFPA 1582."<sup>45</sup>

**Recommendation 9: Establish a Fire and Life Safety Inspection Program.**

**Description:** WFD should provide additional training for personnel to conduct company level fire prevention inspections. This training will improve fire and life safety education for occupants and note discrepancies of code enforcement on a fire company level.

**Outcomes:** Continued community risk reduction by developing public education in regards to fire and fire-related hazards and Code Enforcement, even at the company level, is a primary goal of a comprehensive CRR plan.

**Estimated Financial Cost/Savings:** Costs for inspection plan development and training. Staffing costs to perform a company inspection program.

**Recommendation 10: Create a capital improvement plan that increases the capacity of Williston's water system.**

**Description:** Continue working towards an established town goal to improve these services to prepare for future growth.

**Outcomes:** An improved water system supports sufficient fire flow capabilities for target hazards.

**Estimated Financial Cost/Savings:** Provide comprehensive engineering design to develop a water system capable of providing for current needs and future growth.

**Recommendation 11: Develop a Risk Management Plan that considers fire and fire-related hazards related to large-scale energy production.**

**Description:** Consider the risks related to farm methane plants, solar orchards, wood-burning co-generational plants, and ridgeline wind farms as the area incorporates alternative energy sources.

**Outcomes:** Knowledge of large-scale energy production systems and the mitigation of possible hazards.

**Estimated Financial Cost/Savings:** Staff time to develop and identify risks and develop a strategic plan.

**Recommendation 12: Continue and complete adjustments to job classifications to include a minimum level of emergency medical training certification and add depth to the rank structure. Job descriptions should better reflect the duties, qualifications, and expectations consistent with contemporary fire service makeup.**

**Description:** The classifications and related job descriptions for operational staffing do not consider a company officer and a driver/operator as separate job positions within the rank structure. A company officer must lead effectively, keeping command and control of the fire ground. Once the fire officer becomes task-oriented, such as operating the engine, the focus changes and jeopardizes firefighter safety.

**Outcomes:** Additional rank structure provides officer support on emergency incidents. These personnel can assist chief officers with day-to-day operations.

**Estimated Financial Cost/Savings:** See preceding additions to add driver operator position and Battalion Chief (Shift Supervisor) to rank structure.

### **Recommendation 13: Develop a comprehensive annual employee evaluation program.**

**Description:** Implement employee performance evaluations or appraisals at no less than an annual basis. The process should develop job expectations and evaluate job performance based on job descriptions, training goals, and company and individual competency. Performance evaluations should be used to coach and counsel employees as well as establish annual goals for career development.

**Outcomes:** An employee performance evaluation provides supervisors with an opportunity to discuss the employee's career direction and provide goals for the coming year.

**Estimated Financial Cost/Savings:** Cost of staff time or Human resources Consultant to create the evaluation program documents.

### **Recommendation 14: Establish a technical rescue program.**

**Description:** Develop a technical rescue training program to ensure personnel have the opportunity to receive training provided for technical rescue (rope rescue, confined space, etc.) and hazardous materials courses. Equipment should be procured based on potential technical responses, and a relationship with members of the Vermont US&R Team should be developed, allowing for the integration of WFD personnel into the regional/state team concept.

**Outcomes:** Improve interoperability capabilities for the Department.

**Estimated Financial Cost/Savings:** The initial cost to acquire equipment will be significant but will likely be surpassed by the cost of the initial training and required ongoing training to maintain the required skills. A potential exists for grant funding through federal or state programs.

### **Recommendation 15: Implement Community Risk Reduction strategies.**

**Description:** An emerging trend in the fire service nationally is a concept called Integrated Community Risk Reduction (CRR). CRR is an integrated approach to risk management that marries emergency operations and prevention strategies into a more cohesive approach to reducing risks in any community. It includes the fire department partnering with the community, nonprofit organizations, and any private sector agencies with a nexus to an identified community risk.

