



December 2023

MARYSVILLE FIRE DISTRICT Regional Fire Authority

Marysville, WA

COMMUNITY RISK ASSESSMENT

Standards of Cover &
Deployment Analysis

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Our sincere appreciation is extended to each of you...

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*...and each of the firefighters, officers, and support staff who
daily serve the residents and visitors of the Marysville Fire
District and surrounding communities.*

Introduction

In April 2023, the Marysville Fire District Regional Fire Authority (MFD) signed an agreement to retain AP Triton, LLC (Triton)—a public safety consulting firm—to conduct a Community Risk Assessment, Standards of Cover study, and deployment analysis of the fire district.

The following report entails a detailed evaluation and various comprehensive analyses. It concludes with findings and recommendations based on national and local standards, best practices, and the knowledge and experience of Triton's subject matter experts (SME). This report was prepared objectively with only the best interests of the community, employees, and fire district as the goal.

During this study, Triton found that the Fire Chief and command staff were dedicated to ensuring the fire district's efficiency and quality of fire protection and Emergency Medical Services. They made every effort necessary to provide Triton with the information necessary to evaluate the organization fully. The firefighters, officers, and support personnel were very cooperative and helpful to the Triton project team.

Future District 15 Fire Station

Near the end of this project, Triton was informed that the Tulalip Tribes has entered into an agreement with Tulalip Bay Fire Department (Snohomish County Fire District 15) to construct a new fire station (on the corner of 88th Street NE and 27th Avenue NE) that will serve a significant portion of the Tulalip Indian Reservation now served by MFD. This is expected to occur within the next 2–3 years, with a temporary station being placed in service on January 3, 2024

While Triton disagrees with the decision of the Tulalip Tribes and Fire District 15 to move forward with building this station, it is hoped that the result will have some benefits to the Marysville Fire District. The anecdotal information available to Triton indicates that the Tulalip Tribes will expend substantial funds to construct and operate the new station. In addition, MFD will lose a substantial amount of revenue from various sources.

It is important to note that the recommendations contained in this report were based on the information and conditions at the time (essentially a "snapshot in time"). Therefore, some of these may be irrelevant because of the potential change in the emergency services system. However, Triton has elected to retain the original findings and recommendations if things change. In some cases, MFD has already begun to take steps to implement recommendations on issues that were not yet in place during the study.

Section I: EVALUATION OF CURRENT CONDITIONS

Overview of the Marysville Fire District

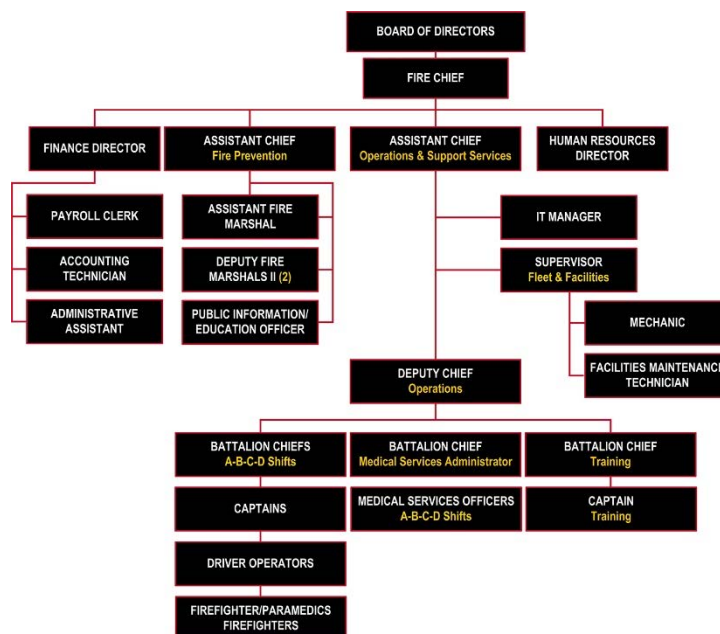
Following approval by the electorate, the Marysville Fire District was formed as a Regional Fire Authority (RFA) in April 2019. This resulted from a merger of Snohomish County Fire District #12 and the City of Marysville Fire Department. District #12 had previously merged with Snohomish County Fire District 20 in 1998. In Washington State, RFAs are special-purpose districts or municipal corporations that may be created under the authority of Title 52 of the Revised Code of Washington (RCW).

MFD Organizational Structure

Governance & Lines of Authority

A six-member Board of Directors governs the Marysville Regional Fire Authority. The Board includes one member and another non-voting member from Snohomish County Fire District #12 and four members from the Marysville City Council.

Figure 1: MFD Organization Chart (2023)



Management & Planning

The Marysville Fire District has adopted a mission statement and staff values. In 2020, it established new organizational goals and objectives. MFD completed a strategic plan for 2020–2025, which was published in 2020. Although the fire district has conducted earlier studies, it has not recently completed a master plan, standards of cover, or other studies.

Fire Chief's Critical Issues

As part of this study's data and information collection process, the Fire Chief was asked to identify the top critical issues at MFD from his perspective. The following lists these in no order of priority:

- Firefighter (and staff) health and wellness.
- Staff career development.
- Facilities and apparatus planning.
- Long-term organizational planning.
- Diversity, equity, and inclusion.

In addition, the Fire Chief desires to provide: *"a comprehensive approach to developing personnel to meet their professional goals while also preparing for the organizational needs of the future and being an ethical and inclusive individual as part of a progressive fire district."*

Internal & External Communications

MFD utilizes a wide variety of both internal and external communication methods and strategies. Members attend regularly scheduled staff meetings and have e-mail and access to an MFD Intranet website. When necessary, memos are drafted, and a member newsletter is distributed.

MFD publishes a community newsletter, maintains a fire district website, and uses social media (Facebook® (now Meta®), Twitter® (now "X"), Instagram®, and Nextdoor®). It has no formal citizens advisory committee independent of the Board of Directors.

Records Management & Reporting

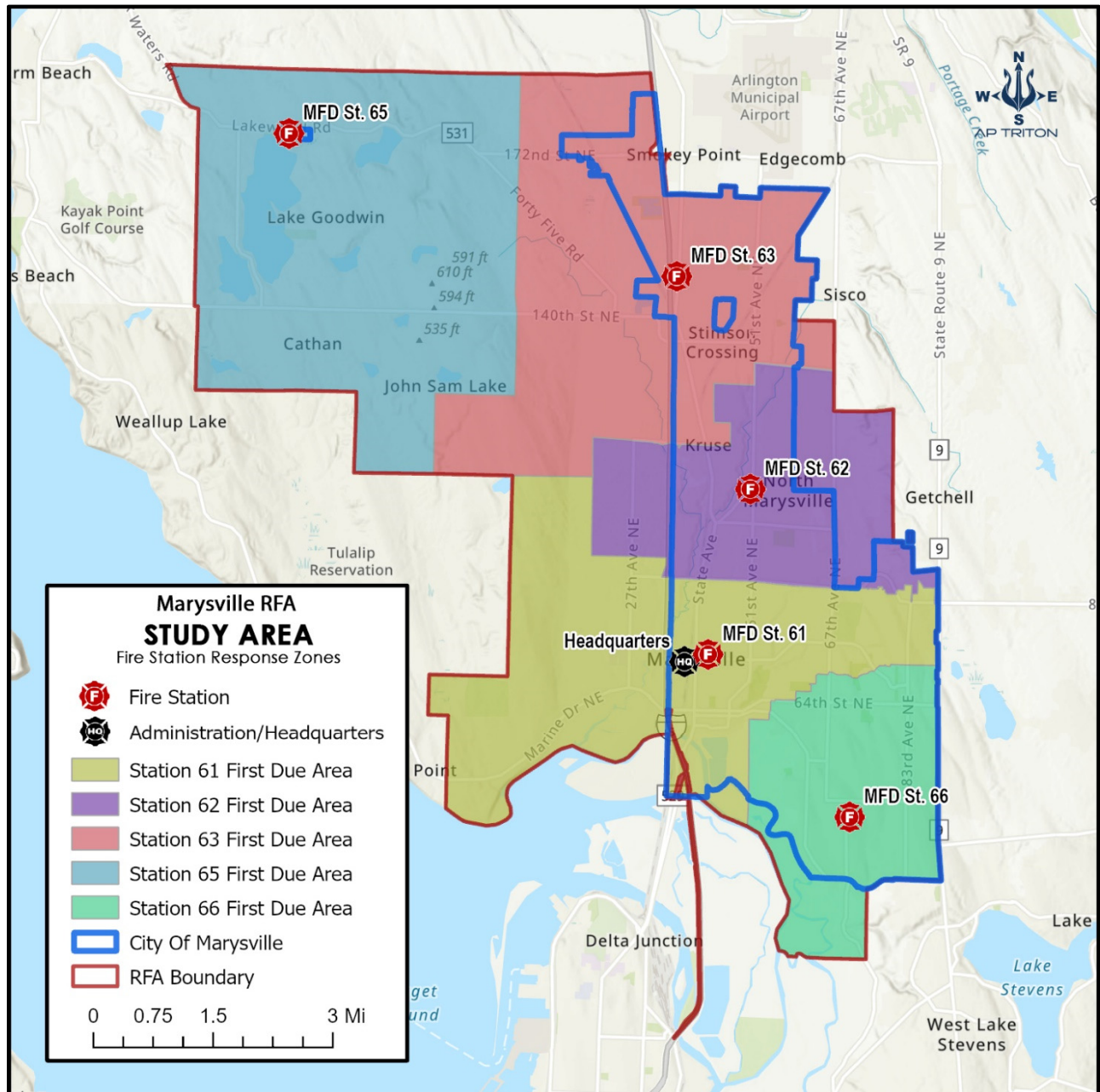
Marysville Fire District utilizes one of the eso® Fire Incidents Reporting software as its records management system (RMS) to document fire calls, electronic patient-care reports (ePCR), and all other incidents. The system is integrated with Snohomish County 911 and automatically downloads basic incident information from the Computer-Aided Dispatch (CAD) system.

MFD utilizes its RMS to provide annual reports and data analyses that are posted to the MFD website. All records are maintained and archived according to Washington State regulations.

Service Area

The district serves an area of 56 square miles with a population of nearly 87,000 permanent residents.¹ It includes the City of Marysville, Seven Lakes, Quil Ceda Village, a portion of the Tulalip Indian Reservation, and parts of unincorporated Snohomish County. The next figure shows the MFD service area.

Figure 2: Marysville Regional Fire Authority Service Area



Operations & Deployment

The Marysville Fire District is an all-hazards public safety organization that provides traditional fire suppression, wildland firefighting, medical first-response (MFR), and ground emergency medical transport (GEMT) at the Basic Life Support (BLS) and Advanced Life Support (ALS) levels.

The district deploys its apparatus, BLS Aid units and ALS Medic units (configured as ambulances to transport), and personnel from five staffed fire stations. In May 2020, the Washington Surveying & Rating Bureau (WSRB) gave the City of Marysville and Snohomish County Fire District 12 a Community Protection Class score of 3.

The next figure lists the frontline apparatus and ambulances assigned to the stations and the minimum staffing of each. The figure does not list the cross-staffed units. As noted, the shift Battalion Chief (BC) and Medical Services Officer (MSO) were also excluded.

Figure 3: Staffing of Frontline Apparatus by Fire Station

Station	Schedule	Staffing ^A
Fire Station 61		
Engine 61	24 hours daily	3
Medic 61	24 hours daily	2
Aid 61	24 hours daily	2
Fire Station 62		
Ladder 62	24 hours daily	3
Aid 62	24 hours daily	2
Fire Station 63		
Engine 63	24 hours daily	3
Medic 63	24 hours daily	2
Fire Station 65		
Engine 65	24 hours daily	3
Fire Station 66		
Engine 66	24 hours daily	3
Total Daily Staffing:		23

^AShift Medical Services Officer and BC excluded from staff total.

MFD units are dispatched utilizing Automatic Vehicle Location (AVL) technology, which sends the closest available apparatus or ambulance to an incident.

Additional MFD Services

The Marysville Fire District conducts fire inspections, code enforcement, plan reviews, public education and prevention programs, and activities through its Fire Prevention Division. MFD does not currently conduct fire-cause and arson investigations.

Other Local Public Safety Services

Emergency Communications

Snohomish County 911 (SNO911) provides dispatch services and communications to the Marysville Fire District and serves 43 police, fire, and Emergency Medical Services (EMS) partner agencies throughout Snohomish County. SNO911 is the county's primary Public Safety Answering Point (PSAP) and handles as many as 2,000 calls daily. The Washington State Surveying & Rating Bureau (WSRB) has awarded the center a Protection Class 1.

As of the end of 2022, SNO911 employed 103 Dispatchers, 16 Supervisors, five Senior Leadership staff, 13 Administrative staff, 22 Radio Technicians, and five Operations Support staff. All dispatchers are trained in Emergency Medical Dispatch (EMD) and can provide pre-arrival instructions to callers. Additional programs provided by the center include:

- **Snohomish County Alerts**—When significant emergencies occur, SNO911 utilizes systems to notify the public through its Emergency Alerts utilizing Smart911.®
- **Smart911®**—Allows individuals to provide additional details to 9-1-1 and first Responders by creating a secure Safety Profile that is only shared when the person calls 9-1-1.
- **PulsePoint**—Enables citizens to assist victims of sudden cardiac arrest. Application users who have indicated they are trained in cardiopulmonary resuscitation (CPR) and are willing to assist in case of an emergency can be notified if someone nearby has a cardiac emergency and may require CPR.

Mutual & Automatic Aid

The Marysville Fire District has substantial access to fire departments and EMS transport providers for mutual and automatic aid.

Fire Suppression & Special Operations Agencies

The next figure lists the fire departments and districts that can provide mutual and/or automatic aid for cases of multi-alarm fires or other incidents. In many cases, “Other Units” were cross-staffed with the primary apparatus. Unstaffed stations were not included.

Figure 4: Mutual & Automatic Aid Resources Available to MFD

Agency	Station No.	No. Engines	No. Aerials	Other Units	No. of Staff
Arlington Rural District 21	#49	1	0	Aid Unit	3
	#50	1	0	Aid Unit	3
Everett Fire Department	#1	1	1	Medic; BC	9
	#2	1	0	Aid Unit	5
	#4	1	0	HazMat Unit	3
	#5	1	1	Aerial, Medic, MSO	6
	#6	1	0	Aid Unit	7
	#7	1	0	—	3
Getchell Fire District 22	#68	1	0	Aid Unit, Brush Unit	3
Granite Falls District 17	#86	1	0	Aid Unit	5
	#87	0	0	Medic only	2
North County RFA	#46	1	0	Medic, Brush Unit	3
	#48	0	1	Aid Unit	5
	#90	1	0	Aid Unit, Brush Unit	3
	#96	0	0	Unstaffed station	0
	#97	1	0	Truck, Aid, Brush	3
	#99	1	0	Medic, BC, Aid	6
Silvana Fire District 19	#94	1	0	Aid Unit, Air Unit	3
Snohomish Regional Fire & Rescue	#81	1	0	Aid, Brush, BC	4
	#82	1	0	Medic, Aid Unit	7
	#83	1	0	Aid Unit, Tender	3
Tulalip Bay District 15	#60	1	0	Medic, Aid Unit	4

Ground Emergency Medical Transport Agencies

The next figure lists the various agencies licensed to provide mutual or automatic aid ground emergency medical transport (GEMT) to MFD and the level of service each can provide—Basic Life Support (BLS) or Advanced Life Support (ALS). The next figure also lists many of those from the preceding figure.

Figure 5: EMS Transport Agencies Available for Mutual Aid to MFD

Transport Agency	Station No.	Level of Service
Arlington Rural District 21	#50	BLS
Everett Fire Department	#1	ALS
	#2	BLS
	#5	ALS
	#6	ALS
Getchell Fire District 22	#68	BLS
Granite Falls District 17	#86	ALS
	#87	BLS
North County RFA	#46	ALS
	#48	ALS/BLS
	#90	BLS
	#97	BLS
	#99	ALS/BLS
Silvana Fire District 19	#94	BLS
Snohomish Regional Fire & Rescue	#81	ALS/BLS
	#82	ALS/BLS
	#83	BLS
Tulalip Bay District 15	#60	ALS/BLS

As shown in the preceding figure, at least eight regional fire departments can provide mutual or automatic aid patient transport services to the Marysville Fire District. Five of the eight are licensed to provide Advanced Life Support.

Figure 6: Mutual Aid Departments & Station Locations



Air Medical Transport

Two air medical agencies serve The Marysville Fire District and provide scene response utilizing rotary wing (helicopter) transport.

Airlift Northwest maintains a helicopter base in Arlington. Each aircraft is staffed with two Flight Nurses with at least five years of experience in critical care or working in an emergency department. Nurses receive additional specialty training. Airlift is accredited through the Commission on Accreditation of Medical Transport Systems (CAMTS).

The LifeFlight Network™ maintains a helicopter base in Coupeville. Each aircraft is staffed with specially trained EMT-Paramedics (EMTP) and Flight Nurses. LifeFlight is a non-profit organization affiliated with a network comprised of four major hospitals.

Local Hospitals & Tertiary Care Facilities

Most MFD patients are transported to Providence Regional Medical Center (PRMC) in Everett and Cascade Valley Hospital (CVH) in Arlington. PRMC maintains a full-service Emergency Department with board-certified Emergency Physicians. It is a designated Level II Trauma Center, a Level 1 Cardiac Center, and a Stroke Center with a catheterization lab with percutaneous coronary intervention (PCI) capabilities.

Cascade Valley Hospital maintains an Emergency Department and is a designated Level IV trauma center capable of providing acute and critical care. CVH does not have a catheterization lab to perform PCI.

When indicated, patients are transported to Harborview Medical Center in Seattle, which is a designated Level I Trauma Center. High-acuity pediatric patients may be transported to Seattle Children's Hospital.

Personnel & Staffing

Administrative & Support Staffing

Typical responsibilities of fire district administration and support staff include planning, organizing, directing, coordinating, and evaluating the various programs within the organization. This list of functions is not exhaustive; other functions may be applicable. It is also important to understand that these functions may occur concurrently, requiring the Fire Chief and administrative support staff to balance work in many different areas simultaneously.

The following figure summarizes the administrative support staff and organizational structure of MFD.

Figure 7: MFD Administrative & Support Staffing (2023)

Position Title	No. Positions	Hours/Week	Schedule ¹
Fire Chief	1	40	4 days/10 hours
Assistant Chief	2	40	4 days/10 hours
Deputy Chief	1	40	4 days/10 hours
Administrative Battalion Chief	2	40	4 days/10 hours
Administrative Captain	1	40	4 days/10 hours
Deputy Fire Marshal II	2	40	4 days/10 hours
Assistant Fire Marshal	1	40	4 days/10 hours
IT Manager	1	40	5 days/8 hours
Administrative Assistant	1	40	5 days/8 hours
Finance Director ²	1	40	40 hours
Human Resources Director	1	40	5 days/8 hours
PIO/Education Officer	1	40	4 days/10 hours
Accounting Technician ²	1	40	40 hours
Payroll Clerk	1	40	5 days/8 hours
Fleet & Facilities Supervisor	1	40	4 days/10 hours
Mechanic	1	40	4 days/10 hours
Facilities Technician	1	40	4 days/10 hours
Total FTEs:	20		

¹Schedule is on weekdays. ²Every other Friday off.

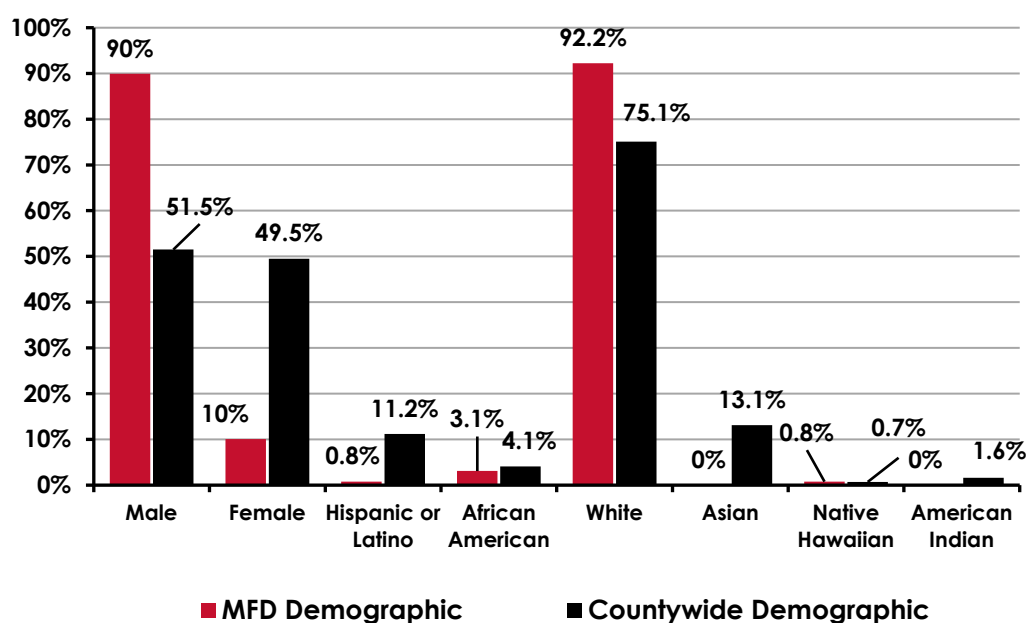
Triton notes that the current administrative and support staffing levels represent just over 15.5% of MFD's total staffing, of which 7.8% is allocated to the overall direction and governing of the fire district.

However, unlike many municipal fire agencies that rely on other city departments to provide support services to their organizations, MFD is responsible for managing its personnel functions and other support services such as payroll, finance, and fleet services.

Diversity & Years of Service

Triton analyzed the diversity of MFD's uniformed personnel, including comparisons to the demographics of Snohomish County as reported by the U.S. Census in its July 2022 population estimates, as shown in the following figure.

Figure 8: MFD Uniformed Employee Gender & Ethnicity (2022)



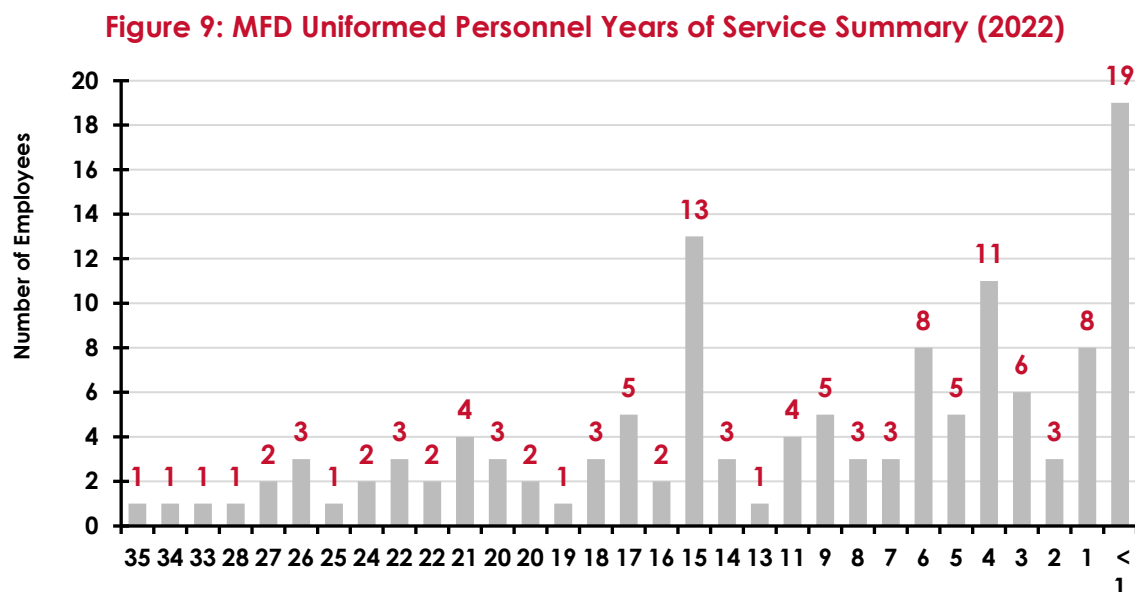
The preceding figure reveals that the fire district's operations personnel are overwhelmingly white and male compared to the overall Snohomish County population base. The fire service has historically had difficulty attracting females and minorities to apply for firefighter positions.

In highlighting this issue, one author offered the following perspective:

*"It's no secret that fire departments in many cities don't much resemble the communities they serve. In areas that have a high concentration of poverty, many fire departments are comprised primarily of members who live outside of the jurisdictions they serve and don't have a vested interest in the municipalities where they work. And as the number of fires has declined over recent decades, so has many fire department's community involvement. In most large cities, many residents have no interactions with members of the fire service only when they dial 911, typically for a medical emergency."*²

The author also noted that focused efforts to conduct community outreach targeting minority populations could successfully attract them to apply for firefighter positions. Outreach techniques include hosting open houses at fire stations in minority neighborhoods and performing targeted recruitment drives, including helping interested citizens apply for the positions.

MFD's uniformed employee tenure is summarized in the following figure.



As shown in the preceding figure, the overall seniority of uniformed personnel is relatively low, with the average years of service at approximately 10 years, and approximately 15% of employees have less than one year with MFD.

Fire District Administration

Current overall fire district administrative and operational responsibilities lie with the Fire Chief, Deputy Chief, and two Assistant Chiefs. Some of the typical responsibilities of the Fire Chief include planning, organizing, directing, and budgeting for all aspects of the district's operations.

Fire Prevention & Life Safety

The Fire Prevention Bureau is staffed with five employees and is responsible for providing the district's community risk reduction program, fire prevention, and life-safety public education programs. These activities typically include reviewing new construction plans, fire inspections of existing commercial occupancies, fire hazard reduction programs, public information and education, and fire cause determination and investigations.

Training

MFD fire, EMS, and special operations programs training is administered by an administratively assigned Training Battalion Chief, who reports to the Operations Deputy Chief. A Training Captain reports to the Training BC. Responsibilities of this division include overseeing training delivery and instructional quality assurance, training documentation, certification tracking, and coordination with outside agencies in the delivery and documentation of regional training related to participation in regional response programs, such as Hazardous Materials Technician responses.

Operations Staffing

The following figure depicts the budgeted MFD operations staff positions.

Figure 10: MFD Total Budgeted Operations Response Staffing

Position Title	No. Budgeted Positions	Hours Worked/Week ^A
Operations Battalion Chief	4	48.46
Operations Captain	20	48.46
Medical Services Officer	4	48.46
Driver/Operator	20	48.46
Firefighter/Paramedic	22	48.46
FF/EMT	38	48.46
Total FTEs:	108	

^AShift schedule is 24 on, 24 off, 24 on, & 120 off.

Fire Operations Bureau Scheduling

MFD utilizes a four-platoon system operating on a 24-hour shift rotation per position. Operations-assigned personnel work an average of 48.6 hours per week or 2,520 hours annually. For Fair Labor Standards Act purposes, each operations employee is assigned to a 24-day consecutive work period with shifts starting at 0700 hours.

This work schedule and the Collective Bargaining Agreement (CBA) require operations-assigned employees to work additional scheduled shifts called "Debit Days." These debit days are assigned per position, not by employee, and are built into the yearly schedule before vacation shifts are selected for each subsequent year. Employees may exchange earned vacation hours instead of working debit shifts during the first round of vacation bidding.

Operations Staff Scheduling Methodology

The total number of positions allocated to the fire district is ultimately a policy decision by the Fire Chief and RFA Board of Directors. Maintaining a minimum staffing level 24 hours a day, seven days a week, requires personnel to be available to backfill scheduled and unscheduled leaves to maintain this staffing level.

Providing this backfill is typically done by hiring off-duty personnel back on overtime or scheduling additional personnel on a shift to provide the necessary relief coverage. Determining the theoretical number of employees necessary to provide adequate relief coverage is often described as a "staffing relief factor."

The staffing methodology used by MFD is very common across the United States for firefighters working 24 hours and proves effective for agencies with moderate workloads. Large agencies with heavy workloads have implemented different staffing models to avoid employee fatigue, including working split shifts (10 and 14-hour shifts, for example). However, the 24-hour work period reduces the number of crew changes that occur in each period, the total number of overall staff required, and the overall cost of benefits associated with the additional FTE required to work a split shift schedule.

Operations personnel are allowed to trade shifts, consistent with district policy and the CBA. Shift trades and overtime hours worked cannot exceed more than 48 hours of consecutive work unless it is an emergency declared by the Fire Chief.

The next figure lists the apparatus and vehicles assigned to each fire station, including cross-staffed ones, and the minimum staffing of each frontline unit.

Figure 11: MFD Apparatus & Staffing by Fire Station

Unit	Type	Staffing ^A
Fire Station 61		
Engine 61	Type 1	3
Medic 61	ALS Ambulance	2
Aid 61	BLS Ambulance	2
Boat 61	Rescue Boat	Cross-staffed
<i>MSO (day)</i>	<i>EMS Supervisor</i>	<i>1</i>
Fire Station 62		
Ladder 62	Aerial	3
Aid 62	BLS Ambulance	2
Technical Rescue 61	Rescue	Cross-staffed
Battalion 61	Command/BC	1
Fire Station 63		
Engine 63	Type 1	3
Medic 63	ALS Ambulance	2
Fire Station 65		
Engine65	Type 1	3
Aid 65	BLS Ambulance	Cross-staffed
Boat 65	Rescue Boat	Cross-staffed
Tender 65	Water Tender	Cross-staffed
Fire Station 66		
Engine 66	Type 1	3
Aid 66	BLS Ambulance	Cross-staffed
Hazmat 61	Hazmat Unit	Cross-staffed
<i>MSO (night)</i>	<i>EMS Supervisor</i>	<i>1</i>

^AExcludes the daily on-duty shift Battalion Chief.

As shown in the preceding figure, the current minimum daily staffing is 23 personnel assigned to frontline apparatus and ambulances. In addition, a Battalion Chief and Medical Services Officer are assigned to each shift for a minimum of 25 personnel.

Fire Operations Staffing Level Discussion

The district plans to add two 40-hour workweek positions to staff a peak-demand aid unit 10 hours daily, four days per week. The selection, schedule, and working conditions for these positions are defined in Appendix G of the Collective Bargaining Agreement (CBA).

The cost of adding employees to ensure adequate staffing versus simply paying current employees overtime to provide relief coverage must be carefully balanced due to the additional cost of employee benefits, which for MFD averaged approximately 30% or more of total Operations-assigned employee salaries and benefits. This additional cost is not factored into overtime expenses, potentially making overtime expenditures more cost-effective.

Triton cautions that while it may seem prudent and cost-efficient for agency administrators to continue to hire off-duty personnel on overtime or expand the use of overtime to maintain minimum daily staffing, it can have diminishing returns and adverse impacts on employee morale, especially if employees are forced to “hold-over” to cover vacancies, increase fatigue, and disrupt their off-duty lives, affecting attrition rates, sick leave usage, and/or employee safety.

Recognizing this, the district uses an “open hiring” process and continually hires for vacancies as they occur. Triton noted that at the time of this study, two Firefighter/EMTs and two Firefighter/Paramedics were being onboarded to fill vacancies.

Salaries & Benefits

The following figures summarize the district salaries and benefits structures.

Figure 12: MFD Employee Salary Structure (2023)

Position Title	Starting Salary	Top Salary	Average Annual Salary
Fire Chief	—	—	\$203,233
Assistant Chief	—	—	\$191,132
Deputy Chief	—	—	\$182,032
Administrative Battalion Chief	\$150,789	\$170,391	\$168,883
Administrative Captain	\$132,479	\$152,101	\$152,101
Deputy Fire Marshal II	\$127,093	\$143,615	\$132,742
Assistant Fire Marshal (Plan Reviewer)	\$140,018	\$160,620	\$160,620
Information Technology Manager	—	—	\$133,750
Administrative Assistant	—	—	\$71,630
Finance Director	—	—	\$182,032
Human Resources Director	—	—	\$149,754
PIO/Education Officer	—	—	\$104,014
Accounting Technician	—	—	\$76,941
Payroll Clerk	—	—	\$83,903
Fleet & Facilities Supervisor	—	—	\$130,921
Mechanic	—	—	\$93,800
Facilities Technician	—	—	\$101,455
Operations Battalion Chief	\$150,789	\$170,391	\$165,114
Operations Captain	\$129,247	\$152,830	\$143,493
Medical Services Officer	\$137,864	\$155,786	\$153,182
Driver/Operator	\$107,706	\$127,793	\$113,128
Firefighter/Paramedic	\$91,550	\$139,964	\$129,255
Firefighter/EMT	\$74,394	\$121,708	\$102,718

The fire district also provides the following benefits package to full-time employees.

Figure 13: Marysville Fire District Full-Time Employee Benefits

Descriptions			
Medical Insurance	Dental Insurance	Employee Assistance Program	College Tuition Reimbursement
Short-Term Disability Insurance	Retirement Pension (LEOFF/PERS)	Deferred Compensation	Healthcare Reimbursement
Term Life Insurance	Workers Compensation	Bereavement Leave	Sick Leave
Vacation Leave	Military Leave	Domestic Violence Leave	Sick Leave Transfer

The percentage cost of benefits compared to the salary paid by MFD varies depending on the salary of each position. Generally, the fire district's benefits costs compared to the average annual salary are approximately 33%.

Introduction to the Staff Online Survey

As a part of this study, Triton conducted a survey of the Marysville Fire District staff, elected officials, and others affiliated with the organization. The survey was web-based and confidential.

The questions were developed by Triton staff, along with input from MFD command staff. The primary intent was to allow individuals to confidentially share opinions and perspectives with the MFD leadership.

The survey consisted of 11 questions with an estimated time to complete it of five minutes. In addition, most questions had the option of including written comments. In some cases, the spelling and grammar of the comments were corrected in a manner that did not change the content substance. There was a total of 49 respondents to the survey.

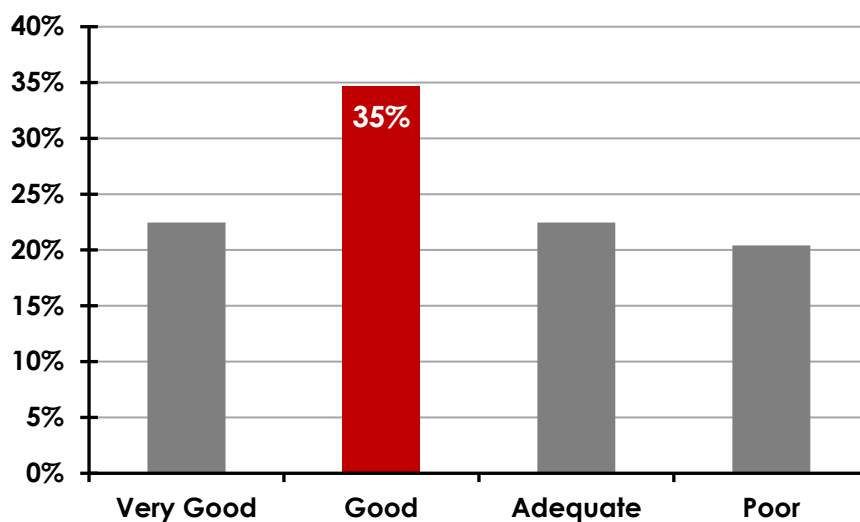
The following pages include the results of some of the online survey questions. The results of the entire survey are shown in Appendix A. The comments from internal stakeholders during Triton's site visit can be found in Appendix B.

Question 1: “What is your current affiliation with the Marysville Fire District?”**Figure 14: Staff Survey Question #1 Results**

Position	% of Total
Firefighter	31%
Driver Operator	12%
Captain	29%
Chief Officer (including Fire Chief)	10%
Fire Prevention Staff	4%
Administrative Position	4%
Elected Official	4%
Other	6%

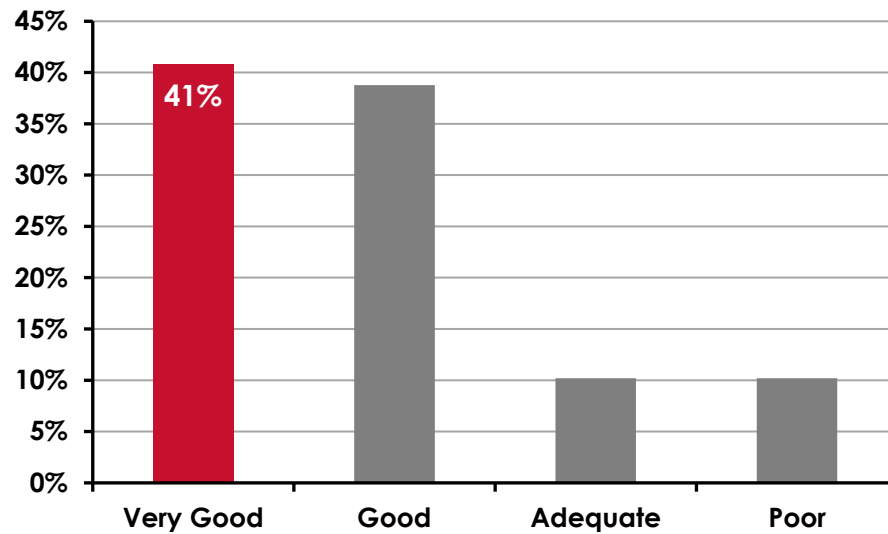
Note: Percentages rounded to the nearest integer.

As shown in the preceding figure, most respondents represented staff assigned to the Operations Division.

Question 2: “How do you rate the level of quality of fire suppression and protection provided by the Marysville Fire District?”**Figure 15: Staff Survey Question #2 Results**

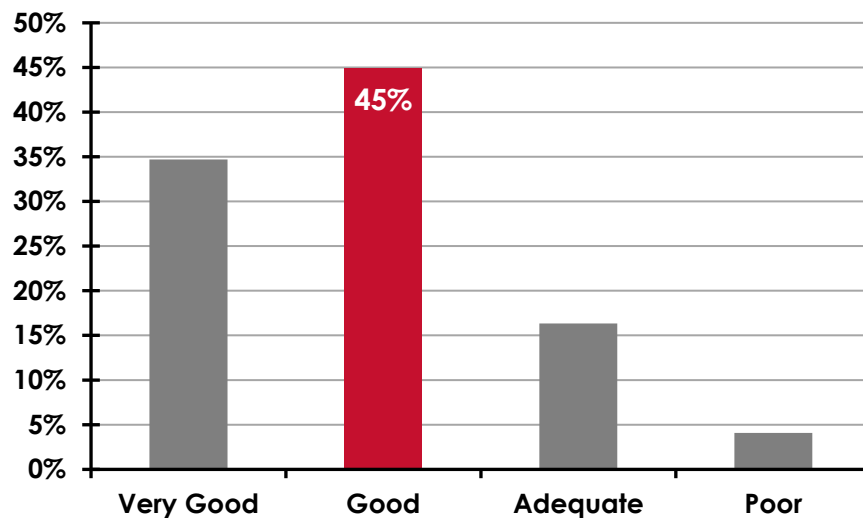
Question 3: “How do you rate the level of quality of Emergency Medical Services and patient transport provided by the Marysville Fire District?”

Figure 16: Staff Survey Question #3 Results



Question 5: “In your opinion, how would you rate the community's opinions and perception of the Marysville Fire District?”

Figure 17: Staff Survey Question #5 Results



The complete results and individual comments can be found in Appendix A. In some cases, duplicate comments were combined.

Financial Review

Sound fiscal health is imperative to ensuring the effective operation of local governments. Analyzing historical trends provides valuable information about current and future fiscal health. To understand Marysville Fire District's historical and projected financial position, Triton reviewed and analyzed the MFD's historical budgeting documents, schedules, and independent auditor reports for the four years of FY 2020–FY 2022 and the adopted FY 2023 budget. Additionally, Triton reviewed the local, state, and national economic conditions to assess and better understand any significant trends that could affect the assumptions in MFD's current and future fiscal years.

The Marysville Fire District (MFD) was established as a regional fire authority (RFA) through a voter-approved measure on April 23, 2019. The RFA officially came into existence on October 1, 2019. Under Title 52 of the Revised Code of Washington (RCW) and other applicable state laws, MFD functions as a special-purpose local government entity.

The MFD's primary funding sources include a regular levy, EMS levies collected by the City of Marysville and Fire District #12, ambulance transport fees, and service contracts with neighboring agencies. Covering an area of 54 square miles in west central Snohomish County, the district provides fire protection and EMS to approximately 86,500 residents. MFD maintains a workforce of around 128 full-time employees, operating from one administrative building, five fire stations, and one shop/maintenance facility.³

Regional Fire Authority Formation

The Marysville Regional Fire Authority was formed in October 2019. The establishment of the RFA was envisioned to address a spectrum of challenges, such as financial concerns, integration of funding sources, enhancement of operational efficiency, and the refinement of the governance model to reflect the demographics of the residents it serves more adequately.

This transition to the RFA model was a strategic response to burgeoning demands on fire and emergency services. This increase in demand was influenced by steady population growth and evolving community needs. Since 2011, there has been a staggering 60% surge in service calls, exerting considerable strain on the then-existing framework.

The antecedent financial model was increasingly seen as untenable, consistently recording expenses outpacing revenues. Concurrently, the governance structure at that time did not adequately capture the representation of the city, and FD12 was proportionate to the population of areas served.

Several compelling factors underscored the necessity for the RFA's inception. To begin with, the rising population was directly proportional to the mounting demand for fire and EMS, exemplified by the nearly 60% upswing in service calls since 2011. The financial dynamics were also worrisome. Not only were expenses eclipsing revenues, but the financial reserves were also regularly tapped to bridge the fiscal deficit.

This was evident when, while exploring the formation of a regional fire authority in 2016, MFD was projected to grapple with a fiscal shortfall of \$2.5 million.⁴ Additionally, the governance mechanism demanded an overhaul. A significant 80% of residents resided within the city precincts, yet their representation in governance was 50%.

MFD Accounting & Budget Governance

MFD prepares its budgets and financial statements using the cash basis of accounting and measurement focus. Revenues are recognized when cash is received, and expenditures are recognized when paid. The Marysville Fire District operates on a calendar year, from January 1 to December 31. Annual budgets are prepared and adopted in accordance with RCW 52.16.030, which requires MFD to prepare a budget for each fund maintained.

Typical of most governmental entities, MFD employs the use of funds to account for its financial operations. It maintains four separate funds, of which the Expense Fund is its primary operating fund. Other funds include the Apparatus Fund, Capital/Reserve Fund, and Equipment Fund.

Each fund is a fiscal and accounting entity that includes cash, financial resources, liabilities, and balances related to specific activities or objectives. A brief description of each of the four funds is detailed below:

- **Expense Fund:** This fund functions as the district's general operating fund. It maintains a minimum fund balance, established by policy, equal to 25% of the district's annual operating budget, exclusive of inter-fund transfers.⁵
- **Apparatus Fund:** This fund operates as a capital projects fund and is dedicated to accumulating and utilizing resources to procure apparatus. The Apparatus Fund's revenues are derived via interfund transfers from the Expense Fund.

- **Capital/Reserve Fund:** This fund also serves as a capital projects fund designated for accumulating and deploying resources for constructing, acquiring, and improving capital assets. Most of the fund's revenue is derived from interfund transfers from the Expense Fund. Additionally, significant contributions come from the Ground Emergency Medical Transportation (GEMT) program revenues.
- **Equipment Fund:** The Equipment Fund was established in FY 2022. It operates as a capital projects fund and is specifically intended for accumulating and utilizing resources for procuring capital equipment.

MFD prepares an annual budget for each fund, which its Board of Directors ratifies at an aggregate fund level. These budgets are further detailed into specific divisions, offering a comprehensive insight into the fiscal architecture of the district.

To ensure fiscal prudence and adherence to established guidelines, the district closely monitors its minimum fund balance, particularly during revenue collection troughs, ensuring it remains in compliance with the policy that mandates the Expense Fund balance be at least 25% of the annual operating expense budget.⁶

The Expense Fund serves as MFD's main operating fund and is responsible for the district's general operating costs. The Expense Fund's primary sources of revenue include property taxes, contract revenue, and ambulance transport revenue. The Expense Fund's revenue collections peak in April and October, correlating with the property tax due dates. While expenses generally follow a consistent, linear pattern throughout the year, there is a notable exception in September due to the execution of interfund transfers.

The Expense Fund is the primary generator of MFD's recurring revenue and provides most of the other three funds its resources via interfund transfers. Notably, a segment of the Ground Emergency Medical Transportation (GEMT) revenue is sourced directly to the Capital/Reserve Fund.

For clarity and a comprehensive understanding, this specific revenue stream will be elaborated upon in the "Ambulance Transport Revenue" subsection and revisited in the detailed overview of the Capital/Reserve Fund later in this document.

For historical comparison and analysis, the following figures in the next section reflect revenue and expenses, net of interfund transfers, from all four of MFD's funds combined. Specific consideration is given to the individual capital funds and individual funds' balances later in this report.

The next figure summarizes the Marysville Fire District's combined FY 2020–FY 2023 activity.

Figure 18: MFD Historical Combined Budget Summary (FY 2020–FY 2023)

All Funds Combined	2020 Actual	2021 Actual	2022 Actual	2023 Budget
RFA Regular Levy	15,708,287	16,988,045	16,964,637	17,450,000
City of Marysville EMS Levy	4,397,761	5,048,258	5,170,757	6,111,000
Fire District #12 EMS Levy	1,203,177	1,253,508	1,389,206	1,560,000
Excise Distributions	4,805	6,731	6,662	5,000
Ambulance Transport Revenue	2,130,124	2,565,748	2,706,671	2,800,000
GEMT - Expense Fund	—	30,000	30,000	180,000
GEMT - Capital Fund	2,627,065	3,481,191	3,999,328	2,900,000
Bad Debt Recovery	26,033	18,611	21,082	20,000
Contract Revenue	700,456	741,035	770,331	778,286
Other Recurring Revenue	165,412	109,557	240,087	240,000
Recurring Revenue:	\$26,963,120	\$30,242,684	\$31,298,760	\$32,044,286
Grants	112,228	756,142	286,629	1,250
Investment Interest Income	120,915	170,488	367,974	171,000
Other Non-Recurring Revenue	80,560	177,218	110,138	75,500
Non-Recurring Revenue:	\$313,703	\$1,103,848	\$764,741	\$247,750
Total Combined Revenue:	\$27,276,823	\$31,346,532	\$32,063,501	\$32,292,036
Personnel Expense	18,303,529	19,742,956	21,066,269	24,782,830
Services Expense	2,168,414	2,164,765	2,287,096	3,068,839
Supplies Expense	620,697	690,307	784,561	957,650
Recurring Expense:	\$21,092,639	\$22,598,028	\$24,137,926	\$28,809,319
Expense Fund Non-Recurring	335,963	132,042	280,583	358,825
Capital Outlay – Capital Funds	140,577	2,545,674	2,093,187	4,595,300
Non-Recurring Expense:	\$476,540	\$2,677,716	\$2,373,770	\$4,954,125
Total Combined Expense:	\$21,569,179	\$25,275,744	\$26,511,696	\$33,763,444
Expense Fund Ending Balance	\$11,709,080	\$13,380,225	\$13,586,833	\$13,319,725
Capital Funds Ending Balance	\$12,825,577	\$17,225,221	\$22,570,417	\$21,366,117

Revenue

For analysis purposes, Triton classifies revenues, sometimes referred to as resources, as recurring or non-recurring. Recurring revenues can be reasonably anticipated annually and are generally quantifiable. On the other hand, non-recurring revenues, such as debt proceeds, one-time grant awards, or proceeds from the disposal of assets, may not occur annually or are not easily quantifiable. While these amounts may be estimated with a reasonable degree of accuracy, the frequency of their receipt places them in the non-recurring category.

A regular levy primarily funds the district. EMS Levies of the City of Marysville and Fire District #12, ambulance transport fees, and service contracts to neighboring agencies tend to fund most of the EMS operational costs. Discussed in further detail below, MFD put forth a successful August 2023 ballot measure to combine the individual City of Marysville and Fire District #12 EMS levies into a single MFD EMS levy. MFD will begin collecting this new EMS Levy in January 2024.

The next figure depicts MFD's total combined actual revenue/resources, exclusive of interfund transfers, between FY 2020 and revenue anticipated in FY 2023, providing a historical perspective of MFD's revenue sources available for day-to-day operations and capital projects.

Figure 19: MFD Historical Combined Fund Revenue Summary (FY 2020–FY 2023)

Combined Revenues	2020 Actual	2021 Actual	2022 Actual	2023 Budget
RFA Regular Levy	15,708,287	16,988,045	16,964,637	17,450,000
City of Marysville EMS Levy	4,397,761	5,048,258	5,170,757	6,111,000
Fire District #12 EMS Levy	1,203,177	1,253,508	1,389,206	1,560,000
Excise Distributions	4,805	6,731	6,662	5,000
Ambulance Transport Revenue	2,130,124	2,565,748	2,706,671	2,800,000
GEMT Revenue	2,627,065	3,511,191	4,029,328	3,080,000
Bad Debt Recovery	26,033	18,611	21,082	20,000
Contract Revenue	700,456	741,035	770,331	778,286
Other Recurring Revenue	165,412	109,557	240,087	240,000
Recurring Revenue:	\$26,963,120	\$30,242,684	\$31,298,760	\$32,044,286
Grants	112,228	756,142	286,629	1,250
Non-Contract Service Fees	14,761	6,588	17,934	5,000
Donations	365	550	1,150	500
Miscellaneous	57,934	164,330	91,054	70,000
Investment Interest Income	120,915	170,488	367,974	171,000
Sale of Assets	7,500	5,750	0	0
Non-Recurring Revenue:	\$313,703	\$1,103,848	\$764,741	\$247,750
Total Combined Revenue:	\$27,276,823	\$31,346,532	\$32,063,501	\$32,292,036

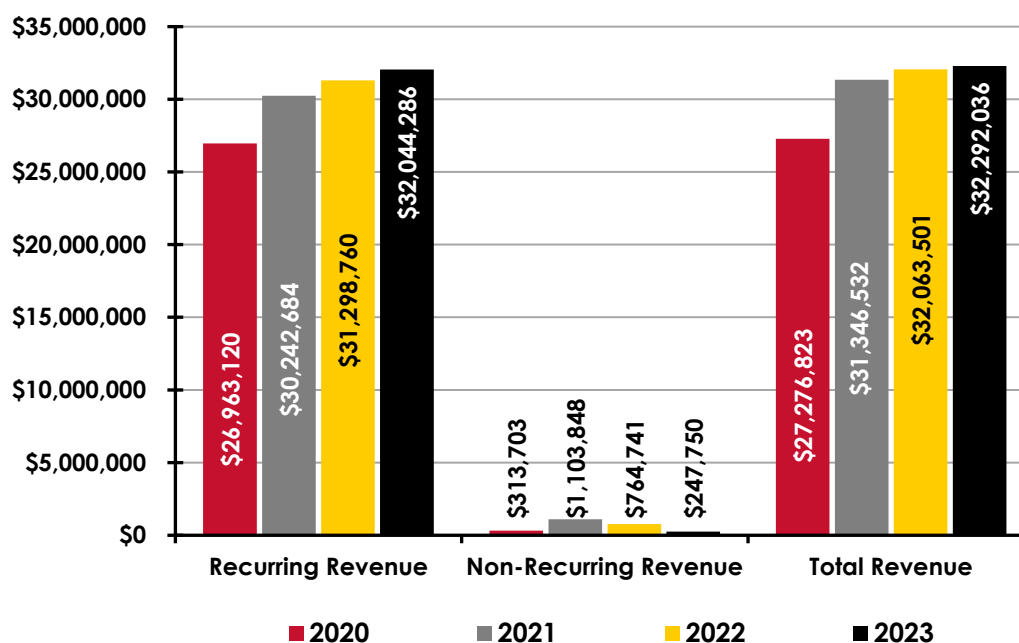
The MFD's total combined revenue has increased by \$5,015,213, from \$27,276,823 in FY 2020 to \$32,292,036 anticipated for FY 2023.⁷ This represents a 19.2% increase over the four-year review period since the Regional Fire Authority was formed. FY 2022 saw the largest year-over-year increase in revenue, primarily due to a sizable increase in "GEMT" revenue. GEMT revenue increased from \$3,511,191 in FY 2021 to \$4,029,328 in FY 2022, contributing to the overall revenue growth.⁸

While organizations must monitor and consider revenue derived from all sources for trend analysis, examining recurring revenues in relation to their ability to fund ongoing expenditures is instructive. MFD's recurring revenue has increased by \$5,081,166, nearly 19%, from \$26,963,120 in FY 2020 to \$32,292,036 projected in the FY 2023 budget.⁹ Except for GEMT revenue and bad debt recovery revenue sourced to the Capital/Reserve Fund, the Expense Fund generates nearly all the district's recurring revenue.