The concept starts with the fire department mining data to quantify community risk. Once the community risks have been identified, they are prioritized based on the frequency of emergency service demand or consequence (to the victim, the community, and the local economy). Upon prioritizing the risks, strategies are developed to mitigate the risks. These strategies are incorporated into a CRR plan, which integrates resources across the fire department, partner agencies, and the community to implement the various strategies in a cohesive manner. After plan implementation, the results are reviewed to determine the impact on the risks. Adjustments are made, as necessary, based on the results, and the process is refined and continuously re-implemented.

The risks are not limited to structure fires. They can include falls, drowning, interface exposure, disasters, or any risk requiring fire department response. Risk can also be localized by station area. Operations personnel, in collaboration with fire prevention staff and community groups, can develop and manage a station area-specific CRR plan as a subset of the fire department's plan. CRR lends itself well to a volunteer-supported effort led by competent professional leadership.

**Outcomes:** CRR also includes public education for risk reduction. A prepared and informed community is a safer community.

**Estimated Financial Cost/Savings:** Staff time to interpret response data and determine the high-frequency risks and staff time to develop and implement an education program.

### **Recommendation 16: Consider a formal program for pre-incident planning of commercial and high-risk occupancies.**

**Description:** With the addition of new supervisors and a fire and life safety division, a formal pre-incident planning program should be established to familiarize operational personnel.

**Outcomes:** A pre-incident planning program provides operational personnel with information to be used during an emergency incident and to familiarize personnel with the building's layout, location of hazardous materials, and fire sprinkler/alarm systems.

**Estimated Financial Cost/Savings:** Costs associated with developing and implementing a program would include the acquisition of appropriate software and initial training on its use. Thereafter, updates could be made during annual inspections of the properties.

### **Recommendation 17: Enhance knowledge of Fire and Life Safety Inspection program.**

**Description:** WFD should provide training for personnel conducting company inspections that would provide an opportunity to educate occupants when a discrepancy is discovered. Although engine company personnel do not provide plan reviews or inspections of fire protection systems such as fire sprinklers or alarms, personnel should be familiar with how a system operates as well as being able to identify common fire code violations found during the inspection process.

**Outcomes:** Provide an opportunity for company officers and crews to build a relationship with building operators and owners prior to an emergency incident.

**Estimated Financial Cost/Savings:** Staff time and cost to attend classes.

### **Recommendation 18: Enhance knowledge of a Fire and Life Safety Fire/Arson Investigation Programs.**

**Description:** WFD should offer additional training to expand knowledge of personnel in the areas of fire/arson investigation, fire inspections, and community risk reduction through a variety of educational opportunities.

**Outcomes:** Fire and arson investigators examine the physical attributes of a fire scene and identify and collect physical evidence from the scene. Knowledge of proper investigation techniques is part of a comprehensive community risk reduction program. Local personnel can develop a detailed fire investigation report of each fire and track any trends that may arise.

**Estimated Financial Cost/Savings:** Cost of training programs and backfill or overtime costs for personnel to attend training.

### **Recommendation 19: Improve the safety committee's goals and objectives as recommended by industry standards.**

**Description:** WFD should improve the goals and objectives of the safety committee as recommended within NFPA 1500: Fire Department Occupational Safety and Health Program to help make health and safety activities an integral part of the Department's operational plan.

**Outcomes:** Health and safety of firefighters is improved when a root cause analysis is performed to investigate accidents and near misses.

**Estimated Financial Cost/Savings:** Cost of staff time to review standards and develop goals and objectives specific to the Department.

### **Recommendation 20: Clarify and enhance procedures within the 2021 Local Emergency Operations Plan.**

**Description:** WFD should expand the procedures within the Williston 2021 Local Emergency Operations Plan to designate procedures to: (1) Declare a state of emergency to implement the plan and exercise emergency powers without regard to time-consuming procedures and formalities prescribed by law," as provided through the Stafford Act, (2) Provide a procedure and example of an Incident Action Plan, and (3) Consider procedures for public assistance damage assessment. The local emergency operations plan should be exercised annually, and changes to the plan should be documented once an after-action report is completed.

**Outcomes:** Improved outcomes during emergency operations.

**Estimated Financial Cost/Savings:** Cost of Staff time to review state standards, the Stafford Act, and to develop internal procedures for planning for, responding to, and recovering from disaster level incidents.

### **Recommendation 21: Update the 2017 Chittenden County All-Hazards Mitigation Plan.**

**Description:** WFD and county officials should consider an updated county all-hazards mitigation plan every 5 years, reevaluating and rating the risk of natural, technological, and societal hazards.

**Outcomes:** The adoption of a well-planned Hazard Mitigation Plan provides:

- Community risk assessment in regards to natural disasters prominent in the area
- Guidance on future economic development and mitigation projects
- Action plans for improving community resilience
- An all-hazards plan to prepare for, respond to, and recover from any type of natural disaster

Provides additional points to reduce premiums for the community from the National Flood Insurance Program.

**Estimated Financial Cost/Savings:** Depending on the level of knowledge and expertise in emergency management, the cost may either be staff time or the cost of a third-party consultant to facilitate the update.

---

## **Section IV: APPENDICES**

---

## Appendix A: Summary of the Stakeholder Interviews

### Introduction to the Stakeholder Interviews

Triton interviewed 31 stakeholders representing a wide variety of the fire department's internal and external stakeholders. The purpose of these interviews was to gain a better understanding of issues, concerns, and options regarding the emergency service delivery system, opportunities for shared services, and expectations from community members.

It is important to note that the information solicited and provided during this process was in the form of "people inputs" (stakeholders individually responding to Triton's questions), some of which are perceptions reported by stakeholders. All information was accepted at face value without an in-depth investigation of its origination or reliability. The project team reviewed the information for consistency and frequency of comment to identify specific patterns and/or trends.

Multiple sources confirmed the observations, and the information provided was significant enough to be included within this report. Based on the information reviewed, the team identified a series of observations, recommendations, and needs and confirmed with multiple sources that all was significant enough to be included within this report.

Stakeholders were identified within the following groups: Elected Officials, Department Heads, Business Community Leaders, Citizens, Rank & File, Chief Officers, and Administrative Staff.

### ELECTED OFFICIALS, TOWN MANAGEMENT, TOWN DEPARTMENT HEADS:

- **What strengths contribute to the successes of the Williston Fire Department?**
  - Strong dedication to the community.
  - Our staff are "one of the best."
  - Our community greatly supported the bond 15 years ago for a new fire station.
  - From a resident's perspective, the fire dept is respected and responsive to calls.
  - The town's collection rate for taxes is good and the local option sales tax helps funding.
  - The fire dept is heavily engaged in the community including at community events. They are accessible and involved.
  - The Williston Police Dept has a great working relationship with the fire dept and often assists on emergencies.

- **What does Williston Fire Department do well?**
  - Fire Dept responds quickly.
  - They always want to do more and they have a very proactive approach.
- **What are some areas in which you think the Fire Department could make improvements?**
  - Retention of call staff volunteers. Call staff numbers peaked at 20 and is now in the single digits.
  - Offer more competitive wages and benefits.
  - It would be nice to be able to staff 2 ambulances. Currently there is not enough staff to do so.
  - The call staff recruitment has not had much success. There is not as much volunteer engagement in the community.
  - A regional dispatch concept.
- **What opportunities, in your view are available to improve the service and capabilities of the Fire Department?**
  - Increase the approach in Fire Prevention including plans reviews and code enforcement. Our missing piece is the regulatory piece of when someone violates the codes.
  - Add more career staffing. Its harder to get more call staff members and the expectations of the community have increased.
  - An opportunity for a consolidated centralized dispatch center is needed.
  - An increased budget to provide for higher staffing. The community might think differently to fund more staffing vs buying equipment.
- **Please share your thoughts regarding utilizing 12 hour shifts and peak hour units?**
  - Right now daytime staff is minimal.
- **What do you see as critical issues face by the Williston Fire Department?**
  - Better understand the call volume staffing needs, especially the medical calls.
  - Better understand the staffing model that would work best for the Town.
  - Improve the dispatch system and try to get a regional dispatch center.
  - Staffing is the number #1 critical issue.
- **If you could change one thing in the fire department, what would it be?**
  - We need more "Paid on Call" call staff members willing to serve.
  - We need more career staff as our community's demands are increasing and our housing population is increasing.