Property tax revenue and revenue derived from ambulance transportation are the largest contributors to MFD's recurring and total revenue, accounting for, on average, over 96% of the district's recurring revenue.

The following chart illustrates MFD's historical and anticipated revenue trends, separated between recurring and non-recurring revenue. As indicated, non-recurring revenue constitutes a minor portion of the district's total revenue, ranging between 1–3%.

Figure 20: Combined Fund Recurring vs. Non-Recurring Revenue



Tax Levy Revenue

The Marysville Fire District (MFD) primarily funds its operations through property tax levies. The district imposes a regular levy and, as of this report, two separate EMS levies, one each in the City of Marysville and Fire District #12. The county's responsibility for collecting property taxes falls on the county treasurer, acting on behalf of all tax-imposing entities.

These collections are disbursed periodically throughout the month and then reported at the end of each month. Since a lien attaches to the property at the point of tax imposition, any delinquent taxes are considered entirely recoverable. Historically, MFD has collected nearly 100% of the taxes levied.¹⁰

Levies imposed on the assessed value of properties within MFD's taxing jurisdiction are the largest single source of revenue for MFD's Expense Fund, historically accounting for nearly 87% of its total revenue and 86% of its recurring revenue.

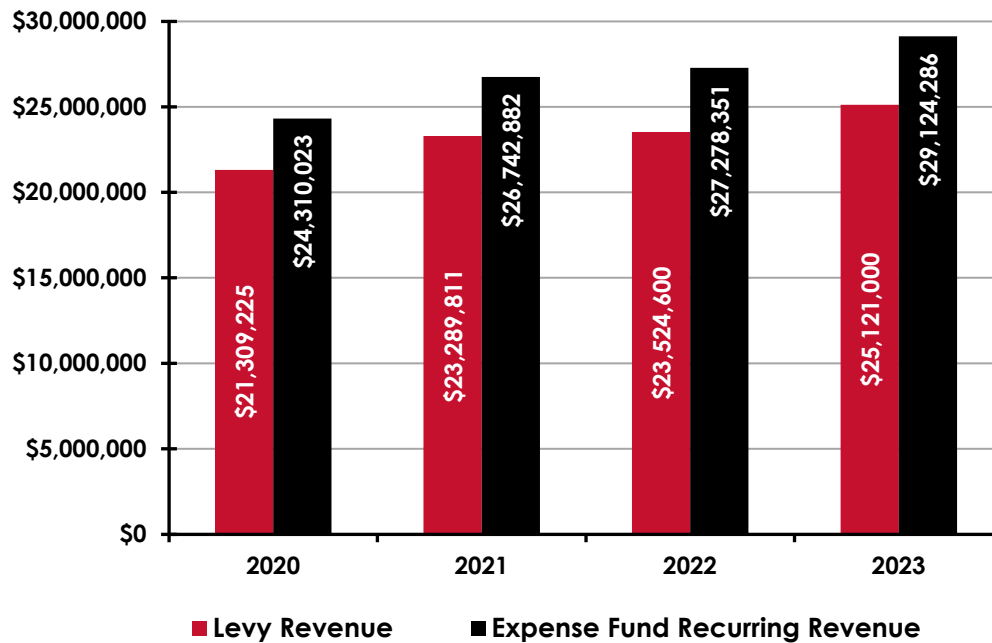
Property tax levy rates are expressed in dollars per \$1,000 of assessed value and are paid by homeowners and businesses based on the assessed valuation (AV) of their property as determined by the County Assessor. Regional Fire Authorities can collect a maximum of \$1.50 per \$1,000 through a regular levy. However, if a benefit charge is imposed (RCW 52.18), the collection of regular property taxes is limited to \$1.00 per \$1,000 of assessed valuation.¹¹ Currently, MFD does not impose a fire benefit charge.

The next figure offers an overview of the MFD Property Levy Revenue from FY 2020–FY 2023.

Figure 21: MFD Property Tax Levy Revenue

Levy Revenue	2020 Actual	2021 Actual	2022 Actual	2023 Budget
Regular Levy—MFD RFA	15,708,287	16,988,045	16,964,637	17,450,000
EMS Levy—Marysville	4,397,761	5,048,258	5,170,757	6,111,000
EMS Levy—Fire District #12	1,203,177	1,253,508	1,389,206	1,560,000
Total Levy Revenue:	\$21,309,225	\$23,289,811	\$23,524,600	\$25,121,000

To illustrate the importance of this recurring revenue source, the following figure shows the tax levy revenue compared to the Expense Fund's recurring revenue for FY 2020 to FY 2023.

Figure 22: Levy Revenue vs. Expense Fund Recurring Revenue

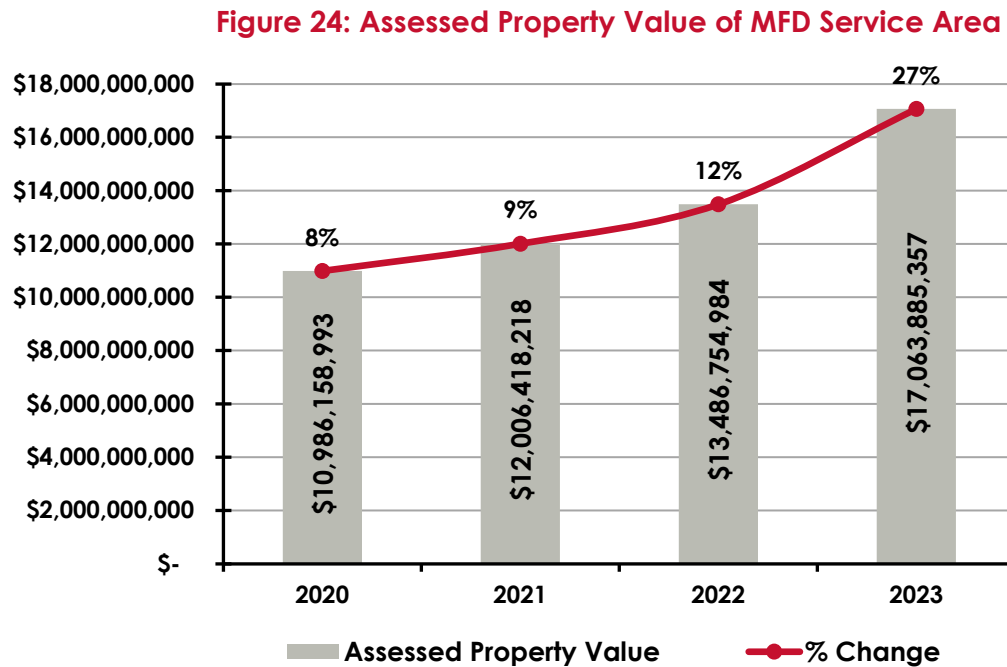
As indicated in the previous figures, MFD has seen a steady growth in tax revenue, largely driven by the 110% annual inflation escalator present on the current EMS levy lid lift and increases in the appraised value of new construction in the district's service area. A significant increase in total assessed property valuation occurred between FY 2022 and FY 2023, with AV increasing 27%, from \$13.5 billion to nearly \$17.1 billion. During this same period, property tax revenues have grown nearly 18%, or \$3,811,775, from \$21,309,225 to an anticipated \$25,121,000 in the current budget year.¹²

The basis for the property tax is the AV of the property within the MFD's jurisdiction using the rates detailed in the following figure.

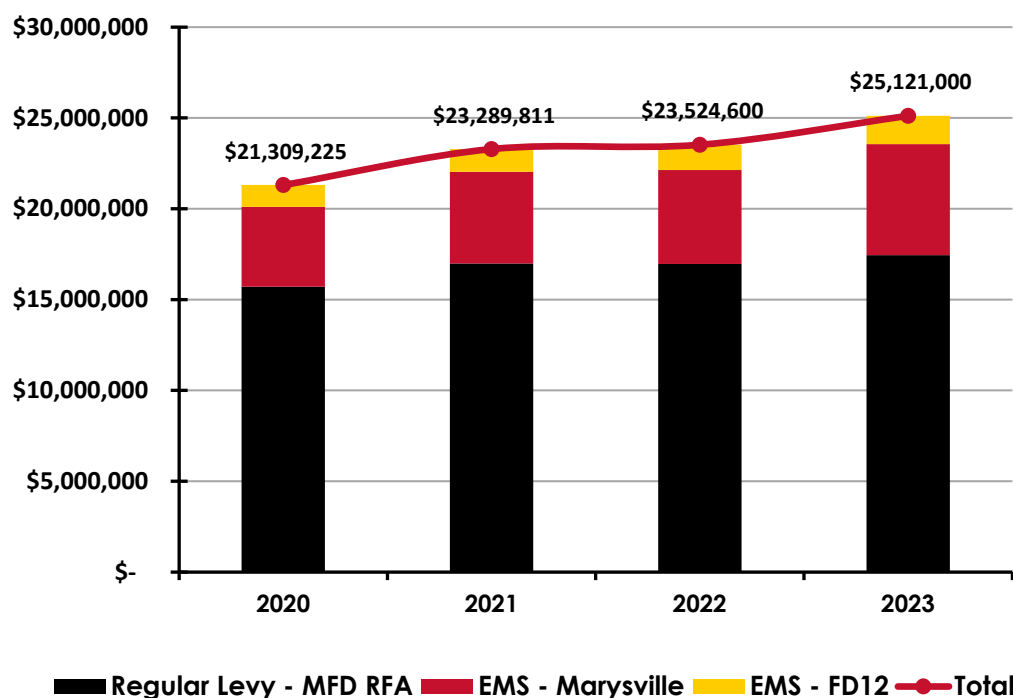
Figure 23: Levy Rates per \$1,000 of Assessed Value (AV) (FY 2020–FY 2023)

Levy Rates	2020 Actual	2021 Actual	2022 Actual	2023 Budget
Regular Levy—MFD RFA	\$1.45	\$1.38	\$1.26	\$1.02
EMS Levy—Marysville	\$0.50	\$0.50	\$0.50	\$0.45
EMS Levy—Fire District #12	\$0.50	\$0.50	\$0.50	\$0.45

Recent data from MFD reveals that since 2020, the assessed property values within the district's service area have surged by over \$6 billion.¹³ The following figure shows the trend of MFD's service area's total assessed property value by total value and annual change as a percentage.



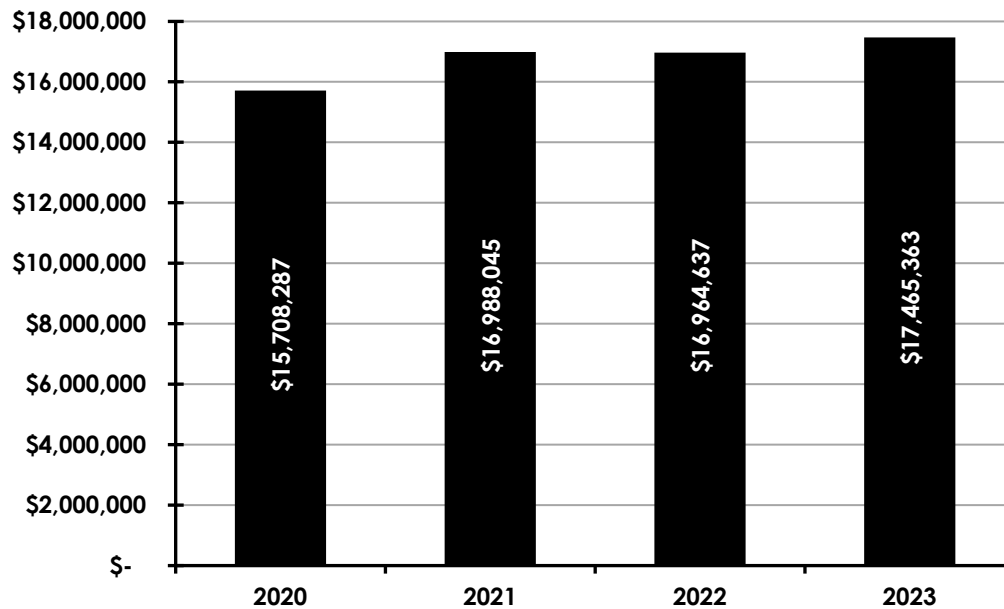
The following figure summarizes MFD's property tax revenue, distinguishing between the RFA Regular Levy and the separate EMS levies, each of which is shown.

Figure 25: MFD Tax Levy Revenue (FY 2020–FY 2023)

As the district continues to see new commercial and residential development, MFD will likely experience better than average assessed value growth, providing positive revenue enhancement opportunities in future levy measures.

MFD RFA Regular Levy

The MFD RFA regular levy began in 2020 upon the formation of the RFA at a rate of \$1.45 per thousand of assessed valuation.¹⁴ RFA Regular Levy revenue, the largest single source of recurring and total revenue, has increased \$1,741,713, or 11%, from \$15,708,287 in FY 2020 to an anticipated \$17,450,000 to be collected in FY 2023. This represents an average annual increase of about 3.6%.

Figure 26: MFD RFA Regular Levy Revenue

Despite this upward trend in total collections, the RFA Regular Levy rate has shown a downward progression due to the growth in assessed property valuations. The rate for FY 2023 has been adjusted to \$1.02 per \$1,000.¹⁵ The following figure summarizes the RFA Regular Levy rate for the four-year period of FY 2020 through FY 2023.

Figure 27: RFA Regular Levy Rates per \$1,000 of Assessed Value

MFD RFA Regular Levy Rates	2020 Actual	2021 Actual	2022 Actual	2023 Budget
Regular Levy—MFD RFA	\$1.45	\$1.38	\$1.26	\$1.02

MFD conservatively estimates a 3.5% decrease in the assessed value of property subject to the RFA Regular Levy in 2024, with a return to a 1% increase in 2025 and a steady 5% annual increase after that.

Although the RFA Regular Levy revenue is anticipated to withstand the projected property value deflation and maintain sufficient funding for MFD's current service levels, the district acknowledges the possible need for further action.

As part of its proactive financial strategy, the district is prepared to consider implementing a regular levy lid lift in FY 2024 or FY 2025 to ensure financial stability and the continuation of current service levels.

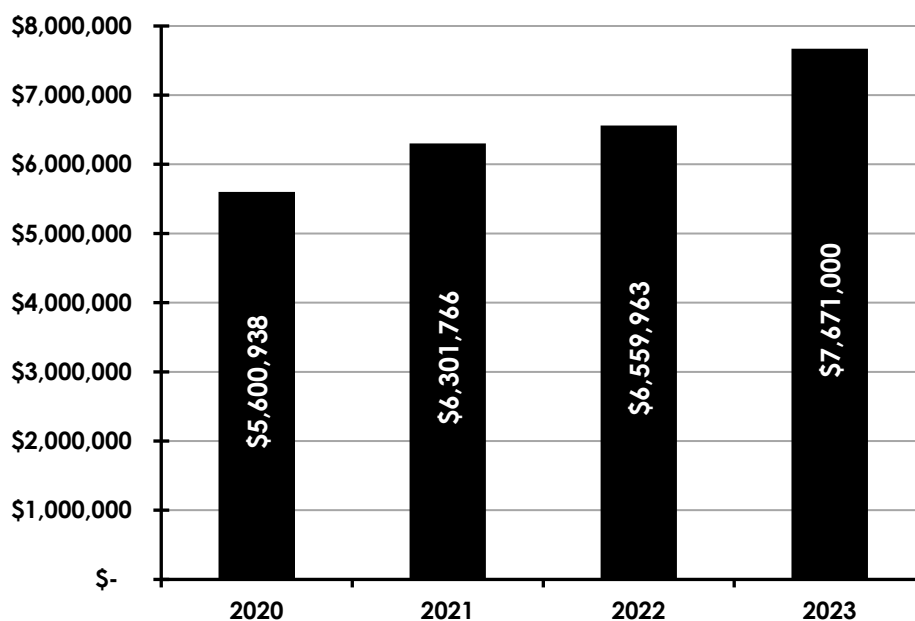
EMS Levy

In addition to the RFA Regular Levy, MFD derives recurring tax revenue via two separate EMS levies: one within the taxing boundaries of the City of Marysville and the other from the taxing boundaries of Fire District #12.

EMS levy tax revenue has increased by \$2,070,062, or 37%, from \$5,600,938 in FY 2020 to \$7,671,000 projected for FY 2023. Combined, the EMS levy tax revenue has contributed, on average, \$6.5 million to MFD's recurring revenue and has accounted for approximately 28% of total property tax revenue.

The following figure illustrates the trend of EMS levy tax revenue for the four-year period FY 2020 to FY 2023.

Figure 28: Combined EMS Levy Tax Revenue (FY 2020–FY 2023)



As indicated in the next figure, the EMS levy rate for both the City of Marysville and Fire District #12 has been maintained at a rate of \$0.50 per \$1,000 AV, except for the current 2023 budget year, where it was reduced to \$0.45 per \$1,000 due to increases in the assessed valuation of the property.

Maintaining the EMS levy rate at \$0.50 per \$1,000 AV for three of the four years this report covers has been possible due to a six-year temporary lid lift with a 110% inflation factor in place from 2018 through the end of 2023.¹⁶

Figure 29: EMS Levy Rates per \$1,000 of Assessed Value

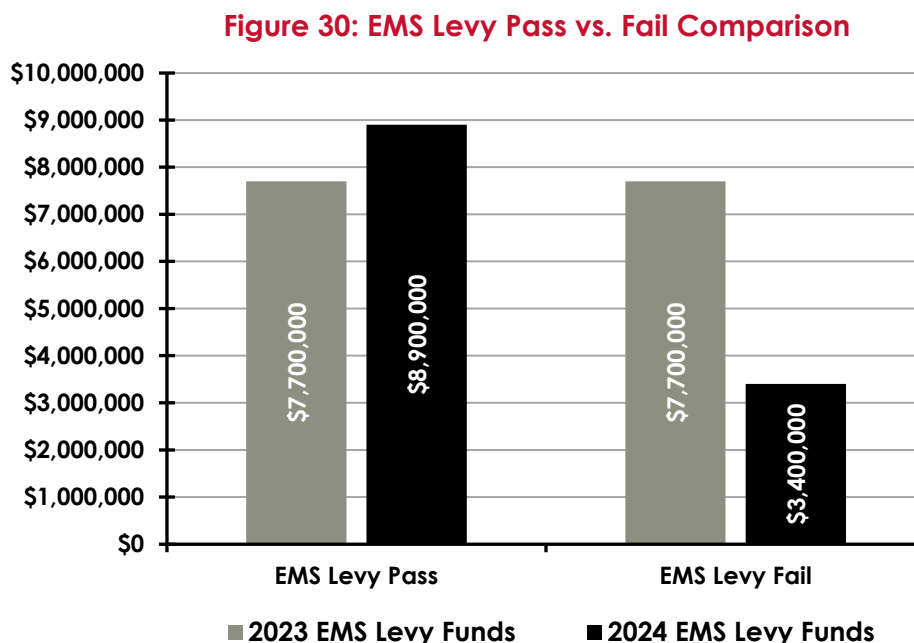
EMS Levy Rates	2020 Actual	2021 Actual	2022 Actual	2023 Budget
EMS Levy—Marysville	\$0.50	\$0.50	\$0.50	\$0.45
EMS Levy—Fire District #12	\$0.50	\$0.50	\$0.50	\$0.45

Due to high property value escalations, the EMS levy rate decreased to \$0.45 for the 2023 budget year. This temporary levy lid lift is set to expire by the end of 2023 and will revert to its former rate as if the 2018 lid lift had never been implemented, approximately \$0.23 per \$1,000 AV for 2024.

Fortunately, MFD put forth a successful ballot measure in August 2023 to consolidate these two separate EMS levies before the six-year lid lift expiration at the end of 2023. The result of the vote replaces these two separate EMS levies with a unified 10-year EMS levy set at an initial rate of \$0.50 per \$1,000 AV. This levy consolidation was part of the voter-approved Plan proposed by the City of Marysville and Fire District #12 that created the RFA in 2019.¹⁷

Had the measure to restore the EMS levy to \$0.50 per \$1,000 AV failed, the EMS levy revenue would have plummeted by 56%, dropping from an estimated \$7.7 million in 2023 to an estimated \$3.4 million in 2024. The successful passage, fortunately, is likely to increase the EMS levy revenue from \$7.7 million in 2023 to \$8.6 million in 2024.¹⁸

The following figure illustrates the impact of this ballot measure passing versus failure. However, due to a decrease in property value, the 2024 EMS Levy Funds may be closer to \$8.6 million instead of \$8.9 million.



Given its reliance on EMS levy tax revenue, the move to unify the EMS levies at \$0.50 per \$1,000 AV was essential for MFD's continued provision of EMS services at the current levels. Over the past five years, the district has experienced a 13% increase in call volume, with about 86% of district responses being EMS-related calls. Thus, approving this levy was crucial for the district to keep up with the growing demand for EMS services.

Leasehold/Excise Distributions

In addition to property tax revenue levied on the district's AV, MFD also generates a small amount of "tax" revenue from leasehold and timber excise distributions. Excise distributions have remained a minor source of revenues, typically averaging about \$6,000 per year. The next figure details the Excise Revenue for the four-year period of FY 2020–FY 2023.¹⁹

Figure 31: Excise Distributions Revenue

Leasehold/Excise Distributions	2020 Actual	2021 Actual	2022 Actual	2023 Budget
Excise Distributions	\$4,805	\$6,731	\$6,662	\$5,000

EMS & Ambulance Transport Revenue

Following property tax revenue, the revenue generated from ambulance transport and GEMT represent MFD's second-largest overall source of revenue stream. Inclusive of ambulance transport revenues, GEMT revenue, and bad debt recoveries, ambulance revenue increased by \$1,973,859, or 41%, from \$4,783,222 in FY 2020 to \$6,757,080 in FY 2022.²⁰ The FY 2023 budget takes a conservative approach, projecting \$5,900,000 in ambulance revenue in anticipation of a substantial decrease in GEMT revenue due to an expected change in the Centers for Medicare & Medicaid Services' "Time on Task" cost allocations applicable to the FY 2023 cost report.²¹

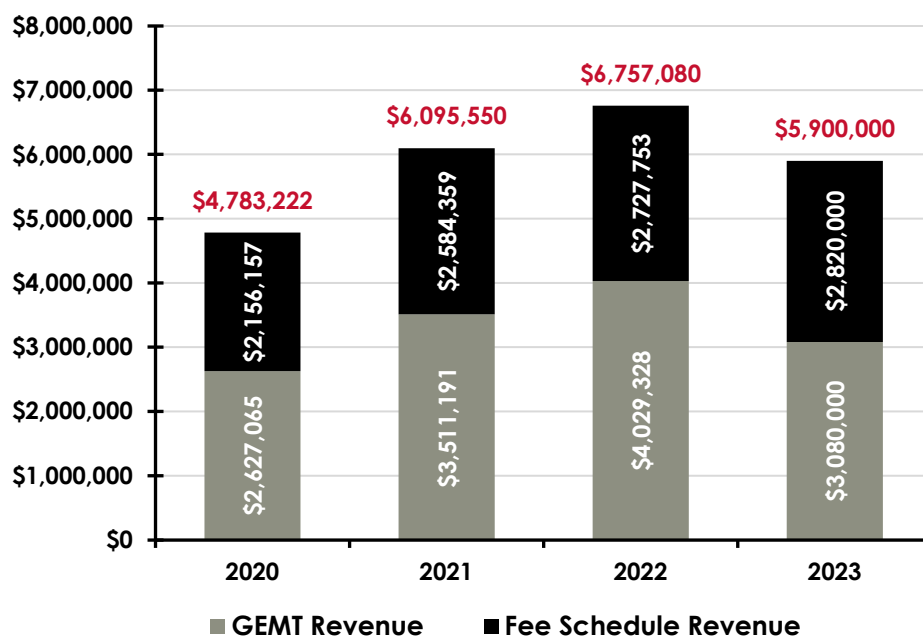
Increased EMS call volume, the revised ambulance transportation fee schedule, and prudent EMS billing practices have all contributed to increased billed and collected ambulance revenues. The following figure shows MFD's historical and anticipated ambulance billing revenue for FY 2020 through FY 2023.

Figure 32: MFD Ambulance Transport Revenue

Ambulance Transport Revenue	2020 Actual	2021 Actual	2022 Actual	2023 Budget
Ambulance Transport Revenue	2,130,124	2,565,748	2,706,671	2,800,000
GEMT—Expense Fund	—	30,000	30,000	180,000
GEMT—Capital/Reserve Fund	2,627,065	3,481,191	3,999,328	2,900,000
Bad Debt Recovery	26,033	18,611	21,082	20,000
Total Ambulance Revenue:	\$4,783,222	\$6,095,550	\$6,757,081	\$5,900,000

Most GEMT revenue is reported in the Capital/Reserve Fund except for a small amount sourced to the Expense Fund. Similarly, bad debt recovery is included in MFD's Capital/Reserve Fund.

The figure below visually represents MFD's ambulance revenue trends, distinguishing between regular ambulance transport and GEMT revenue. In this illustration, "Ambulance Revenue" encompasses MFD's fee schedule and revenue recovered from bad debts. Conversely, "GEMT Revenue" consolidates the Expense Fund's and the Capital/Reserve Fund's shares of GEMT revenues.

Figure 33: MFD Ambulance Transport Revenue

MFD outsources EMS billing to a third party, a common practice among many agencies due to the increasing complexity of billing for ambulance transportation. In addition to thoroughly understanding increasingly complex medical billing rules and laws, third-party billing companies receive their payment as a percentage of revenue collected or on a fee-per-transport billed basis. MFD pays its third-party billing company, Systems Designs®, \$24.50 per transport billed.²²

MFD utilizes a tiered billing approach, determining fees based on the nature of the transport—either BLS or ALS—and the patient’s residential status within the district. Specifically, district residents are subjected to base fees ranging from \$840 for BLS transports to \$1,250 for ALS-2 transports, with non-residents incurring elevated rates.

Additionally, patients are billed a mileage fee relative to the distance covered to the hospital. MFD is proactive in ensuring bill settlements for transportation services provided. In situations where a bill remains unpaid for a duration exceeding 120 days, the responsibility of retrieval is transferred to a collection agency, Sentry Credit. If the collection agency can collect bad debt, MFD receives 75% of the collection, which is sourced to the Expense Fund.²³

The following figure reflects MFD's most recent ambulance billing rates for 2023.²⁴

Figure 34: MFD Ambulance Billing Rates (2023)

EMS Transport Rates	In-District	Out-of-District
Basic Life Support	\$840	\$945
Advanced Life Support-1	\$1,125	\$1,235
Advanced Life Support-2	\$1,250	\$1,360
Base Rate Mileage	\$21.90/mile	\$24.05/mile

MFD reviews ambulance billing rates annually. On January 1, the billing rates for all service levels and base rate mileage underwent an inflation adjustment based on the Seattle-Tacoma-Bellevue Consumer Price Index (CPI) for Urban Wage Earners and Clerical Workers (CPI-W). The adjustment is determined by comparing the CPI-W for the current year's first half to the previous year's first half. If the CPI-W falls below zero, the fee schedule remains unchanged from the previous year.

For ambulance fee billing and revenue recovery, it is prudent to consider the payer mix. The payer mix is important as it is also an indicator of the likelihood of fee collection and broadly represents the total percentage of revenue sourced from each payer mix category.

The term "payor mix" delineates the proportionate distribution of claims originating from EMS transport incidents, segmented according to the primary insurance payer categories. This mix customarily encompasses Medicare, Medicaid, commercial insurance, and direct patient/self-pay. A brief description of each category and the associated population typically covered by each category:

- **Medicare** is the primary healthcare coverage for persons over the age of 65.
- **Medicaid** is a component of the federal Medicaid program and is provided for specific qualified individuals and families (primarily low-income relative to the federal poverty level).
- **Commercial Insurance**—provided by employers to their employees or purchased independently.
- **Private Pay**—which is the term generally applied to those without insurance.

The next figure details MFD's recently available ambulance billing payor mix for FY 2022.²⁵

Figure 35: MFD EMS Payor Mix (Year-End 2022)

Payor	Percentage ^A
Medicare	51%
Medicaid	25%
Private Pay	3%
Insurance	20%
Total:	99%

^A Rounded to the nearest integer

Contract Revenue

MFD also derives a portion of its recurring revenue from interlocal agreements with neighboring agencies and governments. On average, contract revenue has remained relatively stable, accounting for approximately 28% of the combined funds' recurring revenue.

This revenue source increased \$69,875, about 10%, from \$700,456 in FY 2020 to \$770,331 at the end of FY 2022.²⁶ MFD's FY 2023 adopted budget originally projected \$778,286 to be collected in FY 2023; however, this amount will likely be reduced due to an agency that MFD contracts to provide their own ALS transport services.

Figure 36: MFD Contract Revenue Summary

Contract Revenue	2020 Actual	2021 Actual	2022 Actual	2023 Budget
Quil Ceda Village Contract	592,125	609,889	634,285	653,313
Tulalip Tribes Contract	12,593	13,206	13,849	14,523
District #15 ALS/BC Service	69,811	87,248	100,584	90,000 ^A
BC Service Contract	5,902	10,799	1,432	—
OSPI Public Schools	14,945	14,771	14,843	14,500
Sno-Isle Library	5,081	5,122	5,339	5,950
Total Contract Revenue:	\$700,457	\$741,035	\$770,332	\$778,286

^A Likely to be reduced due to Fire District #15 adding its ambulance for ALS transport

The most significant component of the contract revenues is derived from an interlocal agreement between Marysville Fire District and Quil Ceda Village. The agreement between MFD and Quil Ceda Village has historically generated, on average, approximately \$622,000 per year over the four-year study period of FY 2020 to FY 2023. While the FY 2023 adopted budget originally projected \$653,313 to be received from the Quilceda Village agreement, actual revenue will likely exceed the budgeted amount.

This contract will expire at the end of 2023; the district plans to offset the 2024 revenue loss of this contract with GEMT revenues currently being assigned to the Capital/Reserve Fund. Long-term financial mitigation must be built into future levy lid lifts.

Other Recurring Revenue

The district generates a small amount of recurring revenue from rental and investment interest income sourced to the Expense Fund. While MFD's various capital funds also receive investment interest income, Triton has classified this as non-recurring as it has been historically variable and is not immediately available to meet MFD's day-to-day operational expenses.

Figure 37: MFD Other Recurring Revenue Summary

Other Recurring Revenue	2020 Actual	2021 Actual	2022 Actual	2023 Budget
Investment Interest Income	151,933	94,557	226,337	225,000
Rental Income	13,479	15,000	13,750	15,000
Other Recurring Revenue:	\$165,412	\$109,557	\$240,087	\$240,000

Non-Recurring Revenue

The district has structured its finances to support ongoing operations primarily through consistent revenue streams, specifically property tax and ambulance revenue. However, it also benefits from intermittent influxes of non-recurring revenue to supplement its requirements.

As previously mentioned, non-recurring revenues, such as debt proceeds, one-time grant awards, or proceeds from the disposal of assets, may not occur annually or are not easily quantifiable.

The following figure summarizes MFD's non-recurring revenue from all funds for FY 2020 through FY 2023.

Figure 38: Combined Funds Non-Recurring Revenue

Non-Recurring Revenue	2020 Actual	2021 Actual	2022 Actual	2023 Budget
Grants	112,228	756,142	286,629	1,250
Non-Contract Service Fees	14,761	6,588	17,934	5,000
Donations	365	550	1,150	500
Miscellaneous	57,934	164,330	91,054	70,000
Investment Interest Income	120,915	170,488	367,974	171,000
Sale of Assets	7,500	5,750	—	—
Non-Recurring Revenue:	\$313,703	\$1,103,848	\$764,741	\$247,750

Expenses

Like revenue, Triton classifies expenditures as either recurring or non-recurring. Recurring expenses can be reasonably anticipated annually and are generally quantifiable. MFD's recurring expenses include personnel, services, and operating commodities/supplies. Non-recurring expenses may not occur annually or are not easily quantifiable.

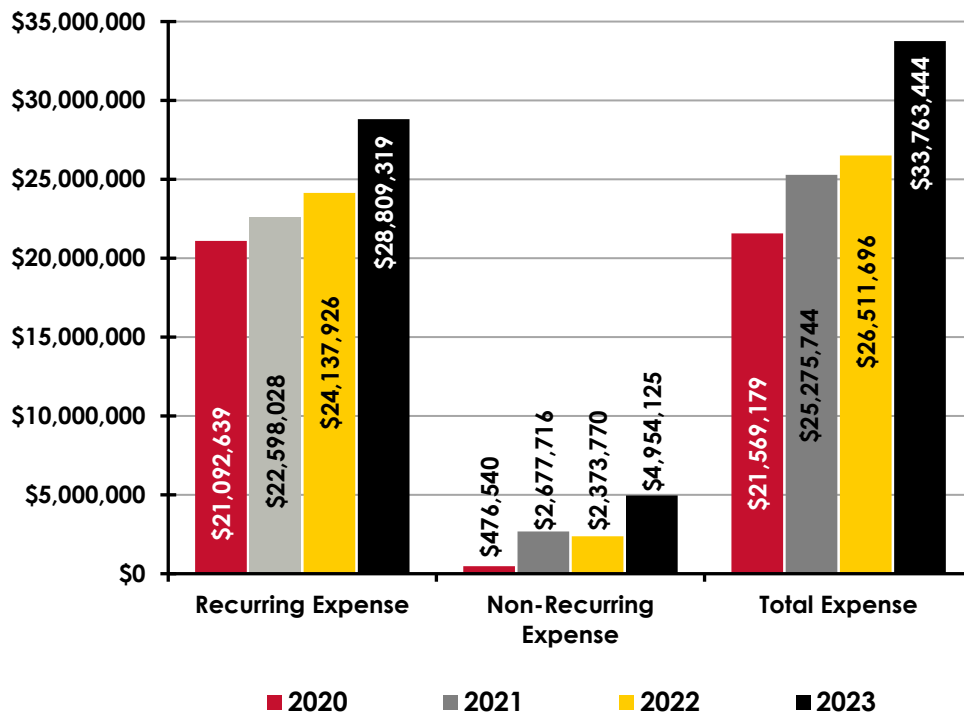
Examples of non-recurring expenses include capital outlay and equipment purchases, non-capitalized equipment purchases, and other minor expenses that are not considered ongoing and are easily predictable. Although MFD has identified the need and approximate timing of various capital outlays, Triton classifies these outlays as "non-recurring" since the amounts and timing of these outlays are historically variable and can be delayed if needed.

The following figure is a consolidation of MFD's four funds. As mentioned, all recurring expenses are provided by the district's Expense Fund and largely represent MFD's operating expenses. Interfund transfers are excluded from consideration, as the net effect of the transfers is canceled out between funds.

Figure 39: MFD Historical Combined Fund Expense Summary

Combined Expenses	2020 Actual	2021 Actual	2022 Actual	2023 Budget
Personnel	18,303,529	19,742,956	21,066,269	24,782,830
Services	2,168,414	2,164,765	2,287,096	3,068,839
Materials & Supplies	620,697	690,307	784,561	957,650
Recurring Expense:	\$21,092,640	\$22,598,028	\$24,137,926	\$28,809,319
Expense Fund Non-Recurring	335,963	132,042	280,583	358,825
Apparatus Fund Expense	8,465	166,200	326,259	2,264,050
Capital/Reserve Fund Expense	132,112	\$2,379,474	1,766,865	2,331,000
Equipment Fund Expense	—	—	63	250
Non-Recurring Expense:	476,540	2,677,716	2,373,770	4,954,125
Total Combined Expense:	\$21,569,180	\$25,275,744	\$26,511,696	\$33,763,444

The following figure illustrates MFD's combined expenses from all funds between recurring and non-recurring.

Figure 40: Total Recurring vs. Non-Recurring Expenses

As indicated in the preceding figures, non-recurring expenses have varied over the four-year study period and largely reflect large capital outlays. The most significant year-over-year increase in non-recurring expenses is budgeted to occur in the current year. This is largely due to the district's final installment payment on the Public Safety Building, remodeling costs, and the purchase of an aerial apparatus.²⁷

While it is important to monitor and evaluate outflows across an organization, for the purposes of this study, it is most instructive to analyze recurring expenses. Recurring expenses reflect the district's operating budget and are vital for day-to-day operations. The following section considers MFD's recurring or operating expenses. For this analysis, the Expense Fund shoulders all the district's operating costs.

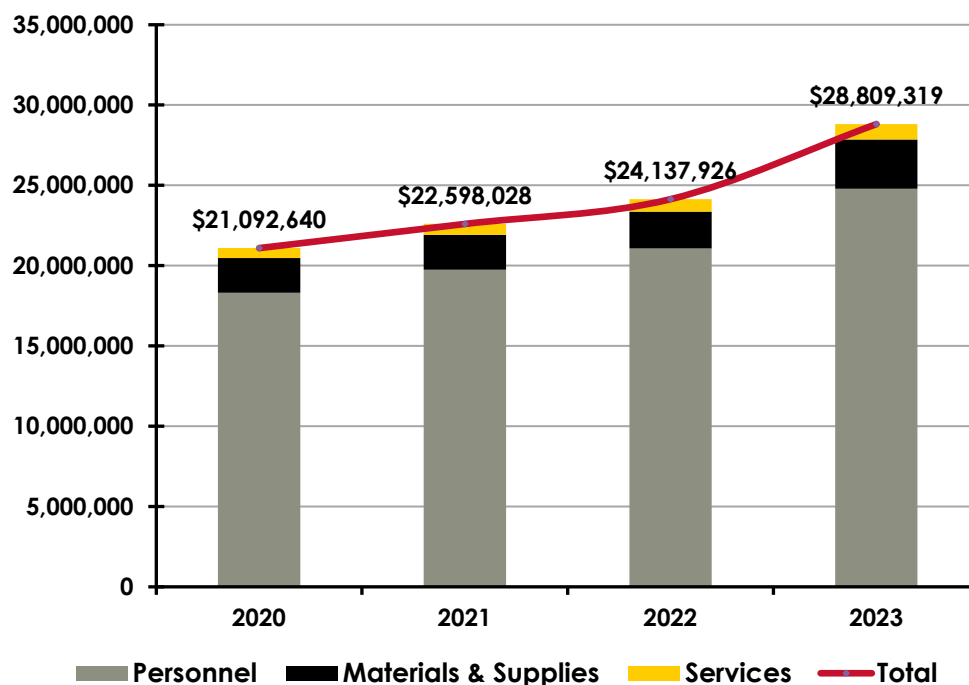
These expenses are divided into three main categories: Personnel, Services, and Materials & Supplies. A concise overview of these recurring expense categories follows. Additional consideration for non-recurring and capital expenditures is given in a later section.

- **Personnel** comprises salaries, wages, and employee-related benefits, such as health insurance, payroll taxes, and retirement. In addition, "other personnel" includes various other personnel-related costs, such as uniforms, physicals, and employee appreciation.
- **Materials and Supplies** include various operating expenses such as fuel, medical supplies, training materials, and non-capital equipment.
- **Services** include expenses for travel, dispatch services, IT expenses, legal services, and administrative support services.

Recurring expenses have increased to slightly over 26%, or \$7,716,680, from \$21,092,639 in FY 2020 to an anticipated \$28,809,319 budgeted in FY 2023. As expected, with a growing organization shouldering an increasing service demand, nearly \$6.5 million of the \$7.7 million increase in recurring expenses has been due to increased personnel expenses.²⁸

The following figure illustrates the trend of MFD's recurring expenses broken out between personnel, materials and supplies, and services for the four-year period of FY 2020–FY 2023.

Figure 41: MFD Recurring Expenses by Type



The following figure reflects recurring expenses by division and provides a helpful understanding of how MFD's resources have historically been allocated. A brief description of each division and typical costs associated with each division precede this figure.²⁹

- Government Services Division:** This division supports the activities of the Board of Directors and shoulders other general government expenses. Among these are Law Enforcement Officers' & Fire Fighters' Retirement System (LEOFF) 1 retiree insurance premiums, state audit fees, tax services, election costs, and refunds related to overpayment of property taxes or ambulance fees.
- Administration Division:** Handling the daily affairs of the district, the Administration Division ensures service delivery in line with the Board's directives. Its expenditures comprise salaries, professional services, human resources, office supplies, insurance premiums, and universally applicable benefits such as Social Security/Medicare and life insurance.

- **Operations Division:** As the hub of core district activities, including fire suppression and EMS, the Operations Division's expenses cover personnel costs, equipment, ambulance billing, medical program services, and the maintenance of tools and equipment vital for delivering emergency services.
- **Fire Prevention & Public Relations Division:** A dual-role division, it emphasizes both fire prevention and public outreach. Costs here include personnel, supplies for public education, fire prevention tools, and communication-related expenses, from printed newsletters to digital outreach.
- **Training, Health & Safety Division:** This division is responsible for MFD's training and wellness activities. Typical expenses include training materials, outside class fees, paramedic school, health tests, safety gear, and overall wellness resources.
- **Support Services Division:** The Support Services Division handles the operation and maintenance of the district's five fire stations, administrative building, shop and storage facilities, and apparatus. Its expenditures encompass staff salaries and benefits, supplies, tools, equipment, utilities, dispatch services, communications equipment, software and licensing, network systems, capital leases of office equipment, and computer hardware.

Figure 42: Recurring Expenses by Division

Expense by Division	2020 Actual	2021 Actual	2022 Actual	2023 Budget
Government Services	153,680	221,825	199,933	392,625
Administration	2,230,620	2,195,422	2,328,842	2,656,843
Operations	15,297,527	16,547,515	17,653,466	21,029,962
Prevention & Public Relations	752,142	849,027	917,974	996,975
Training, Health & Safety	391,275	522,832	549,477	816,239
Support Services	2,267,395	2,261,407	2,488,234	2,916,675
Recurring Expenses:	\$21,092,639	\$22,598,028	\$24,137,926	\$28,809,319

Personnel

Typical of most public safety agencies, personnel-related expenditures account for the largest portion of MFD's recurring and total expenses. These expenses include salary, wages, benefit and retirement costs, overtime, and workers' compensation. Historically, personnel-related expenses account for approximately 87% of recurring expenditures for FY 2020–FY 2023.³⁰

Personnel costs are expected to total \$24,782,830 for the FY 2023 budget year, an increase of \$3,716,561 from FY 2022.³¹ Expenses are broken out between wages and benefits and other personnel-related costs in the following figure.

Figure 43: Personnel Expense Summary

Personnel Expense	2020 Actual	2021 Actual	2022 Actual	2023 Budget
Wages & Benefits	17,967,078	19,506,560	20,804,135	24,356,010
Other Personnel	336,451	236,396	262,134	426,820
Total Personnel Expense:	\$18,303,529	\$19,742,956	\$21,066,269	\$24,782,830

Wages & Benefits

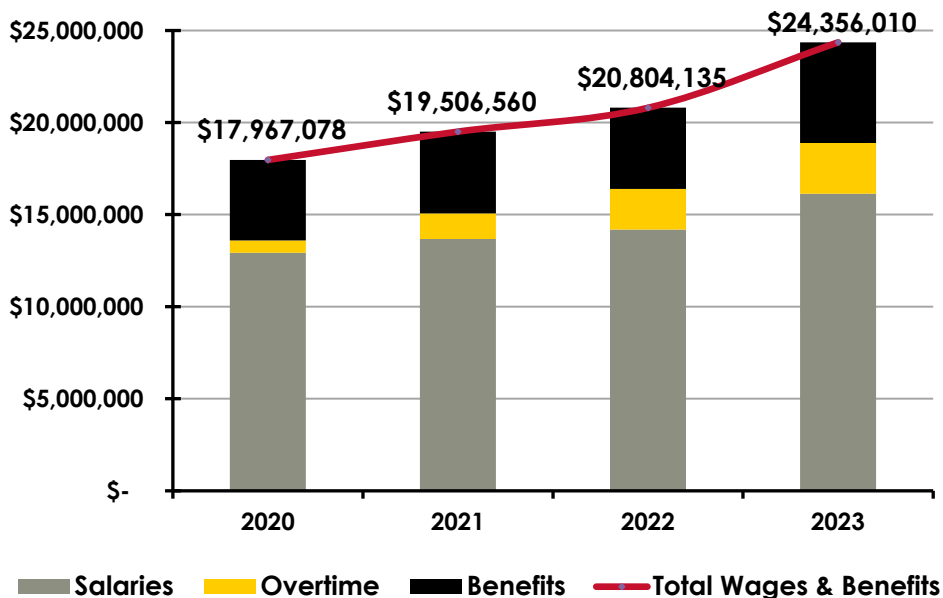
Salaries, wages, overtime, taxes, and benefits constitute most personnel-related costs. As a service organization, wages and benefits are—and will continue to be—MFD's most considerable operational expense. Historically, wages and benefits account for approximately 98.5% of personnel-related expenses and nearly 86% of recurring expenses between FY 2020 and FY 2023.

Figure 44: Wages & Benefits Expense Summary

Wages & Benefits	2020 Actual	2021 Actual	2022 Actual	2023 Budget
Salaries	12,922,347	13,673,098	14,182,141	16,133,195
Overtime	668,809	1,386,554	2,208,892	2,755,500
Taxes & Benefits	4,375,922	4,446,908	4,413,103	5,467,315
Total Wages & Benefits:	\$17,967,078	\$19,506,560	\$20,804,135	\$24,356,010

As MFD has added employees, wages and benefits have increased by \$6,388,932, or 35.6%, between FY 2020 and FY 2023. This increase has been driven by a \$3,210,848 increase in salaries, a \$2,086,691 increase in overtime, and a \$1,090,393 increase in benefits. Over this same period, the average cost of wages and benefits per employee has increased by 22.8% or \$35,393 per employee. The following figure illustrates this trend.

Figure 45: MFD Wages & Benefits



Proportionally, benefit expenses have been relatively stable, constituting approximately 22.7% of wages and benefits. Overtime has been the most variable component, ranging from 3.7% in FY 2020 to 11.3% anticipated for FY 2023.

This trend is expected with the transition to a full-time career district and the elimination of part-time positions. Proportionally, salaries and wages have experienced a downward trend, possibly due to part-time being replaced with full-time and those costs shifting to overtime costs.

The Operations Division, as expected, has seen the most significant increase in wages and benefits over the study period, responsible for \$5.4 million of the nearly \$6.4 million increase. Fire Suppression has increased by over \$4.0 million, or 40%, and the EMS Division has increased by nearly \$1.4 million, or 32%. This trend will likely continue, especially as the district plans to introduce a Peak Activity Unit (PAU) in 2024.

The following figure summarizes the trend of salaries and wages by division for FY 2020 to FY 2023.³² Note that the following figure separates the Operations Division between Suppression and EMS.

Figure 46: Wages & Benefits by Division

Wages & Benefits	2020 Actual	2021 Actual	2022 Actual	2023 Budget
Government Services	109,504	139,031	98,456	132,000
Administration	1,936,701	1,910,367	1,979,901	2,155,875
Fire Suppression	10,216,392	11,319,385	12,078,209	14,278,210
EMS	4,254,912	4,465,648	4,716,257	5,617,300
Prevention & Public Relations	726,804	816,122	865,470	897,475
Training, Health & Safety	252,735	385,540	427,437	410,350
Support Services	470,030	470,467	638,406	864,800
Wages & Benefits:	\$17,967,078	\$19,506,560	\$20,804,136	\$24,356,010

Employees of the Marysville Fire District are registered with the Washington State Department of Retirement Systems and do not contribute to the Social Security system. Moreover, the fire district provides an added incentive by matching contributions up to a maximum of 4% of an employee's base monthly wage, which can be allocated to any of the three deferred compensation plans offered by the district.

The Marysville Fire District offers its employees medical, dental, and vision insurance coverage through the Washington Fire Commissioners Association. The district generously covers 100% of the employee's medical and dental insurance premiums and 90% of these premiums for their dependents.

Employees are also entitled to vacation leave, which they can accumulate up to 500 hours. They receive compensation for unused vacation time upon retirement or voluntary separation. Sick leave allowances differ based on work schedules: 1,040 hours for those on a 40-hour week and 1,440 hours for those working 24-hour shifts. Compensation for unused sick leave upon separation or retirement is determined by a percentage linked to their years of service.

Lastly, the district has a provision for a Cost-of-Living Adjustment (COLA). Effective January 1 each year, the base wage is adjusted in line with 100% of the Seattle/Tacoma/Bremerton CPI-W index, as the Bureau of Labor Statistics reported. This adjustment ensures that the increase is no less than 1% but does not exceed 4%. It is anticipated that both uniformed and non-uniformed personnel will receive the full 4% increase in the upcoming FY 2024 budget year.³³

Other Personnel Expense

Other personnel-related expenses are those related to personnel but not included in wages and benefits. These expenses include personal protective equipment (PPE), uniforms, tuition reimbursement, and employee physicals. These other personnel expenses have varied over the four-year review period but have averaged about 1.5% of total personnel expenses. The next table summarizes other personnel-related expenses.

Figure 47: Other Personnel Expense Summary

Other Personnel Exp	2020 Actual	2021 Actual	2022 Actual	2023 Budget
Uniforms & PPE	283,677	178,298	228,770	327,500
Other	52,774	58,098	33,364	99,320
Total Other Personnel:	\$336,451	\$236,396	\$262,134	\$426,820

Services Expense

Following personnel expenses, services expenses account for the second most significant component of MFD's recurring operating expenses. Service expenses include liability insurance, travel expenses, maintenance and repair, service contracts, utilities, etc., which are not considered capital items. Historically, this expense category has accounted for approximately 10% of MFD's recurring expenses.