- **How would you describe the level of services provided by the fire department?**
  - We are able to provide a high level of service but need a vision for the future with the current growth in the Town and with our aging population.

**OFFICERS, RANK & FILE LINE PERSONNEL, CALL STAFF VOLUNTEERS:**

- **What strengths contribute to the successes of the Williston Fire Department?**
  - We have a strong sense of community and good public relations.
  - Call staff numbers were once a strength but now have diminished to only 4 or 5 active members.
  - We have great camaraderie and lots of teamwork.
  - The career staff treat the call staff very well.
  - Great customer service.
  - EMS response and the Town's commitment to emergency medical services.
  - Our station, equipment, apparatus, and indoor training capabilities.
- **What does Williston Fire Department do well?**
  - Proactive in both EMS and fire.
  - A good level of service at the very basic level.
  - The quality of training is very good by having a staff training Captain. The training Captain does a very good job and respects the call staff, and makes himself available.
- **What are some areas in which you think the fire department could make improvements?**
  - The three-person on duty crew uses only 1 FF on the engine and 2 FF on the ambulance and this happens a lot. One FF responding on engine alone is unsafe.
  - Some career staff don't treat call staff members appropriately.
  - We abandon the engine often when all 3 on-duty crew members need to transport a patient in the ambulance. This is unprecedented and should not be allowed.
  - We need more call staff Lieutenants and a point of contact for call staff personnel.
- **What opportunities, in your view, are available to improve the service and capabilities of the fire department?**
  - The select board needs to address appropriate firefighter staffing for the Town.
  - The select board needs to do the right thing and not be afraid to elevate taxes to handle the level of calls and assign appropriate staffing to handle the calls.
  - The department is improving now with improved leadership.
  - In my opinion, Williston needs at least 6 minimum FF staffing per day.

- We need to make efforts to involve call staff more if we are to keep up the call staff retention.
- It's possible to restructure call staff program as there is no recruitment plan. Who is our current target audience?
- Maintaining status quo will push more call staff members out.
- **Please share your thoughts regarding utilizing 12 hour shifts and peak hour units?**
  - Some departments have part timers but we don't want any single role medics or peak units.
- **What do you see as critical issues face by the Williston Fire Department?**
  - Lack of adequate staffing is #1! Only 3 firefighters responding has a negative effect.
  - Citizens in Williston don't want to volunteer in today's society.
  - The call staff model is broken and call staff recruitment & retention is not possible. We bring on 16 and then its down to 3.
  - Staffing is the most critical issue we face.
  - Burnout and stress of our personnel from running calls with a minimized staff.
  - The ability to do our job when 1 firefighter pulls up and gets out of a truck and a citizen asks "where are all the firefighters"? This stress is taking a toll and once is too many times.
  - Sometimes when all 3 personnel are used to transport a patient in the ambulance, we abandon the engine on a street or in a neighborhood for 1-2 hours.
- **If you could change one thing in the fire department, what would it be?**
  - We need more staffing. It's all about risk management, what is the Town willing to accept?
  - With only three-person minimum staffing, we abandon the engine on emergency scenes often when all 3 are needed for ambulance transport. When all 3 are not needed and a double call comes in, we respond with 1 firefighter on an engine. This is unacceptable and not safe.
  - There is often not even an officer on duty and all 3 personnel are firefighters. This is not good supervisory crew oversight.
  - Adequate staffing for Williston should be 6-7 minimum on duty per shift. It would be preferable to fully staff 2-3 apparatus total.