Figure 48: Services Expense Summary

Services Expense	2020 Actual	2021 Actual	2022 Actual	2023 Budget
Services Expense	\$2,168,414	\$2,164,765	\$2,287,096	\$3,068,839

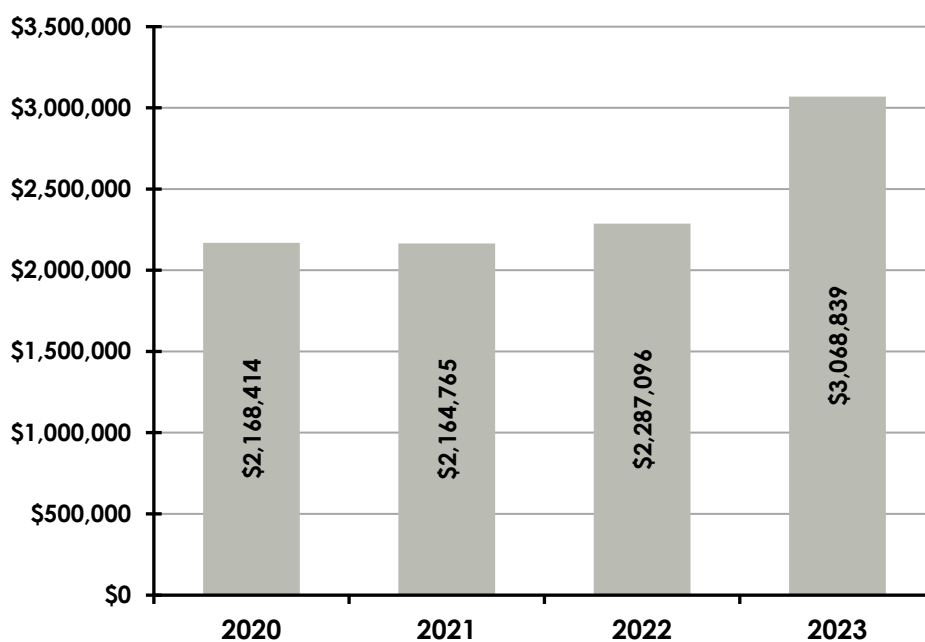
Services expenses have remained relatively stable, increasing \$118,682, or about 5.5%, from FY 2020 through the end of FY 2022. FY 2023's adopted budget anticipates the largest single year-over-year increase of \$781,743, from \$2,287,096 in FY 2022 to \$3,068,839 budgeted in FY 2023.³⁴

The increase budgeted for FY 2023 includes \$100,000 for election costs related to the August 2023 EMS levy election. Historically, election costs have averaged about \$5,000. Other items contributing to the anticipated FY 2023 increase include an increase in consulting services, liability insurance, and the training consortium program. All other service-related expenses have remained relatively stable.

Significant year-to-year service expenses include SNOCO911 dispatch services, computer licensing, ambulance billing services, facilities and vehicle repair/maintenance, and various legal and administrative services.

The next figure shows MFD's FY 2020–FY 2023 service expenses.

Figure 49: Service Expenses



Materials & Supplies Expense

Materials and supplies represent the smallest recurring expense for the district. Although the district is likely to underspend a portion of the amount budgeted for the current FY 2023 budget year, materials and supplies expense has grown by 54%, or \$336,953, from \$620,697 in FY 2020 to a budgeted \$957,650 in FY 2023.³⁵

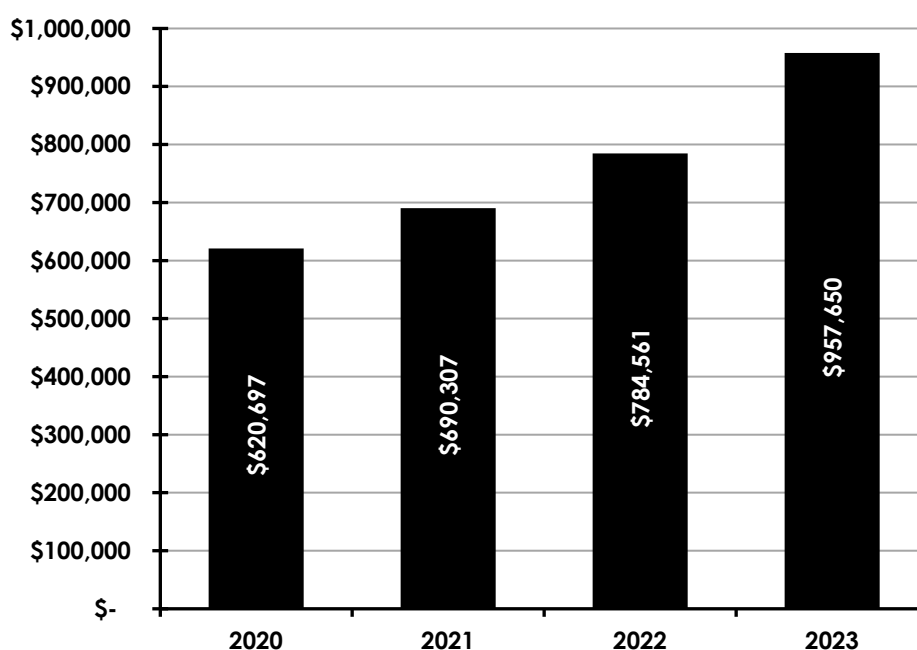
Figure 50: Materials & Supplies Expense Summary

Supplies Expense	2020 Actual	2021 Actual	2022 Actual	2023 Budget
Materials & Supplies Expense	\$620,697	\$690,307	\$784,561	\$957,650

The predominant expenses within the “materials and supplies” category are medical supplies and vehicle shop operating supplies, coupled with other vehicle maintenance costs. The district has effectively managed these expenses, consistently spending below the appropriated budget.

The following figure summarizes MFD’s materials and supplies expenses for the four-year period of FY 2020 to FY 2023.

Figure 51: Materials & Supplies Expenses



Expense Fund Capital & Non-Recurring Expenses

This section briefly reviews the Expense Fund's capital and other non-recurring expenses. Consideration of capital outlays and procurements made by MFD's three capital funds are given in the following sections.

Excluding interfund transfers to the capital accounts, the Expense Fund occasionally has one-time expenses and capital outlays for special projects and special procurements identified during the budgeting process that are not otherwise included in one of the district's three capital accounts. These outlays are typically less than \$100,000 and include special tools, facility repair/maintenance, telecommunications, or security upgrades. These expenses are highly variable each year.

Expense Fund Recurring Revenues versus Recurring Expenses

The distinction between a balanced budget and a structurally sound budget is important. A budget that may fit the statutory definition of a "balanced budget" may not be financially sustainable. For example, a budget balanced by such standards could include non-recurring resources, such as asset sales or reserves, to fund ongoing expenditures and thus not be in structural balance.

This is often seen when an organization experiences revenue declines during a recession and may need to spend more than it takes, using reserves and other one-time measures to make up the difference. To offset that, entities should typically collect more revenue than they spend during periods of economic growth.

Local governments must assess their ability to continue providing their core services in a financially responsible manner. While certainly not always the case, best practice recommends that governmental entities use recurring revenues to meet recurring obligations to ensure long-term fiscal success.

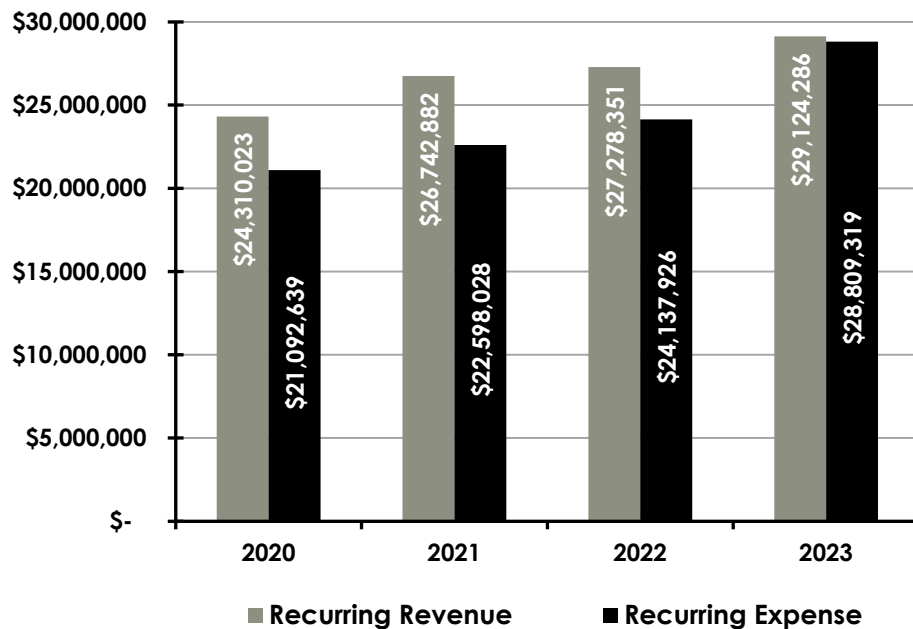
One method to assess structural balance is to compare the trend of recurring revenues to recurring expenses. The current FY 2023 budget year exemplifies this concept. While total expenses surpass total revenues, recurring revenues exceed recurring expenses. The escalation in total expenses over revenues is attributed to an anticipated capital expenditure of \$4,595,050, earmarked for items like a ladder truck and PSB-related costs. MFD has built reserves for these outflows through conservative budgeting practices.

The following image represents the MFD's recurring revenues compared to its recurring expenses for FY 2020 to FY 2023.

Figure 52: Expense Fund Recurring Revenue vs. Recurring Expense

Expense Fund	2020 Actual	2021 Actual	2022 Actual	2023 Budget
Recurring Revenue	24,310,023	26,742,882	27,278,351	29,124,286
Recurring Expense	21,092,639	22,598,028	24,137,926	28,809,319
Revenue Over (Under) Expense:	\$3,217,384	\$4,144,854	\$3,140,425	\$314,967

Figure 53: Expense Fund Recurring Revenue vs. Recurring Expense



As indicated, Expense Fund recurring revenues have historically exceeded recurring expenses. Given preliminary indications, it is likely that recurring revenues in the current biennia will likely outperform the conservative projections used during the budgeting process. Over the four-year assessment period, the Expense Fund's ending balance has remained healthy, totaling \$13,586,833 as of December 31, 2022.³⁶

Capital Funds

Capital assets are generally used to describe those used in operations and have initial useful lives extending beyond a single reporting period. Capital assets include major government facilities, infrastructure, equipment, and networks that enable the delivery of services. The performance and continued use of these capital assets are essential to the health, safety, economic development, and quality of life of those receiving services.

While MFD does not currently maintain a formal capital improvement/replacement plan, it has done an excellent job identifying future capital needs and has accumulated sizable reserves to help fund such needs. MFD maintains three capital funds to accumulate reserves and fund large ticket items. A summary of each of these three funds is provided below.

Apparatus Fund

The primary role of the Apparatus Fund is to gather and allocate resources for apparatus acquisition. An apparatus replacement schedule is updated annually to guarantee ample procurement resources or consider debt planning. The principal revenue source for this fund comes from interfund transfers originating from the Expense Fund and a small amount of investment interest income.

Figure 54: MFD Apparatus Fund

Apparatus Fund	2020 Actual	2021 Actual	2022 Actual	2023 Budget
Beginning Fund Balance:	\$25,120	\$724,643	\$1,972,219	\$2,379,136
Transfer-In	700,000	1,400,000	700,000	200,000
Investment Interest Income	489	8,026	33,176	40,000
Sale of Assets	7,500	5,750	—	—
Available Resources:	\$733,109	\$2,138,419	\$2,705,395	\$2,619,136
Ladder Truck	—	—	—	1,788,000
Snohomish County-Invest Fees	79	439	711	1,050
Ambulance/Remounts	—	49,142	234,875	320,000
Staff Vehicles	—	116,619	70,367	155,000
Other Apparatus	8,386	—	20,306	—
Apparatus Fund Expense:	\$8,465	\$166,200	\$326,259	\$2,264,050
Ending Fund Balance:	\$724,644	\$1,972,219	\$2,379,136	\$355,086

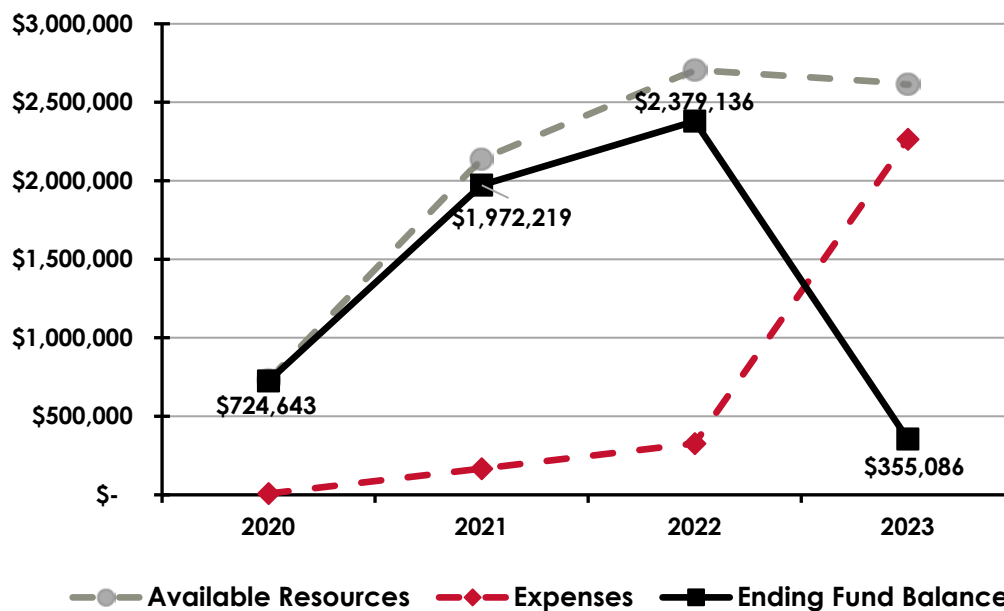
MFD has acknowledged the impending need to replace or add multiple vehicles and apparatus soon. It is projected that the Apparatus Fund will either fully cover the costs or significantly subsidize the financing of these replacements. The following figure provides a detailed summary of the expected apparatus and vehicles set for replacement.

Figure 55: MFD Future Apparatus Replacement

Apparatus	2024	2025	2026	2027	2028	TOTALS
Ladder Truck	1	0	0	0	0	1
Engine	0	2	0	0	0	2
EMS Unit	2	4	0	0	2	8
Staff Vehicle	6	2	1	2	0	11
Projected Cost:	\$2,448,050	\$4,356,200	\$61,200	\$121,200	\$551,200	\$4,356,200

The following figure illustrates the trajectory of the Apparatus Fund's available resources, outlays, and ending fund balance for FY 2020–FY 2023.³⁷ As indicated, FY 2023 experienced a \$ 2 million decrease in the ending fund balance. This is due to the planned procurement of various apparatus, most notably an aerial apparatus, two staff vehicles, and an ambulance.³⁸ A delay in the delivery timeline on the aerial apparatus will likely result in a carryover of that expense to the 2024 budget cycle.

Figure 56: Apparatus Fund Ending Balance Summary



Capital/Reserve Fund

The Capital/Reserve Fund functions as the district's capital projects fund and is dedicated to amassing and allocating resources to construct, acquire, and/or enhance capital assets. The primary revenue sources for this fund are interfund transfers from the Expense Fund and revenues from the GEMT program.

While included in total revenues in the preceding revenue section, GEMT, and bad debt recovery revenue are included in the following figures to present a holistic view of this fund and its resources.

Figure 57: MFD Capital/Reserve Fund

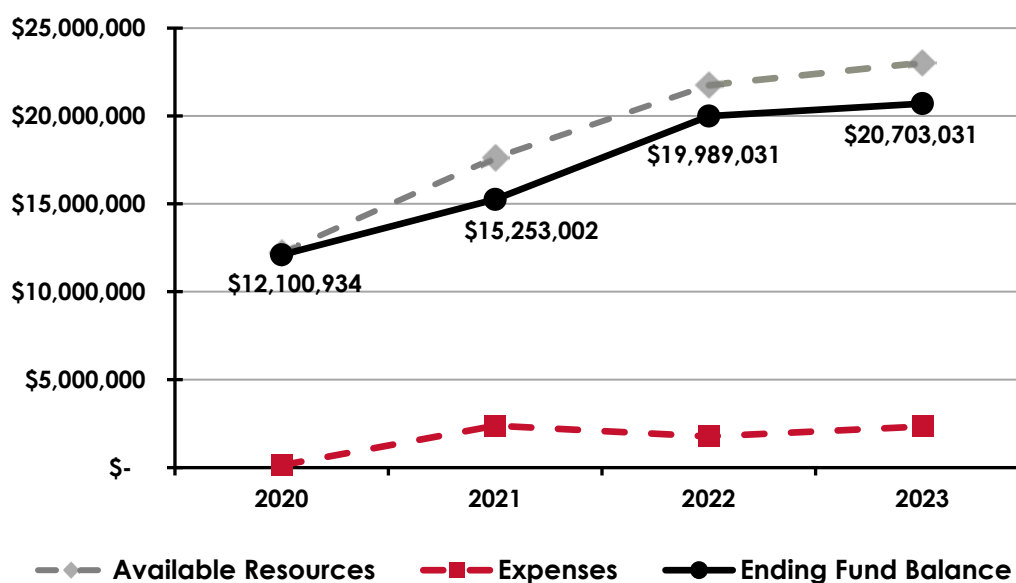
Apparatus Fund	2020 Actual	2021 Actual	2022 Actual	2023 Budget
Beginning Fund Balance:	\$8,209,521	\$12,100,934	\$15,253,002	\$19,989,031
Transfer-In	1,250,000	1,250,000	2,150,000	—
GEMT Revenue	2,627,065	3,481,191	3,999,328	2,900,000
Bad Debt Recovery	26,033	18,611	21,082	20,000
Investment Income	120,427	162,462	332,485	125,000
FEMA Grant	—	619,278	—	—
Available Resources:	\$12,233,046	\$17,632,476	\$21,755,897	\$23,034,031
Investment Fees	3,898	5,690	4,957	6,000
Public Safety Building Remodel	—	—	—	1,050,000
PSB Installment Payment	—	1,175,000	1,175,000	1,175,000
FEMA Grant–SCBA	—	1,017,209	—	—
Other	128,213	181,575	586,910	100,000
Capital/Reserve Fund Expenses:	\$132,111	\$2,379,474	\$1,766,8675	\$2,331,000
Ending Fund Balance:	\$12,100,935	\$15,253,002	\$19,989,030	\$20,703,031

As mentioned, the Capital/Reserve Fund accumulates resources for future large capital outlays. The FY 2023 budget accounts for the final installment payment, a condition of the RFA Formation Plan, for the Public Safety Building and related remodel costs.³⁹

The district has identified the need to replace at least two or more fire stations in the forthcoming years.⁴⁰ The Capital/Reserve Fund balance can be used to alleviate the debt load on residents. Nonetheless, the most probable course of action will see the district resorting to debt to replace these three stations. The district stands ready to allocate a portion of this debt using an upcoming RFA regular levy lid lift.

The following figure illustrates the trajectory of the Apparatus Fund's available resources, outlays, and ending fund balance for FY 2020–FY 2023.⁴¹

Figure 58: MFD Capital/Reserve Fund Ending Balance Summary



Equipment Fund

The Equipment Fund functions as the district's capital projects fund, specifically designated to gather and allocate resources for future large-scale replacement of select capital equipment. This fund's primary revenue source comes from interfund transfers from the Expense Fund, complemented by a modest income from investment interest.

Figure 59: MFD Equipment Fund Summary

Apparatus Fund	2020 Actual	2021 Actual	2022 Actual	2023 Budget
Beginning Fund Balance:	—	—	—	\$202,250
Transfer-In	—	—	200,000	100,000
Investment Income	—	—	2,313	6,000
Available Resources:	—	—	\$202,313	\$308,250
Investment Fees	—	—	63	250
Capital/Reserve Fund Expenses:	—	—	\$63	\$250
Ending Fund Balance:	—	—	\$202,250	\$308,000

Established in FY 2022, the Equipment Fund has not incurred any outlays for capital items, with the only resource outflows being for county investment fees. As of the FY 2023 adopted budget, MFD anticipates using the Equipment Fund to procure SCBAs in FY 2031 at an expected cost of \$1 million.⁴²

Fund Balance Summary

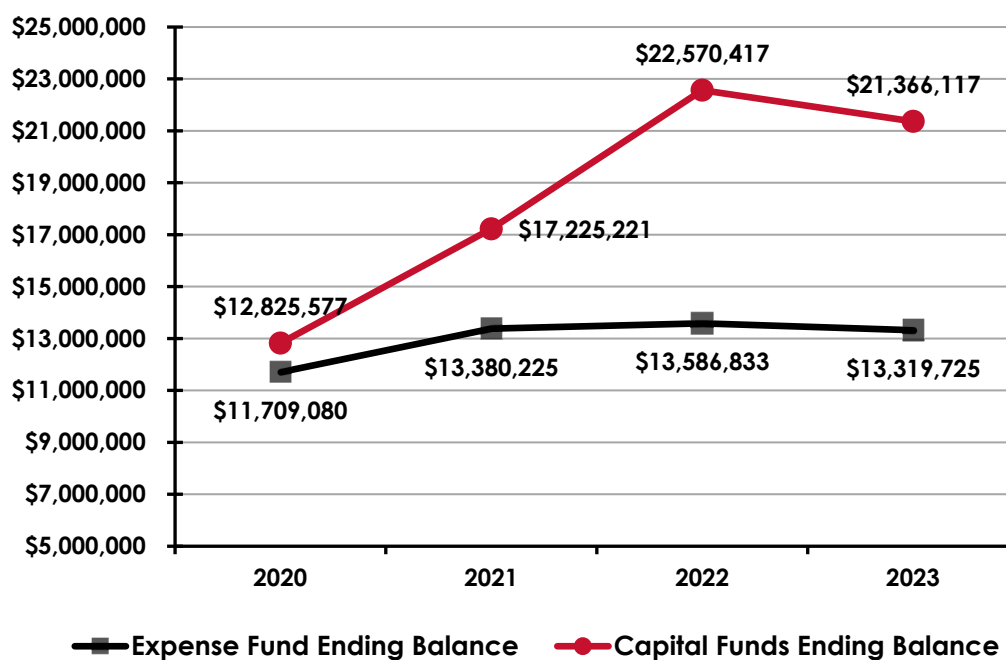
Marysville Fire District's commitment to judicious and conservative financial management has routinely enabled it to retain robust ending balances within its Expense Fund and the Capital Funds. Such disciplined financial stewardship has positioned the fire district favorably, routinely permitting the transfer of surplus monies, over and above annual operational costs, from the Expense Fund (the primary operating fund) into the three designated Capital Funds. This facilitates the strategic financing of imminent capital projects and significant expenditures.

Moreover, these practices ensure that MFD consistently maintains a balance in the Expense Fund that surpasses the mandated 25% of its annual operating costs once interfund transfers are accounted for. Such proactive financial planning fortifies the organization's fiscal health and alleviates potential financial pressures on its residents. This is evident as MFD proactively budgets for extensive future undertakings, encompassing facility constructions and apparatus acquisitions.

Since its first full year, MFD has grown the Expense Fund's ending balance from \$11,709,080 at the end of FY 2020 to \$13,586,833, or 16%. Equally as impressive, the fire district has increased the combined capital funds ending balance by \$9,744,840, or nearly 76%, from \$12,825,577 to \$22,570,417 over the same period.⁴³

The next figure visually represents the ending balances for the Expense Fund and the three capital funds. This is based on the year-end data from FY 2020 through FY 2022 and projections from the FY 2023 adopted budget. It is worth noting that, despite the figures presented for FY 2023 in the figure, there are likely to be higher fund balances by the close of 2023.

Figure 60: Fund Ending Balance Summary



Capital Facilities & Apparatus Inventory

Apparatus and other vehicles, trained personnel, firefighting and emergency medical equipment, and fire stations are the essential capital resources necessary for a fire district to carry out its mission. No matter how competent or numerous the firefighters are, if appropriate capital equipment is unavailable for operations personnel, it would be impossible for the Marysville Fire District to perform its responsibilities effectively. The essential capital assets for emergency operations are facilities, apparatus, and other emergency response vehicles. This report section assesses MFD's fire stations, frontline apparatus, and ambulances.

Fire Station Features

Fire stations play an integral role in delivering 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 survival from sudden cardiac arrest. Fire stations must also be designed to house equipment and apparatus adequately and meet the needs of the organization and its personnel.

Fire station activities should be closely examined to ensure the structure is adequate in size and function. Examples of these functions can include the following:

- Kitchen facilities, appliances, and storage
- Residential living space and sleeping quarters for on-duty personnel (all genders)
- Bathrooms and showers (all genders)
- Training, classroom, and library areas
- Firefighter fitness area
- The housing and cleaning of apparatus and equipment, including decontamination and disposal of biohazards
- Administrative and management offices, computer stations, and office facilities
- Public meeting space

Triton asked the district to rate the condition of its fire stations using the criteria from the next figure. The results can be seen in the following figures.

Figure 61: Criteria Utilized to Determine Fire Station Condition

Excellent	Like new condition. No visible structural defects. The facility is clean and well-maintained. The interior layout is conducive to function with no unnecessary impediments to the apparatus bays or offices. No significant defect history. Building design and construction match the building's purposes. Age is typically less than 10 years.
Good	The exterior has a good appearance with minor or no defects. Clean lines, good workflow design, and only minor wear on the building interior. Roof and apparatus apron are in good working order, absent any significant full-thickness cracks, crumbling of the apron surface, or visible roof patches or leaks. Building design and construction match the building's purposes. Age is typically less than 20 years.
Fair	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. Shows increasing age-related maintenance but with no critical defects. Age is typically 30 years or more.
Poor	The building appears cosmetically weathered and worn with potential structural defects, although not imminently dangerous or unsafe. Large, multiple full-thickness cracks and crumbling concrete on the apron may exist. The roof has evidence of leaking and 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 major defects are evident. It may not be well-suited to its intended purpose. Age is typically greater than 40 years.

Marysville Fire Stations & Facilities

The next figures outline the basic features of the Marysville Fire District's five fire stations.

Figure 62: MFD Station 61


Address/Physical Location:		1635 Grove Street, Marysville, WA 98270								
		General Description: This station co-locates with the new fire administration staff facility. It houses one staffed engine, one medic, and one aid car. The fire station portion of the facility has several deficiencies, including no seismic protection, no extractor, poor kitchen/dining facilities, not ADA-compliant, and no turnout storage room.								
Structure										
Date of Original Construction		1987								
General Condition		Poor								
Seismic Protection		No								
Auxiliary Power		Generator								
ADA Compliant		No								
Number of Apparatus Bays		Drive-Throughs		0	Back-Ins		8	Total Bays:	8	
Total Square Footage		32,722								
Facilities Available										
Sleeping Quarters		Bedrooms		7	Beds		7	Dorm Beds		0
Maximum Staffing Capability		8		(Total number of staff that can be housed at station)						
Bathroom/Shower Facilities		7+ bathrooms								
Gender Segregation (Y/N)		Bathrooms		Y	Showers		Y	Bedrooms		Y
Exercise/Workout Facilities		Workout area in the apparatus bay								
Kitchen Facilities		Very poor with limited space								
Individual Lockers Assigned		Yes								
Training/Meeting Rooms		Small internal training room								
Washer/Dryer/Extractor		Yes/Yes/No								
Safety & Security										
Station Sprinklered		Yes								
Smoke & CO Detection		Yes								
Decon & Biological Disposal		No/Yes								
Security System		No								
Apparatus Exhaust System		Partial (remainder out to bid)								

Figure 63: MFD Station 62

Address/Physical Location: 10701 Shoultes Road, Marysville, WA 98270

**General Description:**

The countertops are in poor condition and need to be replaced. The kitchen and laundry appliances are residential and must be replaced with commercial equipment.

Structure

Date of Original Construction	2002				
General Condition	Good				
Seismic Protection	No				
Auxiliary Power	Generator				
ADA Compliant	Yes				
Number of Apparatus Bays	Drive-Throughs	0	Back-Ins	4	Total Bays: 4
Total Square Footage	11,926				

Facilities Available

Sleeping Quarters	Bedrooms 7		Beds 7		Dorm Beds	
Maximum Staffing Capability	7	(Total number of staff that can be housed at station)				
Bathroom/Shower Facilities	Yes, 4 Showers					
Gender Segregation (Y/N)	Bathrooms Y		Showers Y		Bedrooms Y	
Exercise/Workout Facilities	Yes					
Kitchen Facilities	Yes					
Individual Lockers Assigned	Yes					
Training/Meeting Rooms	Yes					
Washer/Dryer/Extractor	Yes/Yes/Yes (PPE dryer as well)					

Safety & Security

Station Sprinklered	Yes
Smoke & CO Detection	Yes
Decon & Biological Disposal	Yes/Yes
Security System	No
Apparatus Exhaust System	Yes

Figure 64: MFD Station 63

Address/Physical Location:	14716 Smokey Point Boulevard, Marysville, WA 98271
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**General Description:**

This station houses one staffed engine company and one staffed medic unit. It is a cinderblock-constructed building with no seismic protection, is not ADA-compliant, and the exercise area and turnout storage are in the apparatus bay. There is no extractor or decon room, and it is in poor condition overall. It is limited to housing five firefighters. It is on a large lot with an adjacent storage facility.

Structure

Date of Original Construction	1964
General Condition	Poor
Seismic Protection	No
Auxiliary Power	New propane generator
ADA Compliant	No
Number of Apparatus Bays	Drive-Throughs 0 Back-Ins 3 Total Bays: 3
Total Square Footage	4,981

Facilities Available

Sleeping Quarters	Bedrooms 5 Beds 5 Dorm Beds 0
Maximum Staffing Capability	5 (Total number of staff that can be housed at station)
Bathroom/Shower Facilities	3/3 (one can be assigned for gender separation)
Gender Segregation (Y/N)	Bathrooms Y Showers Y Bedrooms Y
Exercise/Workout Facilities	Apparatus bay
Kitchen Facilities	Yes
Individual Lockers Assigned	No
Training/Meeting Rooms	No
Washer/Dryer/Extractor	Yes/Yes/No

Safety & Security

Station Sprinklered	No
Smoke & CO Detection	Yes
Decon & Biological Disposal	No/Yes
Security System	No
Apparatus Exhaust System	Yes

Figure 65: MFD Station 65

Address/Physical Location:	17500 E. Lake Goodwin Road, Stanwood, WA 98292
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**General Description:**

This station houses one staffed engine company that cross-staffs to an aid unit. The facility's exterior condition is extremely poor, with numerous areas of dry rot visible. It has no seismic protection, no sprinkler system, is not ADA-compliant, and no extractor. The exercise area is in the apparatus bay, and the station is limited to only one shower for the entire on-duty staff.

Structure

Date of Original Construction	1963					
General Condition	Poor					
Seismic Protection	No					
Auxiliary Power	New propane generator					
ADA Compliant	No					
Number of Apparatus Bays	Drive-Throughs	0	Back-Ins	6	Total Bays:	6
Total Square Footage	5,360					

Facilities Available

Sleeping Quarters	Bedrooms		5	Beds		5	Dorm Beds		
Maximum Staffing Capability	5	(Total number of staff that can be housed at station)							
Bathroom/Shower Facilities	1 shower, 4 restrooms (2 upstairs, 2 downstairs)								
Gender Segregation (Y/N)	Bathrooms		N	Showers		N	Bedrooms		Y
Exercise/Workout Facilities	Apparatus bay								
Kitchen Facilities	Yes								
Individual Lockers Assigned	Yes								
Training/Meeting Rooms	No								
Washer/Dryer/Extractor	Yes/Yes/No								

Safety & Security

Station Sprinklered	No
Smoke & CO Detection	Yes
Decon & Biological Disposal	No
Security System	No
Apparatus Exhaust System	Yes

Figure 66: MFD Station 66

Address/Physical Location: 7217 40th Street NE, Marysville, WA 98270

**General Description:**

This station houses one staffed engine company that cross-staffs to an aid unit. The station has a community meeting room, is in good shape throughout, and is a very good example of a modern, fully functioning community fire station.

Structure

Date of Original Construction	2009					
General Condition	Good					
Seismic Protection	Yes					
Auxiliary Power	Yes, Generator					
ADA Compliant	Yes					
Number of Apparatus Bays	Drive-Throughs	3	Back-Ins	0	Total Bays:	3
Total Square Footage	10,965					

Facilities Available

Sleeping Quarters	Bedrooms	5	Beds	5	Dorm Beds	0
Maximum Staffing Capability	5	(Total number of staff that can be housed at station)				
Bathroom/Shower Facilities	3 Showers/6 bathrooms					
Gender Segregation (Y/N)	Bathrooms	Y	Showers	Y	Bedrooms	Y
Exercise/Workout Facilities	Yes					
Kitchen Facilities	Yes					
Individual Lockers Assigned	Yes					
Training/Meeting Rooms	Yes					
Washer/Dryer/Extractor	Yes/Yes/Yes					

Safety & Security

Station Sprinklered	Yes					
Smoke & CO Detection	Yes					
Decon & Biological Disposal	Yes/Yes					
Security System	Yes (Fire Alarm)					
Apparatus Exhaust System	Yes					

Summary of the MFD Fire Stations

The following figure summarizes some of the primary features of the five Marysville Fire District fire stations.

Figure 67: Combined Features of the MFD Fire Stations

Station	Square Footage	Apparatus Bays	Daily Staffing	General Condition	First Due Area*	Station Age
Station 61	32,722	8	7	Poor	10 sq. miles	36 years
Station 62	11,926	4	6	Good	7 sq. miles	21 years
Station 63	4,981	3	5	Poor	15 sq. miles	59 years
Station 65	5,360	6	3	Poor	17 sq. miles	60 years
Station 66	10,965	3	3	Good	6 sq. miles	14 years
Totals:	65,954	24	24	Averages:	11 sq. miles	38 years

*Rounded to the nearest integer.

As shown in the preceding figure, three of the five MFD fire stations were rated to be in “Poor” condition. Combined, the fire stations averaged 38 years and an 11-square-mile first-due response area.

Other Facilities

At the time of this study, MFD leased a separate Administration facility at 1094 Cedar Avenue. However, during Triton’s site visit, Station 61 was in the process of being remodeled on one side for use as office space for all administrative support staff. At the time of this report, MFD staff had moved into the new facility.

MFD also has an old fire station adjacent to Station 62 that was converted for use as a maintenance facility—although this building may no longer be adequate to meet the maintenance needs of MFD.

Figure 68: MFD Maintenance Facility



Fire Stations Discussion

It was evident that at least three of MFD's fire stations are aging and in poor condition, while others need upgrades and repairs (e.g., lack of commercial-grade appliances, over worn countertops, etc.).

Two stations (Stations 63 and 65) are considered in "Poor" condition and are well beyond the typical lifespan of 50 years for most fire stations. In the online survey conducted by Triton, 68% of the respondents felt that Station 63 should be the first facility to be replaced, and 29% felt that Station 65 should be replaced first.

One station (Station 61) is also considered in "Poor" condition but could be upgraded using the current building footprint and shell and converted into a modern fire facility. The fire station is in the newly acquired former police headquarters building, where the adjacent half of the structure is currently being remodeled into the new Marysville Fire District administrative facility.

Fire Station 63

During Triton's inspection, it was evident that Station 63 has exceeded its life expectancy because of its age and numerous infrastructure problems. The facility is 59 years old and well beyond repair. Some of the deficiencies identified by Triton included:

- It is not ADA-compliant.
- Does not have a sprinkler system.
- Lacks seismic upgrade protections.
- Does not have a security system.
- Lacks a separate turnout storage room.

Living, safety, and usability deficiencies included:

- Lack of a separate workout or exercise room. Exercise equipment is kept in the apparatus bay.
- No adequate training or meeting room.
- Inadequate office space for fire crews.
- Inadequate public reception area.
- Numerous other general issues resulted in dysfunction and insufficient fire station use.
- Inadequate bathroom and shower facilities that are not gender-assigned.

Fire Station 65

During Triton's inspection, it was noted that Station 65 has exceeded its life expectancy because of its age and numerous infrastructure problems. The facility is 60 years old and well beyond the typical life expectancy of a fire station.

Some of the deficiencies identified by Triton included:

- Does not meet seismic upgrade protections.
- It is not ADA-compliant.
- Lacks a sprinkler system.
- Does not have a security system.
- Lacks a separate turnout storage room.
- Has exterior dry rot conditions in numerous areas.
- Personnel must walk through the apparatus bay to travel from dormitories to second-floor facilities and the first-floor daytime front entry living quarters.
- Apparatus bay ceiling doors are too low for some MFD apparatus.

Living, safety, and usability deficiencies included:

- Lacks a separate workout or exercise room (equipment is kept in the apparatus bay).
- No turnout washing extractor.
- Lacks a dedicated EMS supply and decontamination room and sink.
- Only one shower for the on-duty firefighting crew within the facility.
- Numerous other general issues resulted in dysfunction and insufficient fire station use.

MFD Apparatus & Vehicles Inventory

Fire apparatus, ambulances, and other emergency response vehicles must be sufficiently reliable to transport firefighters and equipment rapidly and safely to an incident scene. In addition, such vehicles must be properly equipped and function appropriately to ensure that the delivery of emergency services is not compromised.

As a part of this study, Triton requested that the Marysville Fire District provide a complete inventory of its fleet (suppression apparatus, ambulances, command, support vehicles, specialty units, etc.). For each vehicle listed, MFD was asked to rate its condition utilizing the criteria described in the next figure.

Figure 69: Criteria Used to Determine Apparatus & Vehicle Condition

Components	Points Assignment Criteria	
Age:	One point for every year of chronological age, based on the date the unit was originally placed into service.	
Miles/Hours:	One point for every 10,000 miles or 1,000 hours	
Service:	1, 3, or 5 points are assigned based on the service type received (e.g., pumper given a 5 since it is classified as severe duty).	
Condition:	This category considers body condition, rust, interior condition, accident history, anticipated repairs, etc. The better the condition, the lower the assignment of points.	
Reliability:	Points are assigned as 1, 3, or 5, depending on the frequency a vehicle is in for repair (e.g., a 5 would be assigned to a vehicle in the shop 2 or more times per month on average, while a 1 would be assigned if in the shop on average once every 3 months or less.	
Point Ranges	Rating	Condition Description
Under 18 points	Condition I	Excellent
18–22 points	Condition II	Good
23–27 points	Condition III	Fair (consider replacement)
28 points or higher	Condition IV	Poor (immediate replacement)

The next figure lists the inventory of the Marysville Fire District's current frontline apparatus, ambulances, and staff vehicles.

Figure 70: MFD Frontline Fleet Inventory (2023)

Unit	Type	Manufacturer	Year	Condition	Features
Engines, Aerials, & Tenders					
Engine 61	Type 1	Rosenbauer	2017	Good	1500 gpm/500 gal.
Engine 63	Type 1	Rosenbauer	2017	Good	1500 gpm/500 gal.
Engine 65	Type 1	E-One	2010	Poor	1500 gpm/500 gal.
Engine 66	Type 1	E-One	2010	Poor	1500 gpm/500 gal.
Ladder 62	95-ft. Truck	E-One	2006	Poor	1750 gpm/200 gal.
Tender 65	Tender	Kenworth	2005	Fair	1000 gpm/3500 gal.
Medic & Aid Units					
Medic 61	Ambulance	Ford	2022	Excellent	ALS equipped
Aid 61	Ambulance	Ford	2019	Fair	BLS equipped
Aid 62	Ambulance	Ford	2019	Poor	BLS equipped
Medic 63	Ambulance	Ford	2019	Good	ALS equipped
Aid 65	Ambulance	International	2015	Poor	BLS equipped
Aid 66	Ambulance	International	2015	Poor	BLS equipped
Other Apparatus					
TR 61	Rescue	Ford	2003	Poor	
Hazmat 61	Hazmat	International	1998	Poor	
Squad 61	Utility	Chevrolet	1998	Poor	Boat tow vehicle

As shown, two of MFD's frontline engines, its single aerial, and three of its ambulances are described as being in "Poor" condition. Along with its frontline vehicles, MFD maintains four engines and four ambulances in reserve. These are also described as being in "Poor" condition. Of all the apparatus and ambulances, only one (Medic 61) was described as being in "Excellent" condition.

Specialty Vehicles

MFD maintains two rescue boats. Boat 61 is a 2022 Sea-Doo® with a trailer. Boat 65 is a 1999 Zodiac® boat with a trailer. Additionally, the fire district utilizes two trailers for technical rescue and Urban Search & Rescue (USAR) operations.

The next figure lists most of the Marysville Fire District's frontline command, staff, and utility vehicles. In addition to the vehicles listed, MFD maintains eight other support and utility vehicles, many of which are listed in "Poor" condition.

Figure 71: MFD Frontline Command & Staff Vehicles Inventory (2023)

Unit	Assigned To	Manufacturer	Year	Condition
C-61	Fire Chief	Chevrolet	2009	Poor
FM-61	Fire Marshal/AC	Chevrolet	2019	Excellent
B-61	IC Battalion	Chevrolet	2021	Excellent
CH-64	AC Operations	Ford	2015	Excellent
MSO-61	MSOs	Chevrolet	2019	Excellent
MSA-61	EMS Administrator	Chevrolet	2021	Excellent
TRN-61	Training BC	Chevrolet	2019	Excellent
TRN-62	Training Captain	Chevrolet	2021	Excellent
DFM-61	Fire Prevention	Chevrolet	2015	Excellent
DFM-62	Fire Prevention	Dodge	2007	Fair
AFM-61	Fire Prevention	Ford	2009	Poor
PIO-61	PIO/Education	Ford	2015	Excellent

The preceding figure shows that most of the fire district's command and staff vehicles are relatively new and in "Excellent" condition.

Apparatus Maintenance & Replacement Planning

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

Most communities develop replacement plans because of the expense of fire apparatus and medic units (ambulances). To enable such planning, fire districts 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

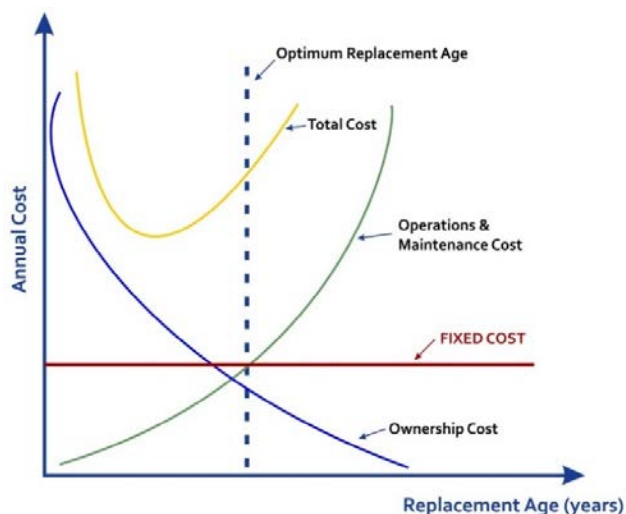
A conceptual model some fire districts utilize is the *Economic Theory of Vehicle Replacement*. The theory states that as a vehicle ages, the cost of capital diminishes, and its operating costs increase. The combination of these two costs produces a total cost curve. The model suggests that the optimal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

Shortening the replacement cycle to this window allows an apparatus to be replaced at optimal savings to the fire district. However, if an organization does not routinely replace equipment promptly, the overall reduction in replacement spending can quickly increase maintenance and repair expenditures. Therefore, 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.
- Deferrals may increase overall fleet costs.

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

Figure 72: Economic Theory of Vehicle Replacement



Despite its net effect on current apparatus and vehicle costs, deferring replacement purchases increases future replacement spending needs. In addition, the deferral may also impact operational capabilities, including the safe and efficient use of apparatus.

Discussion of MFD Apparatus

Many of MFD's frontline apparatus are in less-than-ideal condition. A perfunctory evaluation of MFD's frontline apparatus indicated that several apparatus and vehicles need replacement. In addition, the reserve fleet needs to be updated.

Many fire districts use a 20-year (15 years frontline, 5 years in reserve) life expectancy for Type 1 engines and a 12-year (10 years frontline, two years in reserve) life expectancy for ambulances. National Fire Protection Association (NFPA) Standard 1911 generally says that a 10 to 15-year life expectancy may be normal for a frontline engine.⁴⁴ This is also supported in a publication by the Fire Underwriters Survey™ (FUS): *Insurance Grading Recognition of Used and Rebuilt Fire Apparatus*.

Considering the criteria described above, Engines 61 and 63 are six years old and may not need replacement as frontline apparatus until 2032. However, Engines 65 and 66 are 13 years old and should be replaced and put in reserve by 2025. Ladder 62 has exceeded its life expectancy and should be replaced and put in reserve status.

MFD has wisely ordered two new E-ONE® Type 1 engines and a 100-foot aerial platform truck. The new truck was expected to be delivered in September 2023 but has been delayed with no delivery date at the time of this report. The two engines are not expected until the spring or summer of 2025.

Two existing ambulances will be remounted with new chassis in 2024. MFD is planning to purchase four new ambulances in 2025. The bid documents have been completed, and the due-date for return from the manufacturer is November 30, 2023. The goal is to purchase four ambulances for immediate delivery, dependent upon the selected manufacturer's construction and delivery timeline.

MFD Fleet Maintenance

Much of the Marysville Fire District's maintenance is done internally. Larger and more complex projects are outsourced. The district has one Emergency Vehicle Technician (EVT) Master and one EVT I in accordance with NFPA Standard 1071.⁴⁵

Preventive maintenance checks on vehicles and apparatus are done regularly based on time and mileage-based intervals. Maintenance records have been kept since 2004. In addition, MFD performs annual pump tests as recommended by NFPA Standard 1911.⁴⁶

It was evident from Triton's site visit that the fleet maintenance management and staff are highly capable and qualified to perform the duties necessary to keep the district's apparatus functioning. The online staff survey and interviews conducted by Triton indicated that the operations personnel appreciated the work done by the fleet maintenance staff.

Capital Medical & Rescue Equipment

Cardiac Devices

The Marysville Fire District maintains 21 Physio-Control (now Stryker) Lifepak® 1000 Automated External Defibrillators manufactured in 2020. The ALS-level devices are Physio-Control Lifepak® 15 cardiac monitor/defibrillators ranging in age 1–4 years of age. Aside from the typical features, the Lifepak® 15s have the following capabilities:

- 12-Lead Electrocardiograms.
- Oxygen saturation monitoring (SpO₂).
- End-tidal carbon monoxide monitoring (etCO₂).
- Carbon monoxide monitoring (CO).
- Blood pressure monitoring.
- Temperature monitoring.

Patient Movement Devices

MFD maintains 10 Stryker Power-PRO XT® Ambulance Cots for use in its ambulances. All but one was manufactured in 2014. In addition, the fire district utilizes eight Stryker Stair-PRO stair chairs manufactured in 2017 and 2018.

Rescue & Extrication Equipment

MFD maintains a large inventory of hydraulic extrication tools, including spreaders, rams, cutters, and their respective power units. Amkus® Rescue Systems and the Holmatro Group manufacture the devices. The Holmatro tools consist of the Pentheon series.

Section II: SUPPORT PROGRAMS

Emergency Medical Services

As described previously, MFD provides medical first-response utilizing its engine and truck companies and patient transport services utilizing BLS and ALS ambulances. Service is provided to the Tulalip Reservation, Quilceda Village, and portions of unincorporated Snohomish County. All MFD firefighters are certified to at least the EMT-Basic level.

In this report section, Triton has evaluated the Marysville Fire District's Emergency Medical Services delivery model, medical oversight, and related issues.

EMS Administration

The EMS Division is directed by the Medical Services Administrator (MSA), who holds the rank of Battalion Chief and oversees the medical supervision of four Medical Services Officers (MSO) assigned to each shift. Operationally, the four MSOs report to their assigned duty Battalion Chiefs.

Medical Direction & Oversight

The Washington State Department of Health's Trauma System Division oversees the provision of EMS throughout the State. On a regional level, MFD participates in the Snohomish County EMS & Trauma Care Council and the North Region EMS & Trauma Care Council. Members of these non-profit organizations consist of representatives from local hospitals, EMS agencies, fire departments, city and county emergency management offices, and other healthcare and public safety providers in Snohomish County. The North Region includes the five counties in the far northwest corner of Washington State (Island, Skagit, Snohomish, San Juan, and Whatcom Counties).

The primary missions of the regional and county councils are to provide EMS provider training support, quality improvement programs (including gathering and analyzing patient care data), and disseminating public safety and public health information.

Physician oversight for prehospital EMS is the responsibility of the Snohomish County Medical Program Director (MPD). The MPD is a Board-Certified Emergency Medicine Physician who serves as a Division Chief over the Emergency Medicine and Outpatient Medicine Departments at Providence Regional Medical Center. Washington State Administrative Code (WAC 246-976-920) describes the required responsibilities of Medical Program Directors.

Medical Program Directors can delegate *some* of their responsibilities to other physicians. The Marysville Fire District has a contract for services for an MPD Delegate (MPDD)—sometimes referred to as a Physician Advisor. The current MPDD is currently employed with North Sound Emergency Medicine. In accordance with the contractual obligations, the MPDD is to provide the following physician services to MFD in exchange for a \$38,563 annual payment:

- Assist and advise in developing medical standard policies, procedures, and protocols (protocols can only be promulgated by the MPD).
- Review and recommend appropriate levels of ALS and BLS response coverage.
- Assist in continually developing EMS strategies and plans to improve and unify EMS in the RFA.
- Assist in developing and implementing EMS training and continuing education programs.
- Assist in developing plans and procedures for multi-casualty and disaster response plans.
- Monitor and enhance communications and relationships between MFD EMS personnel, hospital staff, and physicians.
- Periodically review EMS incident reports for quality assurance purposes.
- Evaluate EMS personnel skills and performance as required for hiring, discipline, and remedial training.

Medical Direction Discussion

While the preceding list generally describes most of the typical medical oversight and quality management duties performed by an MPDD, there does not appear to be sufficient *quantifiable* deliverables in the contract that can be measured to ensure the MPDD is appropriately engaged with the fire district's EMS program.

For example, the requirement to "Periodically review EMS incident reports for quality assurance purposes" could be modified to define the district's expectations more clearly—such as "Review 100% of patient refusals and documentation of incidents involving cardiac arrest, stroke, and severe respiratory distress, and subsequently provide timely feedback to the fire district's EMS providers." Discussions with MFD's EMS leadership revealed a desire to have increased MPDD interaction with the fire district's personnel.

EMS Documentation

Electronic patient care reports (ePCR) are recorded using the ESO® RMS. The RMS is NEMESIS and HIPAA-compliant and integrated into the Snohomish County 911 CAD system and two regional receiving hospitals.

EMS Operations

MFD's Stations 61 and 63 have staffed medic units and designated response territories. Stations 61 and 62 also have staffed BLS aid units. Two paramedics are assigned to each medic unit, and two EMT-Basics are assigned to the staffed aid units. Stations 65 and 66 also have BLS aid units that are cross-staffed as needed by engine company crews. A Medical Services Officer is assigned to each shift to support logistical, operational, and EMS quality improvement.

Patients Overview

Triton evaluated EMS records for 2019–2022 to determine the types, frequency, and dispositions of patients evaluated, treated, and transported by MFD personnel. The top ten National Fire Incident Reporting System (NFIRS) EMS type codes are listed in the next figure.

Figure 73: Top 10 EMS NFIRS Type Codes

NFIRS Call Type	Qty.	% of Total ^A
EMS call, excluding MVA with injury	35,955	94%
Motor vehicle accident with injuries	983	3%
Motor vehicle accident with no injuries.	525	1%
Assist invalid	201	1%
Emergency medical service incident, other	119	<1%
Motor vehicle/pedestrian accident	95	<1%
Medical assist, assist EMS crew	60	<1%
Rescue, EMS incident, other	51	<1%
Public service assistance, other	42	<1%
Service Call, other	14	<1%

^APercentages rounded to the nearest integer.