**FIRE DEPARTMENT CHIEF OFFICERS & ADMINISTRATIVE STAFF:**

- **What strengths contribute to the successes of the Williston Fire Department?**
  - Our personnel are well trained and good at what they do.
  - We have a lot of community support.
  - We have an exceptional facility that's great for training and very good apparatus.
- **What are some areas in which you think the fire department could make improvements?**
  - Staffing. Every time the ambulance transports, it leaves 1 firefighter on the engine. The engine is often abandoned and a high number of times, the 3rd firefighter is left alone.
  - The call staff pool is incredibly shallow with no ability to fill with adequate members.
  - We need staffing improvements and the numbers to meet NFPA.
  - We need to add call staff. Combination depts have different needs. Call staff lose interest.
- **What opportunities, in your view are available to improve the service and capabilities of the fire department?**
  - Increasing the fire dept staffing budget will increase the staffing opportunities and service levels.
  - The number for daily staffing needed should be 5-8 firefighters on duty to allow flexibility or a robust call staff program.
- **Please share your thoughts regarding utilizing 12 hour shifts and peak hour units?**
  - Don't like peak staffing with part timers as not efficient or effective.
- **What do you see as critical issues face by the Williston Fire Department?**
  - The lack of staffing is a safety issue in addition to a service issue. What level of risk is the community willing to accept?
  - Is recruitment and retention of more call staff members possible?
  - The Town of Williston firefighting staffing is not at the same adequate level when comparing to neighboring jurisdictions, including South Burlington, Burlington, or the Air National Guard fire department.
  - If Williston knew they only had 1 firefighter covering the Town at times, they wouldn't sleep at night. I don't think it would be difficult to get the Town's support for more staffing. You can't run a town this size with only three firefighters on duty.

- **If you could change one thing in the fire department, what would it be?**
  - Increase call staff numbers but the observations are that the pool has shrunk dramatically. We are a dynamic town now with blue collar workers living in a community with increased priced housing. This is a national problem.
- **How would you describe the level of services provided by the fire department?**
  - Two basic calls (and sometimes one) totally deplete all department resources. It has a ripple affect down and we have been on this pattern for a while.
  - Williston is borrowing other resources from mutual aid departments.

#### **BUSINESS AND COMMUNITY MEMBERS AND OTHER:**

- **What strengths contribute to the successes of the Williston Fire Department?**
  - A great department with a new Chief that is highly thought of.
  - Williston fire department has stepped up their commitment to EMS and provides a high level of EMS care.
  - The dept is very involved with community events and is visible.
  - Williston fire has great community relations and community connection.
- **What does Williston Fire Department do well?**
  - Fire dept has a good reputation in the Town and at the Medical Center.
- **What are some areas in which you think the fire department could make improvements?**
  - The call staff member numbers are low. There are less people that have time today to volunteer as many families have 2 incomes and less time to serve the community.
  - Call staff and volunteer recruitment and retention are a Statewide urgent problem. The demands have gone up while the staffs have gone down.
  - More career staffing is needed. Funding is a problem.
  - Most citizens don't understand the low level of Williston fire dept staffing. "It's concerning I'll be honest with you."
- **What opportunities, in your view are available to improve the service and capabilities of the fire department?**
  - Burlington created an EMS Chief position. This could be an option for a career path for EMS for Williston.
  - It would make sense to staff the fire dept higher.
  - If we create the awareness that there is a staffing issue, the citizens will be more likely to support it at the Town meeting.

- People are not aware of the current staffing levels. We need to communicate to and educate the community. Is the community OK with the current level of service? Is one firefighter on an engine OK? Let's ask the question.
- **Please share your thoughts regarding utilizing 12 hour shifts and peak hour units?**
  - We could have the option of a single role EMS position that could attract more female diversity.
- **What do you see as the critical issues face by the Williston Fire Department ?**
  - Inadequate Staffing is #1.
  - Recruitment and retention of call staff members.
  - There is no unified dispatch system and we need one.
- **If you could change one thing in the fire department, what would it be?**
  - We need to provide 24/7 paramedic coverage and make sure enough paramedics and firefighters are always on duty. I see Williston at the Medical Center 1–2 times a day and every time they drive to Burlington, only 1 firefighter is left behind to protect the Town. Ideally, we should have staffing of 5 with an independent engine crew.

## Appendix B: Table of Figures

Figure 1: Population Density of the Town of Williston .....	3
Figure 2: Williston Organizational Chart (2021) .....	4
Figure 3: Williston Fire Department Study Area.....	6
Figure 4: Administrative & Support Staff Management Process.....	10
Figure 5: WFD Administrative & Support Staffing.....	11
Figure 6: NFPA 1720 Staffing & Response Times.....	13
Figure 7: Williston Fire Department Daily Minimum Staffing .....	14
Figure 8: Firefighters per 1,000 Population.....	15
Figure 9: Mutual Aid Resources .....	16
Figure 10: EMS Transport (Ambulance) Providers.....	17
Figure 11: Hiring Process Components .....	19
Figure 12: Historical Fire Department Expenses & Revenues .....	29
Figure 13: Graphic Depiction of WFD Expenses (FY 17–FY 21) .....	29
Figure 14: Town of Williston Payer Mix.....	30
Figure 15: Williston Current Adopted Ambulance Fee Schedule.....	31
Figure 16: WFD Projected Expenses & Revenues (FY 22–FY 26) .....	32
Figure 17: Criteria Utilized to Determine Fire Station Condition .....	34
Figure 18: Williston Fire Station .....	35
Figure 19: Williston Fire Department Apparatus & Vehicles Fleet Inventory (2021) .....	36
Figure 20: Economic Theory of Vehicle Replacement .....	38
Figure 21: WFD Response Workload History .....	40
Figure 22: WFD Incidents by Type (2020) .....	41
Figure 23: WFD Response Workload by Month.....	41
Figure 24: WFD Response Workload by Day of Week.....	42
Figure 25: WFD Response Workload by Hour of Day .....	42
Figure 26: Incidents per Square Mile—All Incidents (2020) .....	43
Figure 27: WFD Fire Incidents (2020).....	44
Figure 28: WFD Incidents per Square Mile—EMS Incidents (2020) .....	45
Figure 29: WFD Responses by Unit .....	47
Figure 30: Unit Hour Utilization—Rescue 1 & Rescue 2 Combined .....	48
Figure 31: Turnout Times by Type & Year .....	51