The most frequent NFIRS call types tended to vary annually between 2019–2022. For example, in 2020, “Assist invalid” represented the fifth-highest number of documented call types. However, in 2022, it was listed as the fourth highest. The top three NFIRS call types were consistent annually during 2019–2022.

The next figure lists the top 15 primary impressions (or “diagnoses”) documented by MFD personnel. This information represents a more accurate perspective of the types of EMS patients seen in the Marysville Fire District. As shown, many of these appeared to be patients with lower-acuity conditions.

Figure 74: Top 10 EMS Patient Impressions by Provider (2019–2022)

MFD Primary Impression	Qty.	% of Total ^A
Generalized Weakness	3,426	10%
Injury	2,358	7%
Abdominal Pain	2,267	6%
Anxiety reaction/Emotional Upset	1,623	5%
Behavioral/Psychiatric Episode	1,463	4%
Pain (Non-Traumatic)	1,395	4%
Chest Pain/Discomfort	1,362	4%
Shortness of breath	1,251	4%
Injury of Head	1,162	3%
Back Pain	1,099	3%
Altered Mental Status	1,089	3%
Chest Pain, Other (Non-Cardiac)	1,022	3%
Dizziness	916	3%
Acute Respiratory Distress (Dyspnea)	787	2%
Syncope/Fainting	764	2%

^APercentages rounded to the nearest integer.

The “No Complaints or Injury/Illness Noted” impression was excluded from the preceding figure. This impression was consistently the second highest each year between 2019–2022.

The next figure compares the patient or caller's complaint as identified by Snohomish County 911 to the primary impression documented by MFD Firefighter/Emergency Medical Technicians or Firefighter/Paramedics.

Figure 75: Top 15 MFD Primary Impressions vs. Complaints by Dispatch (2019–2022)

Complaints by Dispatch	Percent Total ^A	MFD Primary Impression	Percent Total ^A
Sick Person	41%	Generalized Weakness	10%
Falls	11%	Injury	7%
Breathing Problem	9%	Abdominal Pain	6%
No Other Choice	8%	Anxiety/Emotional	5%
Traffic Accident	5%	Psychiatric Episode	4%
Chest Pain (Non-Traumatic)	3%	Pain (Non-Traumatic)	4%
Psychiatric Problem	3%	Chest Pain/Discomfort	4%
Abdominal Pain	3%	Shortness of breath	4%
Seizures	2%	Injury of Head	3%
Altered Mental Status	1%	Back Pain	3%
Traumatic Injury	1%	Altered Mental Status	3%
OD/Poisoning	1%	Non-Cardiac Chest Pain	3%
Stroke/CVA	1%	Dizziness	3%
Diabetic Problem	1%	Dyspnea	2%
Back Pain (Non-Traumatic)	1%	Syncope/Fainting	2%

^APercentages rounded to the nearest integer.

Dispatch Discussion

As shown in the preceding figure, a considerable difference exists between the type of patient identified by SNO911 and the ultimate primary impression by MFD personnel. Dispatchers identified the majority (41%) of EMS calls as a "Sick Person." This is a broad category and could include many different conditions.

It must be noted, however, that this is not necessarily an equitable comparison. For example, "Falls" or "Traffic Accidents" can produce a variety of injuries. Those are usually considered mechanisms of injury, not an impression or diagnosis.

Determining an accurate patient condition through a phone call can be challenging for dispatchers. Therefore, it is important to maintain regular continuing education and quality improvement processes, including timely MPDD direct involvement and oversight.

Levels of Acuity

Excluding deceased patients that had no resuscitation (449 or 1%), the following represented the final level of acuity of patients during 2019–2022:

- Lower Acuity (Green)—54%
- Emergent (Yellow)—41%
- Critical (Red)—3%

As in most EMS systems, the data indicates that only a small percentage of patients seen by MFD during the 48-month study period were in critical condition. These results are consistent with the data described under the “Primary Action Taken” field. The top five primary actions taken during 2019–2022 included:

- Provide basic life support (BLS)—80%
- Provide advanced life support (ALS)—14%
- Transport person—1%
- Emergency medical services, other—1%
- Provide first aid and check for injuries—1%

Transport Destinations & Dispositions

During 2019–2022, 92% of patients transported by the Marysville Fire District were taken to Providence Regional Medical Center in Everett, with another 7% transported to Cascade Valley Hospital in Arlington.

Dispositions

During the 48-month study period, MFD documented 21 separate “patient dispositions.” The next figure lists the top 10 most frequent.

Figure 76: Top 10 MFD EMS Patient Dispositions (2019–2022)

Patient Disposition	Qty.	Percent of Total ^A
Transported—No Lights/Siren	20,126	53%
Patient Treated & Released (Against Medical Advice)	9,757	26%
Transported Lights/Siren	3,200	8%
Patient Treated, Transferred Care to Another EMS Professional ^B	1,551	4%
Patient Refused Evaluation/Care (Without Transport)	1,248	3%
Public Assist	448	1%
Patient Treated & Transported by Private Vehicle	420	1%
Dead on Scene—No Resuscitation Attempted (no transport)	373	1%
Patient Evaluated, No Treatment/Transport Required	373	1%
Dead on Scene—Resuscitation Attempted (no transport)	197	1%

^APercentages rounded to the nearest integer. ^BCombination of two nearly the same dispositions.

EMS Billing

MFD charges a fee for patient transports and has contracted with Systems Design®—a third-party billing company—to collect ambulance revenue. The company charges a fee per billed transport for this service and provides MFD with monthly and annual reporting that includes various patient demographics and billing metrics to measure performance. An online payment portal is provided to collect credit card and electronic payments from patients. The following figure summarizes MFD’s EMS billing by billing category. As shown, BLS-Emergency comprised most of the billing categories.

Figure 77: BLS versus ALS Billing Levels (2019–2022)

Level	% of Total ^A
Basic Life Support—Emergency	70%
Basic Life Support	1%
Advanced Life Support—Level 1 Emergency	26%
Advanced Life Support—Level 1	< 1%
Advanced Life Support—Level 2	2%

^APercentages rounded to the nearest integer.

EMS Response & Operations Discussion

Over 80% of all MFD EMS incidents were primarily responded to by aid and medic units in an emergent (lights and siren) mode. However, just over 8% of the patients were transported in an emergent mode.

Triton noted that the SNO911 Dispatch Center utilizes the Priority Dispatch® Emergency Medical Dispatch (EMD) protocol system and assigns an acuity code to each EMS incident based on caller information. For example, the program groups EMS incident responses into five main priority categories (also known as determinate codes):

- **Alpha:** (Single response unit, non-emergent response).
- **Bravo:** (Closest BLS engine or ambulance, emergent or non-emergent response).
- **Charlie:** (ALS ambulance, non-emergent response).
- **Delta:** (Closest BLS unit and ALS ambulance, emergent response).
- **Echo:** (Closest first response unit- BLS and ALS ambulance, emergent response).
- **Omega:** (Single response unit, non-emergent response, public service investigation, or referral to other agencies).

It is important to note that agencies adopting this system define each category's response modes and units. An MPDD typically reviews and approves these response-level configurations before implementation. Likewise, the Snohomish County MPD has reviewed and approved the EMD system and the response assignments used by SNO911.

Examples of an Alpha response can include superficial bites, minor bleeding, and non-recent trauma. Conversely, Delta and Echo level responses include acute stroke, unconsciousness, sudden respiratory distress, and cardiac arrest.

The issue of lights and siren response mode by EMS agencies has been reviewed and studied extensively over the years. A 2017 position paper, *Lights and Siren Use by Emergency Medical Services (EMS): Above All Do No Harm*, addressed the issue and effectiveness of lights and siren response and emergent patient transports, especially related to patient outcomes.⁴⁷

In the executive summary, the authors stated:

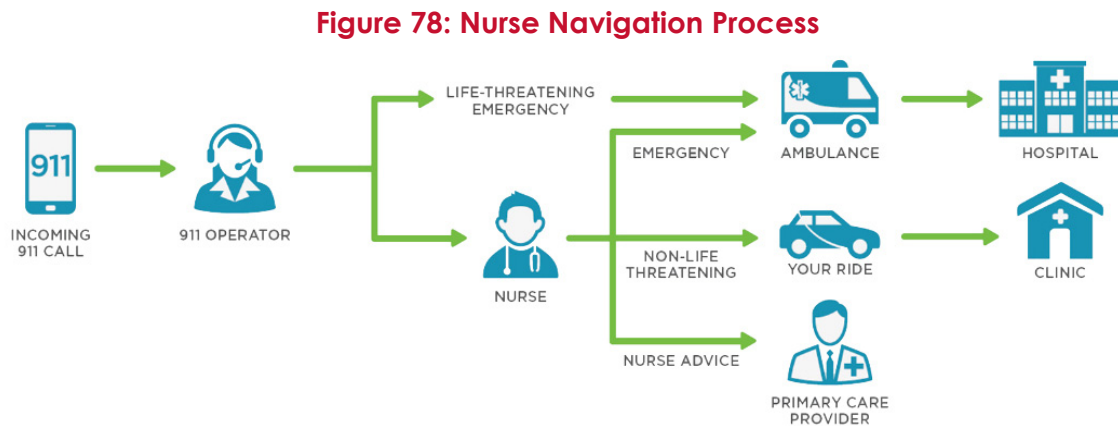
"The time saved by using lights and siren (L&S) during response and transport has been evaluated by several studies. These all show that a relatively short amount of time is saved by L&S use. While this may be of clinical importance to patient outcome in critical time-sensitive conditions like cardiac arrest, the consensus among the researchers in this field is that the time is not significant in most of the responses or transports. In addition to the amount of time saved with L&S transport, an equally important discussion is whether that time is clinically important to patient outcome. For most conditions, EMS professionals can provide appropriate care to reduce the importance of saving a few minutes by L&S transport. While we do not fully understand the potential negative physiologic effects from L&S use, any EMS vehicle crash that occurs when exercising the privileges of L&S is detrimental to the health of both EMS providers and their patients."

Nurse Navigation Program

SNO911 will implement a new "Nurse Navigation" program provided by Access2Care® from Global Medical Response Solution. People who call 911 in Snohomish County will continue to go through professional medical triage, and those with acute/urgent needs will not see any change. Some callers, triaged with low acuity and non-urgent medical needs, will be eligible for a secondary triage through Global Medical Response's (GMR) Nurse Navigator system.

A GMR Registered Nurse will conduct additional protocol-based triage and match alternative options that meet the caller's needs better. Options include stay-at-home care instructions, connection to a local non-emergency department clinic, telehealth consultation with a physician, and round-trip Lyft transportation to a healthcare provider at no cost to the caller.

The next figure is a graphic representation of the Nurse Navigation process.⁴⁸



The primary purpose of this program is to improve triage and reduce unnecessary responses by the EMS provider agencies. In addition, the program is also intended to reduce extensive Ambulance Patient Offload Times (APOT)—also called “Wall” times—at the hospitals.

Life Safety & Public Education

The life safety services and public education programs within a Regional Fire Authority should be the foundation of all prevention activities provided by the district. These programs prevent fires, injuries, loss of life for civilians and firefighters, environmental harm, and property damage. In addition, the proactive involvement of an RFA through the delivery of these programs can provide a high degree of return on investment of funding.

The following seven fundamental components can be utilized to create effective life safety services and public education programs.

- Code enforcement activities
- General inspection program
- New construction inspection and involvement
- Fire and Life-Safety public education programs
- Fire investigation programs
- Pre-incident planning
- Statistical collection and analysis

Life Safety Programs

Code Enforcement & General Inspection Program

The most efficient and effective way to combat fires is to prevent them from occurring. Based on locally identified risks and relevant codes and ordinances, a comprehensive life safety program reduces the loss of life and property and the personal and community-wide disruption accompanying a catastrophic fire event.

MFD has adopted several national, state, and local codes and ordinances as a component of its code enforcement and general inspection program. This includes the 2018 International Fire Code (IFC) edition with the Washington state amendments. In addition, the district has an ordinance amending the code further for emergency access and emergency radio communications and reducing commercial sprinkler requirements. MFD's Fire Marshal manages the general inspection program.

During 2021, MFD had approximately 1,633 annual business inspections and has completed a limited number since returning from the COVID-19 pandemic. There are no fees associated with an initial inspection or first follow-up inspection. All inspection records are stored electronically utilizing the Streamline software system.

New Construction Inspection & Involvement

MFD is involved in the early stages of new construction throughout the district. The new construction inspection program includes reviewing site, building, and fire protection plans. The intent is to ensure fire safety features are included in the design of the building and construction sites. Specific features reviewed include fire access roads, fire hydrant placement, fire sprinklers, smoke alarms, fire alarm systems, fire pumps, smoke control, ventilation, egress systems, and other special extinguishing systems.

A third-party contractor completes some of the fire suppression systems and fire alarm plan reviews, with the cost being the applicant's responsibility. All other reviews are completed by the Prevention staff, which consists of two inspectors, one assistant fire marshal, and the Fire Marshal.

In addition, MFD utilizes a KNOX® Rapid Access System for commercial occupancies. Detailed information for business owners and occupants on the new construction inspection program, including plan reviews, planning, permits, and acceptance tests, can be found on the district's website.

Fire Investigation Program

According to NFPA Standard 921: *Guide for Fire & Explosion Investigations*, there are four determinations when investigating a fire's cause: accidental, natural, incendiary, and undetermined. In addition, NFIRS requires documenting the types of ignitions for all fires, which is necessary for fire investigations.

Accurately determining the cause of fires often provides clues to prevent future incidents. For example, identifying fires intentionally set (incendiary) and identifying or prosecuting the responsible parties can prevent additional fires. If the cause of a fire is natural or accidental, it is also of great value to know and understand its origin. This critical information can be used to direct fire prevention and public education efforts to reduce or prevent future events.

The Snohomish County Fire Marshal provides fire investigation through an interlocal agreement, with oversight by the MFD Fire Marshal. Personnel hold a minimum Investigator certification, with the county staff holding additional certifications, including the International Association of Arson Investigations Fire Investigation Technician (IAAI-Fit) and National Association of Fire Investigators (NAFI) Fire and Explosion Investigator.

Investigations are coordinated with local law enforcement agencies as appropriate, with evidence collection and scene photography handled internally with Snohomish County.

Pre-Incident Planning

Pre-incident planning provides firefighters with information on specific structures and processes and is a tool for firefighters to engage in strategy and tactical tabletop discussions before an incident occurs. A comprehensive pre-incident planning process involves evaluating protection systems, building construction, contents, and operating procedures that may influence emergency operations.

The ability to retrieve up-to-date pre-incident plans during an operation is necessary. Access to this information is essential to assist on-scene firefighters when making decisions during the incident. Strategies and tactics can be developed based on potential problems during an event identified during pre-incident planning. Other items to consider may include the location of the closest water sources and mutual aid resources.

MFD fire prevention personnel create and maintain pre-incident plans for target hazards throughout the fire district with the assistance of operations personnel. However, this is currently being completed by an individual on light duty in the Prevention office. This information, including photographs of key building features, access points, fire protection systems, and special hazards, is entered into an electronic database for quick retrieval via mobile data computers in each apparatus.

Program Review

A community risk reduction plan must have specific goals and objectives to remain effective, including education, enforcement, engineering, economic incentives, and emergency response. Periodic reviews describe the performance and how programs address a community's risk. The review process includes the three key aspects of data collection, outcome definitions, and program analysis. A lack of current and effective reviews turns a well-meaning plan into a less relevant document.

Statistical Collection & Analysis

A records management system is essential for any fire and EMS organization. As noted by the U.S. Fire Administration, organizations have a legal requirement to document fire and EMS incidents, as insurance companies, victims, regulatory agencies, and others may require this information regarding the facts surrounding an incident.

As noted, MFD currently utilizes ESO to document its NFIRS-compliant reports. All NFIRS reports collect fire incidents by cause/location, time-of-day and day-of-week, alarm method, dispatch times, and arrival times. The data is analyzed by MFD leadership and utilized when planning for emergencies.

Outcomes

Understanding outcomes of risk prevention tasks such as education and enforcement can be complex. In most cases, it requires inferring how a program affects the total number and severity of incidents by assessing those that did not occur. However, defining expected outcomes is essential to judge the program's effectiveness fairly. Identifying at-risk populations and analyzing the number of incidents an agency responds to within that population before program implementation and after meeting specific benchmarks may help guide the program analysis.

The Community Risk Reduction Planning Guide provides examples of identified risks and describes strategies to cope with those risks.⁴⁹

Analysis

After the outcome identification and the data collection, the final step is to analyze the information periodically to determine program effectiveness. Typically, this analysis will evaluate historical loss or injury types against current loss trends across each program. A loss reduction may indicate the program is having an effect, while no changes or increases may require more research to understand the root cause of the apparent lack of progress.

For example, an agency has reviewed incident information and has determined a potential problem with smoker-initiated fires, and then the agency introduces a program to reduce these fires. For analysis, the first step would be to generate a list of fires caused by smokers. Then, it would generate a new list after program completion to compare pre- and post-program statistics to evaluate the strategy's impact. Several examples of programs and potential outcomes are in the Community Risk Reduction Planning Guide for reference.⁵⁰ MFD does not currently conduct performance analyses.

Public Education

Fire and life safety public education programs aim to minimize the number of emergencies by training citizens in the community to take appropriate action should an incident occur. A comprehensive fire and life safety public education program provides the best chance to minimize the effects of fire, injury, and illness on the community. Additionally, public education can directly affect the overall safety of an organization's firefighters. MFD utilizes a Public Education/PIO position for its public education and information activities.

The 2019 NFPA 1730: Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations specifically identifies public education programs. Each program is based on the agency's community risk assessment, targets specific ages, and includes directions to provide information to each program's caregivers or adult supervisors.

Figure 79: NFPA Recommended Programs

Program	MFD Delivers
Pre-K-5 th grade School Education	Yes
Middle School – High School Education	No
Independent Senior Adult Education	Yes
Adult and Community-Wide Education	No
Workplace Education	Yes
Youth Fire Setter Education	No
Home Safety Education	No
Wildfire Safety Education	No

In addition, various community programs are offered, with the following list providing examples.

- Elementary School program
- Smoke detector program
- Workplace Fire safety
- Senior Fall Prevention
- Fire extinguisher use
- Electronic newsletters and one newsletter mailer

As with most public education programs, the COVID-19 pandemic has altered many of the community interactions necessary to ensure a robust public education program. For example, MFD suspended its school-based public education programs for the past two years but started them again in 2023 to provide basic fire safety and injury safety to kindergarten through fifth grade.

Training & Continuing Medical Education

Delivering safe and effective fire and emergency medical services requires a well-trained workforce. Therefore, initial, ongoing, and high-quality training and education are critical for the effectiveness of emergency services organizations and the safety of their personnel.

Initial training of newly hired firefighters is essential, requiring a structured recruit training and testing process, after which regular, ongoing, verifiable training must be conducted to ensure skill and knowledge retention and competency. Delivering high-quality training requires dedicating significant internal training resources or contracting with outside agencies and providers for these services. In addition, high-quality training requires specific written objectives, lesson plans, and methods to verify learning knowledge comprehension and retention.

General Training Program Description

MFD has a comprehensive training program under the direction of an assigned Training Battalion Chief, along with the assistance of a Training Captain. Continuing Medical Education (CME) is under the Medical Services Administrator's (MSA) direction.

MFD provides training on various mandatory topics, including scene safety, incident management, infection control and prevention, and driver certification courses. The district's training plan meets all Washington State and local CME requirements while addressing its mission and scope.

MFD currently does not have a training center tower, training grounds, or live fire training facility within the jurisdiction. The recently opened training facility at the North County Regional Fire Authority in Stanwood is the nearest fully equipped training center. Driver certifications require using parking lots of local businesses or the Marysville School District. The use of school district parking lots requires the completion of a formal use permit.

The fire district has a limited presence in wildland firefighting, with only a few staff maintaining wildland Red Cards. Hazardous material certifications and associated training are done at the Awareness and Operations level for all personnel, and MFD has 12 members trained at the Technician level. Additionally, 12 MFD members are trained to maintain Technical Rescue certifications. The Rescue Technicians train with and respond as part of the Snohomish County Technical Rescue Team.

It was noted that MFD has not adopted formal standard operating guidelines for conducting training. However, draft guidelines are currently being reviewed for future implementation.

In the following sections, Triton has reviewed Marysville Fire District's fire, EMS, and special operations training programs, resource allocation, schedules, training documents, and training practices. Specific training program criteria are listed in the following figures.

General Training Competencies

The following figure summarizes the general training topics provided by MFD.

Figure 80: MFD General Training Competencies

General Training	MFD
Incident Command System	Yes
Accountability Procedures	Yes
Training SOGs	No
Recruit Academy	External
Special Rescue Training	Yes
HazMat Certifications	Ops/Tech
Wildland Certifications	No
Vehicle Extrication Training	Yes
Driver Certification	Yes
Communications & Dispatch	Yes

The next figure lists emergency medical training competencies for MFD.

Figure 81: MFD EMS Training Competencies

EMS Training	MFD
Internal EMT/EMT-P Initial Training	No
CME Provided In-House	Yes
BLS/ALS Skills Training	BLS/ALS

Training Delivery & Scheduling

The following figure summarizes the training methodologies utilized by MFD.

Figure 82: Methodologies Utilized in Training

Topics	MFD
Manipulative skills and tasks	Yes
Fire training hours requirements	Yes
EMS training hours requirements	Yes
Annual training hours tracked	Yes
Use of lesson plans	Yes
In-house or commercial	Both
Night drills	Yes
Multi-agency drills	Yes
Inter-station drills	Yes
Disaster drills	No
Pre-fire planning included	Yes

The next figure lists MFD's annual training hours and the funds allocated for training.

Figure 83: MFD Annual Training Hours & Budget

Description	MFD
Training Hours Delivered	12,609 hours (135 members)
Training Budget	\$734,925
Annual Training Report	Yes

Snohomish County Training Consortium

MFD also participates in the Snohomish County Regional Training Consortium, which consists of MFD, Everett Fire Department, Snohomish Regional Fire & Rescue, South County Fire, and North County Fire Authority. The Training Consortium is overseen by a joint board of fire chiefs from the five participating agencies.

The Training Consortium's mission and purpose is to provide regular joint recruit academy opportunities for each of the five agencies to send incoming recruits to and train them to the Firefighter 2 level. Each agency supports the consortium recruit academies, including providing a rotating Administrative Battalion Chief for academy oversight, adjunct instructors for classroom and practical training sessions, and funding for the ongoing academies.

The consortium also allows departments to send individuals to be company officers for the recruits. In this position, they can receive some of their Fire Officer credentials. The consortium recruit academies are based at the North County Regional Fire Authority's training center.

Special Operations

Hazardous Materials Response

Hazardous materials incidents are a part of almost every fire agency's call volume. While this type of emergency response does not occur as often as some other emergency incidents, it can pose a very high risk due to the challenges and dangers of this type of incident. Marysville Fire District can respond to hazardous materials incidents.

MFD is one of seven regional/county agencies that comprise the Snohomish County Regional Hazmat Response Team to respond to and mitigate hazardous material incidents throughout the region using four hazmat response units. MFD training and training with other county fire departments happen quarterly during the year. All county fire departments utilize the NFPA 472: Standard for Competence of Hazardous Materials/Weapons of Mass Destruction Incidents, 2018 Edition, Job Performance Requirements (JPRs) related to hazardous materials to meet the continuing education requirements for certification purposes.

During the data set period 2019–2022, MFD responded to 344 "hazardous conditions" incidents. MFD cross-staffs a hazardous materials unit at Station 66 that responds when a hazardous materials incident occurs in the fire district or anywhere in the Snohomish County region. This cross-staffing impacts MFD's internal staffing capabilities to respond to other incidents that occur within the fire district.

The amount of hazardous materials transiting MFD via I-5 and the railway is substantial. However, the transportation routes are not the only risk the community faces. Industrial warehousing activities increase risk due to the handling of these raw materials.

MFD currently trains all personnel to the Hazmat Awareness and Operations levels, with 12 personnel certified at the Hazmat Technician level, 11 certified at the Hazmat Incident Commander level, and three certified at the Hazmat Safety Officer level.

Technical Rescue Capabilities

Much like hazardous materials incidents, MFD includes a Special Operations Team that is in place to respond to technical rescue incidents. The disciplines for which the agency is prepared include structural collapse rescue, confined space rescue, rope (high angle & low angle) rescue, vehicle/machinery rescue, trench collapse rescue, surface water rescue, swift water rescue, and ice rescue.

The technical rescue operations are well structured, and appropriate training is in place. MFD deploys assets that include a Technical Rescue Unit located at Station 62, a Sea-Doo watercraft, and a rescue boat. MFD is one of four agency partnerships that comprise the Snohomish County Technical Rescue Team, with responses both in and out of the MFD jurisdiction.

In addition to surface water/swift water rescue, MFD has a Rapid Entry Rescue Swimmer program. They currently have 12 rescue swimmers with a goal of expanding to 16 in 2024. Rescue swimmers have been certified by a 3rd party training program to initiate search and rescue operations on both the surface and sub-surface bodies of water.

MFD rescue swimmers are also certified operators of the district's Sea-Doo watercraft. The internal budget funds the rescue swimmer program to create a regional/county team in the future. Training for Rapid Entry Rescue Swimmers, including surface and swift water, is 16 hours annually.

MFD also has two Ice Rescue Technicians, trained and certified by a third-party training program. The third-party training program also trained and certified MFD's two Ice Rescue Technicians as Ice Rescue Instructors. MFD aims to expand to 16 Ice Rescue Technicians in 2024, with in-house training and certification provided by MFD Ice Rescue Instructors. In-house training for Ice Rescue Technician is 8 hours annually.

The following figure is a view of the special operations services provided by MFD.

Figure 84: Special Operations Services

Service Description	MFD
Confined space rescue	Yes
High-angle rescue	Yes
Low-angle rescue	Yes
Trench collapse rescue	Yes
Structural collapse rescue	Yes
Vehicle/machinery rescue	Yes
Surface water rescue	Yes
Swiftwater rescue	Yes
Ice rescue	Yes
Rapid entry rescue swimmers	Yes
Partnership with regional agency	Yes
Dedicated Hot Mat apparatus	Yes
Staff certified at HM Awareness level	Yes
Staff certified at HM Operations level	Yes
Staff certified at HM Technician level	12 total
Staff certified at HM Commander level	11 total
Staff certified as Hazmat Safety Officer	3 total
Maintain Level A suits	Yes
Maintain Level B suits	Yes
Partnership with regional agency	Yes

Section III: STANDARDS OF COVER & DEPLOYMENT ANALYSIS

Historical Service Delivery & Performance Analysis

This section is intended to provide a general overview of relevant MFD's historical response performance. It has been developed to assist the fire district with identifying its recent performance and creating a baseline performance expectation. MFD leadership and policymakers can utilize this information to develop policies and procedures, deployment planning, and determine the need for potential response resources.

Research Information

The information within this section was developed from various sources provided by MFD. Detailed information was provided spanning January 1, 2019, through December 31, 2022. The data included information from the agency's records management system and electronic patient care records.

Statistics Discussion

Mathematical and technological methodologies must be used judiciously to evaluate something as complex as an emergency incident response. There are instances of incorrect evaluations leading to severe consequences, which requires decision makers to understand the statistical analysis and have a solid understanding of the service in general. This analysis is designed to quantify and analyze available information. It should be used as a starting place by the agency as it seeks to improve performance.

Statistical Tools

Various statistical analytical tools were employed to create this section. The fundamental tools were categorization, percentile, and regression analysis. This helps paint a picture of historical performance, with some inferences that may help leaders identify positive and negative performance trends.

Measurement at the 90th Percentile

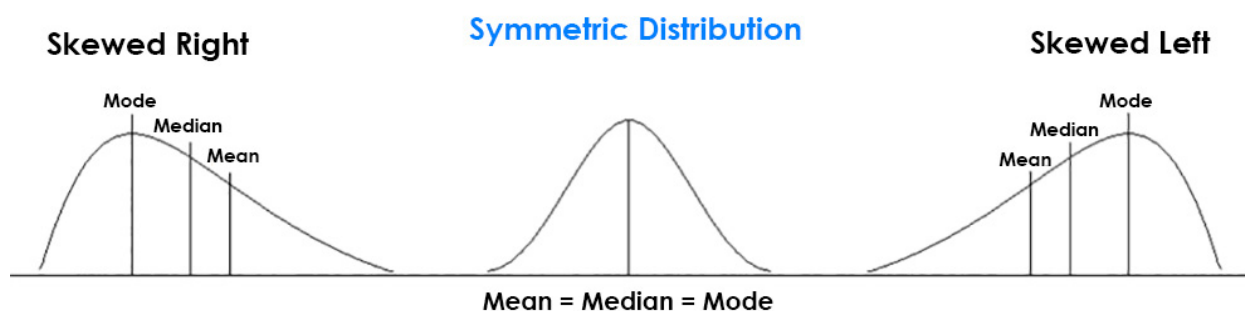
The time performance measures for this report are done using the 90th percentile measure. While discussing the mathematics behind this measure is outside this report's scope, it is helpful to understand why it is utilized.

The most common reason to use this measure is that the industry has adopted it. If a fire agency wishes to judge its performance against standards or other agencies, it should use the 90th percentile to determine its actual performance.

For example, the National Fire Protection Association (NFPA) utilizes the 90th percentile measure in most of its standards. In addition, the Commission on Fire Accreditation International (CFAI) requires reporting performance measures at the 90th percentile.

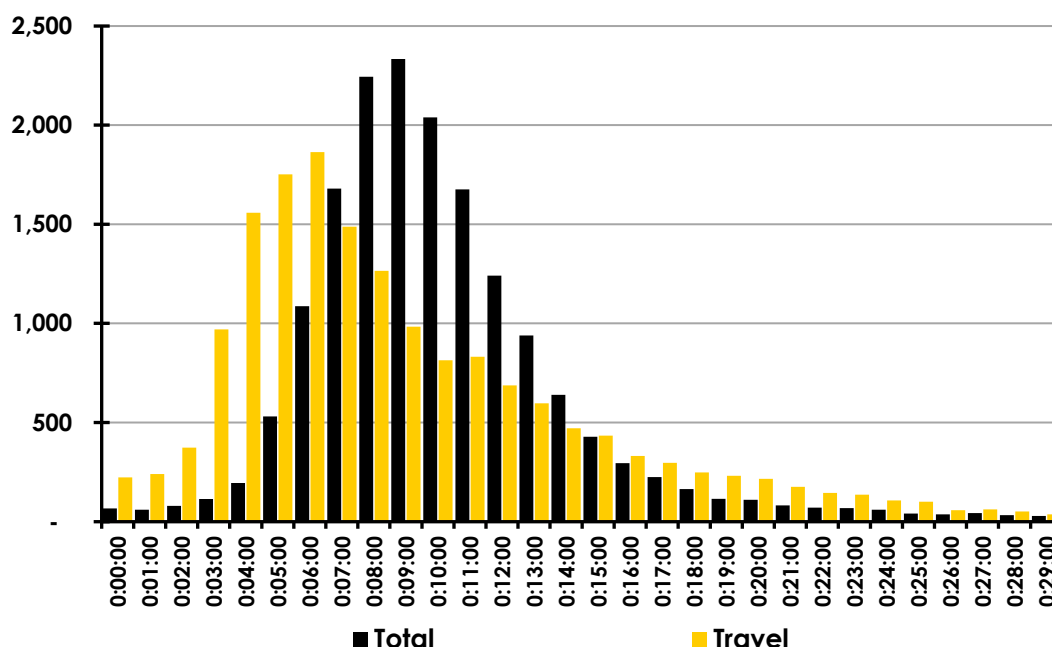
The statistical reason to use the measure is that it more fully captures performance and will identify trends in performance more quickly. Unfortunately, the time performance data used in this study has a skew, making other statistical measures less sensitive and representative. The following figure is a general example of data skew.

Figure 85: Data Skew⁵¹



In a symmetric distribution, the mean (average), median (middle of the data), and mode (the most frequent) are all equal. When the distribution skews, these three measures of the middle shift. Using the average, or mean, in skewed data left would underrepresent the bulk of the performance. The opposite is true when skewed right.

In MFD's case, most of the time-performance data is skewed right. In this case, using the average would over-represent the performance. This is a typical data skew for emergency performance and should not be used for any judgment. However, before analyzing statistical information, the data slant should be understood. The following figure shows travel and total time calculations binned in 1-minute intervals, highlighting the right skew of MFD's data.

Figure 86: Travel & Total Time Skew

Data Discussion

Detailed data was provided from MFD's primary records management system (RMS) and electronic patient care reports (ePCR). These different databases were combined utilizing proven data engineering techniques into one analytical dataset.

Data Engineering Findings

MFD provided four datasets from the two systems. RMS incident, unit data, ePCR patient, and return of spontaneous circulation (ROSC). These were combined into a single data set for analysis.

A total of 57,163 incidents and 100,321 unit records were provided. These were combined with a 100% match. The 390 Return of Spontaneous Circulation (ROSC) records were matched completely with ePCR records. However, 91 patient records could not be matched to unit information in the RMS records, representing a very slight 0.24% drop in the data.

The data was combined through geospatial records and matched to jurisdictions. In addition, record definitions were added for NFIRS and unit data. The final data set included 98,882 records of units, 98.5% original data, 56,591 incidents, and 99% conversion. Data loss was attributed to missing NFIRS codes and null unit information records.

Data Error Handling

Data collection within the various data sets has the potential for significant errors. Although there can be many reasons for incorrect information, these errors are typically a combination of human input and collection errors. Various methods exist to manage these errors, including statistical exclusion, real-time exclusion, formula manipulation, and logic testing.

For MFD, the information in the data fields had minimal error-prone data. Therefore, most of the data did not require statistical intervention. However, some data was excluded by formula or logic tests. The time segment math utilized a logic tree to eliminate inaccurate and null sets. Some performance data required developing a method to remove obvious or likely data errors that interfere with accurate analysis. Each outlier policy is defined within the study where they were employed. However, the shape and quality of the data were adequate. They allowed for a high degree of confidence that the analysis represents overall performance.

Overall Service Demand

The first dimension of the analysis is the overall system call load. Because this is a simple count of the incidents by type and location, no data was excluded after engineering. Therefore, the detailed data from the three previously discussed systems will be used for most aspects of this analysis, except for the volume projection.

Volume Analysis

A simple volume analysis can indicate how often the fire district is called upon to respond to an incident. The first look is at the overall call counts grouped by primary categories in the National Fire Incident Reporting System (NFIRS). Establishing the incident jurisdiction required a match between the geocoded information and the provided geographic boundaries.

The following figure is the total number of responses recorded by the agency for the entire data set and the percentage of the categorized responses.

Figure 87: Total Incident Count

Incident (NIFRS Group)	Count	% Total Responses^A
MFD Responses		
Fire (100)	809	1%
Overpressure, Rupture, Explosion (200)	21	<1%
Rescue & Emergency Medical (300)	39,081	69%
Hazardous Condition (No Fire) (400)	344	<1%
Service Call (500)	5,921	11%
Good Intent Call (600)	8,658	15%
False Alarm & False Call (700)	1,539	3%
Severe Weather & Natural Disaster (800)	21	<1%
Special Incident Type (900)	13	<1%
Total Responses	56,407	
Mutual Aid		
Automatic & Mutual Aid Received	4,876	8%
Automatic & Mutual Aid Given	5,915	11%

^ARounded to the nearest integer.

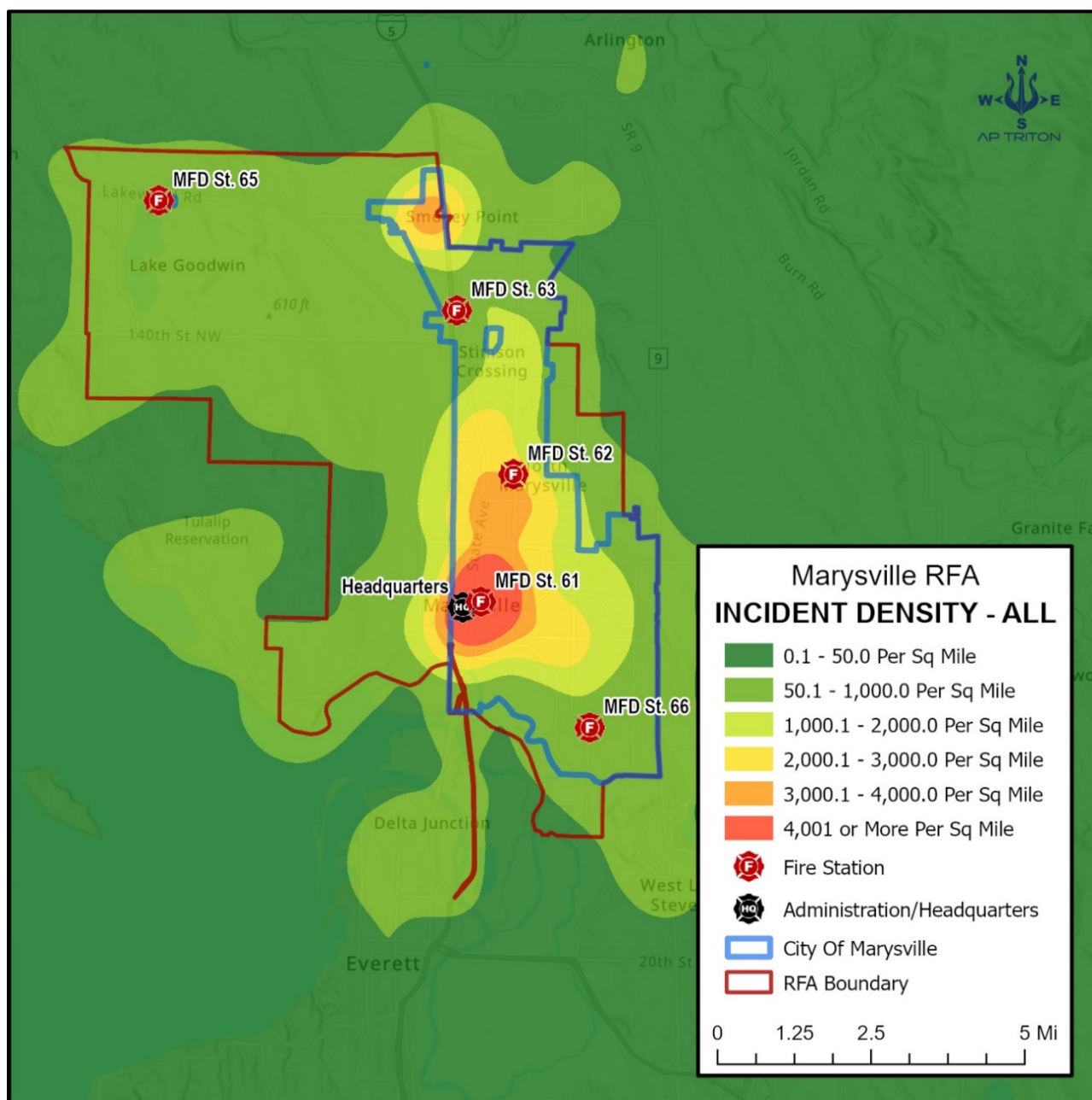
MFD provided RMS data from 2019 through 2022, and each year indicated a similar proportion of aid given to aid-received calls. Consistent with the previous figure, the aid given was regularly between 10% and 11% of the annual incident volume. Similarly, aid received ranged between 8% and 9%.

Geographic Analysis

A call density analysis is helpful when reviewing the best location for apparatus placement. It is also useful when evaluating where the prevention programs may have the most impact.

The following figure geographically represents the incident density for the study period.

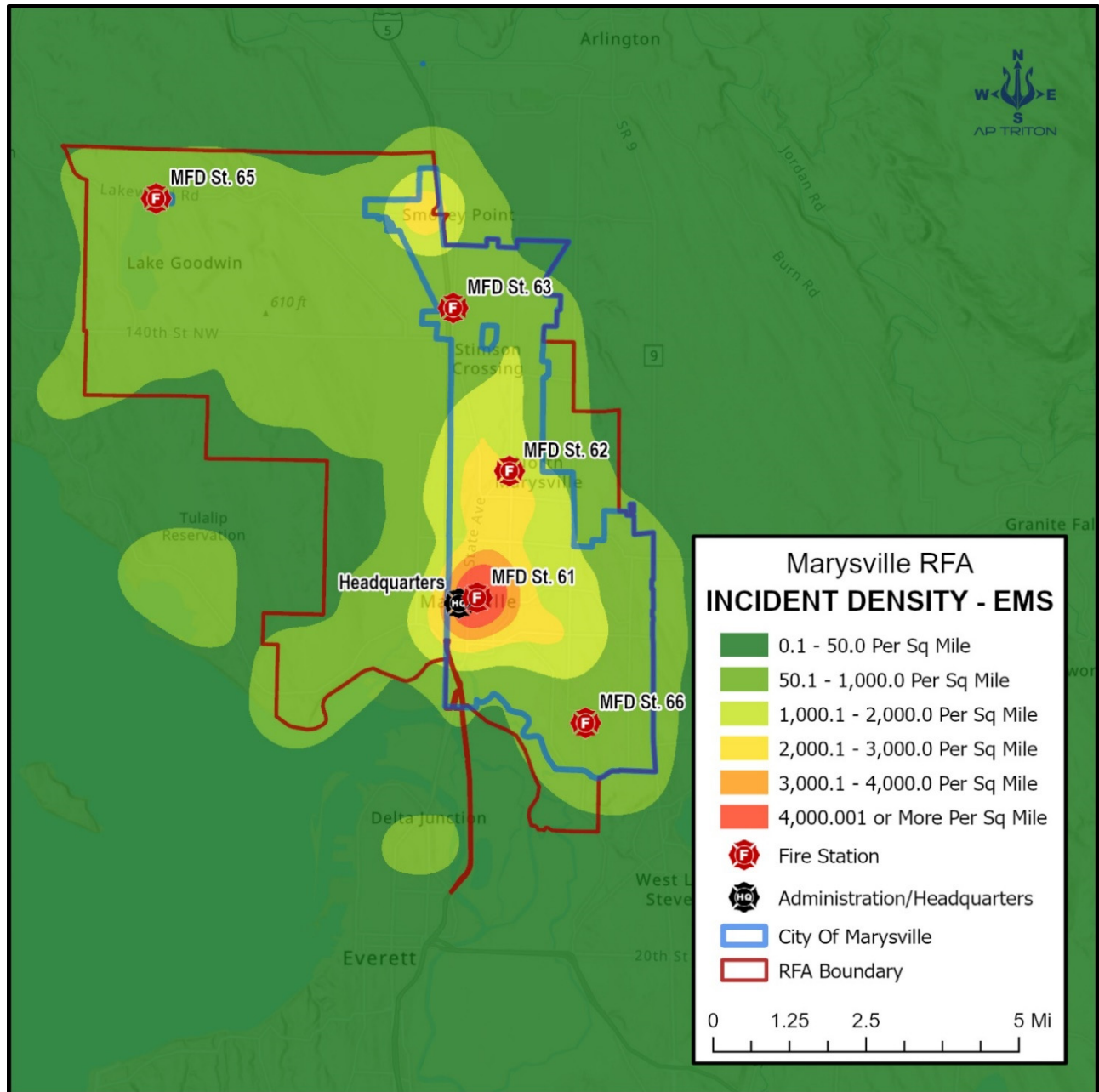
Figure 88: Incident Density—All Incidents (2019–2022)



As indicated in the previous figure, incident density is the most concentrated within the City of Marysville, predominately in the areas surrounding Stations 61 and 62. EMS incidents are almost 70% of MFD's incidents, which drives the incident density.

The following figure shows the EMS incident density for the study period.

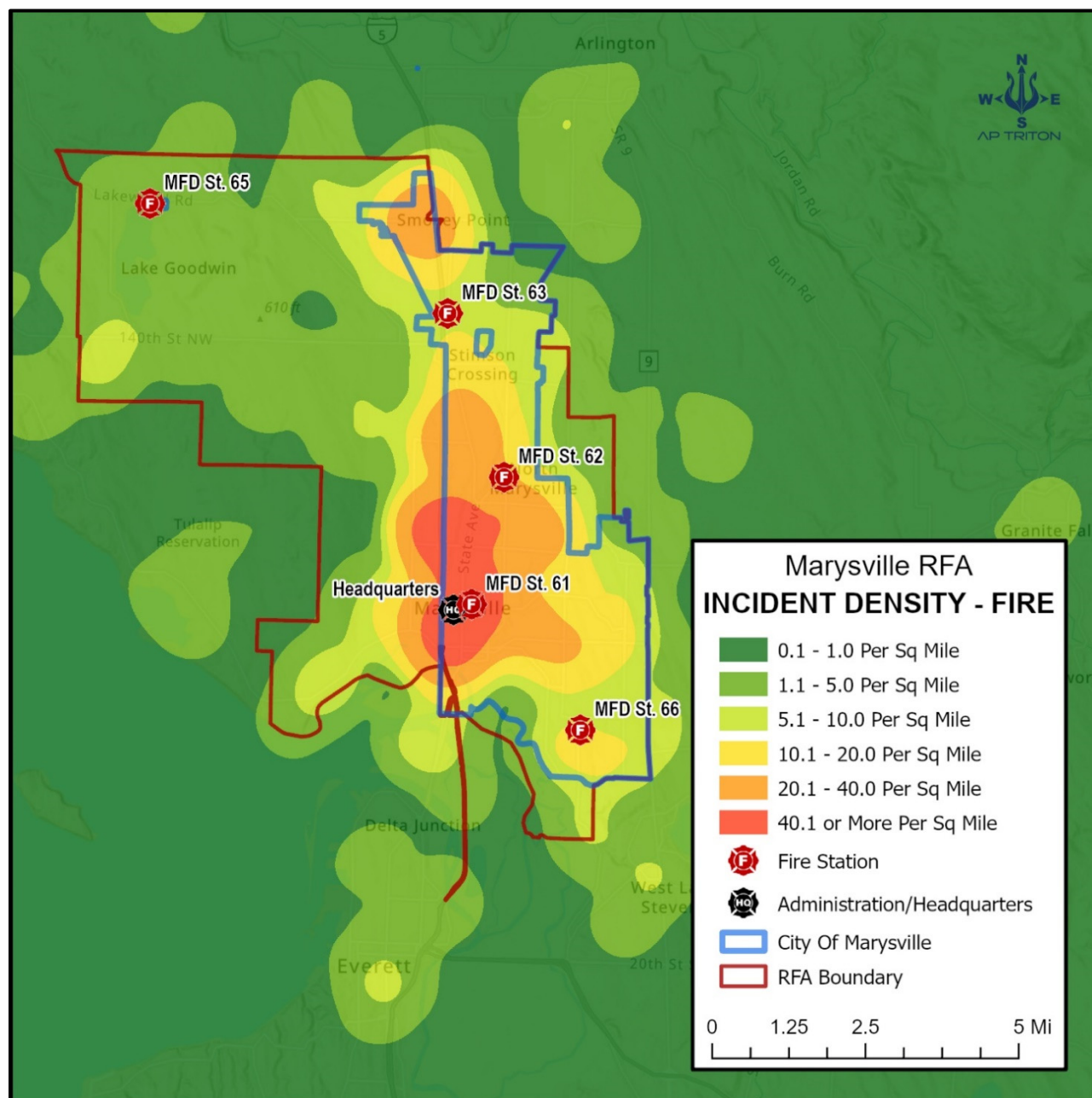
Figure 89: Incident Density—EMS Incidents (2019–2022)



This indicates a strong correlation between the EMS incidents and the total call volume. While this may give a general idea of where to focus medical prevention efforts, it does not address the more hazardous incident types. Fires represent one of the most demanding responses MFD will encounter—both for the risk and the complexity.

The next figure shows the incident density within the district for fire incidents.

Figure 90: Incident Density—Fires (2019–2022)



For MFD, there is a strong correlation between fire incident density and overall incident density. It is noteworthy to evaluate the scale of the density. Where widespread EMS incidents include thousands of responses, fires only account for a fraction of that volume.

Most fire agencies have certain facilities or addresses that demand more responses and resources than others. This is typically a combination of occupancy type and the clientele demographics within the building. MFD had several locations where multiple responses were required throughout the study period.

None of the occupancies was a primary driver of incident volume, and there was a rapid drop between the highest demand occupancies and the tenth most common. The following figure shows the ten most common addresses within the data set and the percentage of medical incidents.

Figure 91: Top 10 Incident Responses by Address (2019–2022)

Location	Location Type	Incidents	% EMS ^A
2901 174 th Street	Medical Clinic	1,077	95%
4420 76 th Street	Medical Clinic	1,045	97%
10200 Quil Ceda Blvd.	Casino	886	87%
2203 172 nd Street	Senior Living	676	74%
9912 48 th Drive	Senior Living	583	69%
1216 Grove Street	Senior Living	498	95%
9802 48 th Drive	Assisted Living	480	85%
11015 State Avenue	Assisted Living	475	96%
16600 25 th Avenue	Mobile Home Park	446	76%
5900 64 th Street	Mobile Home Park	438	81%

^APercentages rounded to the nearest integer.

Service Demand by City

The next figure shows service demand by the city documented for each incident during the 24-month period of 2022–2023. It must be noted that addresses listed as “Marysville” are not necessarily within the Marysville city limits.

Figure 92: MFD Service Demand by City (2021–2022)

City	No. of Calls	% of Total ^A
Marysville	25,992	87%
Arlington	1,950	7%
Stanwood	1,009	3%
Lake Stevens	515	2%
Everett	452	2%
All Others Combined	113	<1%

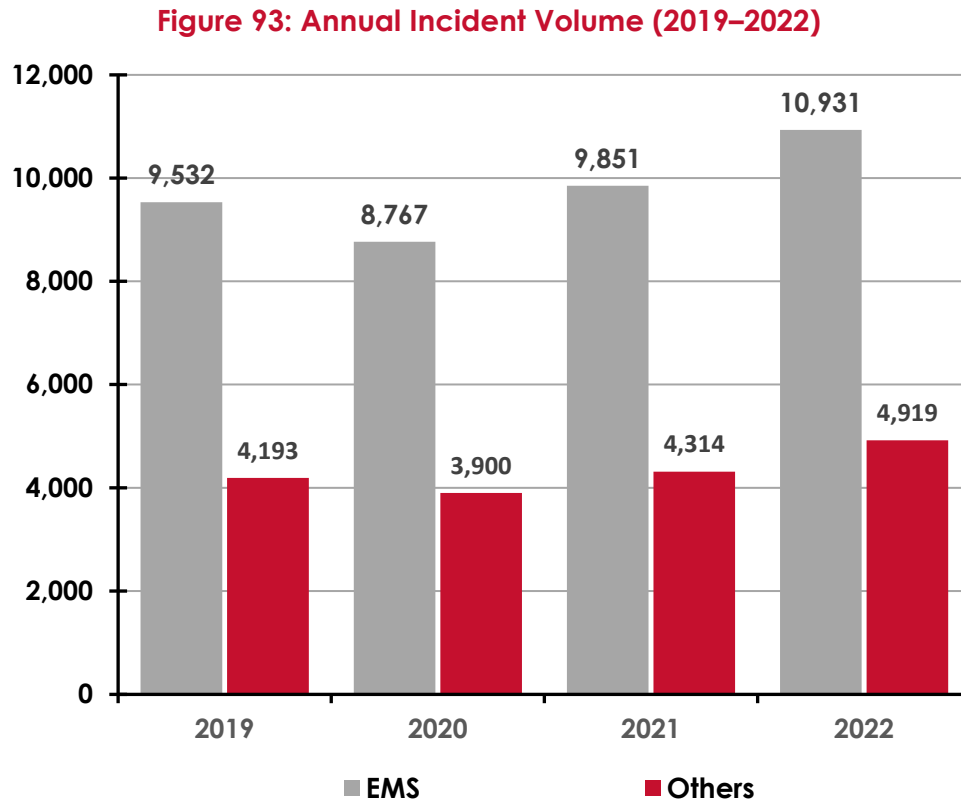
^APercentages rounded to the nearest integer.