Figure 32: Turnout Time by Hour of Day (2020) .....52

Figure 33: WFD Travel Coverage.....53

Figure 34: South Burlington Station Travel Coverage.....54

Figure 35: WFD Travel Time by Type & Year .....55

Figure 36: WFD Travel Time by Hour of Day (2020) .....55

Figure 37: WFD Travel Time by Area (2020) .....56

Figure 38: WFD Response Times by Incident Type.....57

Figure 39: WFD Response Time by Hour of Day (2020) .....58

Figure 40: Incident Concurrency .....59

Figure 41: Williston Population (2010–2020) .....62

Figure 42: Number of Building Permits for Single-Family Dwellings by Year.....63

Figure 43: At-Risk Age Groups in Williston .....64

Figure 44: Persons with Disabilities under the Age of 65 .....64

Figure 45: Persons that Speak a Language Other than English.....65

Figure 46: Low-Income Population .....66

Figure 47: Population Without Health Insurance .....67

Figure 48: Race & Ethnicity for the Town of Williston.....67

Figure 49: Education Levels of the Population Over 25 Years of Age .....68

Figure 50: Median Household Income for Williston & Vermont .....69

Figure 51: Owner & Rental-Occupied Housing .....69

Figure 52: Age of Housing in Williston.....70

Figure 53: Changing Residential Fire Dynamics .....71

Figure 54: Average Temperatures & Snowfall for Williston .....72

Figure 55: Floodway for Williston .....74

Figure 56: Dams Located in Williston .....75

Figure 57: Main Intersection Traffic Counts for Williston .....77

Figure 58: Vermont Natural Gas Transmission Line .....78

Figure 59: Burlington International Airport (BTV/KBTV) .....80

Figure 60: Williston Zoning Districts.....82

Figure 61: Relative Fire Risk in Williston .....83

Figure 62: K–12 Locations .....85

Figure 63: College and Specialty Training Center .....86

Figure 64: Primary Health Care Clinics in Williston .....87

Figure 65: Long-Term Care Facilities in Williston .....88

Figure 66: Government Buildings in Williston .....89

Figure 67: Buildings 32-Feet in Height or Greater..... 91

Figure 68: Buildings in Williston Larger than 25,000 Square Feet ..... 93

Figure 69: WFD ISO Water Supply Points Earned (2015) ..... 94

Figure 70: Costs of Additional Nine Firefighter Positions ..... 101

Figure 71: Cost of Recruitment/Retention Lieutenant ..... 103

Figure 72: Cost of Staffing the Aerial Truck ..... 105

Figure 73: Cost of Staffing an Additional Engine Company in Today's Dollars ..... 107

Figure 74: Cost of Increasing Support Staff Positions..... 110

## Appendix C: References

- <sup>1</sup> PLACE Program website.
- <sup>2</sup> United States Census Bureau, 2020.
- <sup>3</sup> Williston Fire Department.
- <sup>4</sup> Ibid
- <sup>5</sup> Vermont Department of Labor, via the Town of Williston 2016–2024 Comprehensive Plan.
- <sup>6</sup> Ibid.
- <sup>7</sup> United States Census Bureau.
- <sup>8</sup> Ibid.
- <sup>9</sup> Source: Town of Williston.
- <sup>10</sup> Title 20: Internal Security & Public Safety, Chapter 1: Emergency Management.
- <sup>11</sup> Lighting the Path of Evolution: The Red Ribbon Report – Leading the Transition in Volunteer and Combination Fire Departments. November, 2005. International Association of Fire Chief Volunteer & Combination Officers Section.
- <sup>12</sup> NFPA 1720 Standard. 2020 Edition. Table 4.3.2.
- <sup>13</sup> Average of 4 personnel is based on NFRIS incident data (2020) for 100 series (fires): 4.865 personnel per incident and 700 series (fire alarms): 3.346 personnel per incident.
- <sup>14</sup> Evarts and Stein. U.S. Fire Department Profile 2018. February, 2020. [www.nfpa.org/-/media/Files/News-and-Research/Fire-statistics-and-reports/Emergency-responders/osfdprofile.pdf](http://www.nfpa.org/-/media/Files/News-and-Research/Fire-statistics-and-reports/Emergency-responders/osfdprofile.pdf).
- <sup>15</sup> Lighting the Path of Evolution: The Red Ribbon Report – Leading the Transition in Volunteer and Combination Fire Departments. November, 2005. International Association of Fire Chief Volunteer & Combination Officers Section.
- <sup>16</sup> Five Reasons Diversity Is Important in The Fire Service. Johnny Winston, Jr. 11/7/14.
- <sup>17</sup> Effective and Simple Performance Evaluations for Fire Service Personnel, Peter Bryan, Fire Engineering, November 2012. <https://www.nfpa.org/-/media/Files/News-and-Research/Fire-statistics-and-reports/Emergency-responders/osfdprofile.pdf>effective and Simple Performance Evaluations for Fire Service Personnel | Fire Engineering.
- <sup>18</sup> A Fire Department's Guide to Implementing NFPA 1582. [https://www.iafc.org/docs/default-source/1vcos/vws\\_rkit\\_nfpa-1582.pdf?sfvrsn=ca9b9f0d\\_2](https://www.iafc.org/docs/default-source/1vcos/vws_rkit_nfpa-1582.pdf?sfvrsn=ca9b9f0d_2).
- <sup>19</sup> Stress, Cortisol can complicate Firefighting. DeGryse, Dan. February 20, 2015. <https://www.fireengineering.com/health-safety/stress-cortisol-can-complicate-firefighting/>.