As shown in the preceding figure, and not unexpectedly, incidents with a Marysville address represented the majority of call locations by city, followed by Arlington and Stanwood.

Temporal Analysis

The annual incident count for MFD has generally increased from 2019 through 2022, with a 15% increase in four years. 2020 showed a dip in service demand, with an immediate rebound in 2021. While it is not entirely understood what caused this decrease in need, it is likely due to the societal lockdown during the COVID-19 pandemic—which was also found in other public safety agencies studied by Triton over the same period.

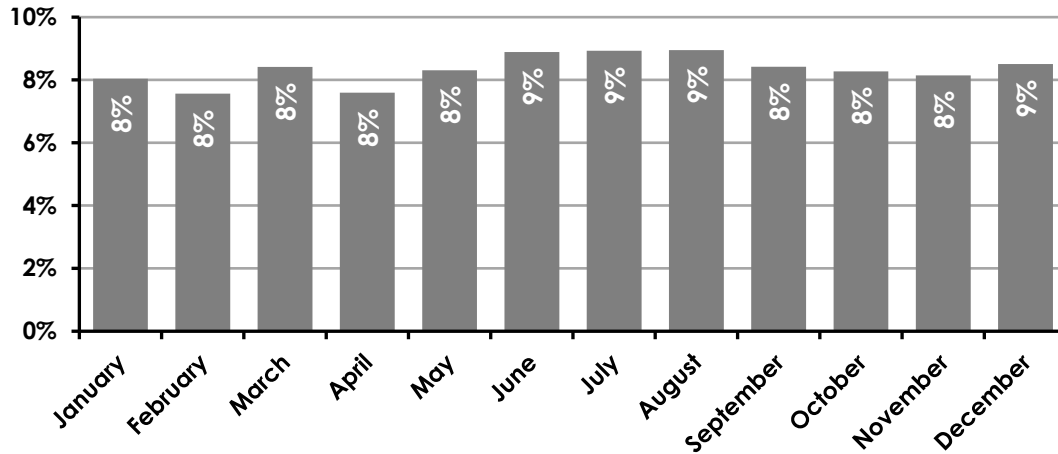
The following figure shows the annual incident count of EMS and all other incident types for the study period.



Analyzing the incident volume by month, day of the week, and hour is valuable when attempting to schedule events or add staffing. Additionally, the months analysis may reveal seasonality for the service needs. At the same time, days and hours may indicate the population movement and activities throughout the days.

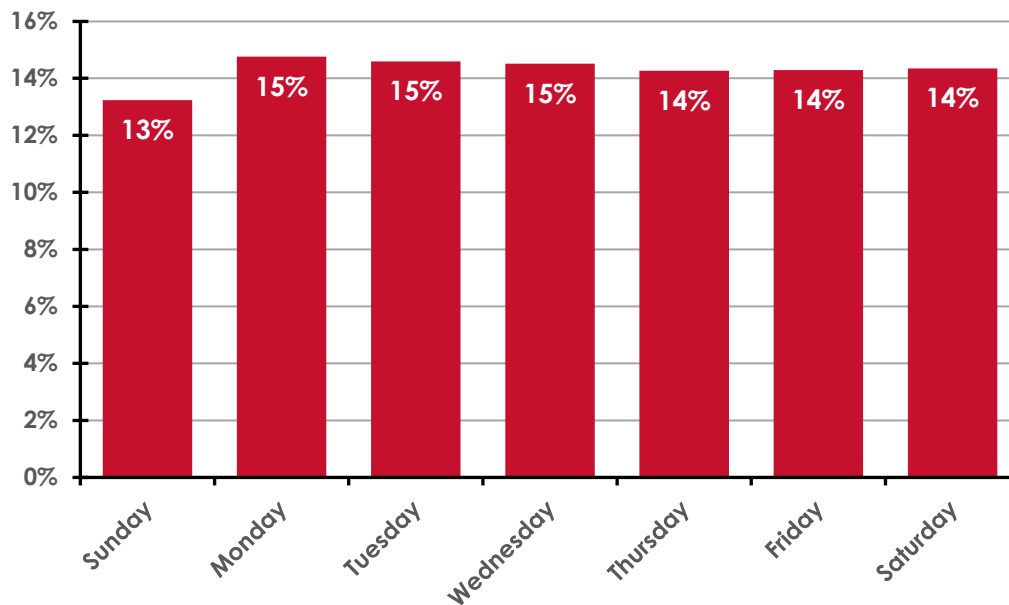
The following figure analyzes incident percentages by month for 2019 through 2022.

Figure 94: Monthly Incident Percentages (2019–2022)



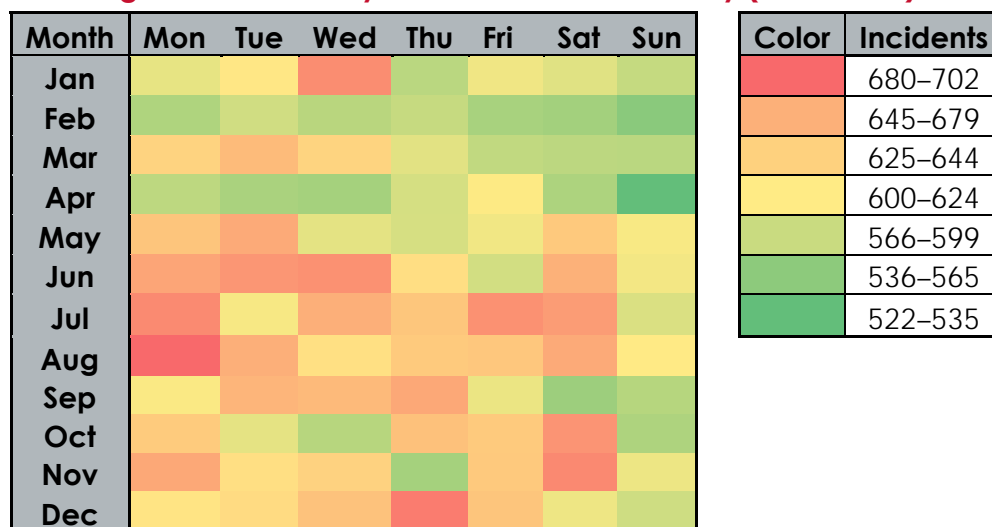
There appears to be minimal variation for each month and minimal seasonality to the incidents. While the winter months are slightly lower, the overall difference from the expected standard distribution was less than +/- 1%.

Another dimension for evaluation is the percentage of incidents that happen by the day of the week. The following figure is the percentage of incidents that occur by the weekday and includes all the detailed incident data.

Figure 95: Weekday Incident Distribution (2019–2022)

There is slight variation throughout the weekdays, although Sundays are approximately 1% lighter than the rest of the week.

It can be helpful to combine the month and day dimensions to identify potentially significant combinations of the month and weekday. For example, the following figure shows the density of call volume by month and weekday.

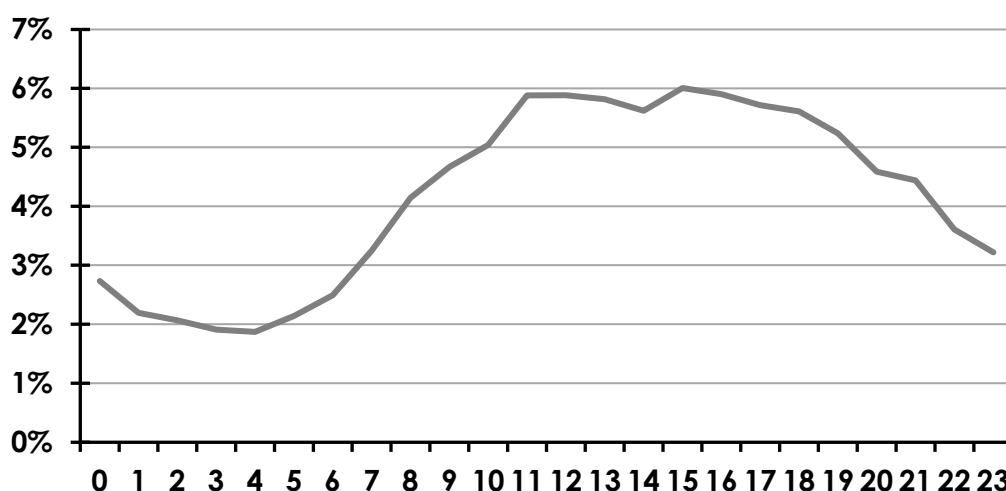
Figure 96: Weekday & Month Incident Density (2019–2022)

As with the individual evaluation, there are no substantial variations. Sunday has a lighter response demand each month. Still, there is no strong correlation between the incident demand and day or month.

Another analytic dimension is to evaluate call volume throughout the hours of the day. For example, fire and EMS incidents are distributed unequally throughout most systems throughout the day. The daytime is typically more active than the evening, night, and early morning.

The driving force behind this phenomenon is likely that people are awake and moving. The following figure indicates that MFD closely follows this daytime pattern, with approximately 70% of incidents occurring between 8 a.m. and 8 p.m.

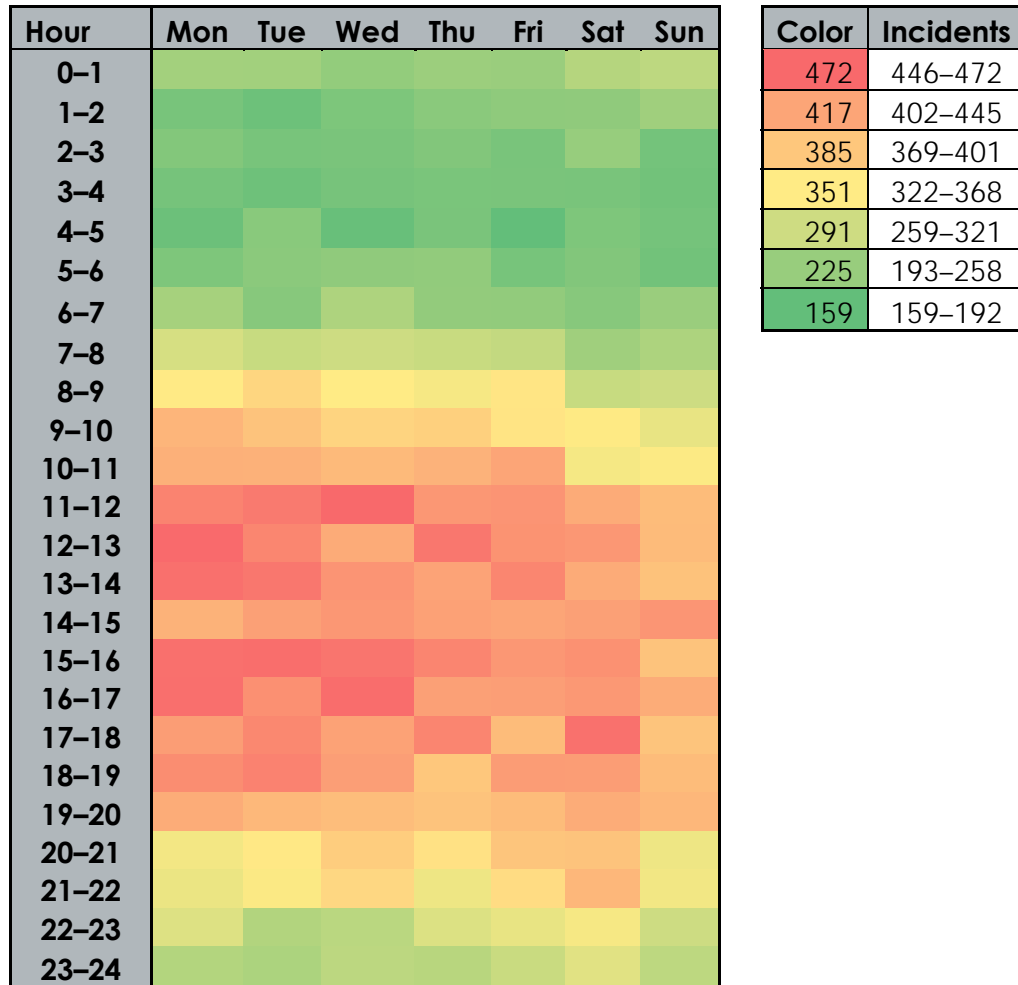
Figure 97: Incident Variation by Hour of the Day



It is essential to understand the combination of the hour of the day and the day of the week. By evaluating that density, some hot spot times can be identified. In MFD's case, the evaluation shows a consistent and statistically significant pattern of daytime calls regardless of the day of the week. The incident volume shifts slightly from Friday to Saturday to later in the evening, but this is not a significant shift.

The following figure indicates incident density by the hour and day of the week for all incidents between January 1, 2019, and December 31, 2022.

Figure 98: Incident Demand by Day & Hour



Resource Distribution

Several key performance metrics assist in identifying the effectiveness of resource distribution. A broad allocation of resources allows for a more rapid first response to any given area. However, the first unit is only a portion of the deployment question. It is critical to have enough units to respond to incidents' volume, type, and severity. It is also essential to attempt to equalize the unit responses.

Geographic Distribution Analysis

Units and stations should be distributed to allow the best chance of reaching an incident in its earliest stages. There are two primary sources for performance standards that address this geographic distribution. The Insurance Services Office, Inc. (ISO) defines distance, while the National Fire Protection Association (NFPA) utilizes time as a criterion.

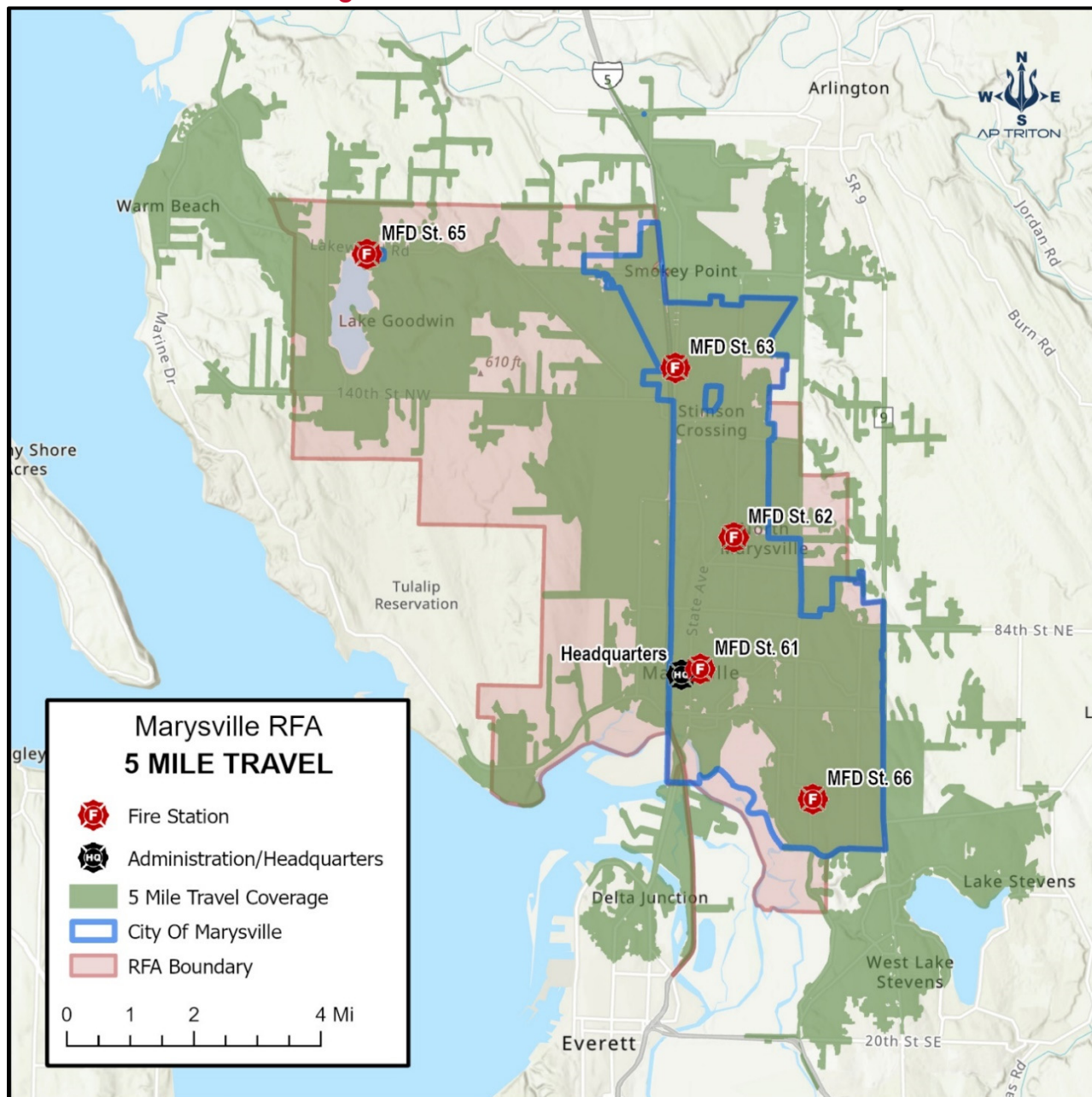
The Marysville Fire District protects a service area of approximately 55 square miles. As shown earlier in this report, the first-due response areas of each MFD fire station are as follows (rounded to the nearest integer):

- Station 61: 10 square miles
- Station 62: 7 square miles
- Station 63: 15 square miles
- Station 65: 17 square miles
- Station 66: 6 square miles

Combined, MFD's five fire stations have an average first-due response area of about 11 square miles.

ISO uses five miles from a fire station as its standard. The following figure shows the 5-mile travel distance from a fire station.

Figure 99: ISO Five-Mile Travel Distance



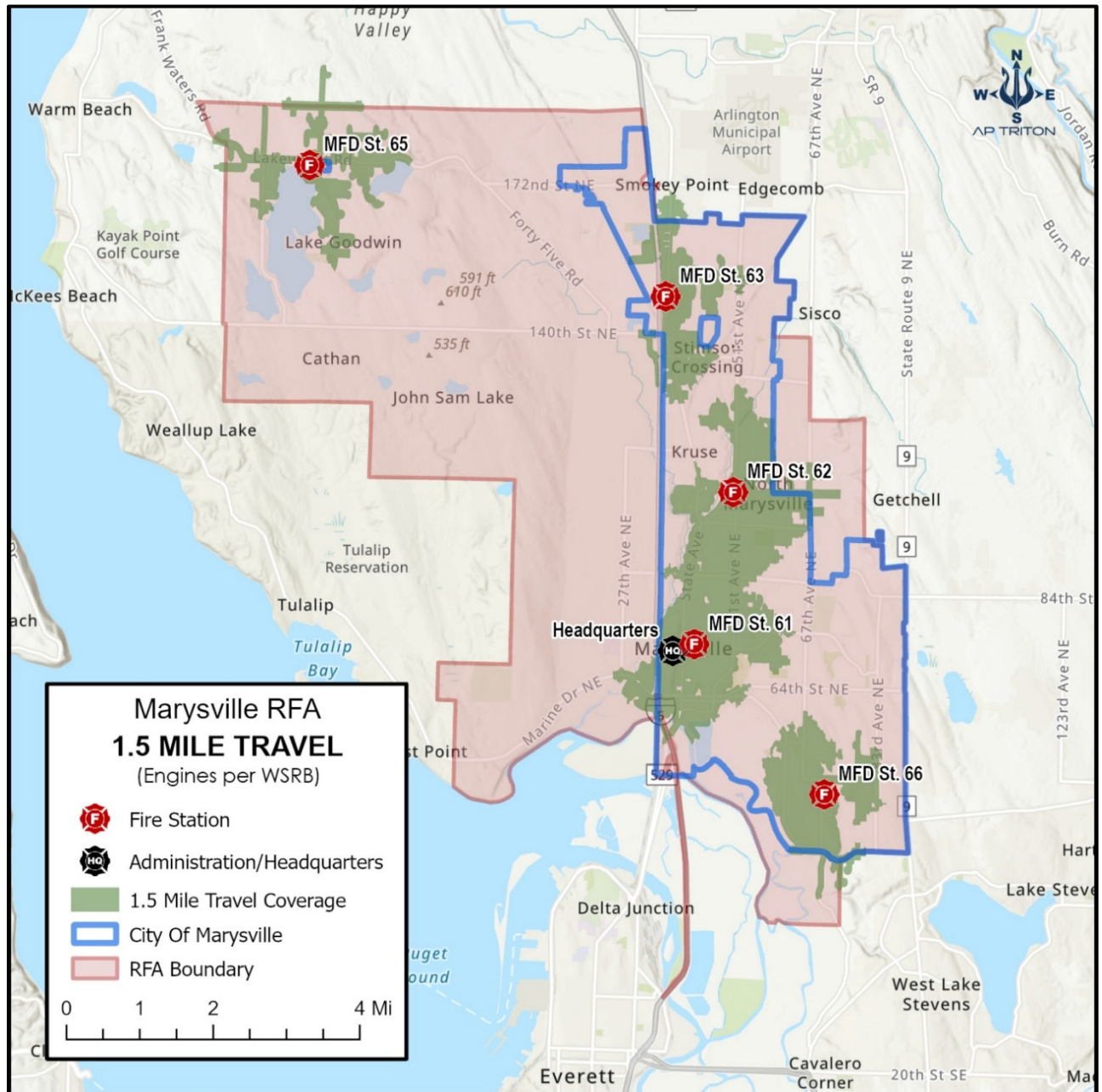
The overall 5-mile station coverage is sufficient for the populated areas of the response area. Within the data, many places that appear not to have coverage are without roads.

For full credit in an ISO Fire Suppression Rating Schedule (FSRS), any building within the jurisdiction should be within 1.5 miles of an engine company and 2.5 miles of a truck company.⁵² MFD has an engine at four fire stations, with the ladder at Station 62 capable of working as an engine. While ISO will give partial credit for an apparatus considered a Quint or a truck that can operate as an engine, this geographic analysis looks at Ladder 62 as Quint, acting as either an engine or a truck.

The four engines and one truck can provide moderate coverage to the entire city; however, the district boundaries are not as well protected.

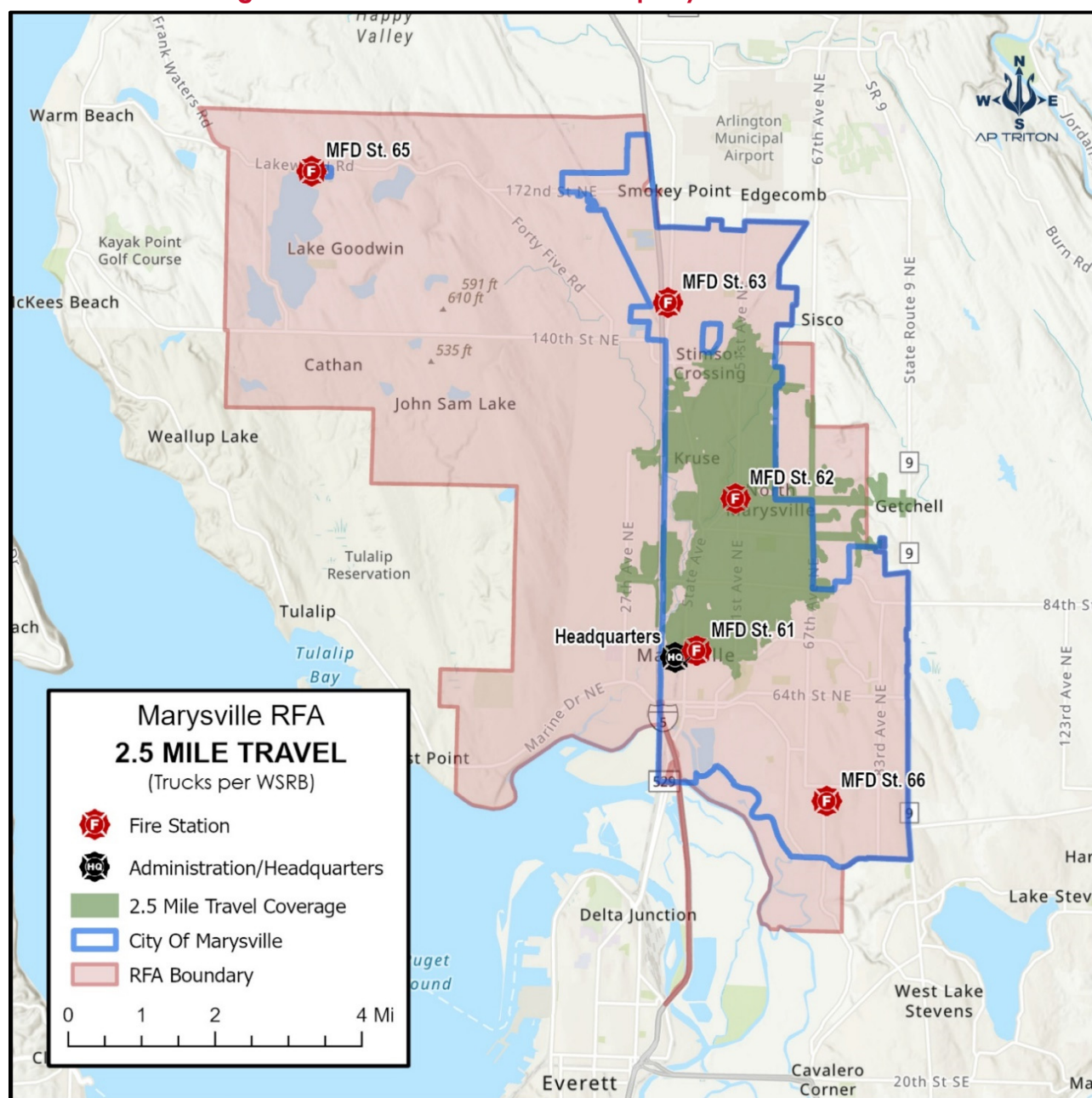
The following figure shows the 1.5-mile travel distance from each station as they house engine companies.

Figure 100: ISO 1.5-Mile Engine Company Travel Distance



ISO judges specialized equipment, such as a truck company, separately from an engine company. While engine companies are typically found at most fire stations, truck companies are only located at specific locations. ISO requires these truck companies to be within 2.5 miles of any building. Since MFD runs one truck company from Station 62, there is an extended travel distance to many portions of the city. The following figure shows the 2.5-mile road travel from Fire Station 2 and Ladder 62.

Figure 101: ISO 2.5-Mile Truck Company Travel Distance



Unit Workload Analysis

Unit workload should be balanced to maintain readiness, resiliency, and service availability. While it is prevalent for one unit to be busier than others, no crew should carry too heavy a load, which can make them less effective.

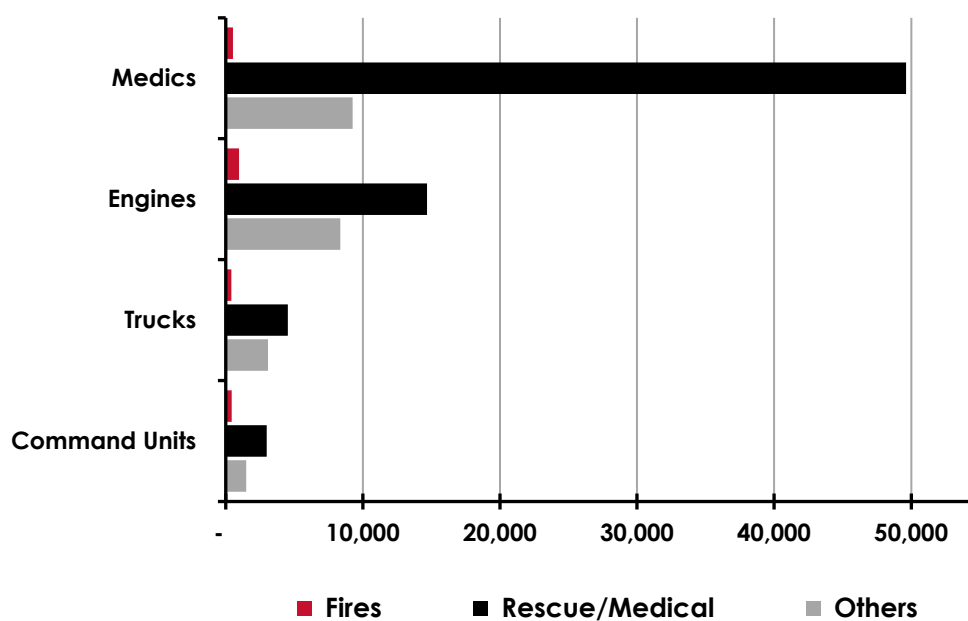
Incidents by Unit

MFD had 33 unique units responding to all calls within the incident records. However, over 94% of all unit responses were accomplished by the frontline engines, trucks, and medic units. The remaining units included chief officers, staff officers, fire marshal and inspection units, specialty units, and other response vehicles. Six additional pieces of equipment are in the response data and cross-staffed. Cross-staffed apparatus were included in the primary unit's data when applicable.

Medic and aid units accounted for over 60% of the response data, while the engines and trucks comprised approximately 34% of the service demand. All units except Aid 62 show a general trend of increasing volume from 2020. The COVID-19 pandemic complicates a detailed trend analysis.

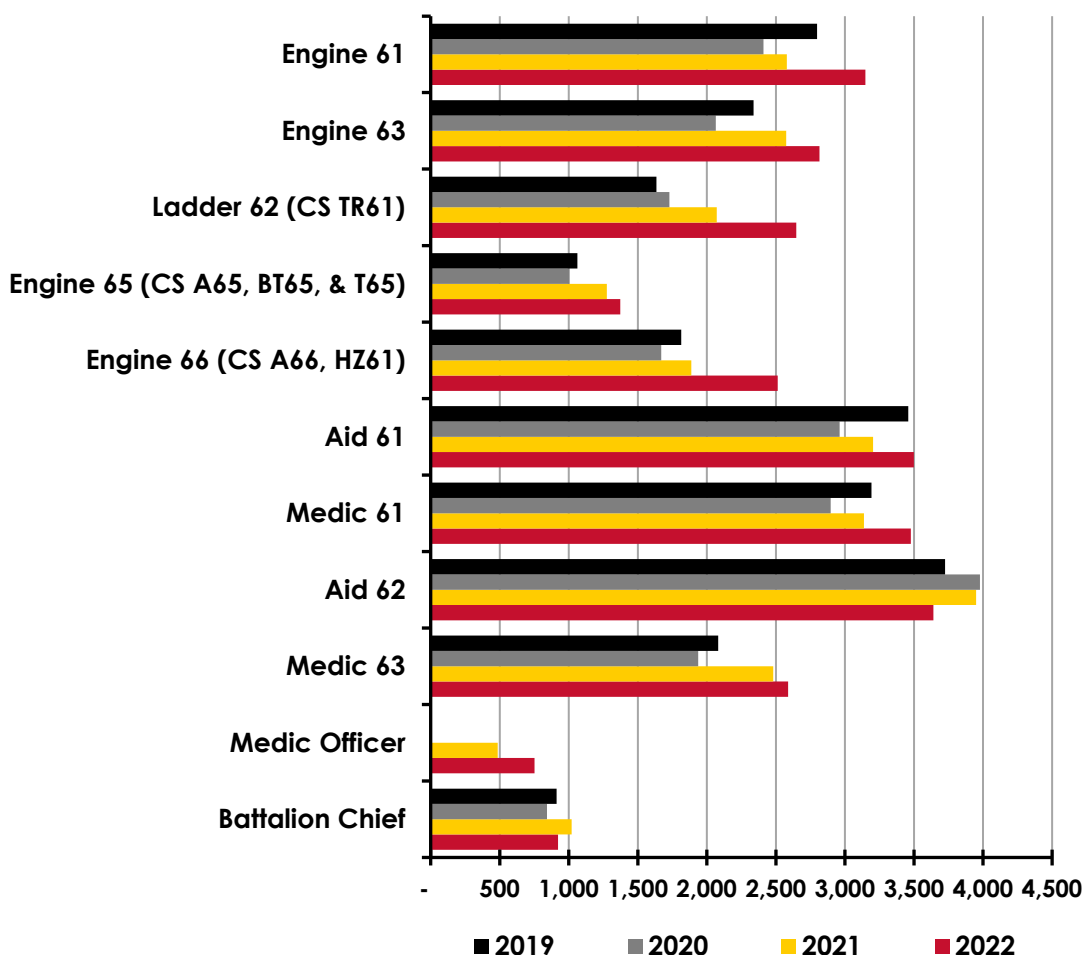
The following figure shows MFD's top responding unit types for 2019 through 2022.

Figure 102: Annual Incident Responses by Apparatus Type (2019–2022)



The workload is not evenly distributed across all the apparatus. Most responded to more than 2,500 incidents in 2022. This equates to approximately seven incident responses per day—a significant number. Engine 65, the MSO, and the Battalion Chief were the exception. The next figure shows the response volume of each apparatus for each year in the study period.

Figure 103: Annual Incident Responses by Unit (2019–2022)

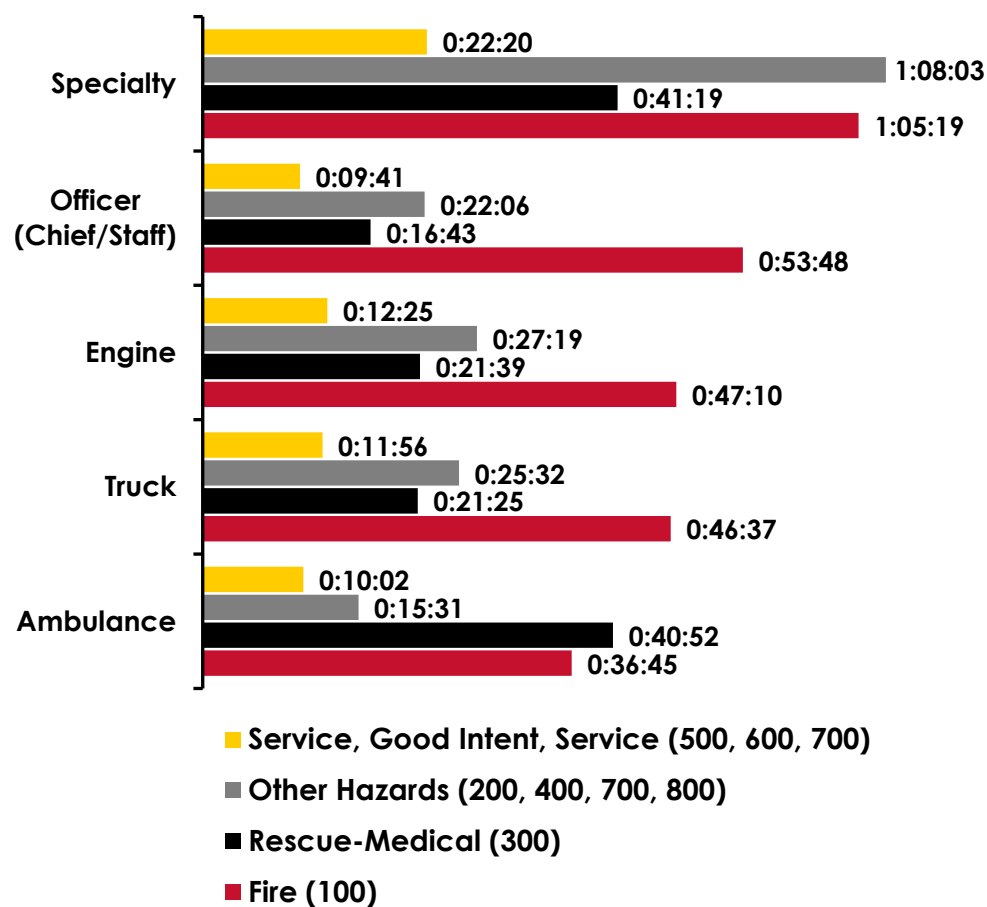


Each incident requires a unit to remain on the scene to handle the situation. Therefore, a general idea of how long a specific crew will stay on the incident can assist operational planning. MFD has five primary types of units that respond to emergencies. Medic and aid units were typically committed for longer periods on rescue and medical scenes. Trucks and engines have different specific functions. However, their average time on incidents was similar, so they were grouped for this analysis.

Specialty units, such as the hazmat, boat, and technical rescue trailer, do not respond as frequently but are typically committed for more extended periods per specialty incident. Finally, the chief and staff officers within the MFD system are committed longer to more complex incidents.

The following figure shows the average minutes each apparatus type was committed to a given incident category for the entire study period.

Figure 104: Average Unit Commit Time by Apparatus and Incident Type



One final dimension of unit workload is how much time each unit is committed to incidents throughout the year. The unit hour utilization (UHU) calculation evaluates how much time a crew is committed to an incident versus the total time on duty during a specific time frame. The formula for this calculation is the total time committed to an incident divided by the sum of all time the unit is staffed.

$$UHU = \frac{\sum \text{Time Committed to a Scene}}{\sum \text{Time Unit is Staffed and In Service}}$$

The desire is for the primary unit at a station, typically an engine or Quint company, the most flexible response unit, to be under 10% UHU. Maintaining 10% UHU should indicate that the area has 90% availability from unscheduled events. Stations with multiple engines and quint companies should aggregate to less than 10% UHU for all similar units. However, ambulance UHU rates are the subject of much debate within the fire service.

Due to the ancillary work crews must accomplish and given that the personnel should be able to rest and eat, a 24-hour shift unit should not have a UHU above 45%. Any 24-hour aid or medic unit approaching 30% should be evaluated to determine whether the crews are getting enough training, rest, and fitness time to prevent burnout.

MFD has a busy system, and the incident workload is unevenly distributed. However, many engines are at or above the cautionary UHU amount. The ambulances are not necessarily at the cautionary 30%, but Aid 62 is approaching.

The following figure shows the UHU rates for each staffed and cross-staffed apparatus.

Figure 105: MFD UHU Rates by Apparatus & Other Units

Apparatus & Units ^A	2019	2020	2021	2022	Average
Engine 61	10%	9%	9%	11%	10%
Aid 61	24%	21%	22%	29%	24%
Medic 61	19%	16%	17%	19%	18%
Ladder 62 (and CS units)	6%	7%	8%	10%	8%
Aid 62	26%	30%	31%	30%	29%
Battalion Chief	3%	3%	4%	3%	3%
Engine 63	9%	9%	10%	12%	10%
Medic 63	13%	11%	14%	15%	13%
Engine 65 (and CS units)	9%	8%	11%	10%	10%
Engine 66 (and CS units)	11%	10%	11%	14%	12%

^ACS = Refers to cross-staffed units. Note: Percentages rounded to the nearest integer.

Not all the time committed to an incident is apparent in the data. Crews may be out of service for maintenance, training, or other events that do not appear in this analysis. Approximately half of a crew's day may be spent in administrative, training, or recovery activities.

For example, assuming the crews are allowed eight hours of rest and recovery daily, two hours for meals, and two hours for station, equipment, and vehicle maintenance. That totals to 12 hours. Additional time is usually given to physical fitness, training, and public education.

Reliability

Creating a reliable system requires units arranged geographically and enough units in service to run the multiple responses required. As indicated above, many units are reaching the recommended usage rate. The following expands that information with concurrency and multiple units' responses.

Concurrency

Incidents that happen simultaneously can impact an agency's ability to respond. While MFD maintains multiple units at each station, there may be times when all crews are engaged, leaving the jurisdiction reliant on outside aid.

The first dimension of the concurrency evaluation is how often, within MFD's primary jurisdiction, there is more than one incident at any given time. For example, the following figure shows how often multiple incidents happen simultaneously within the MFD primary response area.

Figure 106: Concurrent Incidents in Jurisdiction (2019–2022)

Incidents in Process	Historic Probability
1 Incident	34%
2 Incidents	34%
3 Incidents	20%
4 Incidents	9%
5 Incidents	3%
6 Incidents	1%
> 7 Incidents	<1%

It is common for MFD to be running simultaneous incidents within the jurisdiction. The data collected had additional information that split the incidents into specific battalions, presumably station response areas. The following figure shows how often incidents within the jurisdiction happen within the same station area.

Figure 107: Concurrent Station Incidents (2019–2022)

Incidents in Process	Historic Probability
1 Incident	75%
2 Incidents	21%
3 Incidents	4%
4 Incidents	1%

The jurisdictional incident count study indicates that MFD responds many times outside the city limits of Marysville.

The following figure demonstrates how often MFD works on multiple incidents throughout the response system.

Figure 108: Concurrent Incidents for Entire Area (2019–2022)

Incidents in Process	Historic Probability
1 Incident	31%
2 Incidents	34%
3 Incidents	21%
4 Incidents	9%
5 Incidents	3%
6 Incidents	1%
> 7 Incidents	<1%

When considering its entire workload—not just incidents within the city—the number of concurrent incidents increases significantly, especially in the third and fourth incident categories.

Another factor in unit workload is the number of units assigned to a specific incident. The majority of MFD incidents, over 96%, are accomplished by either one or two companies. The following figure shows the percentage of incidents where the specified number of response units were assigned to an incident.

Figure 109: Multiple Units Assigned Percentage (2019–2022)

Incidents in Process	Historic Probability
1 Incident	52%
2 Incidents	30%
3 Incidents	13%
4 Incidents	3%
5 Incidents	1%
6 Incidents	1%
>7 Incidents	<1%
> 8 Incidents	<1%

Queuing Analysis of MFD Fire Stations

A process called “queuing analysis” was used to evaluate how well each fire station serves the community by the hour of the day. This process utilized a probability analysis to determine the likelihood that a crew from a particular fire station would be unavailable to serve an incident. It uses the following variables: incidents per hour, number of available response units, number of incidents during the day (0800–1959 hours), number at night (2000–0759), and average time committed per incident (one hour).

A queuing analysis does have some limitations. It assumes that incidents arrive at a constant rate, which is not always accurate in emergency services. It also assumes that each incident or “customer” requires an equal amount of time from the emergency response units. Although the average time committed to an incident was used for service time, some incidents require less or substantially more than the average.

The following analysis used the total number of *staffed* units (regardless of type) available to MFD at each of the fire stations as follows:

- Station 61—Three units (engine, medic, BLS aid unit).
- Station 62—Two units (ladder, BLS aid unit).
- Station 63—Two units (engine, ALS medic unit).
- Station 65—One unit (engine with cross-staffed units).
- Station 66—One unit (engine with cross-staffed units).

The following queuing analysis results are based on all incidents in each station's response zone—emergent and non-emergent during 2022.

Figure 110: Wait Probability by MFD Fire Station (2022)

MFD Station	No. Day Calls	No. Night Calls	Calls/Hour (0800–1959)	Calls/Hour (2000–0759)	— Wait Probability —	
					Day	Night
Station 61	3,573	1,877	0.82	0.43	3%	1%
Station 62	2,048	1,170	0.47	0.27	6%	2%
Station 63	1,999	909	0.46	0.21	5%	1%
Station 65	580	330	0.13	0.08	10%	6%
Station 66	1,039	622	0.24	0.14	19%	11%

Note: Percentages are rounded to the nearest integer.

The preceding figure shows that the probability of waiting for a Marysville Fire District apparatus is highest during the day at Stations 65 and 66 and at night at Station 66. Therefore, incidents at those stations during those time intervals have the highest probability of a customer being required to wait for the next closest or available apparatus, aid, or medic unit. Percentages above 10% indicate a fire station with insufficient resources to respond to all calls within its response zone.

Operational Performance Review

When evaluating a system, having a set of objectives or standards against which to judge performance is helpful. While national and state standards may be recommended, it is up to the authority having jurisdiction to adopt specific ones in Washington State. In this case, MFD has adopted performance goals.

MFD utilizes 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 (NFPA 1710). While MFD did not indicate it works toward the NFPA 1225 Standard for Emergency Services Communications, that standard will also be used as a reference for this report. MFD has adopted a turnout time standard of 1 minute during the day and 2 minutes at night.

Evaluating overall performance requires an understanding of the lifecycle of an incident. It starts with a normal state and should end with a new normal state, but there are many measurable time segments in between. Some elements, such as call processing time and turn out time, can be improved by tactical management techniques such as training and policy. However, other time segment performances, such as travel time, are typically managed by a strategic methodology such as station location.

The following figure identifies each time segment in the incident lifecycle, an example of a key performance indicator (KPI), and the applicable NFPA standards.

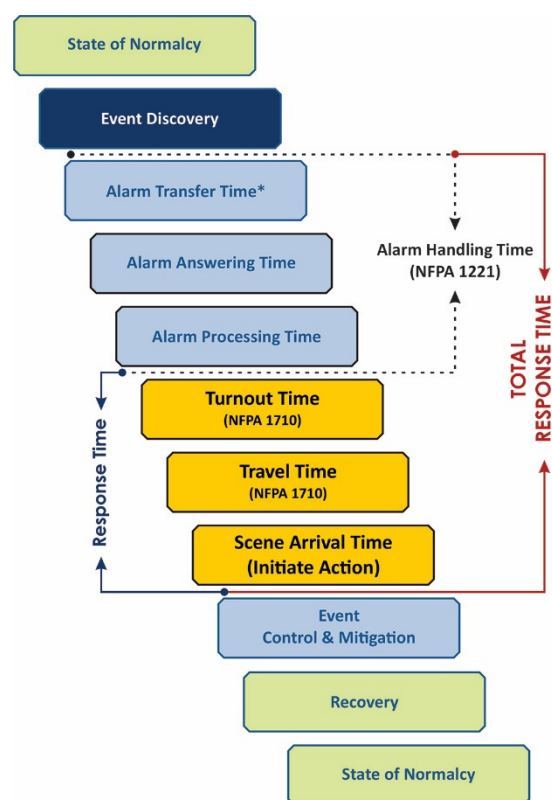
The incident data provided did not allow for analysis of all time segments in the above list. However, enough information was provided to evaluate call processing, turnout, travel, and total response time. NFPA and MFD-adopted standards will be used as a performance benchmark.

The time segment performance standards are evaluated as a percentile. This will allow MFD to compare its performance against other agencies and the standard with a similar statistical technique.

Call Processing Analysis

There are several time measures of a dispatch center. The metrics identified in NFPA 1225 and NFPA 1710 are ring time and call processing. Ring time measures when the phone in dispatch begins to ring until someone answers.

Figure 111: Incident Lifecycle



*If alarms are received directly at fire department communication center and not transferred from a PSAP, alarm transfer time is zero.

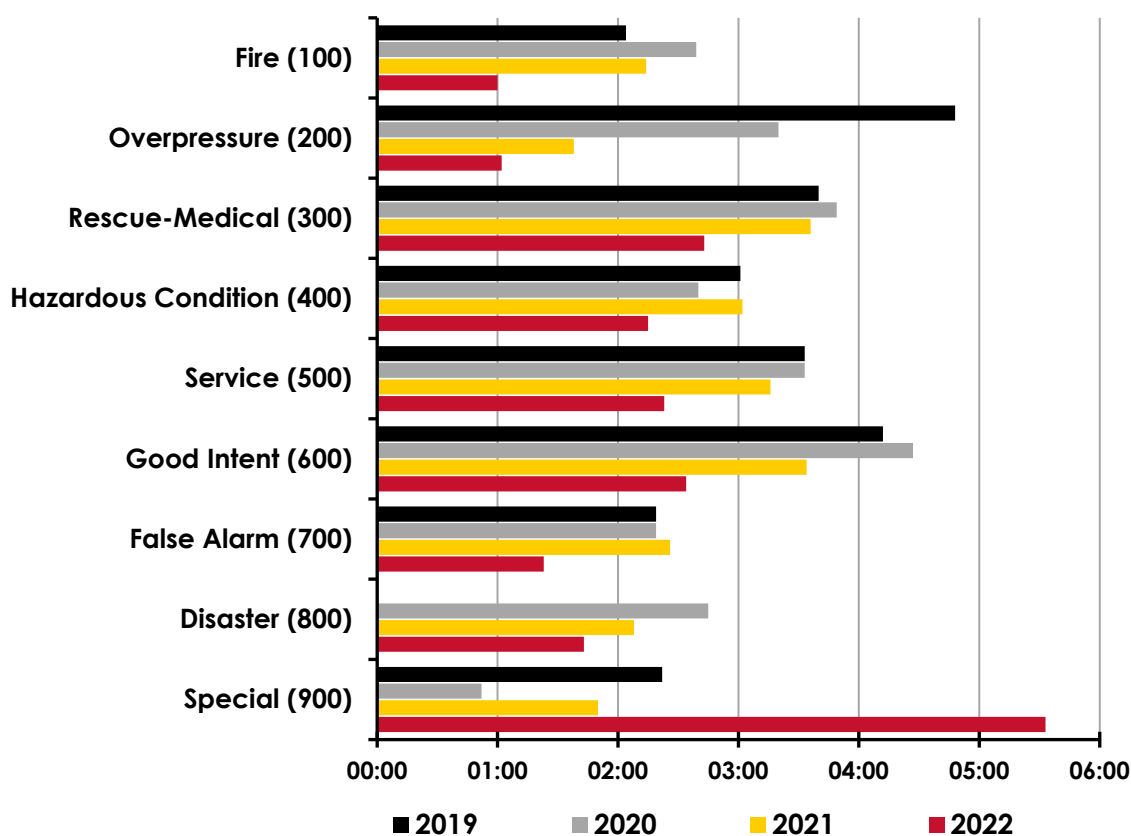
NFPA 1225 requires the ring time to be less than 15 seconds 90% of the time and less than 20 seconds 95% of the time. Call processing indicates the time it takes from when a person answers the call for help until the first unit is notified there is an incident. Ring time is typically captured in a separate system and was unavailable for this report. However, sufficient data was available to evaluate call processing.

Call processing should start from when the phone is answered until the first, preferably correct, unit has been notified that an incident is in progress. However, there is typically a short period (seconds usually) from when the phone is answered, and the incident is started in the computer-aided dispatch system. For this analysis, it is assumed that this short period, while not captured, is inconsequential.

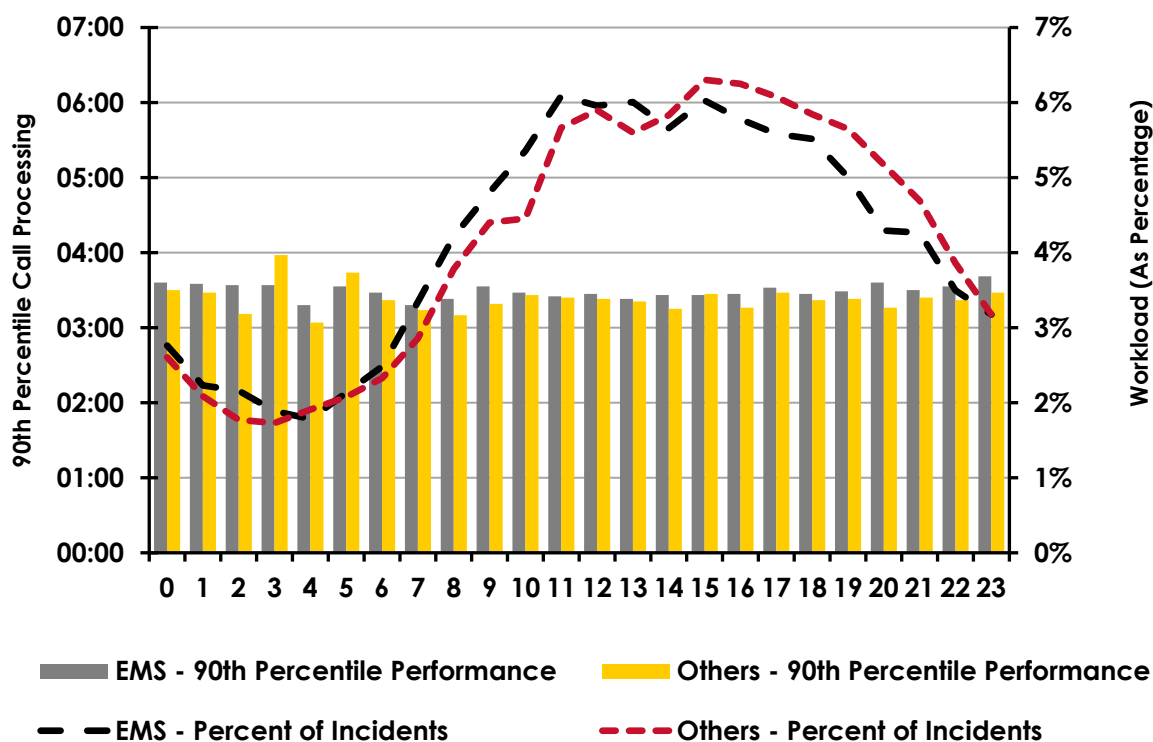
NFPA 1225 standard indicates that a high-priority incident should be processed within 60 seconds 90% of the time. NFPA requires an agency that utilizes priority dispatch systems, such as EMD, to adopt a time standard for each dispatch category. These incident types include those requiring emergency medical questioning, hazardous materials incidents, and technical rescue incidents. This additional time is available for persons needing translation, calls from devices used by hard-of-hearing individuals, text messages, and calls requiring location determination.⁵³

The data provided was evaluated for integrity and reliability. It was found that 4.2% of the data was statistically unreliable. One percent of the data was dropped during data engineering for bad records, and 409 records were removed due to incomplete or unusable time data.

After evaluation, the outlier policy was set at anything over 8 minutes. This was a natural break; after evaluation, some of the extended dispatch times appeared accurate. However, that did leave 54,748 incidents for assessment. Overall, dispatch is processing incidents at 3 minutes and 27 seconds 90% of the time. The following chart shows the call processing time at the 90th percentile based on the NFIRS incident grouping for 2019-2022.

Figure 112: Call Processing by Incident Type (2019–2022)

Another dimension of the call processing time is how incident workload affects dispatch center performance. The dispatch center manages the workload well, and the call processing time is consistent by the hour. The following figure is the call processing times of medical incidents and all other incidents by the hour of the day, with the call load added as a reference.

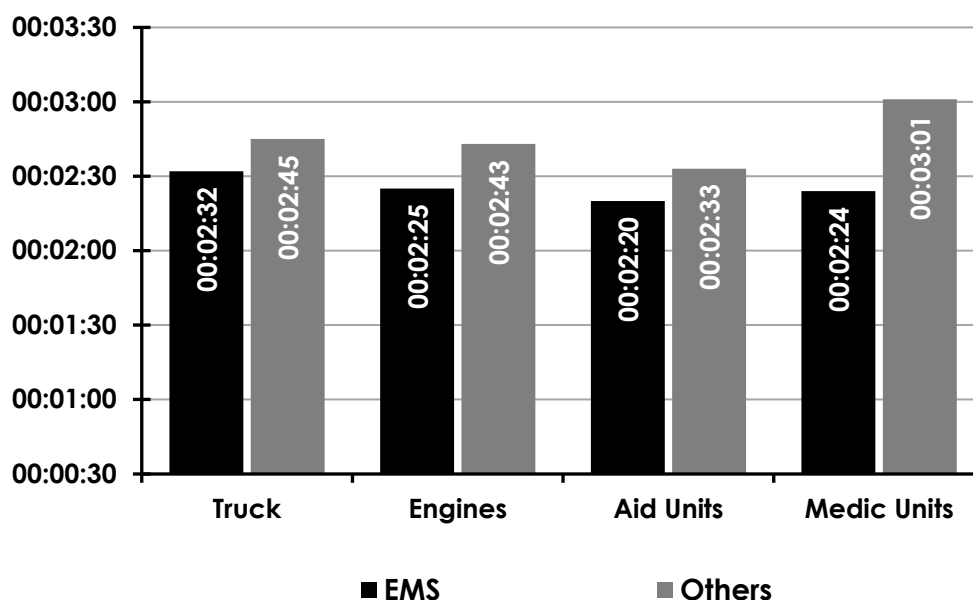
Figure 113: Call Processing by Hour (2019–2022)

Turnout Time Analysis

Turnout time is the difference between when the unit is notified of an incident and when it starts to respond. NFPA 1710 indicates the performance measure for this time segment is 60 seconds for medical incidents and 80 seconds for fire incidents. For this analysis, the incidents will be grouped by EMS and all others to match this standard. In addition, MFD stated a turnout time standard of 1 minute during the day and 2 minutes at night.

The data was analyzed for statistical reliability. The total usable data included 90,920, or 92% of the total unit data. In addition, to ensure the responding crew was facing an urgent situation, only incidents the unit responded emergent to and those not canceled were evaluated. In addition, only the frontline apparatus was assessed, not the cross-staffed apparatus or the chief and staff units.

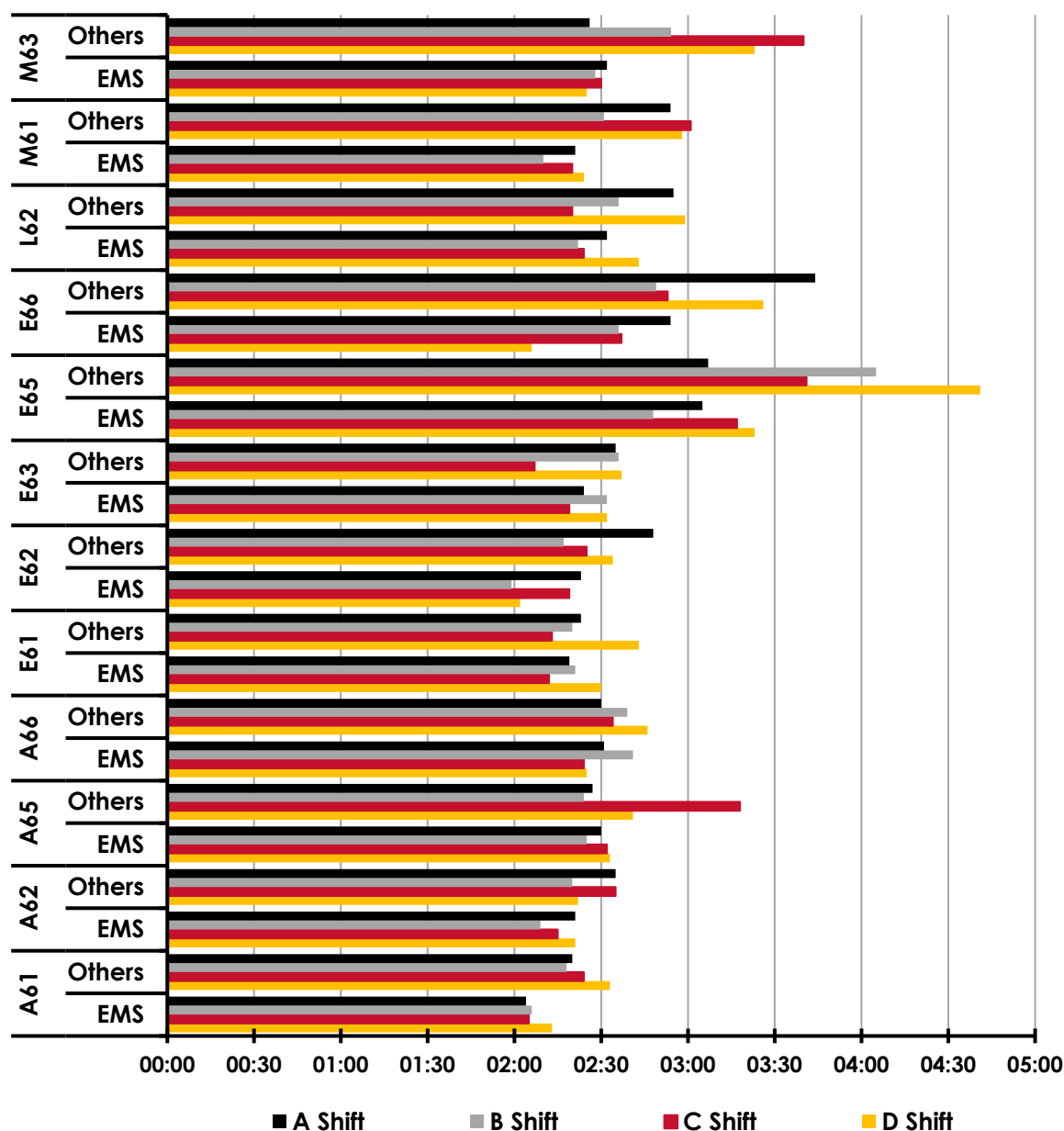
Finally, the outlier policy was set to 8 minutes after evaluation as a natural break, and those under 8 minutes appeared legitimate. This left 53% of the unit data available for analysis. Overall, MFD-staffed apparatus have a turnout time of 2 minutes and 25 seconds at the 90th percentile. The following figure shows the turnout times by unit and general incident types.

Figure 114: Turnout Time by Apparatus Type (2019–2022)

Each apparatus is staffed among four shifts. Evaluating each shift may help indicate where there are physical barriers to performance. Suppose all shifts struggle at a single apparatus or station. In that case, it may indicate an issue with something other than firefighter performance.

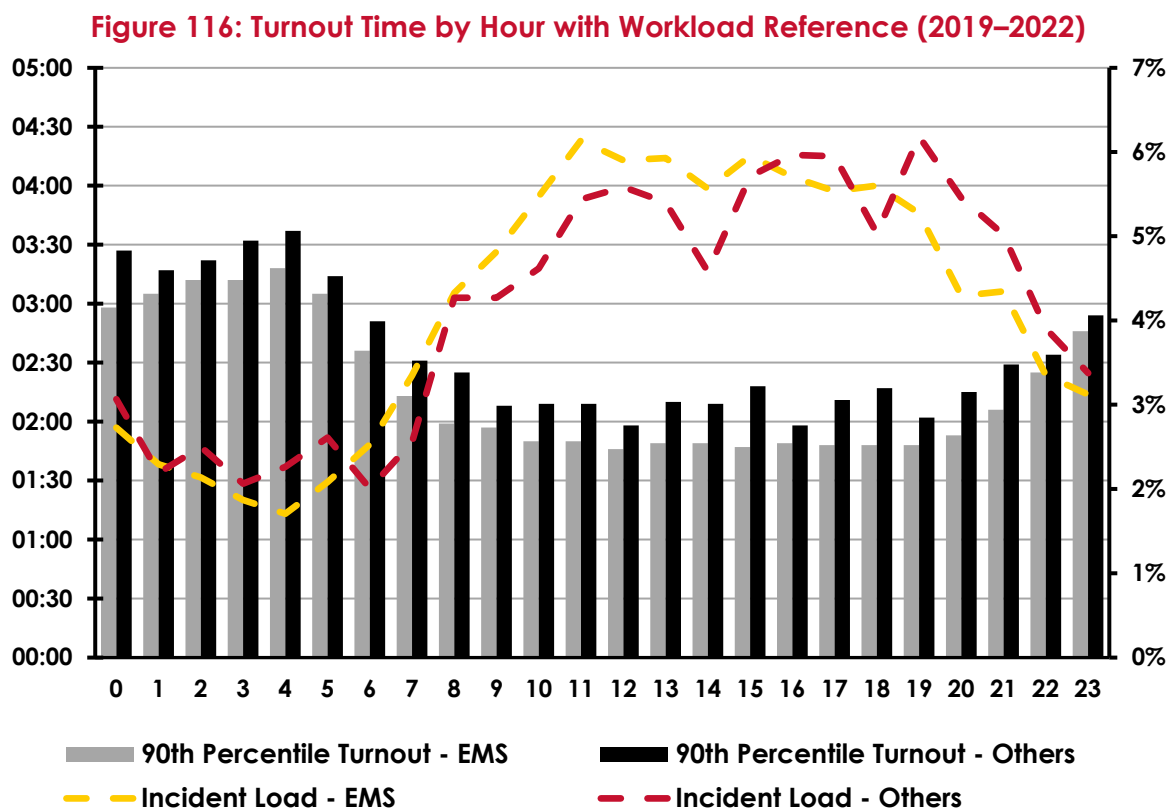
In MFD's case, Engine 65 appears to have the most significant deviation in turnout times from the group norm. However, the lower volume of incidents may be the reason, as a smaller data set is much more sensitive to individual responses with higher turnout times.

The following figure shows the turnout time at the 90th percentile for each staffed unit grouped by shift and general incident type.

Figure 115: Turnout Time by Apparatus & Shift (2019–2022)

One final dimension of the turnout time analysis is the changes in the percentile by the hour of the day. Since MFD staffs their units 24 hours a day, it is expected that crews can try to sleep at night. However, sleeping personnel can impact how quickly they can awaken, dress, and get to the apparatus to begin responding. Because MFD has adopted a day/night turnout time standard, an additional analysis was completed using 8:00 a.m. to 8:00 p.m. as the daytime hours.

This evaluation shows the overall turnout performance to be 1 minute, 54 seconds during the day, and 2 minutes 54 seconds at night at the 90th percentile. The following figure shows the turnout percentile by the hour of the day, with the workload by general incident type added for reference.



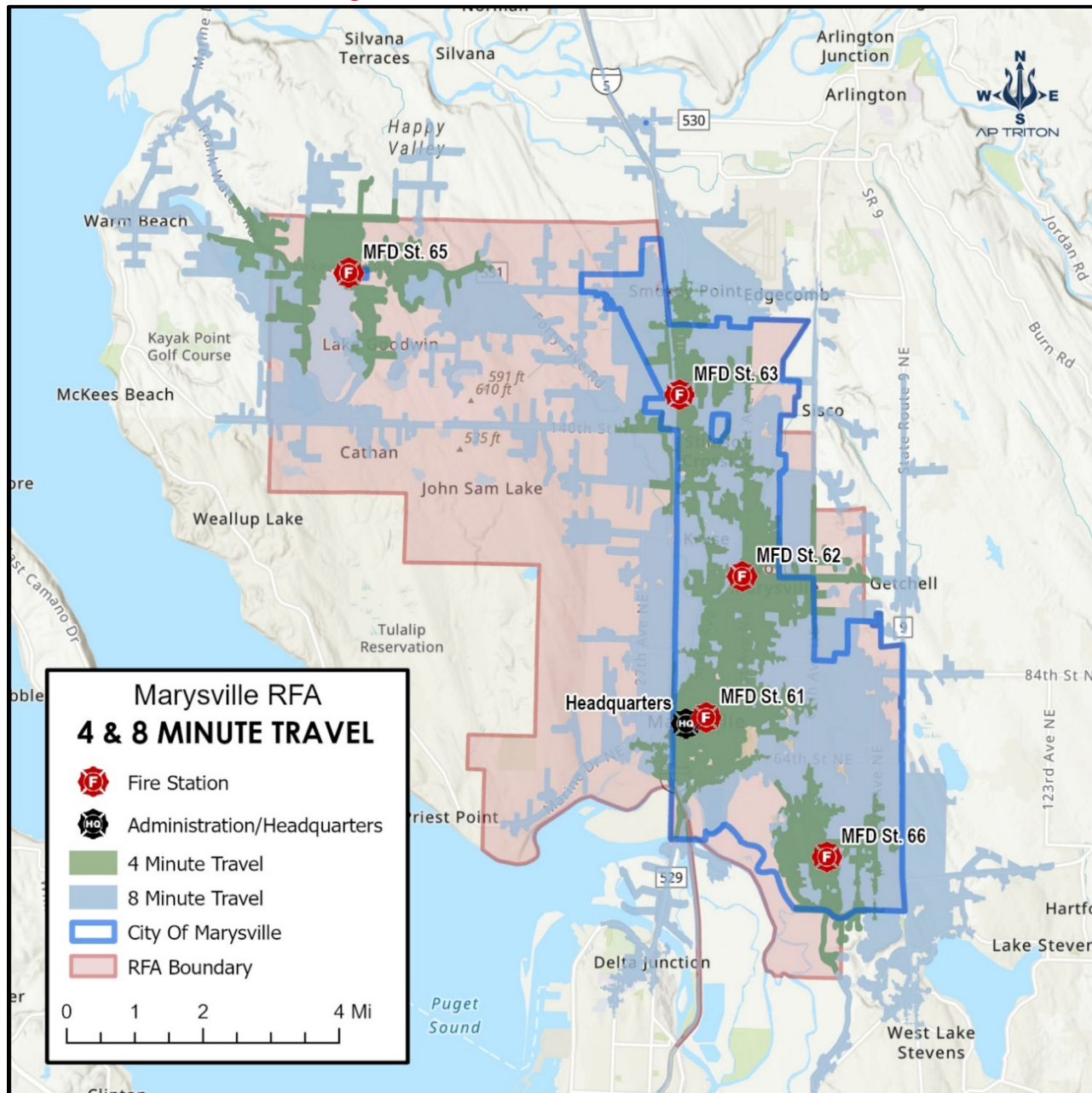
It is interesting to note the inverse pattern of turnout times and workload. This phenomenon is common in agencies with lower call volume at night. This can be explained as a combination of crews resting and fewer incidents to analyze. A limited data set is typically much more susceptible to higher times and more obvious data swings.

Travel Time Analysis

NFPA 1710: Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Departments lists several travel time requirements for apparatus. The first defined travel time is the first unit, either an engine or a truck that can operate as an engine, to arrive within 4 minutes. The second-due engine should travel 6 minutes, and the first alarm should arrive within 8 minutes for a moderate-risk structure fire.⁵⁴

NFPA has historically defined ALS travel time as 8 minutes. However, the new standard leaves that up to the authority having jurisdiction. Travel time is the difference between when the apparatus checks en route and when it arrives on the scene. The following chart shows the theoretical travel times from the two MFD stations. The following figure shows the 4- and 8-minute travel times from all MFD's active fire stations.

Figure 117: 4- & 8-Minute Travel Times



In theory, the distribution and concentration are appropriate for the city. However, areas in the district will struggle to meet the 8-minute effective response force (ERF) goals established by the NFPA. In addition, some of the city and much of the district do not meet the 4-minute travel benchmark. It should be noted that this model only uses the published road network, and some of the areas not showing appropriate travel times may not have any roads.

All the fire stations except Station 65 are located east of Interstate 5. This appears to be a significant physical travel-time barrier to incidents west of the interstate.

Theoretic models are beneficial when evaluating what can happen. However, considering the actual performance may give a better understanding of what the agency can provide.

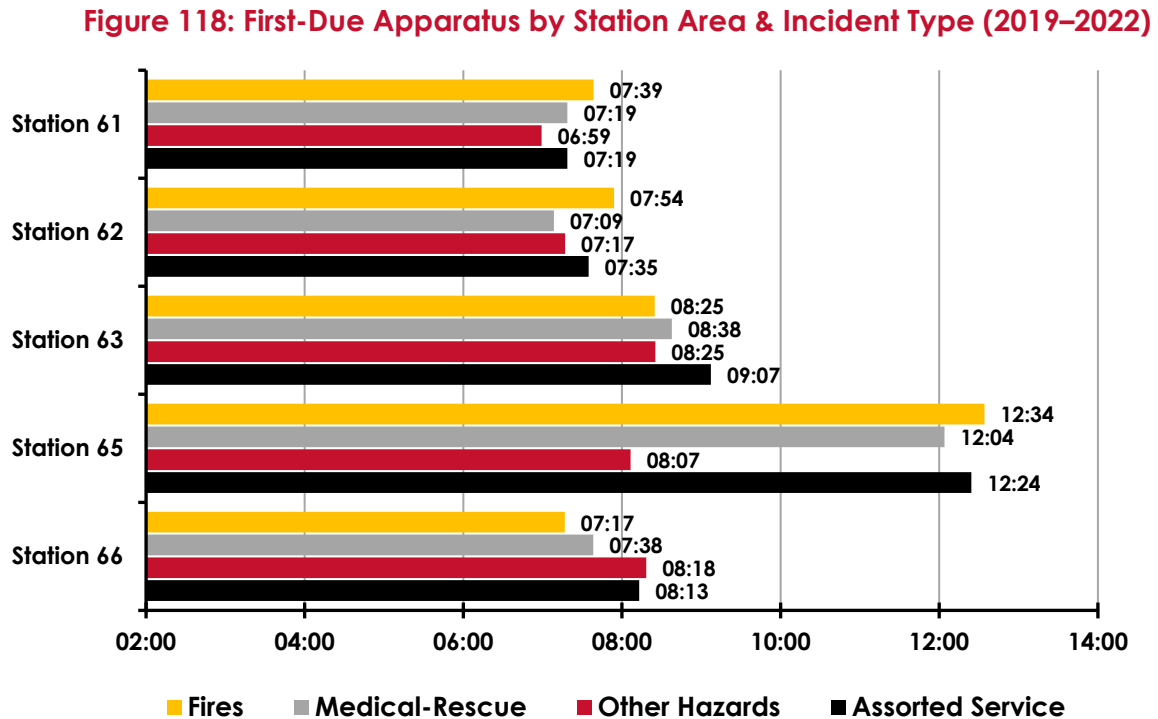
The provided data was evaluated for statistical reliability. The data for the front line, first arriving apparatus, was found to be 52.26% reliable. In addition, the outlier data was set at one hour. This was done by analyzing two opposing points within the response area and calculating a general travel time between them. The two points selected were at 18310 76th Ave. NW, and 1033 91st Ave. SE.

The general drive time between the two points was established at 40 minutes. An evaluation of travel times indicated that this 40-minute break fit the shape of the data and matched the 1-hour time very well. Therefore, the outlier policy for the travel time was set at one hour to remove as many erroneous data points as possible.

First Due Apparatus

The first due performance for MFD is at 8 minutes, 6 seconds for all incidents within the city. Understanding the agency's capabilities is more manageable when defining smaller geographic areas. Fortunately, the geographic station zones were provided, and the incidents were matched within those zones. Most station areas fall within the 8-minute performance, while Station 65 is closer to the 12-minute mark.

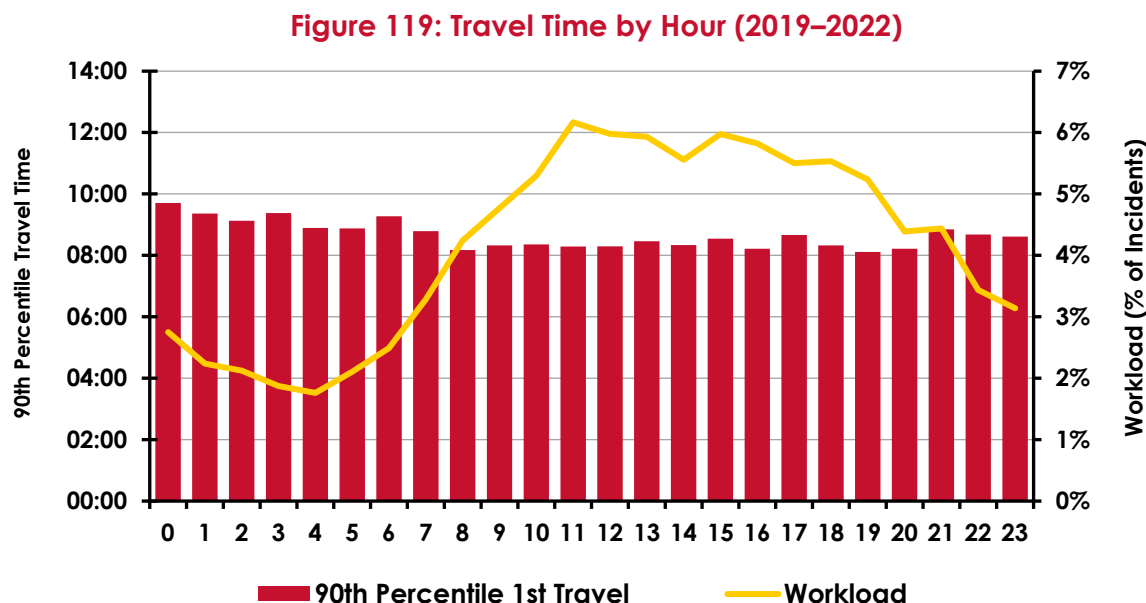
The following figure shows the first due travel time for emergent responses by station response areas and incident types.



Because EMS calls are the most significant percentage of emergent incidents and the stations are so similarly staffed, the EMS times appear to be the primary driver of the overall performance time.

Time of day can have an enormous impact on travel times. In addition, crew readiness, traffic patterns, and incident volume can impact travel times. Nevertheless, MFD's travel times throughout the day remain relatively consistent.

The next figure shows the first-due travel times by hour and includes workload for reference.



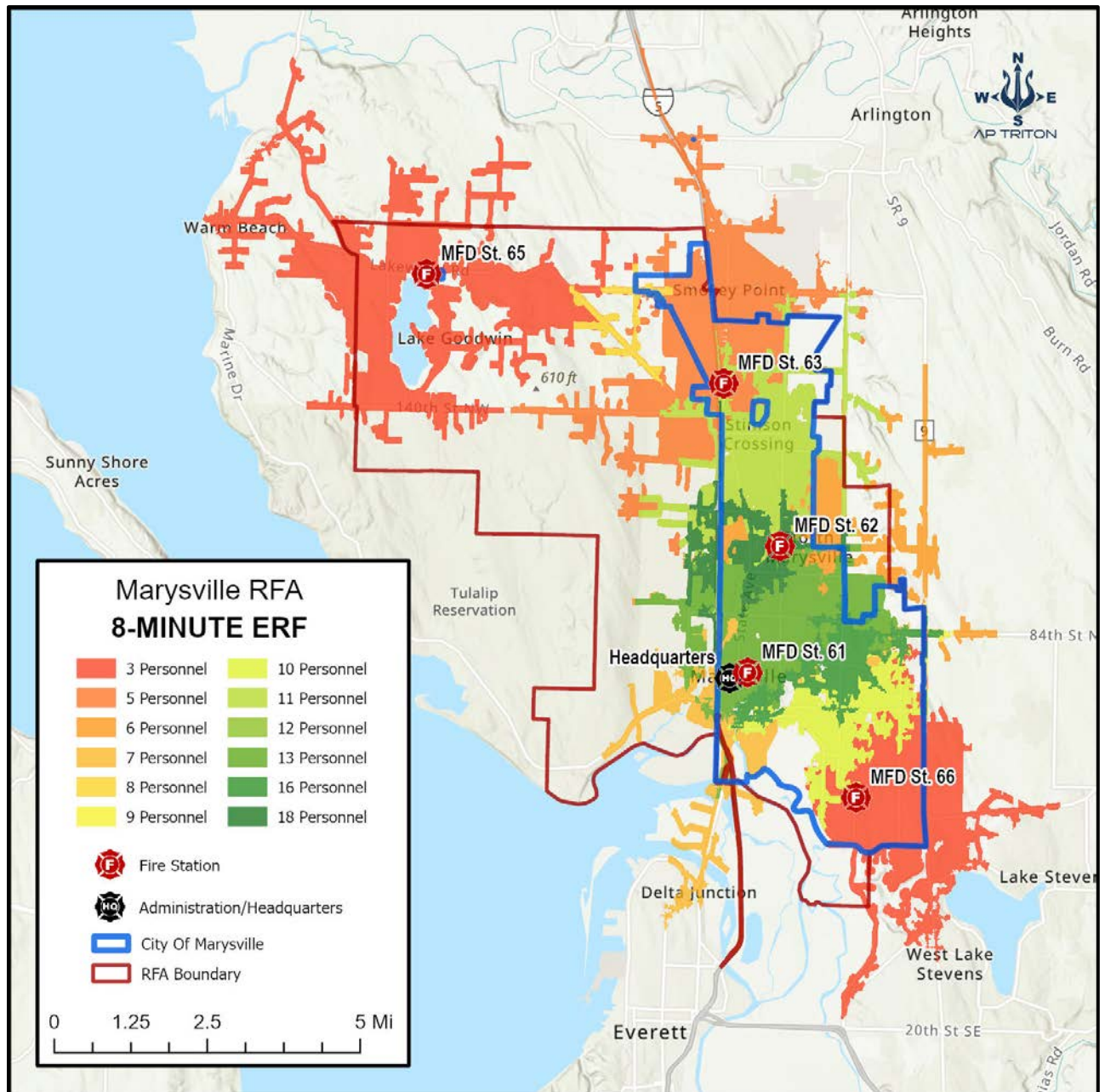
Effective Response Force

The second dimension of the travel time analysis is how well the ERF needed for a type of incident can be assembled. ERFs change with the complexity and resources required of any incident. They can range from one unit to multiple units with specialty equipment. Two commonly evaluated ERFs are EMS incidents and a moderate risk structure fire. MFD's ERF for low-risk EMS incidents is an "ambulance" and an engine or truck.

In contrast, moderate-risk structure fires include three engines, one truck, one Battalion Chief, one Medical Services Officer, and two ambulances. MFD's deployment model makes it difficult to gather more than 10 people within 8 minutes throughout most of the service area.

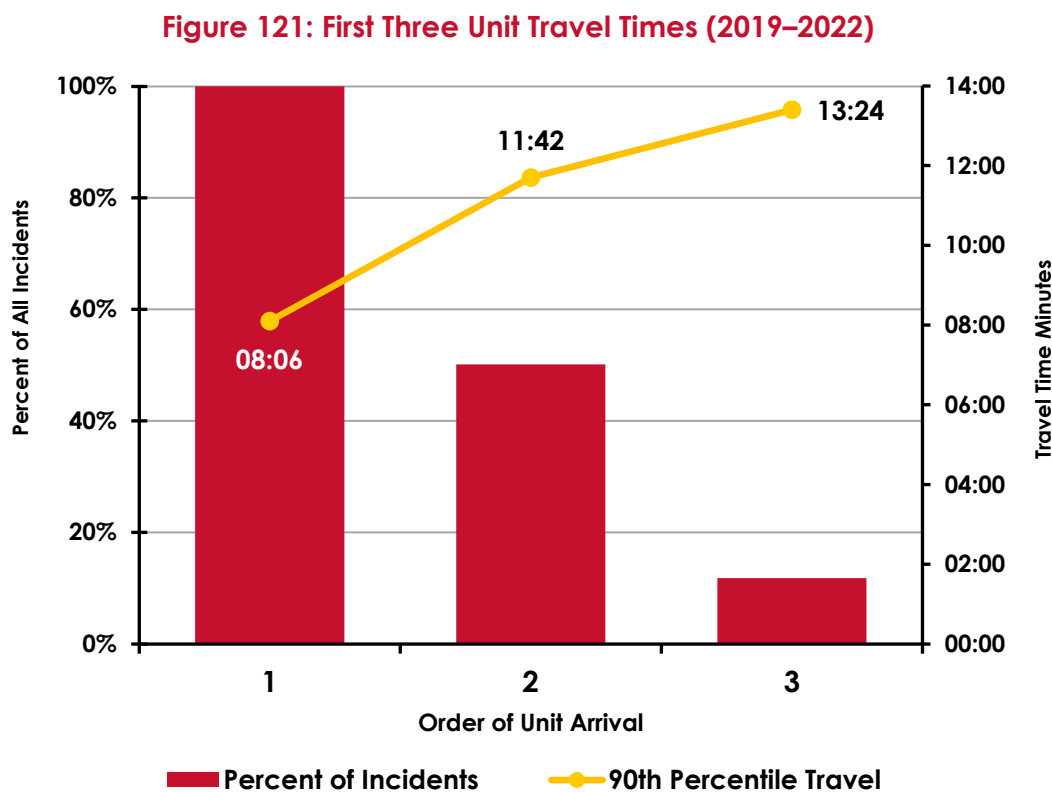
The following figure shows the approximate locations where a specified number of people can be gathered within 8 minutes of travel time.

Figure 120: 8-Minute ERF Travel Time

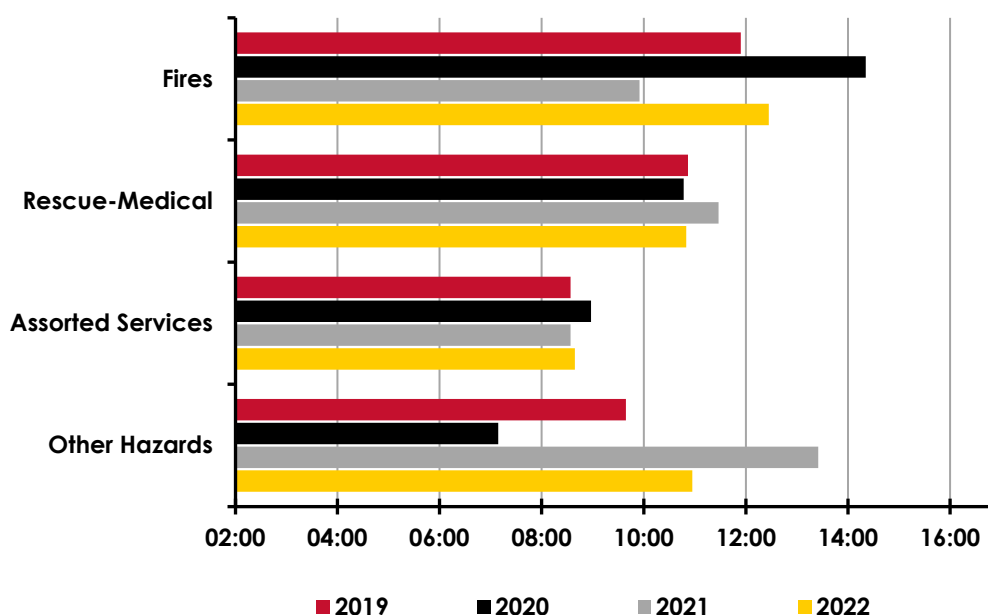


Given the agency's risk, the model is beneficial for developing distribution and concentration to maintain adequate units. Evaluating the multiple-unit responses, regardless of the incident type, can show how fast the first three units have historically been gathered.

The next figure shows the travel time for emergent incidents of the first three arriving units.



Generally, it takes an additional 4 minutes to get the second unit and then a little over a minute to get the third. Again, this is primarily due to apparatus concentration. It does take longer to assemble a firefighting force than to bring an engine and an aid or medic unit together for an EMS incident. The following figure shows the 90th percentile travel times for MFD's ERF based on EMS and structure fire call-types by year.

Figure 122: ERF Times by Year & General Incident Group (2019–2022)

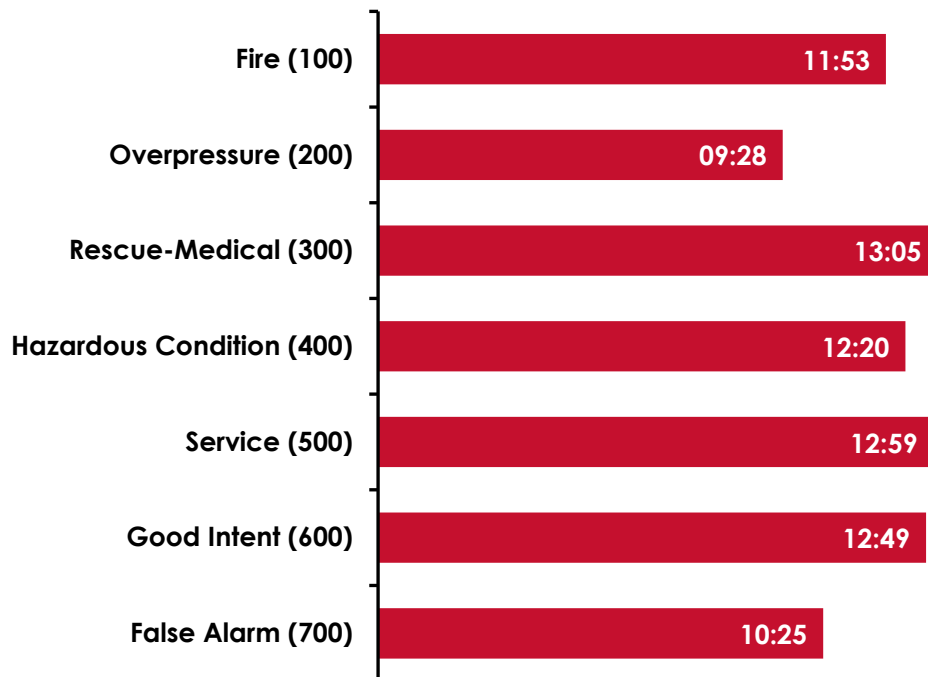
Total Response Time Analysis

Each time segment is analyzed to get an understanding of where performance can be measured and improved. Total response time is the interval between the time the phone is answered until the first unit arrives on the scene. The primary performance measurement from the public's perspective is total response time. This is because the person in need sees and feels every step to be one process and, therefore, the district's performance.

MFD's first-due total response time for a structure fire incident is 11 minutes, 53 seconds. Response time for EMS incidents was slightly longer at 13 minutes, 5 seconds.

The following figure shows incident types and their first-due total response times.

Figure 123: Total Response Time by Category (2019–2022)

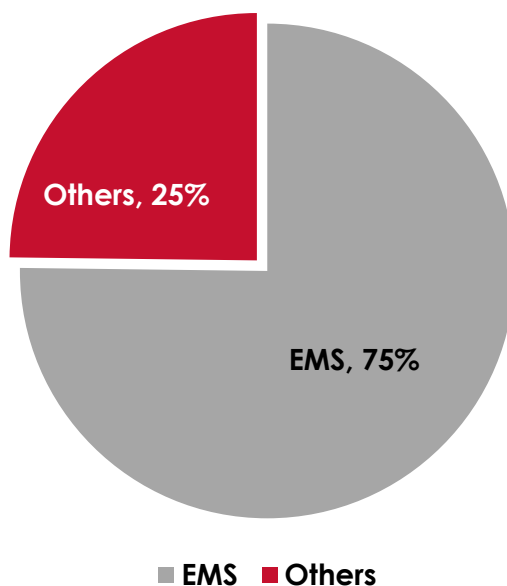


The preceding figure shows no data for category 800–Severe Weather & Natural Disaster or 900–Special Incident type. This is due to maintaining the call processing, turnout, and travel time outlier policies. Limiting the responses to outlier times and only evaluating in-district emergency incidents precluded any of the 800 or 900 category incidents from being included.

EMS Service Demand & Performance

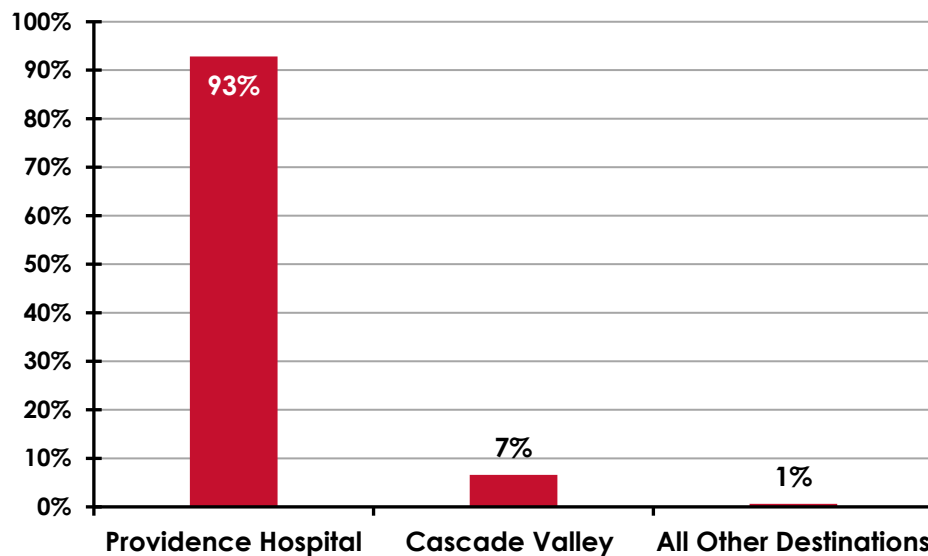
As expected, EMS incidents account for most of the incidents within the MFD system. The following figure shows the percentage of incidents as either EMS or another type of emergency incident.

Figure 124: Percentage of Apparatus Responses by EMS & Others (2019–2022)



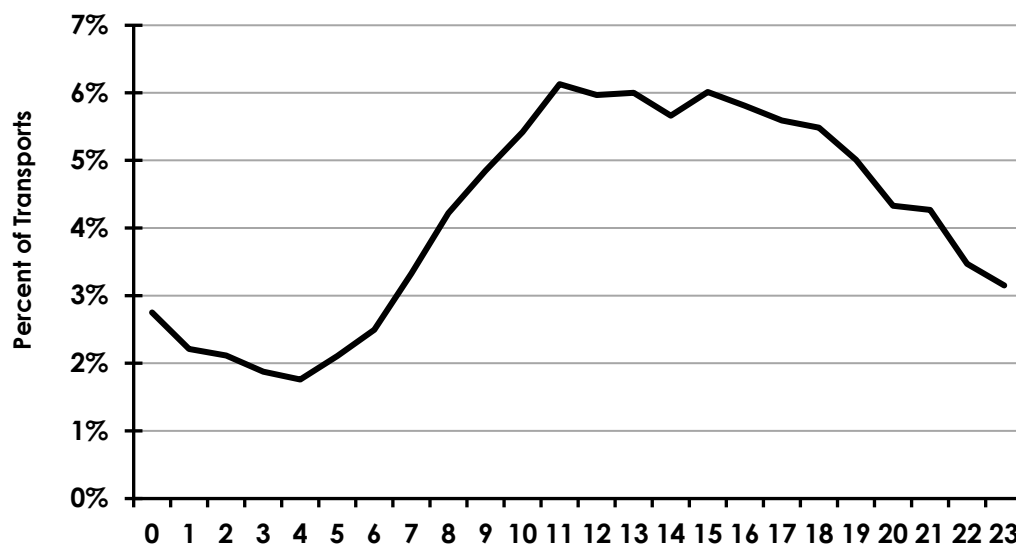
When a unit transports a patient, it may have an option to transport more than one patient. However, for MFD, of the patients transported to area hospitals, just under 99% were single patients in the aid or medic unit.

There were 13 transport destinations in the patient record. However, the overwhelming majority, 99%, were transported to either Cascade Valley Hospital or Providence Hospital. Providence Hospital received the most patients. The following figure shows the percentage transported to the various regional receiving facilities.

Figure 125: Percentage of Transportation to Area Facilities (2019–2022)

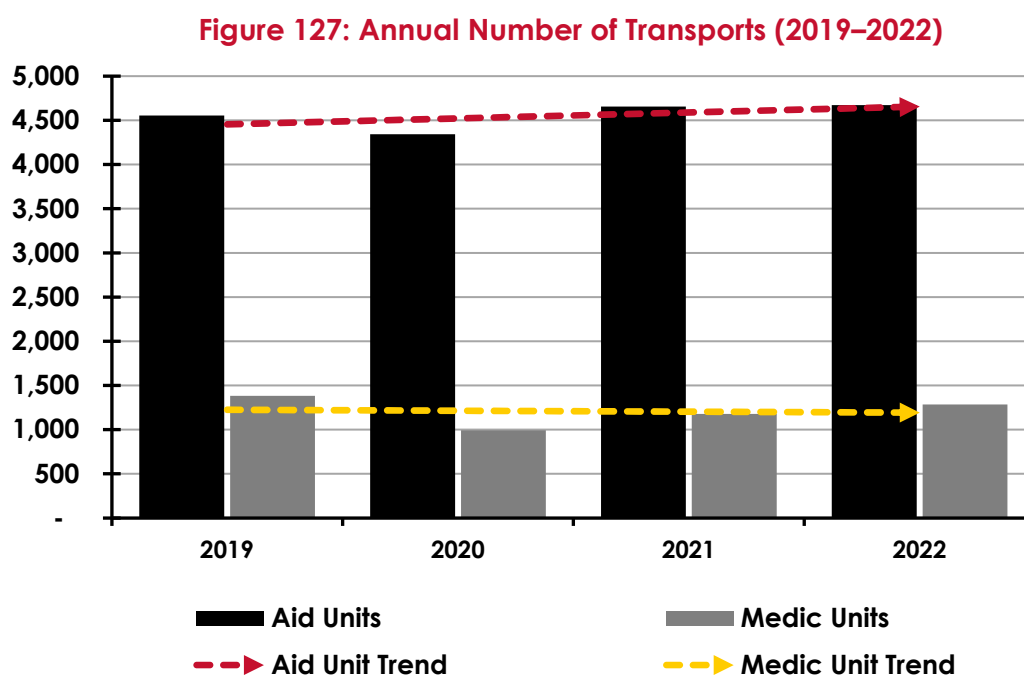
EMS Temporal Study

Much of the temporal study was completed in previous sections and will not be repeated here. However, the above research captures the EMS component since MFD primarily responds to EMS incidents. Like the overall incident volume, transport follows the same hour-of-the-day analysis. The following chart shows the percentage of medical transportation by the hour of the day.

Figure 126: Transports by Hour (2019–2022)

This distribution and the density distribution of EMS incidents and transportation follow the same line as the earlier analysis for all incidents. The above figure is almost an exact mirror of the overall incident-by-hour figure, even though this is limited to patient transport. These similarities underline the fact that MFD primarily responds to EMS incidents.

Annually, the patient transports have hovered around 6,000. The growth in the incident transport data was so moderate that the next few years should also see approximately 6,000 transports. The following figure shows the annual patients transported with a two-year projected line.

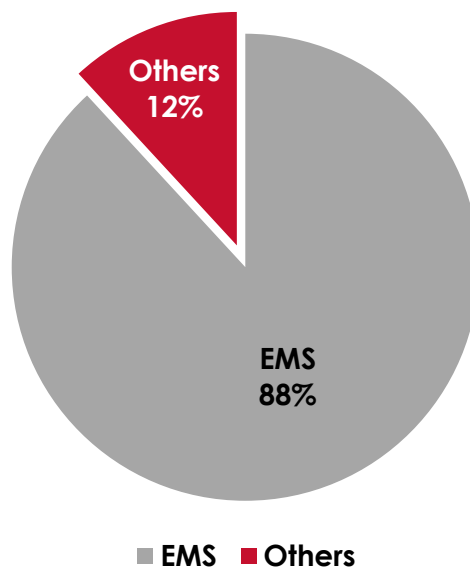


EMS System & Unit Performance

As with the overall volume of incidents, most of the staff time is spent on EMS incidents. MFD personnel spend over 88% of their response time on EMS incidents.

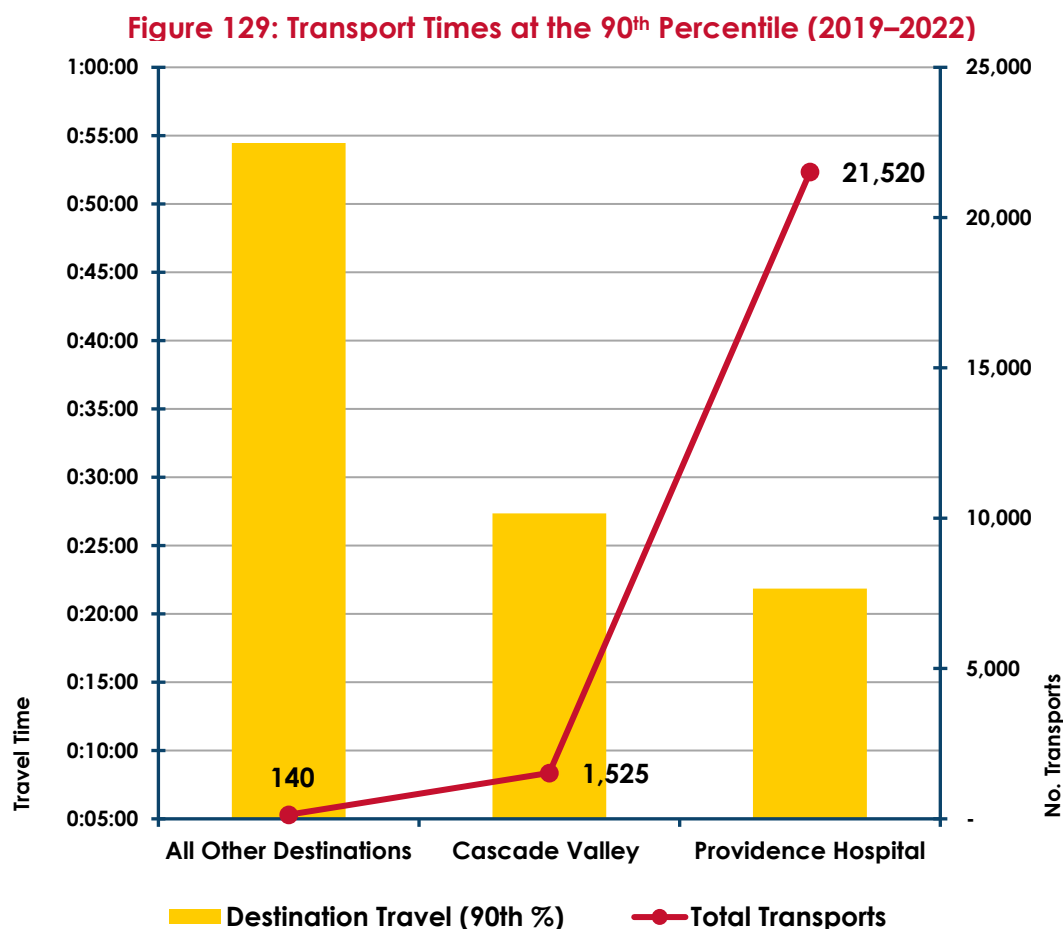
The next figure shows the percentage of time responders spent on EMS or other incidents.

Figure 128: Percentage of Staff Time on EMS Incidents (2019–2022)



The travel times to a local hospital are significant because there is no hospital within the fire district response area. The 90th percentile travel time across all receiving facilities is almost 21 minutes. A separate analysis of transports using lights and sirens shows an improvement of about 2 minutes to just under 19 minutes—primarily to Providence.

The following figure shows the 90th percentile travel time to the group receiving facilities with a reference line denoting the total number of transports to that facility.