- <sup>20</sup> IAFF/IAFC Joint Labor/Management Wellness Fitness Initiative 4<sup>th</sup> Edition. [https://www.iaff.org/wp-content/uploads/2019/04/WFI\\_Manual\\_2018.pdf](https://www.iaff.org/wp-content/uploads/2019/04/WFI_Manual_2018.pdf).
- <sup>21</sup> Firefighters and Cancer. <https://www.nfpa.org/News-and-Research/Resources/Emergency-Responders/Health-and-Wellness/Firefighters-and-cancer>.
- <sup>22</sup> Ibid.
- <sup>23</sup> Annual financial information supplied by the Town of Williston.
- <sup>24</sup> US Census Bureau, <https://www.census.gov/quickfacts/>.
- <sup>25</sup> Occupational Safety and Health in the Emergency Services. Angle, James S. Fifth Edition. Jones & Bartlett Learning 2021.
- <sup>26</sup> Williston, Vermont 2016–2024 Comprehensive Plan. Adopted August, 2017 and amended on November 5, 2018 and September 1, 2020, respectively.
- <sup>27</sup> *National Fire Protection Association, 2007; Urban Fire Safety Project, Emmitsburg, MD.*
- <sup>28</sup> U.S. Census Bureau.
- <sup>29</sup> U.S. Census Bureau. <https://data.census.gov/cedsci/table?q=language%20spoken%20in%20williston,%20vermont&tid=ACST5Y2015.S1601>.
- <sup>30</sup> Indo-European Languages. <https://www.britannica.com/topic/Indo-European-languages>.
- <sup>31</sup> Know the Dangers in Your Older Home. ESFI publication.
- <sup>32</sup> Socioeconomic Factors and The Incidence of Fire. June, 1997. U.S. Fire Administration National Fire Data Center.
- <sup>33</sup> Know the Dangers in Your Older Home. ESFI publication.
- <sup>34</sup> Home Fire Sprinklers Safety Tip Sheet. National Fire Protection Association (NFPA).
- <sup>35</sup> Analysis of Changing Residential Fire Dynamics and Its Implications on Firefighter Operational Timeframes. Kerber, Stephen. August, 2011.
- <sup>36</sup> Ibid.
- <sup>37</sup> Smoke Alarms in US Home Fires. Ahrens, Marty. NFPA Publication, February, 2021.
- <sup>38</sup> Automatic Traffic Recorder Station History, 2011–2020. <https://vtrans.vermont.gov/sites/aot/files/planning/documents/trafficresearch/StationLocationHistory2020.pdf>.
- <sup>39</sup> Pandemic creates historic changes in Williston. December 30, 2020.
- <sup>40</sup> Structure Fires in Schools. Campbell, Richard. September, 2020.
- <sup>41</sup> Campus Fire Fatalities in Residential Buildings (2000-2015). U.S. Fire Administration.
- <sup>42</sup> Balanced Design Fire Protection for Multifamily Housing.

<sup>43</sup> Williston, Vermont 2016-2024 Comprehensive Plan. Adopted August, 2017 and amended November 5, 2018 & September 1, 2020, respectively.

<sup>44</sup> U.S. Committee for Refugees and Immigrants. <https://refugees.org/>.

<sup>45</sup> IAFC: A Fire Department's Guide to Implementing NFPA 1582. [https://www.iafc.org/docs/default-source/1vcos/vws\\_rrkit\\_nfpa-1582.pdf?sfvrsn=ca9b9f0d\\_2](https://www.iafc.org/docs/default-source/1vcos/vws_rrkit_nfpa-1582.pdf?sfvrsn=ca9b9f0d_2).