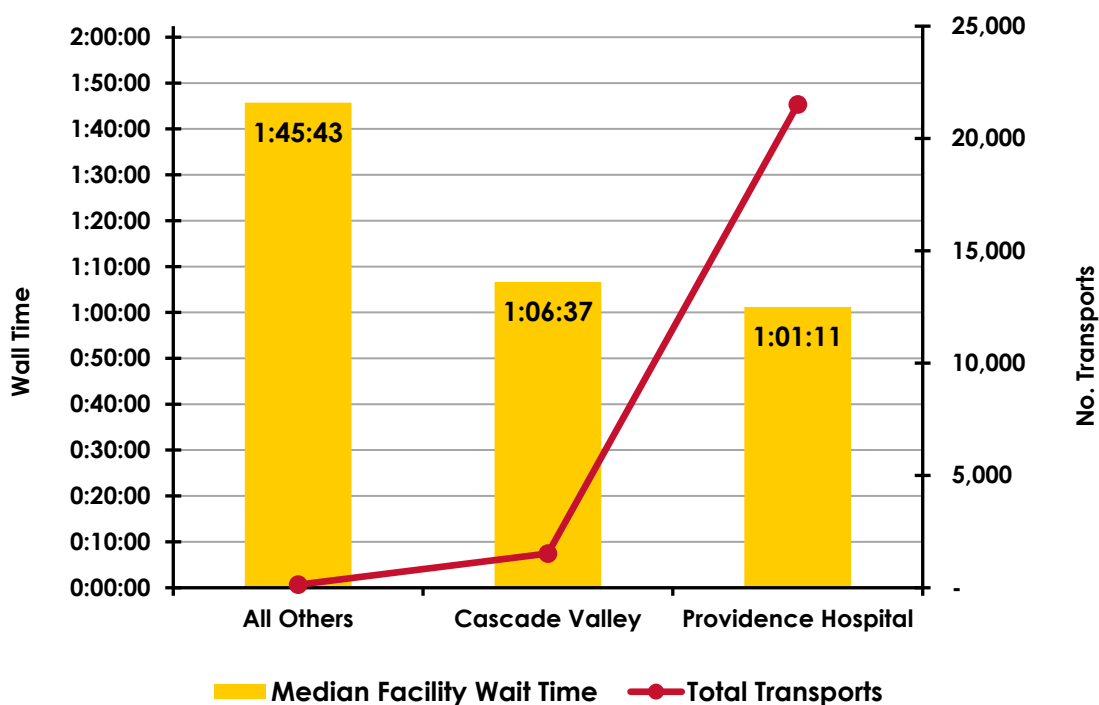
Ambulance Patient Offload Times

Ambulance Patient Offload Times, “Wall” times or hospital turnaround times represent the interval between the time of arrival of an ambulance at the hospital (usually the emergency department) and the time the ambulance leaves the hospital.

An ambulance crew cannot leave a patient until a qualified healthcare provider at the hospital assumes responsibility for the patient. Therefore, there are many cases where an ambulance must remain out of service while waiting for the hospital staff to assume responsibility.

The following figure shows the hospital turnaround times at the 90th percentile between 2019 through 2022.

Figure 130: Patient Offload (“Wall”) Times at the 90th Percentile (2019–2022)



Ambulance Patient Offload Times Discussion

As shown in the preceding figure, MFD had an overall significant hospital turnaround time over the 48-month study period of 1 hour and 2 minutes at the 90th percentile. It is important to note that there is no national standard for APOT. When calculating median hospital turnaround times, the results were as follows:

- All Other Destinations: 52 minutes, 21 seconds (139 transports).
- Cascade Valley Hospital: 48 minutes, 39 seconds (1,525 transports).
- Providence Hospital: 39 minutes, 0 seconds (21,516 transports).

Anecdotal information and interviews with operations personnel and the MSOs indicated occasional APOTs of 2–3 hours. If an aid or medic unit is engaged at a hospital, it cannot respond to any other incidents within the fire district.

Population Growth & Service Demand Projections

Service demand is generally driven by population. Without people, there is very little need for emergency services. However, the relationship between general population, population density, population growth, and demographic distribution is poorly understood. Therefore, this analysis provides information for leadership to determine appropriate resources and distribution.

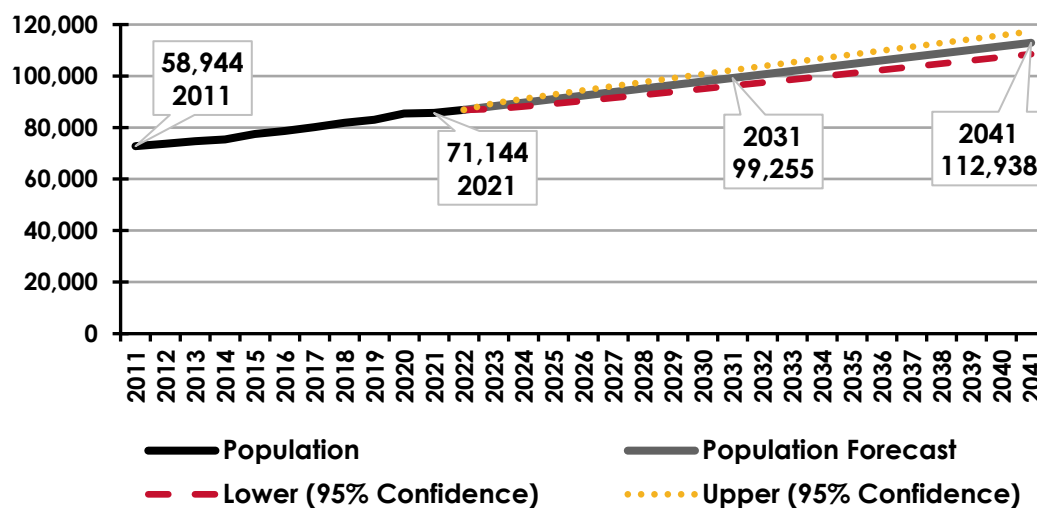
Population Growth

The population in the MFD response area includes the City of Marysville and the surrounding fire protection district area. The data used for this study was the historical information and population projections provided by Washington State's Office of Financial Management (OFM)

The population of the City of Marysville grew from 60,672 in 2011 to 70,714 in the 2020 Decennial Census. The fire district area was estimated at 14,747 in 2020, and the Triton model regressed that number to 12,134 in 2011 as historical data was unavailable. Overall, the entire MFD response area has grown from 72,806 in 2011 to an estimated 88,677 in 2023. Triton's model is based on a linear regression forecast and projects the overall district population to be between 108,539 and 117,336 in 2041. An estimated annual growth rate of 1.67%.

The following figure shows the growth model and 95% confidence bands.

Figure 131: 20-Year Population Forecast with 95% Confidence Bands



Growth projections from the OFM were also researched as part of the study. Snohomish County is estimated to increase at an estimated 1.26% annually.⁵⁵ The county's annual growth rate is projected to be slightly lower than the projected area growth. However, the confidence bands for this projection are much broader than the Triton model, and the 1.67% growth rate does fall into the higher confidence band for county population growth forecasts.

Population Distribution

Most of the MFD population is in the city segments between State Route 9 on the east and Interstate 5 on the west. While many sites on the west have a more rural density, homes on large suburban lots separated by broad sections of undeveloped land, some areas to the northwest are denser. There are areas around Station 65 that have a higher population density profile.

The homes and structures around the lakes in Lake Goodwin and Cathan are much more densely packed, and the area shows a higher population density per square mile.

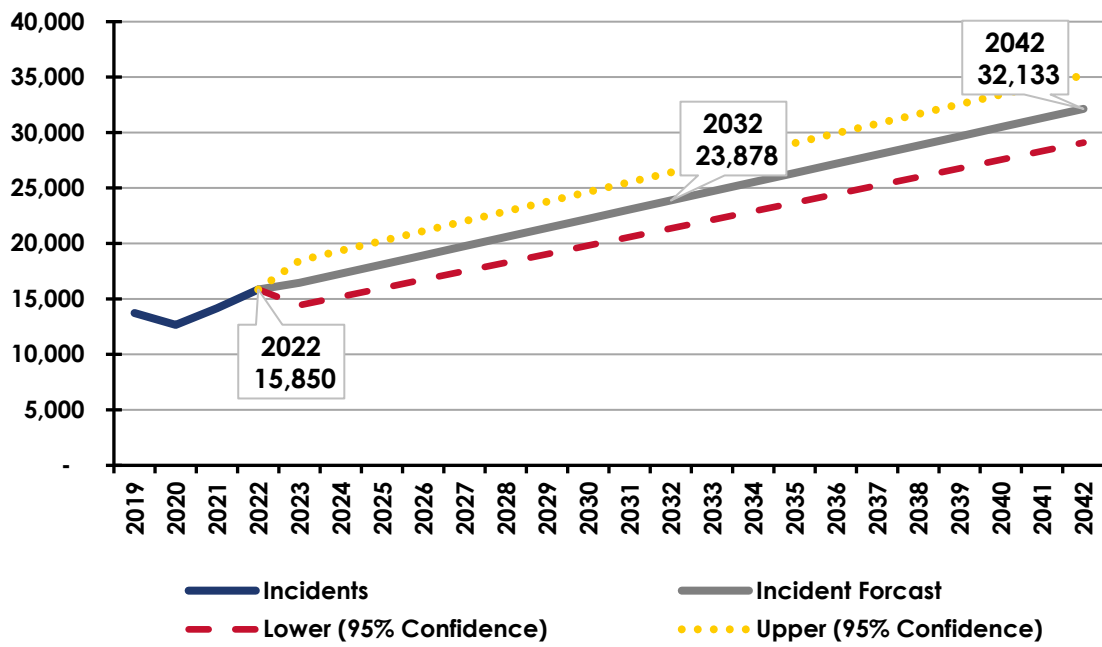
Service Demand Projections

Standard linear and polynomial projection models were applied to MFD's four years of data. Each model was evaluated using the R^2 methodology for the best data fit. Initially, a polynomial model showed the best statistical fit. However, the 2020 data decrease appeared to bias the model, creating a much more dramatic increase that seemed unlikely. Because of this, a straight linear forecast model was used. The projection analysis is limited because the historical data was limited to four years.

The R^2 value measures how well the model fits the historical data. The closer to 1 the value, the better the fit with the historical data. In this case, the polynomial model returned an R^2 value of 0.94. It also yielded an incident volume of over double the workload within 5 years, to approximately 47,000 incidents by 2027.

A more reasonable model was removing 2020 as an anomaly and using a linear forest that returned an R^2 value of 0.89 and a better projection. In this case, the five-year forecast was from 15,850 in 2022 to 19,750 in 2027.

The following figure shows the historic incident responses rose from 13,725 in 2019 to 15,850 in 2022 and can reasonably be expected to reach between 29,00 and 35,000 by 2042 with a 95% confidence level.

Figure 132: Service Demand Projection to 2042

Section IV: COMMUNITY RISK ASSESSMENT

Description of the Communities Served

City of Marysville

The Marysville Fire District proudly serves the City of Marysville and several areas through Snohomish County, like the Lake Goodwin area, Lakewood, Weallup Lake, the Cathan community, Stimson Crossing community, the Shaker Church area, and Priest Point. The MFD response area is a vibrant and thriving community located in Snohomish County. Situated about 35 miles north of Seattle, it offers residents an excellent balance between small-town charm and access to urban amenities.

The MFD response area is a melting pot of different cultures and backgrounds. The population is characterized by its diversity, with residents of various ethnicities and races living together harmoniously. The area has grown steadily, attracting individuals and families from different parts of the country and worldwide.

Tulalip Indian Reservation

The Tulalip Tribe plays a significant role in shaping the operations and dynamics of MFD due to its geographical proximity, unique demographics, and collaborative efforts in emergency response and community safety. The relationship between the Tulalip Tribe and MFD is marked by cooperation, shared resources, and a commitment to enhancing the overall safety of the region. The demographics of the Tulalip Tribe also play a crucial role in shaping the services provided by the fire district.

MFD recognizes the importance of cultural sensitivity and understanding the needs of the Tulalip Tribe's community members. This includes being aware of cultural practices, traditions, and preferences during emergencies. Like many indigenous communities, the Tulalip Tribe may face health disparities that require specific attention.

The Tribe may include individuals with varying levels of mobility and accessibility requirements. The Marysville Fire District may have to adapt its services to address the unique health challenges and other factors in its emergency planning, evacuation procedures, and accessibility needs of the Tribe's population.

The Tulalip Tribe's presence and demographics substantially impact the operations and approach of the Marysville Fire District. The collaborative efforts between the two entities improve emergency response and contribute to a safer and more inclusive community for all residents, irrespective of their cultural background or tribal affiliation.

General Risk Factors

The area's age distribution offers a balanced mix of young families, working professionals, and retirees. The presence of schools and family-friendly amenities makes it an attractive destination for those looking to raise children in a safe and nurturing environment.

Economically, Marysville's diverse population contributes to a varied job market. The city has various industries, including manufacturing, healthcare, retail, and services.

Additionally, its proximity to larger urban centers like Seattle and Everett provides residents with multiple employment opportunities within commuting distance.

Education is a priority for the community, and Marysville boasts a network of schools dedicated to providing quality learning experiences for its young residents. The Marysville School District serves the city, continually striving to deliver excellent educational resources to its students.

Transportation is convenient in the area, with well-maintained roads and highways connecting the area to nearby cities and metropolitan regions. This accessibility makes it easy for residents to commute to work or explore the surrounding attractions.

Risk factors influence the types of services a community provides. Identification of hazards is the process of recognizing the natural or human-caused events that threaten a community. Every community must prepare for and respond to events, including natural disasters like an earthquake, pandemics, or wildfires. In addition, the degree to which a community exhibits certain social conditions, including poverty levels, vehicle access, or the number of individuals in a household, may affect the community's ability to prevent suffering and financial loss in the event of a disaster. These factors describe community risk.

A community's risk assessment is based on numerous factors, including socioeconomic status, household composition, minority status and language, population density, and housing types, local land use and development, and the geography and natural hazards present throughout the community. These factors affect the number and type of resources—both personnel and apparatus—necessary to control or mitigate an emergency. The community's risk assessment provides relevant information to help public officials and agencies better prepare their communities to respond to emergency events and help them recover faster.

- Population density is a risk factor, and demographics present another unique risk. For example, over 14% of the population is 65 years of age, which is lower than the state average of 16%, and around 4.7% do not have medical insurance.

- The physical characteristics of the area and the resultant natural hazards are risk factors. For example, MFD is near Possession Sound, the foothills of Mt. Baker, and the Cascade Mountains. With Amtrak Cascades and BNSF railroads, they are at risk of entirely different hazards like earthquakes and wildfires.
- Land use and zoning risk can be characterized as low (e.g., agricultural or low-density housing), moderate (e.g., small commercial and office), or high (e.g., significant commercial, industrial, wildland exposures, and high-density residential).

Population & Demographics

The MFD service area has seen an increase in population based on the U.S. Census data from the American Community Survey, except for the last few years.⁵⁶ As a result, the fire and EMS response area population has increased from 75,052 in 2011 to 85,842 in 2021. The highest density is in the City of Marysville. This population density is evident based on the number of fire and EMS incidents in the service area. The following figures illustrate the population growth in MFD's service area between 2011 and 2021.

Figure 133: Population (2011–2021)

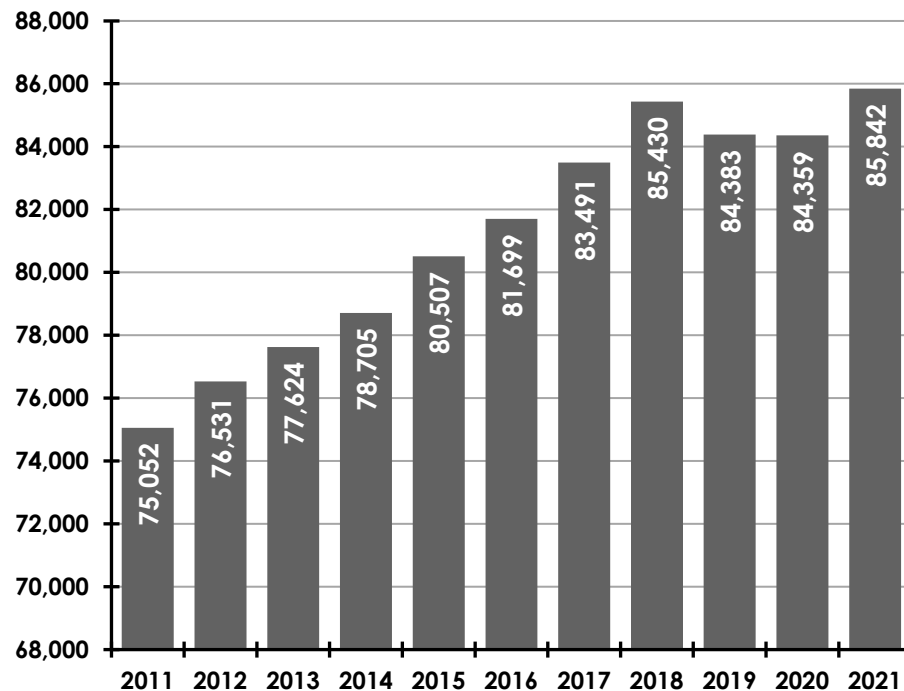
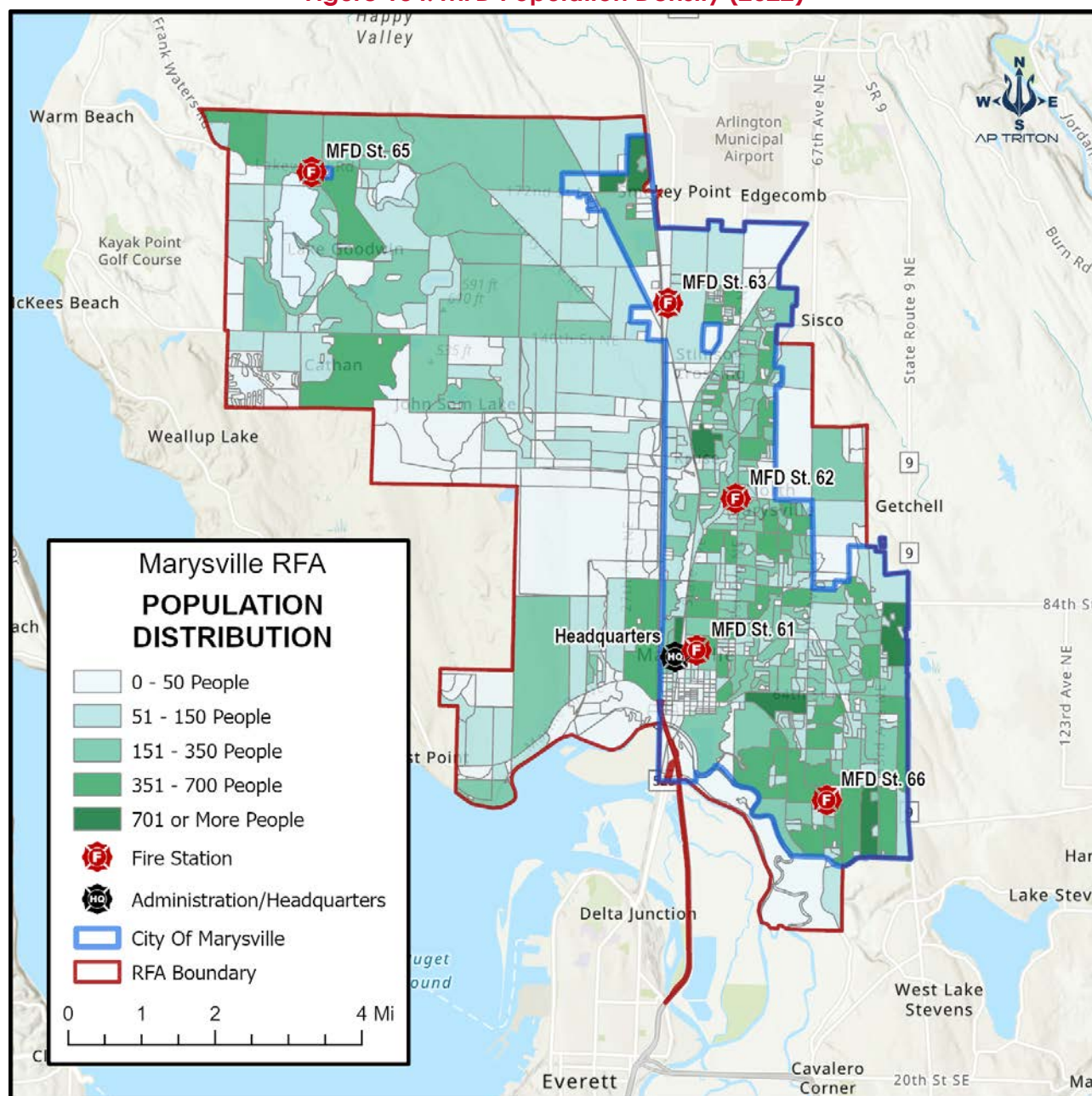


Figure 134: MFD Population Density (2022)**At-Risk Populations**

Specific populations are at higher risk of fires and other unintentional injuries, and these incidents directly affect service delivery. Several factors place groups of people in higher-risk categories in urban and suburban areas. NFPA reports identified groups with a higher risk of injury or death in a fire as follows:

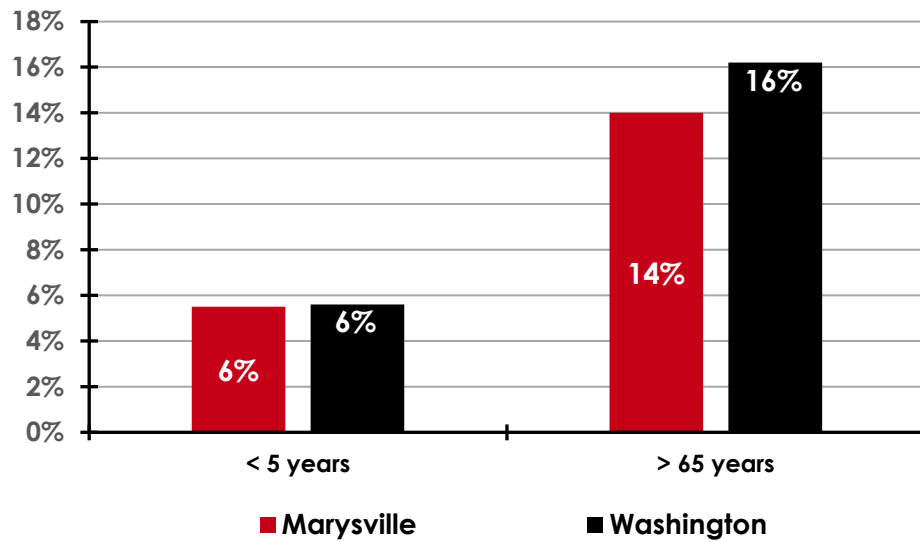
- Children under 5 years of age
- Older adults over 65 years of age
- People with disabilities
- Language barrier
- People in low-income communities

Information from the U.S. Census data estimates identified several groups that fall into these categories.⁵⁷ These groups are more likely to need additional emergency services than other population groups—especially EMS.

Age

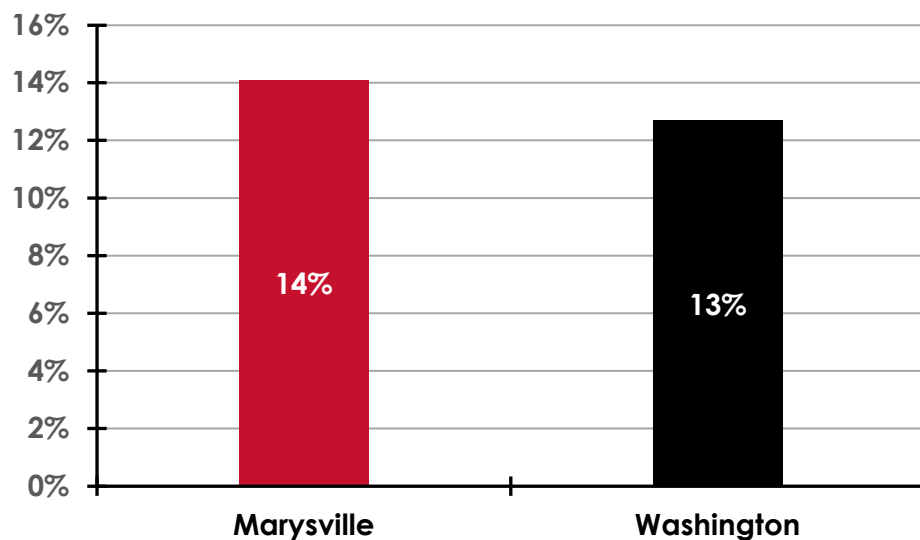
The age of young children and older adults may directly relate to increased medical responses. For example, young children under five may need additional assistance when evacuating a building during a fire or other event, which poses a higher risk to this age group. In MFD's response area, the percentage of the population under five is 6%, the same as in the State of Washington.

As people age, their mobility decreases, placing them at a higher risk during a fire, and they are more likely to fall and need assistance from MFD. The percentage of adults older than 65 is 14% in Marysville, meaning the MFD response area falls below the State of Washington average of 16.2%.

Figure 135: Vulnerable Population by Age

Disabilities

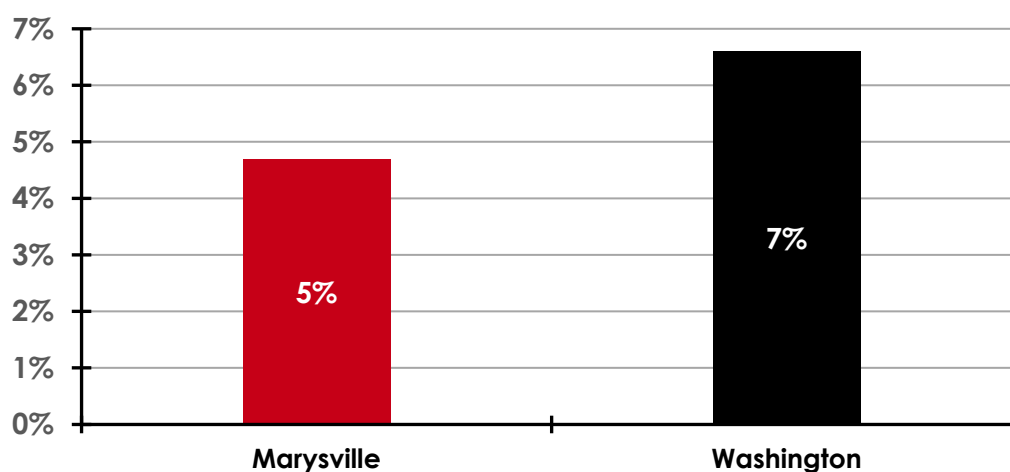
Residents with disabilities comprise 14.1% of the population in the MFD response area, which is higher than Washington at 12.7%. This group may have more difficulty or be unable to evacuate during an emergency. In addition, these people place an additional demand for EMS as they age, thus increasing response from MFD. The following figure shows the percentage of people with disabilities.

Figure 136: Percentage of People with Disabilities

Persons Without Health Insurance

This group will likely require additional emergency medical assistance because they did not seek treatment for chronic illnesses. The lack of health insurance affects lower-income populations since they cannot pay or have difficulty paying for medical visits because of the lack of insurance. The percentage of people without health insurance under the age of 65 in Marysville is 4.7%, lower than in the state of Washington at 6.6%.

Figure 137: Percentage of Population Without Health Insurance



Low-Income Persons

Low incomes increase the risk of fires and medical responses in the community. Living in a properly maintained residence or receiving adequate medical care becomes difficult without higher incomes. People living below the poverty level are considered at the highest risk when combined with other factors such as education levels, disabilities, or an inability to work.

Nearly 7% of Marysville residents had an income below the poverty level in 2021, which was less than what is found across the State of Washington. Considering residents not living in families, 13.0% are high school graduates, and 29.3% are non-high school graduates who live in poverty. The poverty rate was 9.9% among disabled males and 16.4% among disabled females.

The median household income in Marysville is \$90,368, which is significantly higher than in Washington State at \$82,400.

Figure 138: Percent of Population Below the Poverty Level

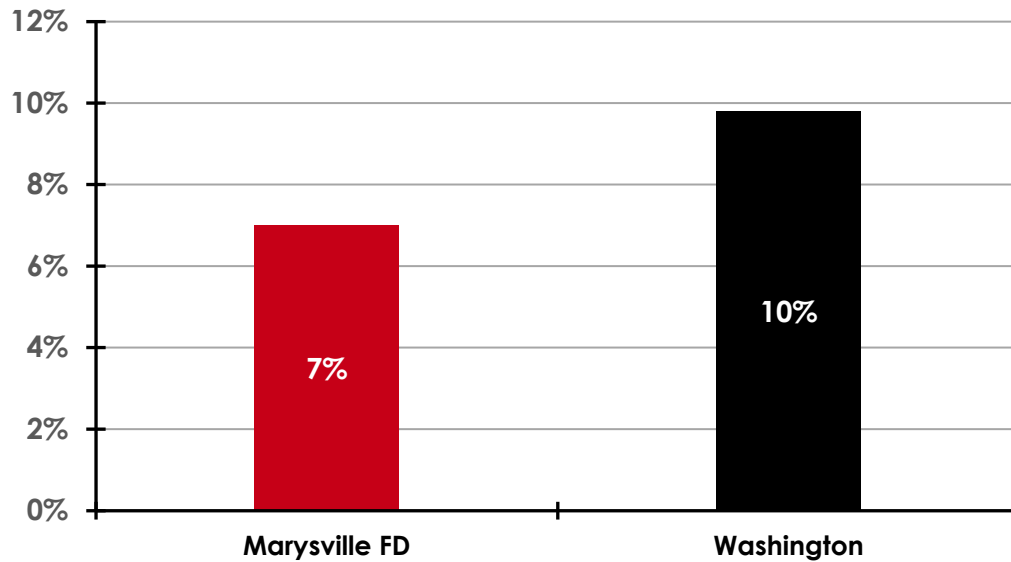
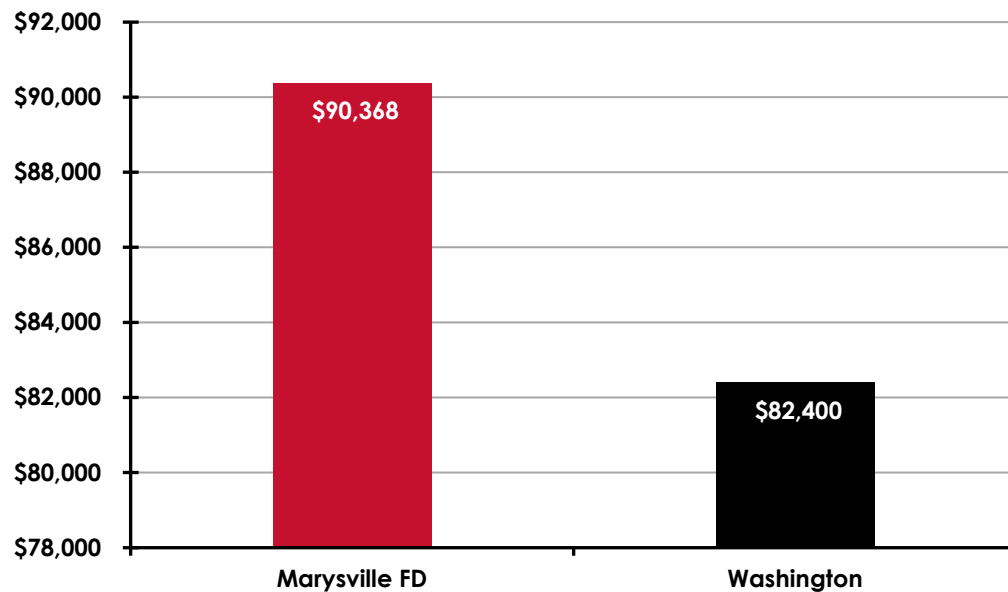


Figure 139: Median Household Income

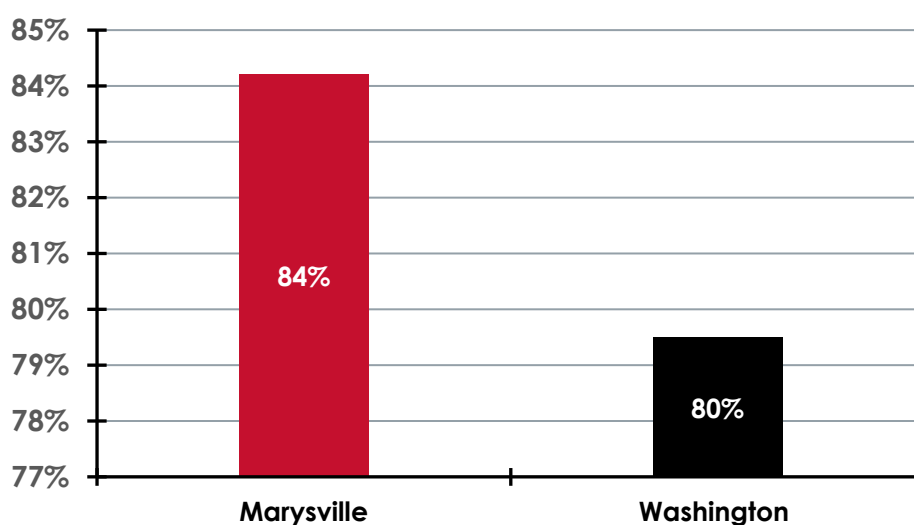


Language Barriers

Populations that need to fully understand the English language present challenges that include cultural differences, or they may need to be more familiar with the use of smoke alarm technology, thus increasing the risk of a fire or injuries in the home.

According to the U.S. Census data, the most numerous races in MFD are White alone (47,667 residents), Hispanic (9,712 residents), and Asian alone (5,892 residents). 82.6% of Marysville residents speak English at home. 10.7% of Marysville residents are foreign-born (4.9% born in Asia, 2.8% born in Latin America, and 2.2% born in Europe), which is 36.8% less than the foreign-born rate of 14.7% across Washington State.

Figure 140: English is the Primary Language



According to the U.S. Bureau of Labor Statistics, higher educational levels directly correlate to higher wages. In 2021, earnings and unemployment rates by educational attainment, using data from the U.S. Bureau of Labor Statistics (BLS) Current Population Survey (CPS).

Workers aged 25 and over with less than a high school diploma had the lowest median weekly earnings (\$626) and the highest unemployment rate (8.3%) among all education levels.⁵⁸

The following figure indicates the education level by percentage for each community served by MFD.

Figure 141: Education Levels

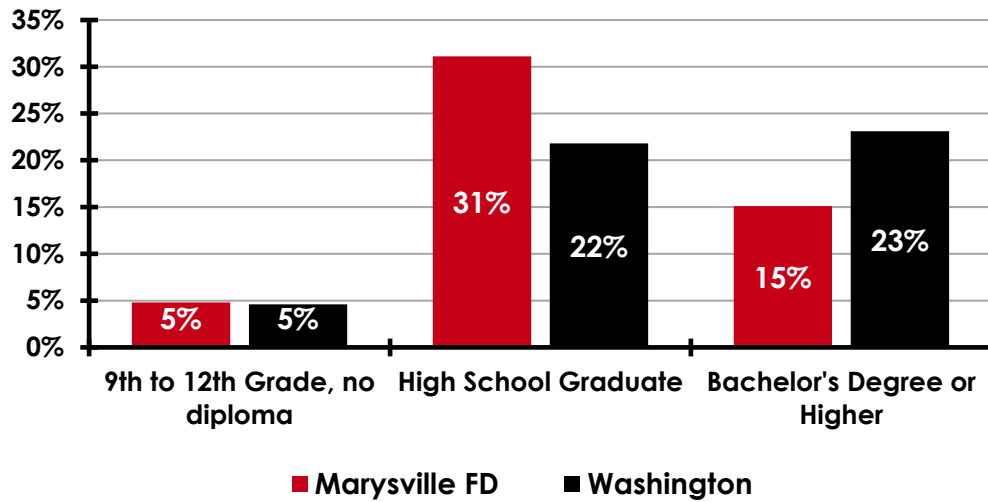
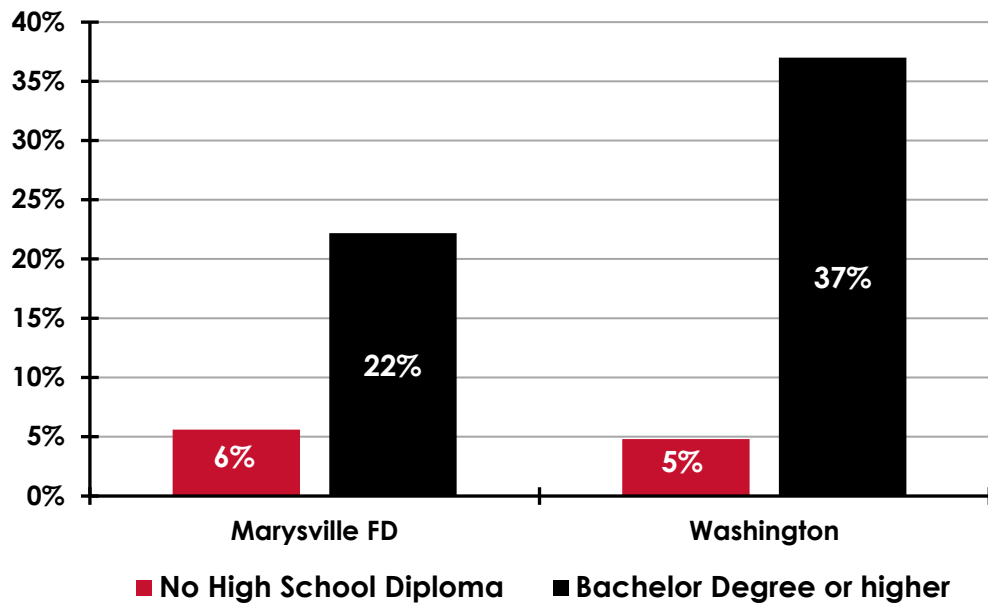


Figure 142: Education over 25

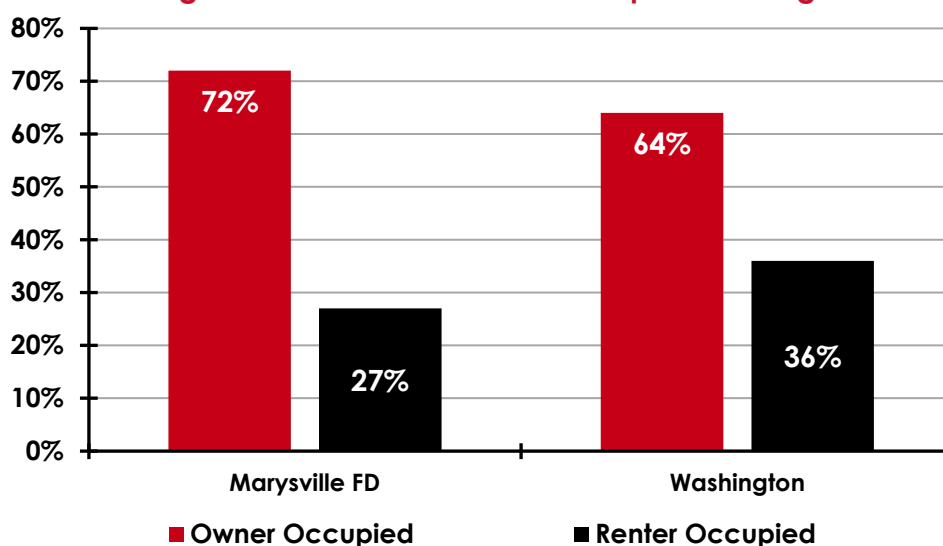


Housing

Although housing is not considered a significant risk compared to income or age, it can provide information for selected housing types, such as older multifamily apartments built before fire sprinkler requirements or vacant homes. The housing types vary in a community and can provide insight into ownership, the age of the home, and the number of units in the building. MFD's response area has approximately 26,570 houses (25,906 occupied: 18,870 owner-occupied, 7,036 renter-occupied).

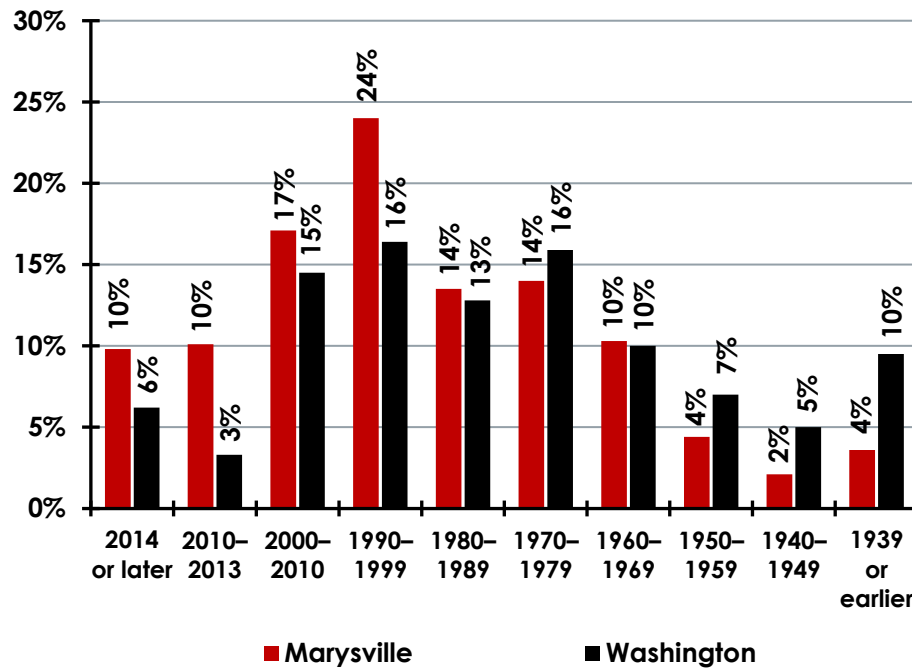
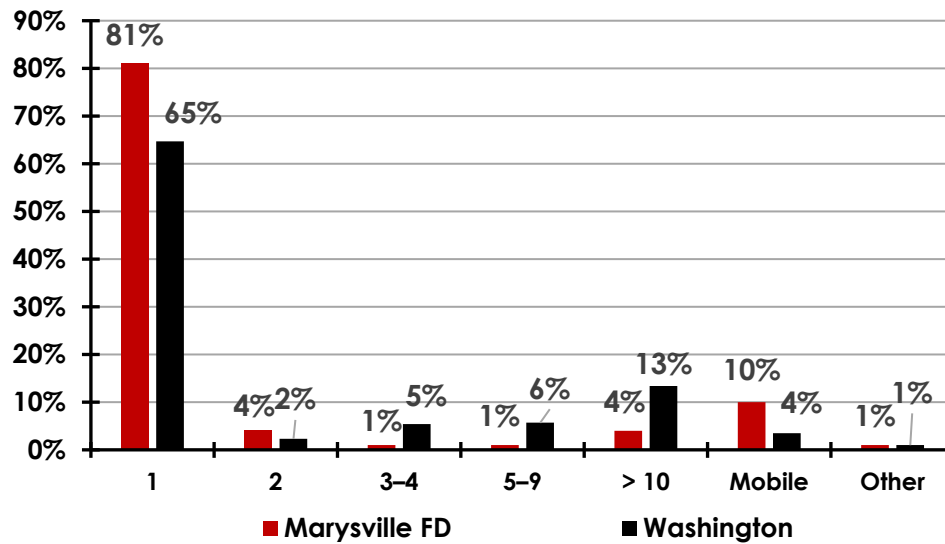
Vacant structures can pose a risk to the fire district and community if the building is not secured to prevent entry. If the building is not maintained, the structural integrity can degrade and present problems during a fire. Vandalism may create additional problems for the fire district and law enforcement. In the MFD response area, owner-occupied housing is 72%, higher than Washington State at 64%.

Figure 143: Owner & Renter-Occupied Housing



Age of Housing

Understanding the age of housing is essential based on the requirements for smoke alarms in residential occupancies and when building and fire codes were adopted. In addition, older homes eventually need repairs as the building ages, leading to more fires, especially from electrical systems. In the MFDs response area, 34% of the housing was built before 1979, higher than Washington State at 23%. The highest percentage of housing was built in the 1990s, at 24%.

Figure 144: Percentage of Homes Built by Year**Figure 145: Housing Units per Building**

Environmental & Physical Hazards

A physical hazard is a natural or human-caused event that has the potential to cause impacts on people, buildings, infrastructure, agriculture, environmental assets, and communities. Every community faces the risk of being struck by a physical hazard of one type or another, including natural disasters such as floods, hurricanes, ice storms, wildfires, earthquakes, or technological disasters such as chemical spills or explosions. When disaster strikes, it can wreak havoc on a community—destroying homes and businesses and leaving people homeless and out of work. Nationwide, property damage from disasters has been increasing steadily, partly because of more significant disaster events and because more and more people live in hazard-prone areas. For example, high wind event damage alone has cost the nation billions of dollars.

Knowledge of the past is necessary to predict what might happen in the future. Historical catalogs are used to understand the frequency of hazardous events. They help us develop synthetic event sets that represent, for example, up to 10,000 years of events. This allows an understanding of what might be possible in the future and be prepared for events not seen previously. For rarer hazards such as earthquakes, seismological investigations play a critical role in identifying and characterizing individual pre-historic events that make up the active tectonics record.

Reducing risk can only be achieved by decreasing the contribution from one or more of these three components. Examples of risk reduction or managing the risk in these components are:

- Hazard: building a flood levee to alter the course of flood events
- Exposure: land-use planning decisions to ensure that new development is not exposed to hazardous events or to influence the type of development
- Vulnerability: retrofitting older buildings built to lower building standards or before building codes were enforced.

The number of natural disasters in Snohomish County (31) is higher than the U.S. average (15).⁵⁹ Major Disasters (Presidential) Declared: 24. In the history of the MFD response area, emergencies declared have been the following: Floods: 21, Storms: 17, Mudslides: 14, Landslides: 10, Winter Storms: 6, Winds: 5, Earthquakes: 2, Heavy Rain: 1, Hurricane: 1, Snow: 1, Tornado: 1, Volcanic Eruption: 1, Other: 1.

Weather

Temperature

Weather conditions can impact the fire district and the entire community. High or low temperatures affect firefighters during extended incident operations and require rehabilitation to prevent exhaustion. For example, although the average temperature in the area is a high of 60° Fahrenheit (F) and an average low of 41° F, the temperature can decrease from December through February when the average minimum temperature is 28.6° F.

Figure 146: Average Daily High Temperatures

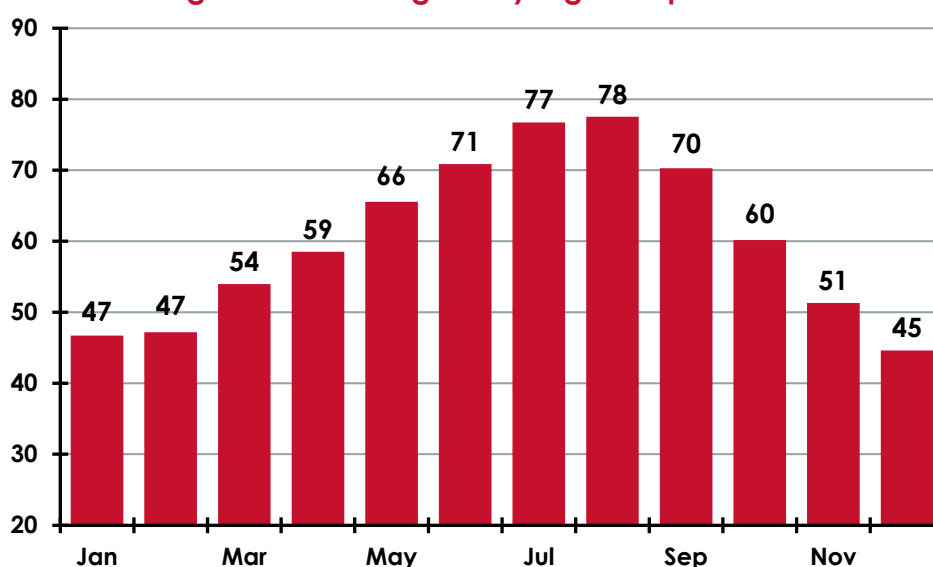
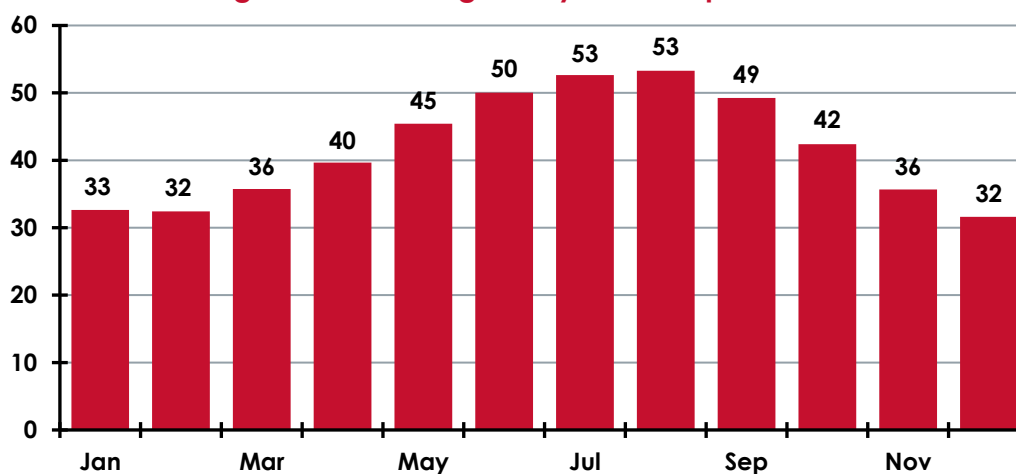


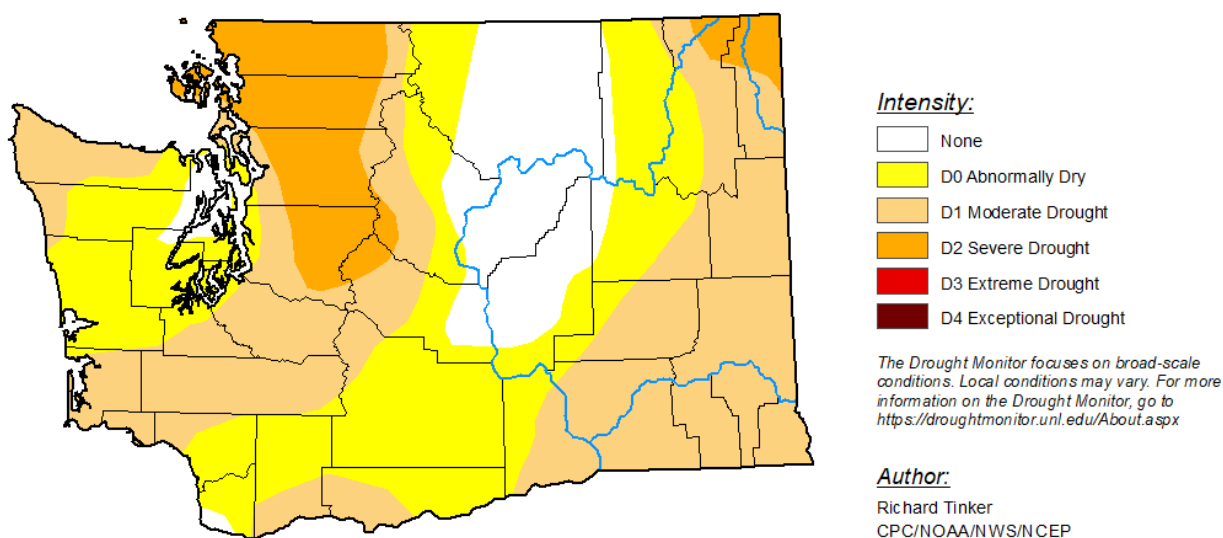
Figure 147: Average Daily Low Temperatures



Drought

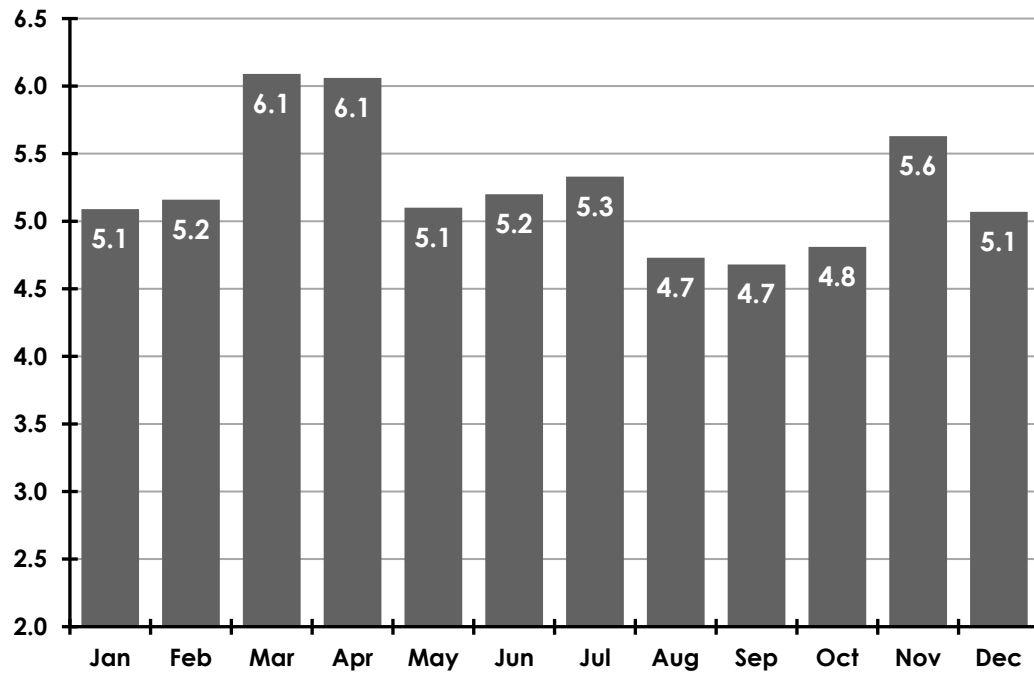
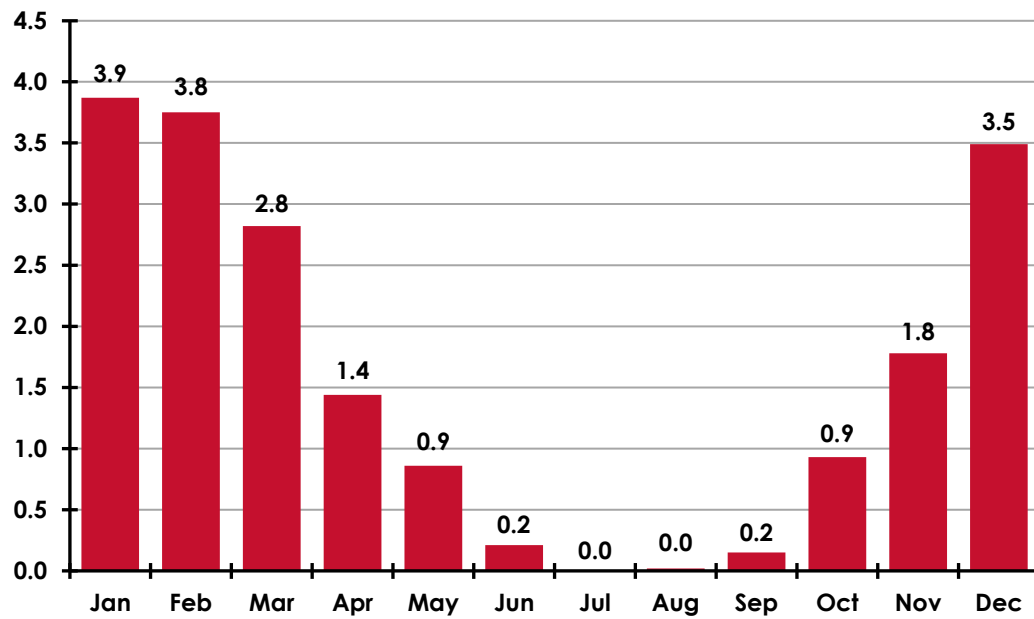
A drought may impact the community, such as the lack of rainfall to replenish groundwater or aquifers when wells are used for drinking water. In addition, droughts may last for an extended period and create secondary problems during peak wildfire conditions as the vegetation becomes dry and highly combustible. As of July 2023, the drought condition is moderate to severe in Snohomish County, as shown in the next figure.

Figure 148: Drought Conditions (July 2023)



Winds

Wind direction and speed of winds directly influence how MFD plans for daily operations, specifically during wildland fire danger. Other weather-related issues affecting MFD's day-to-day operations could include the snowfall in December through February and limited visibility due to fog. All of these can increase the risk to the community and firefighters.

Figure 149: Average Wind Speeds**Figure 150: Average Precipitation**

Environmental Hazards

Earthquakes

MFD's service area is located within a seismic area, and the United States Geological Society has identified two faults near the service area. One fault is located north of MFD's response zone in the Snohomish area, called the Darrington-Devils Mountain fault, and one is just south of the MFD response zone, called the southern Whidbey Island fault zone.

Data suggests a 74.01% probability of a 5.0 magnitude earthquake within the next 50 years. The Marysville area has a high earthquake risk, totaling 886 earthquakes since 1931. The largest earthquake within 30 miles of Marysville was a 5.8 magnitude in 1996. Of concern is the possibility of soil liquefaction in the event of an earthquake, and there are locations where high-severity groundwater and soil liquefaction could occur.

Even though MFD's response area is not near any volcanoes, there is still a volcanic risk to consider. Of the five major volcanoes in Washington, Glacier Peak and Mount St. Helens have had significant eruptions in past years.

When ash and lahar (mudflow) from eruptions reach populated areas, they can bury structures and people. The northeastern corner and area just north of the response area is at risk of lahars from the Glacier Peak impact area. The figures below show the probability of a future earthquake and seismic and volcanic risk areas.

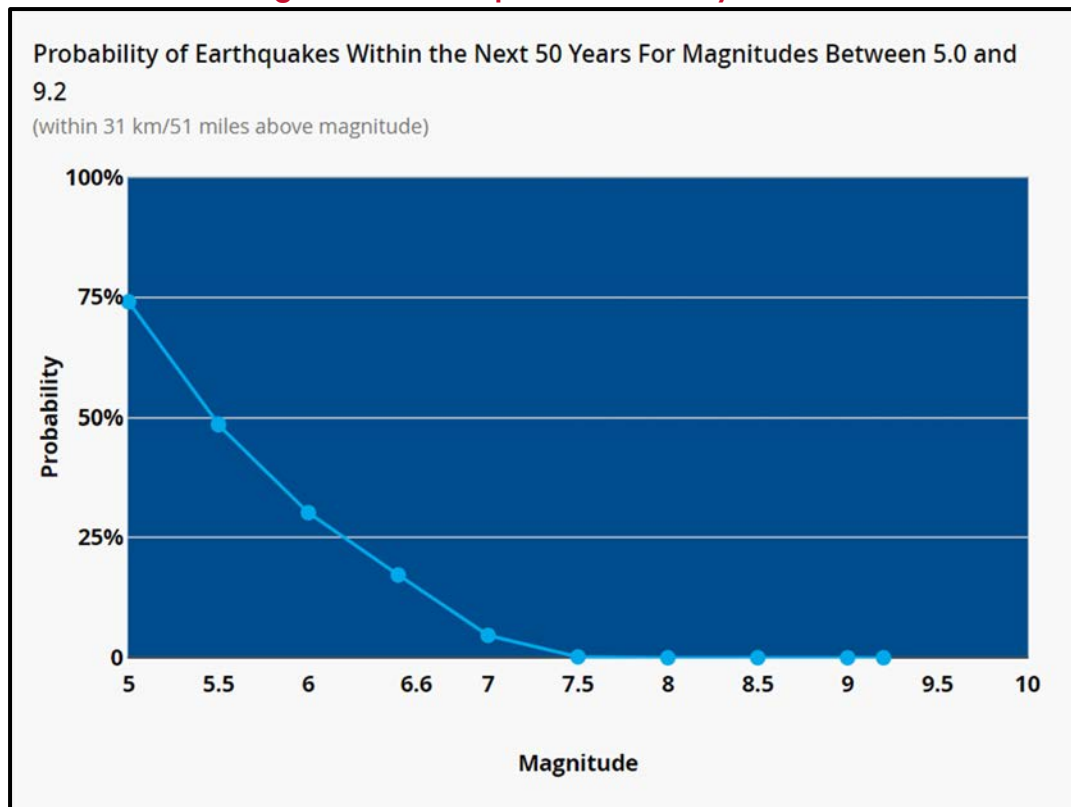
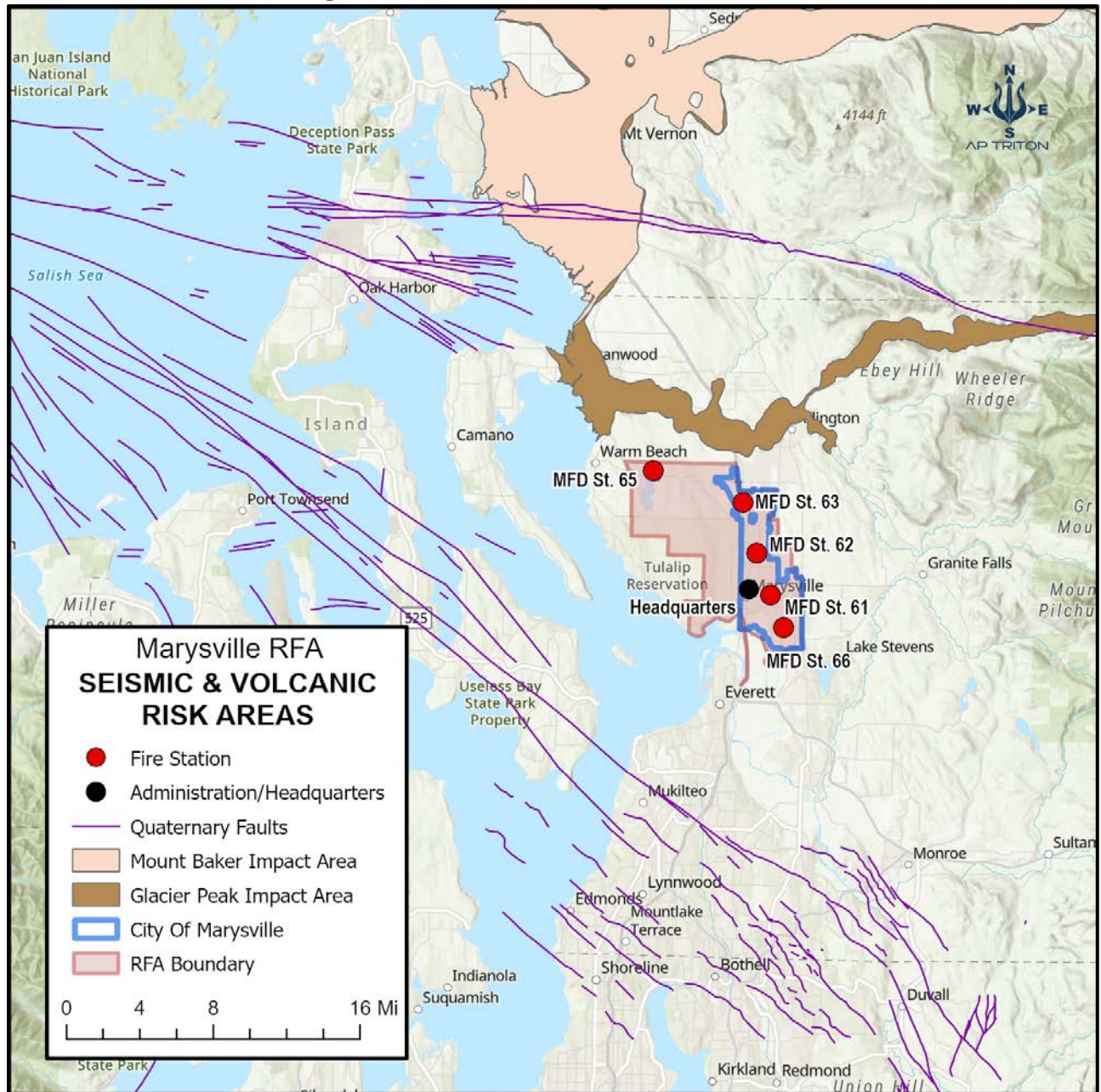
Figure 151: Earthquake Probability in MFD

Figure 152: Seismic & Volcanic Risk Areas

Landslides

The risk of a landslide in MFD is considered a moderate hazard for the area. Areas in the MFD have the potential for landslides, especially along hills or canyons. Landslides usually occur because of slope failure due to erosion from surface water runoff, mudflows when the water has saturated the ground, or debris flows after a wildland fire. Over the years, this area has had a minimum of 17 mudslides and four landslides that caused natural disasters.

Wildland Fires

The wildland fire risk for MFD is low. MFD's service area is in the third percentile of wildfire burning in any given year compared to other communities throughout Washington State. Exposure is the intersection of wildfire likelihood and intensity with communities.

Communities can be directly exposed to wildfire from adjacent wildland vegetation or indirectly from embers and home-to-home ignition. Therefore, the ability to protect the community and those living in the area is a primary goal. Limited access to areas due to narrow and steep roads like those in specific subdivisions, reduced right-of-way from overgrown vegetation, properties without proper addressing, and dead-end roads with limited abilities to turn around fire apparatus or vehicles are all wildland-urban interface issues.

Local homeowners, businesses, and government agencies bear the impact costs in most community wildfires. Many of these costs are due to long-term damage to community and environmental services, such as landscape rehabilitation, lost business and tax revenues, and property and infrastructure repairs. By comparison, Triton's analysis suggests suppression costs comprise around 9% of total wildfire costs.⁶⁰

The remaining costs include short-term expenses, or those occurring within the first six months—and long-term damages accruing during many months and years following a wildfire. Communities at risk of wildfires can reduce wildfire impacts and associated costs through land-use planning and fire prevention measures.

Floods

MFD's service area is at risk of flooding along the rivers and creeks. Flooding typically occurs with the highest rainfall. These seasonable variations can cause localized flooding along the creek channels during high-intensity rainfall events.

Like offshore storms, deeper floods from significant events are less likely to occur but cause greater damage than shallower flood events, like heavy rains. As a result, 917 properties in Marysville have a greater than 26% chance of being severely affected by flooding over the next 30 years. This represents 7% of all properties in Marysville.⁶¹

In addition to damaging properties, flooding can cut off access to utilities, emergency services, and transportation and may impact the overall economic well-being of an area. Since Marysville has a minor risk of flooding over the next 30 years, flooding will likely have a minimal impact.

Tsunamis

Tsunamis, though infrequent, can have catastrophic consequences. Understanding their risks is paramount for ensuring the safety and resilience of Marysville's residents and infrastructure. Tsunamis are large, powerful ocean waves generated by underwater earthquakes, volcanic eruptions, or landslides.

While Marysville is located inland, its proximity to Puget Sound and the Cascadia Subduction Zone necessitates a thorough analysis of potential tsunami threats. MFD's response area faces a tangible but infrequent tsunami hazard due to its geographical proximity to potential tsunami-generating sources. Snohomish County would not likely see significant tsunami impacts from an earthquake somewhere in the Pacific Ocean because of Whidbey Island, which sits like a shield to the west. This indicates that the water levels should not be any higher than what appears in the following flood zone map.

Figure 153: Flood Zones

**Marysville RFA
FLOOD RISK**

FEMA Flood Zones

- A-Zone
- AE-Zone
- VE- Zone

Fire Station

Administration/Headquarters

City Of Marysville

RFA Boundary

0 0.75 1.5 3 Mi

The Marysville Fire District can significantly enhance its resilience and readiness to respond to potential tsunami events by proactively assessing the risks, educating the community, and implementing effective mitigation strategies. It is essential to foster a collaborative approach involving local authorities, emergency services, and the public to ensure the safety and well-being of all residents.

A changing environment means higher seas, new weather patterns, and stronger storms. In addition, as the atmosphere warms, more evaporation and water are available when it rains. As a result, additional problems occur with flash flooding in the district's urban areas, but they are usually short-lived.

Technological (Human-Caused) Hazards

Events that occur without warning or that are unknown and suddenly appear are considered technological hazards. Examples include industrial accidents or hazardous chemical releases. Each community should create contingency plans for the specific risks in their jurisdiction. This may include periodic permitting, fire and life safety inspections, and pre-incident planning. These activities are designed to reduce risks and provide on-site visits for fire district personnel.

If a building or facility that stores or produces hazardous materials has been identified, unique personal protective clothing and equipment may be required to control or mitigate the event. Locations with hazardous materials on-site during the year exceeding the limits established by the Environmental Protection Agency are required to file Tier II reports.

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. The following thresholds require submission:

- Ten thousand pounds for hazardous chemicals
- Lesser than 500 pounds or the threshold planning quantity for highly hazardous chemicals

Some areas require additional reporting quantities through a five-tier system that authorizes the treatment and storage of hazardous waste.

Hazardous Materials

At least eight facilities in MFD's jurisdiction store hazardous materials, but no locations produce or store any highly hazardous substances. U.S. Highways 89, 134 and 235, and Interstate 5 (I-5) are the primary transportation corridors passing through the district—with I-5 being the main transport route. This presents the possibility of a hazardous materials incident involving motor vehicles and trucks.

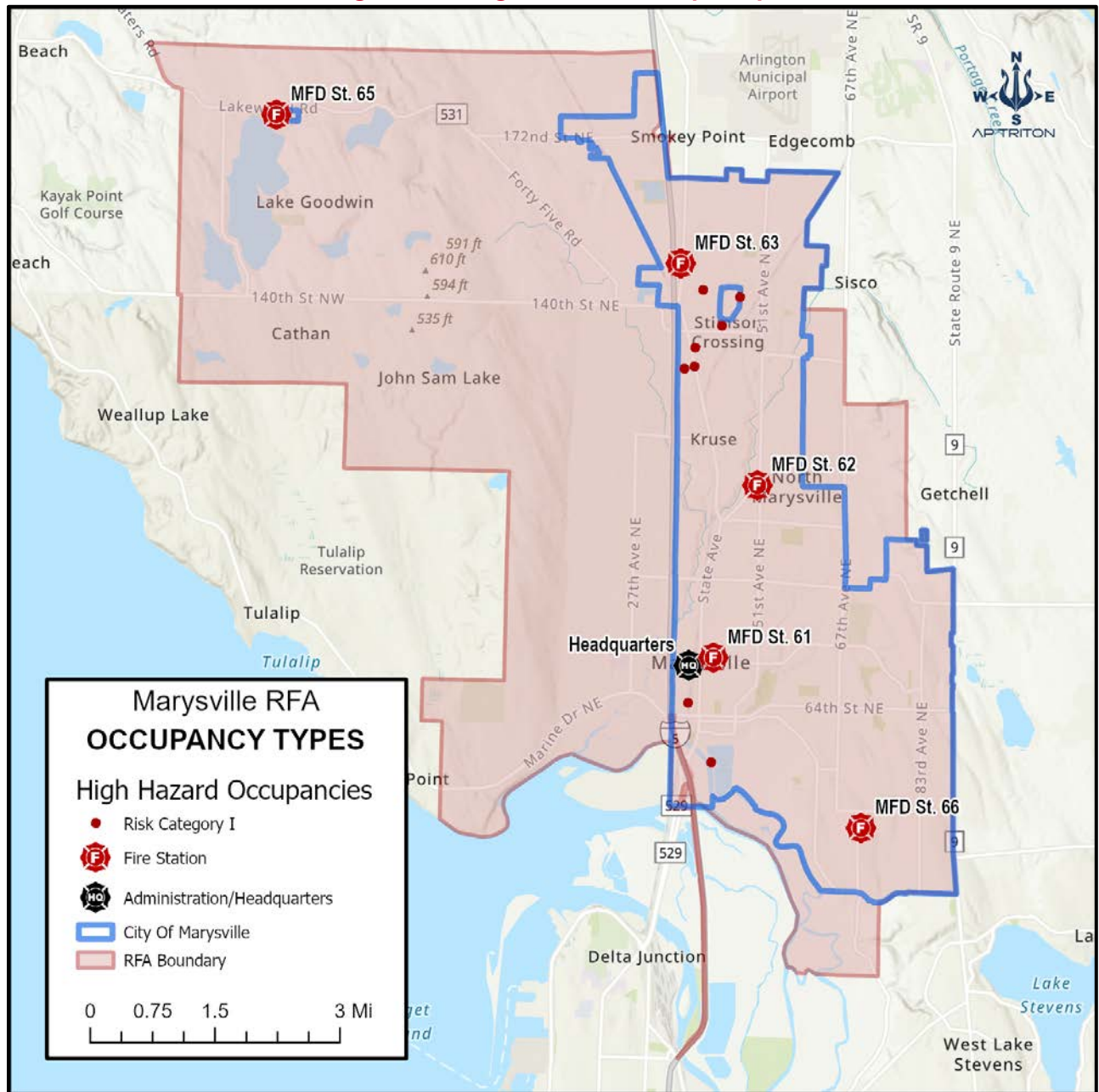
MFD provides the initial essential hazardous materials incident response at the operations response level. MFD trains everyone to the HazMat Operations level, has staff members at Station 66 trained to the Technician level, and is part of the regional team. However, if there is a need for an in-depth response, the Snohomish County Hazmat Response Team has been greatly improved over the past several years.

Currently, the team operates four strategic technical response units in Snohomish County. HAZMAT-1, a technical response unit based in Everett, DCON-12 a decontamination unit based at South County Fire, HAZMAT-61 a technical response unit based in Marysville; and HAZMAT-71, a technical response unit based at Snohomish Regional Fire & Rescue.

The team has assembled various technical equipment to detect and identify chemical, biological, radiological, and explosive materials. Multiple levels of chemical protective clothing and equipment needed to enter dangerous atmospheres are contained in each response unit. Technicians can perform hazard risk assessments, including estimating release rates and downwind threats to populations using current weather data and plume dispersion modeling technologies.

The following figure shows the locations of these high-hazard occupancies.

Figure 154: High Hazard Occupancy



Land Use & Occupancies

Land use for a community is designed to classify properties within a geographical area generally under governmental control. The concept of land use regulation is to provide attractive social and environmental outcomes to assist in the efficient management of development. Zoning areas may vary from one portion of the service area with a mixture of low-, moderate-, and high-risk properties.

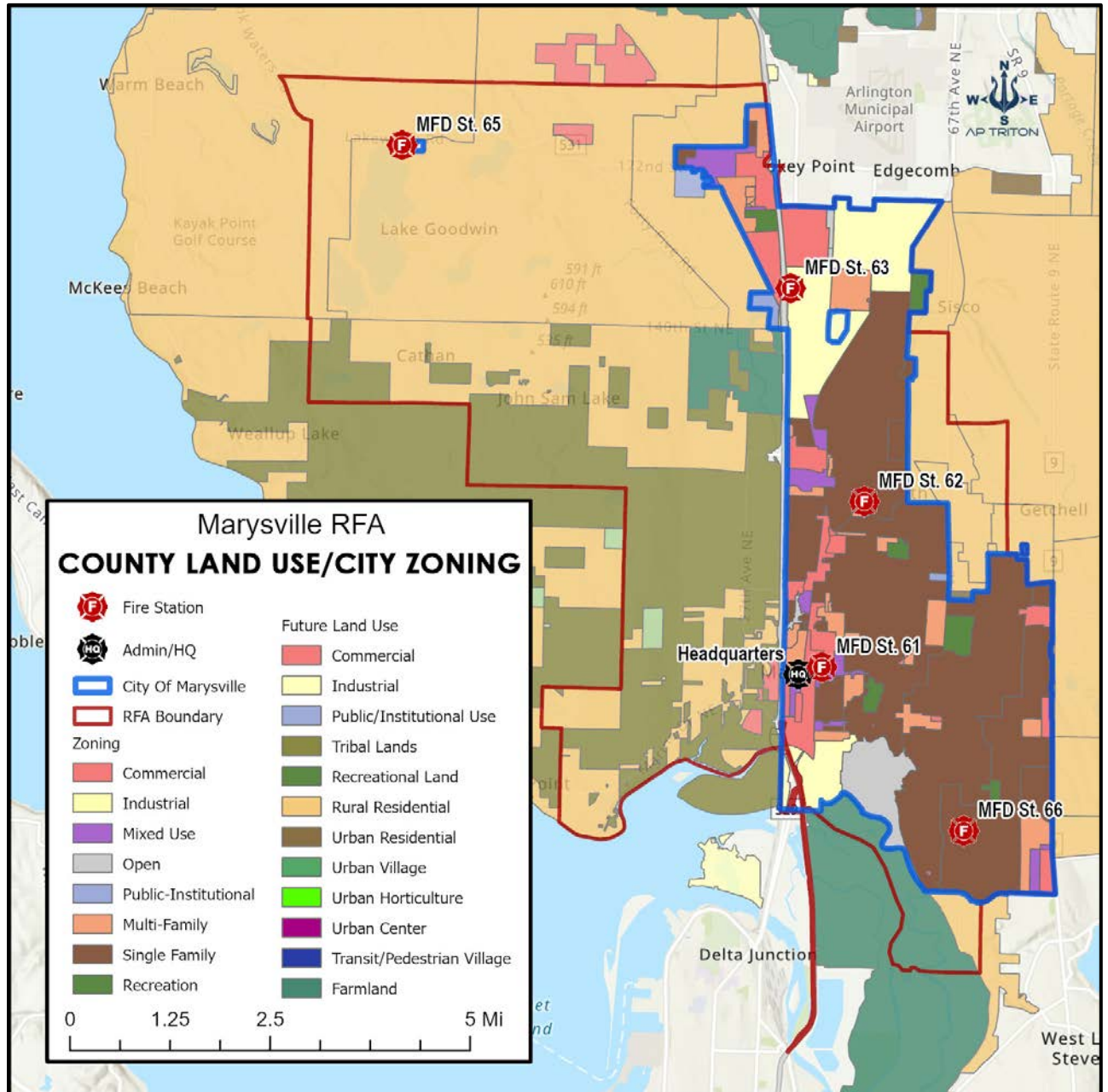
- **Low Risk:** Areas zoned for agricultural purposes, open spaces, low-density residential, and other low-intensity use. Defined by MFD as Risk Level 3.
- **Moderate Risk:** Areas zoned for medium-density single-family properties, small commercial and office use, low-intensity retail sales, and similarly sized business activities. Defined by MFD as Risk Level 2.
- **High Risk:** High-intensity business districts, mixed-use areas, high-density residential, industrial, storage facilities, and large mercantile centers. Defined by MFD as Risk Level 1.

Marysville adopted an updated comprehensive plan in 2015 for future development.⁶² The comprehensive plan is designed and written for a planning period of approximately 20 years, with updates occurring every eight years or as needed. However, the City Councils may use the plans as guides when approving new developments. Some of the highlights of the 2005 comprehensive plan and 2015 update were as follows:

- Review and revitalize community vision for the Marysville Urban Growth Area and downtown.
- Adopt subarea plans for downtown to guide future growth, development, and redevelopment.
- Review Marysville land use assumptions to accommodate 2035 population and employment targets.
- Adopt a subarea plan for the Lakewood Neighborhood to guide future growth, development, and redevelopment.
- Review and update Land Use, Housing, Transportation, Economic Development, Parks & Recreation, Public Facilities and Services, Utilities, Environmental and Resource Management, and Capital Facilities Elements. Consider development agreements, especially during rezoning, to ensure higher-quality development.

MFD should be aware of future development and continue regular meetings with city staff and building officials on proposed or existing building projects to ensure compliance with the fire code. MFD should also continue communicating and being involved with the Tulalip Tribe building officials and its planning department. This area has a big impact on the level of service provided by the MFD. Tribal and other areas are shown next.

Figure 155: MFD Land Use



Physical Assets Protected

Commercial occupancies or properties are considered target hazards in every community because of the special or unique risks to emergency responders and occupants during an incident or event. Each of these occupancies should have up-to-date pre-incident surveys completed annually. The surveys allow responders to become familiar with the building, property, and special hazards.

These occupancies and facilities should have a pre-incident plan available for MFD operations personnel during an incident. The pre-incident program provides emergency responders with information about potential hazards and can help them develop strategies and tactics during an incident.

Schools

The Marysville School District and schools within the MFD response area serve approximately 12,132 students from 26 schools with pre-kindergarten through high school grades. In addition, the Lakewood School District includes three elementary schools, one middle school, and one high school. Therefore, these locations should be considered target hazards because of the large number of students and teachers in a single location. The following schools with the highest student numbers are within the MFD service area:

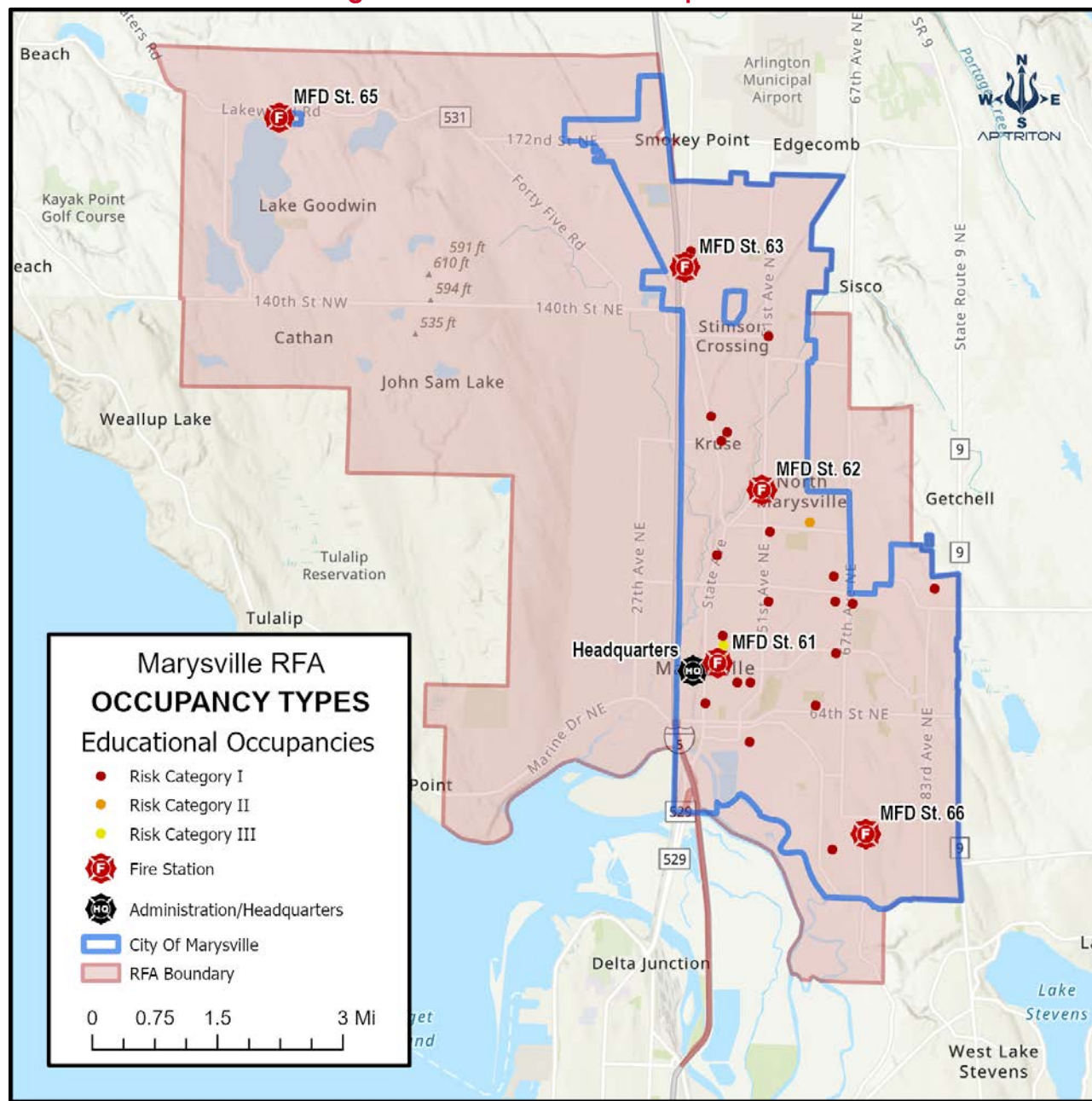
- Marysville Pilchuck High School MPHS with 1195 students.
- Marysville Getchell High School MGHS with 1661 students.
- Marysville Middle School MMS with 855 students.
- Cedarcrest Middle School with 809 students.
- Sunnyside Elementary School with 520 students.
- Pinewood Elementary School with 578 students.
- Allen Creek Elementary School with 550 students.
- Shoultes Elementary School with 460 students.
- Grove Street Elementary School with 457 students.

In addition, the Lakewood School District is within the fire district and includes five schools: three elementary schools (English Crossing, Cougar Creek, and Lakewood), Lakewood Middle School, and Lakewood High School.

Childcare facilities for infants and preschool or afterschool care for children create specific concerns because of their age. Very young children will need additional assistance from childcare workers to evacuate a building during an emergency. An evacuation may require the employees to carry the infants.

The following figure shows the current location for educational occupancies.

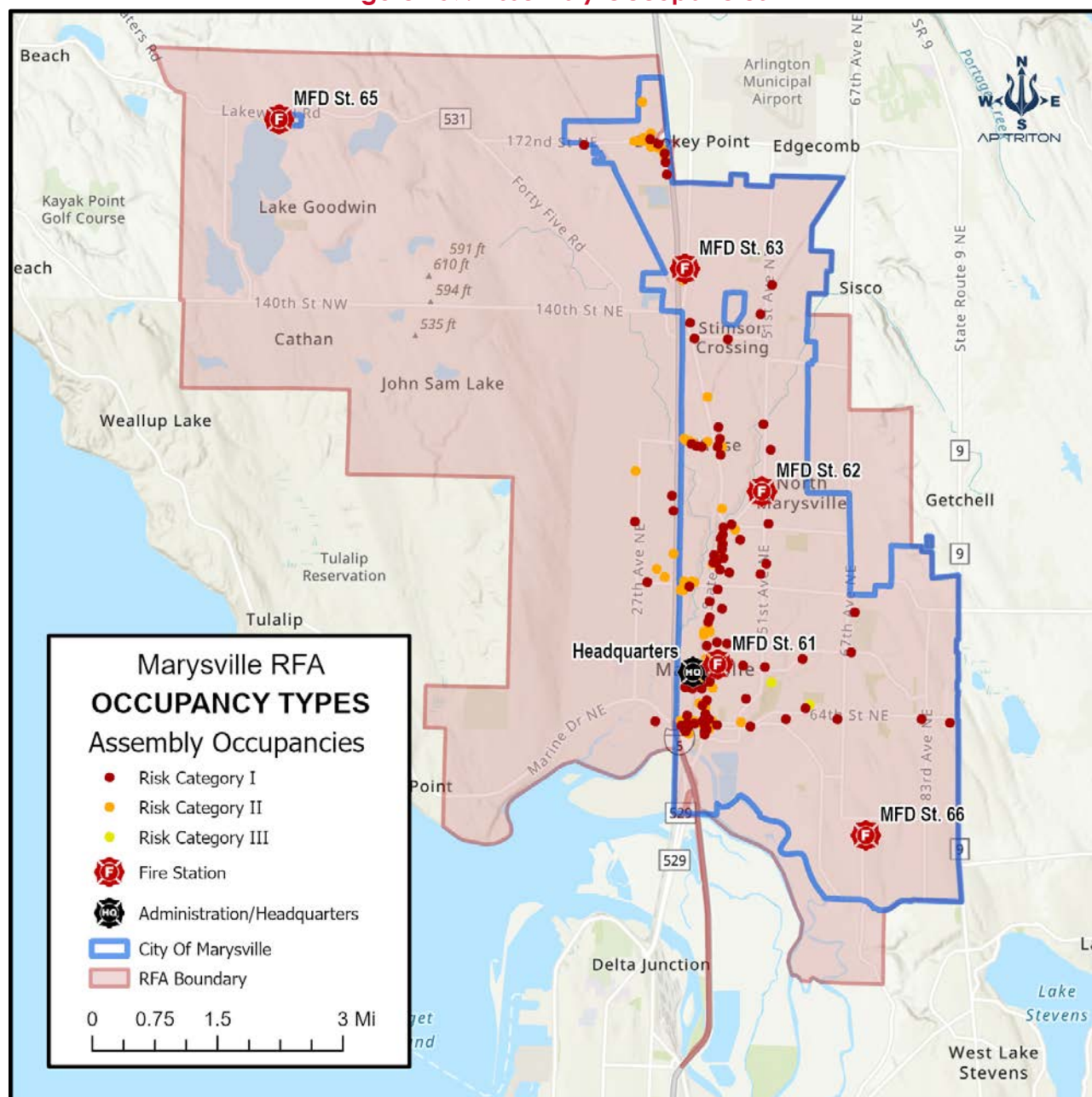
Figure 156: Educational Occupancies



Assembly

Assembly occupancies create unique risks because of the large number of people in a single location. These occupancies include restaurants, theaters, nightclubs, sporting events, or large outside festivals, all locations where people gather. In addition, these occupancies may require many emergency response personnel during an event such as a fire or active shooter. Therefore, these locations should have completed pre-incident plans.

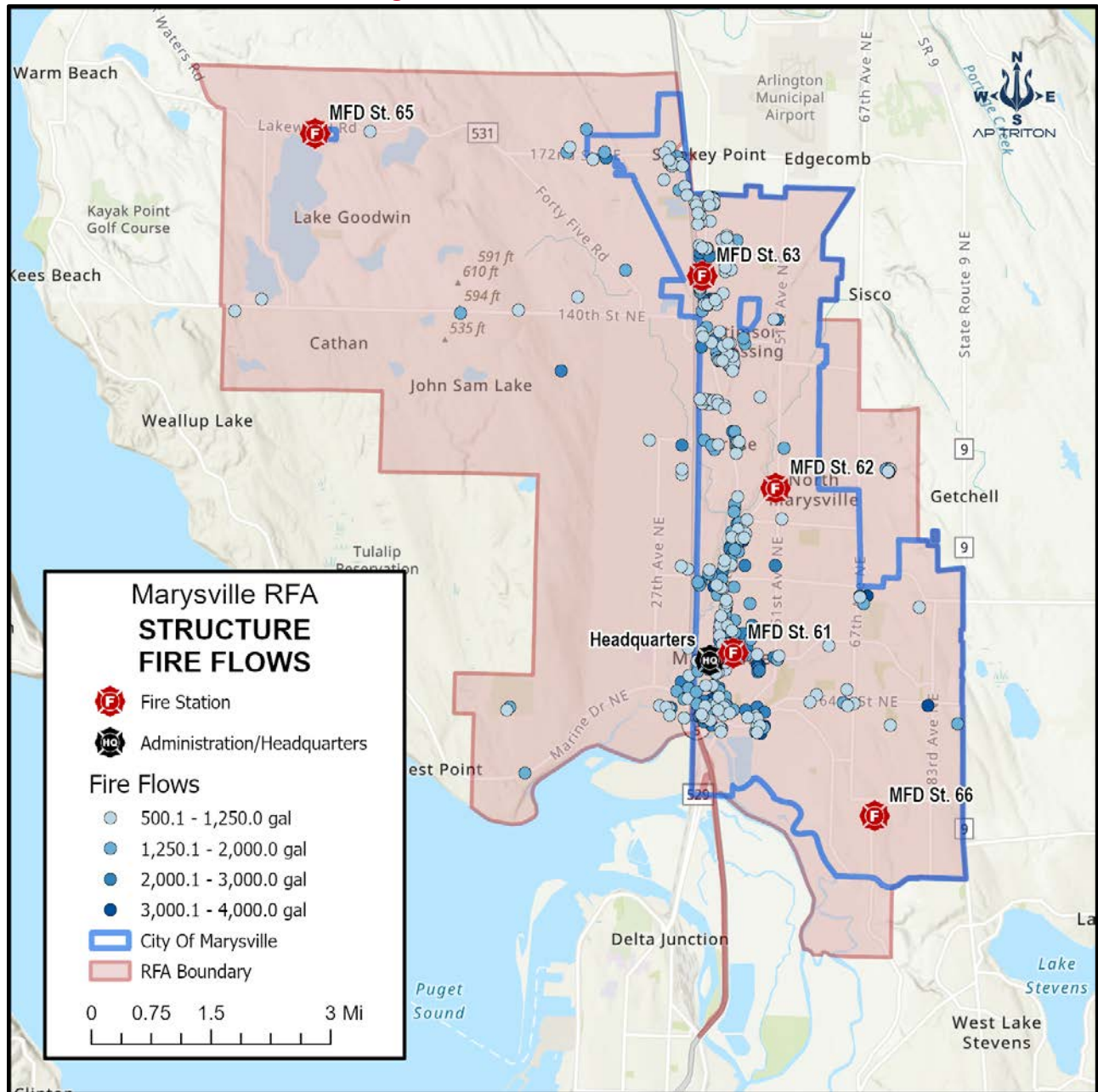
Figure 157: Assembly Occupancies



Large Fire-Flow Occupancies

Occupancies can be classified according to their risk level. Risk factors that classify occupancies as low, medium, or high include the size of the building(s), construction type, the presence or absence of fire suppression features such as sprinklers and standpipes, the needed fire flow, the risk to life, the presence of chemicals or hazardous processes, and the amount of water available concerning the required fire flow.

Examples include Marysville Mall, Quil Ceda Village, the Seattle Premium Outlet Mall, Cascade Commerce Center, and the local high schools. The following figure shows structure fire flows occupancies.

Figure 158: Structure Fire Flows

Hospital, Medical, & Congregate Care Occupancies

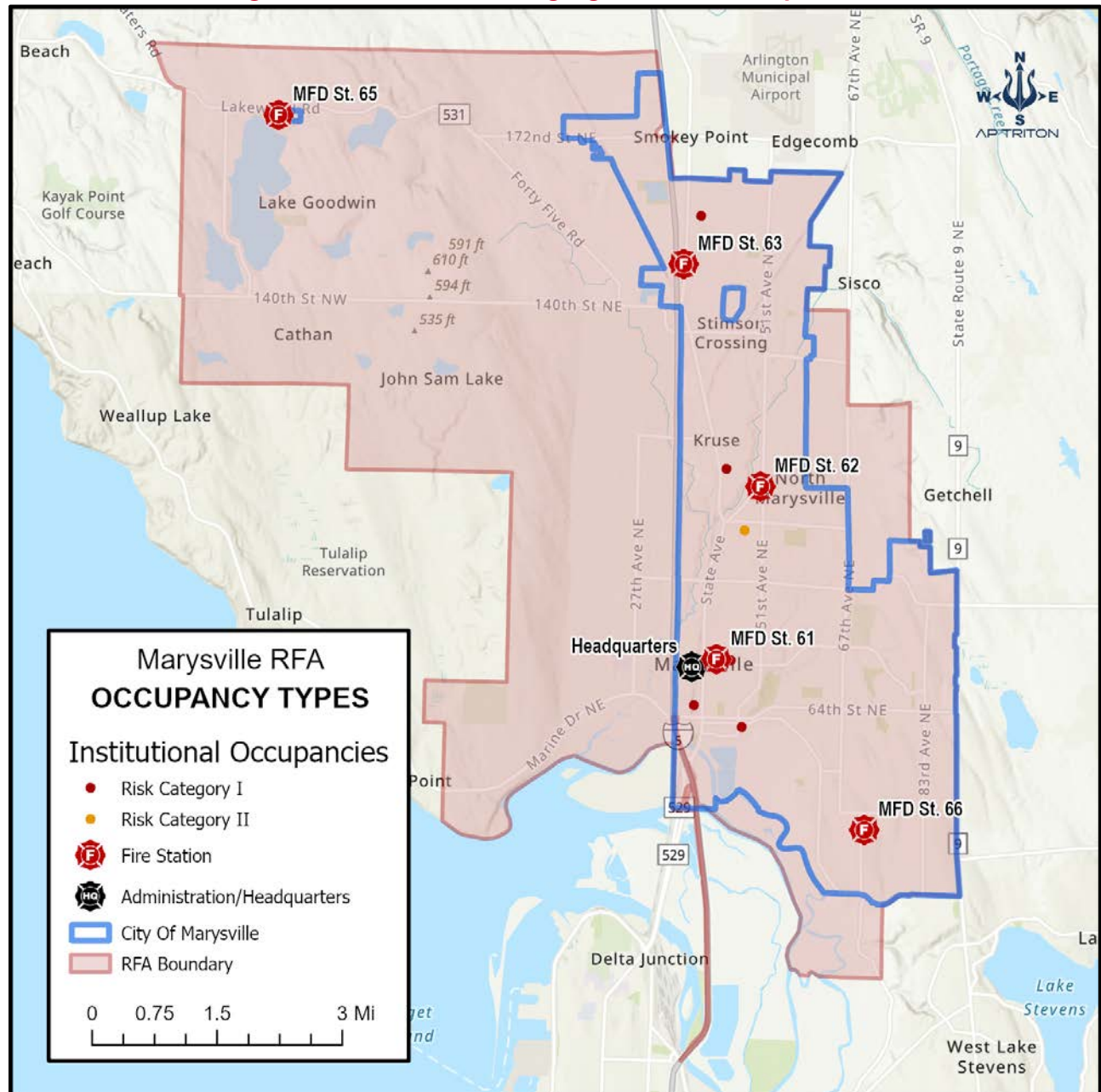
These facilities assist people seeking medical attention. Hospitals are at a higher risk because of the inability of some patients to self-evacuate from the facility. These locations require more fire and life safety requirements than medical clinics to enhance the occupants' protection.

Other protection includes a fire alarm to notify the occupants of an emergency or a fire sprinkler system to control or extinguish a fire.

Congregate care facilities provide daily services to aging populations or those with declining health or cognition issues. Depending on their mobility or mental conditions, they may need assistance evacuating the building. Special locking arrangements for areas where patients with dementia or Alzheimer's live are allowed to prevent them from leaving the facility. These locations also require additional fire protection systems, like in a hospital, to protect the occupants.

Staff should have plans for moving the occupants or patients during an emergency to meet fire requirements and should be confirmed on the annual inspection.

Figure 159: Medical & Congregate Care Occupancies



Buildings Three or More Stories in Height

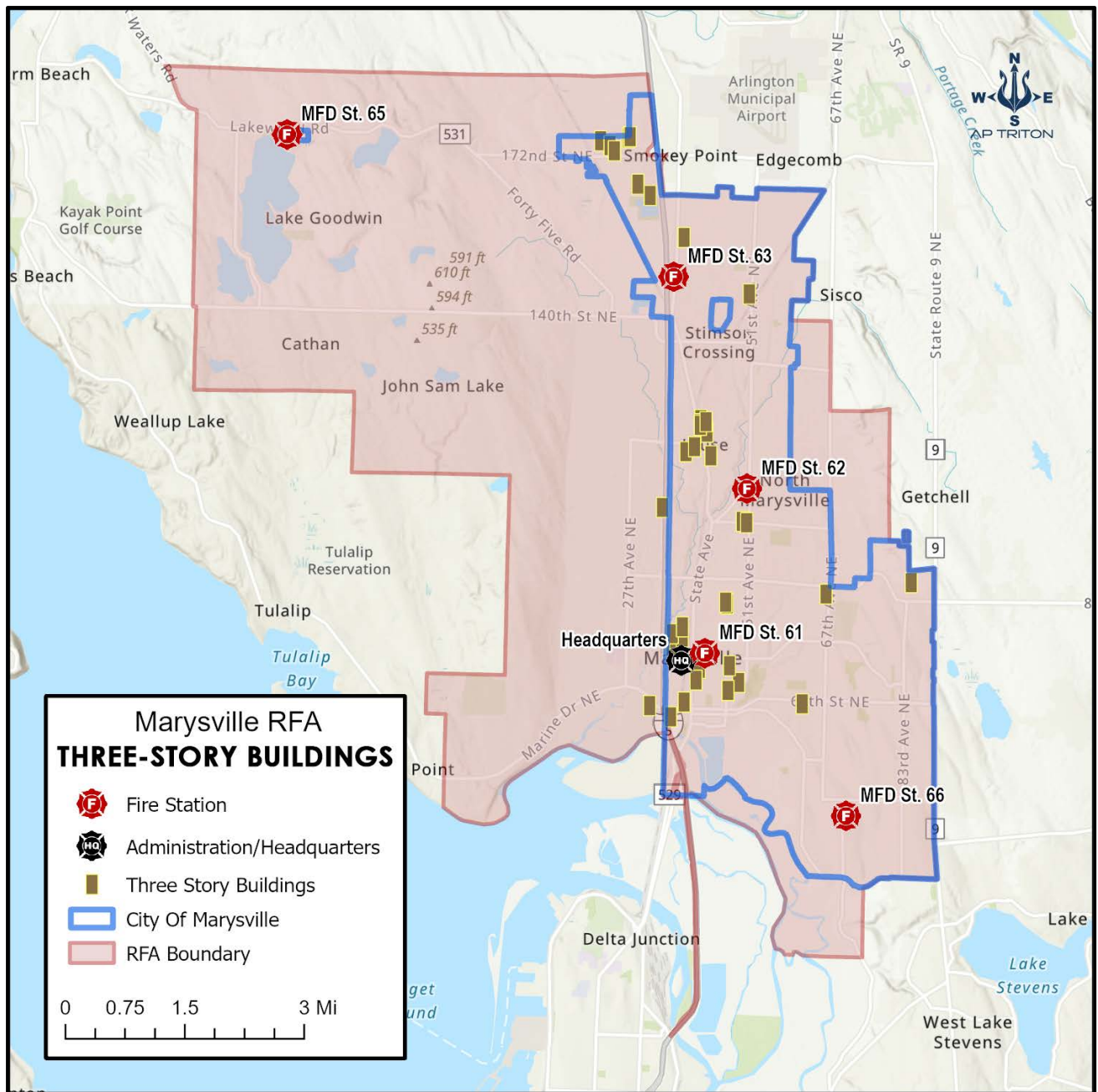
Structures three or more stories in height typically require an aerial apparatus with an elevated master stream. A ladder truck may be necessary to access these higher buildings' upper floors or roofs since most ground ladders cannot reach these heights.

The Insurance Services Office reviews the coverage area for a ladder truck for all buildings within 2.5 miles. It is essential to recognize that the MFD response area has several buildings that would fall in the mid-rise to high-rise range as defined by the fire code. These facilities present a unique hazard for operations and medical calls. Therefore, these locations should be considered target hazards because of their special features and many people in a single place.

The following facilities would meet this definition within the MFD area:

- Tulalip Hotel has 12 floors.
- La Quinta Inn has five floors.
- Hilton Home 2 Suites with five floors.
- QCCC Parking garage with five floors.
- Holiday Inn Express has four floors plus a basement.

The next figure provides the locations of buildings within MFD's service area that are more than three stories tall.

Figure 160: Buildings Three or More Stories

Residential Multifamily Occupancies

Residential properties create a higher risk for occupants than most commercial buildings. Most fire fatalities occur in these locations and represent numerous risks, such as occupants with accessibility issues or buildings built without fire sprinkler protection. These common areas must be inspected annually to ensure fire code compliance.

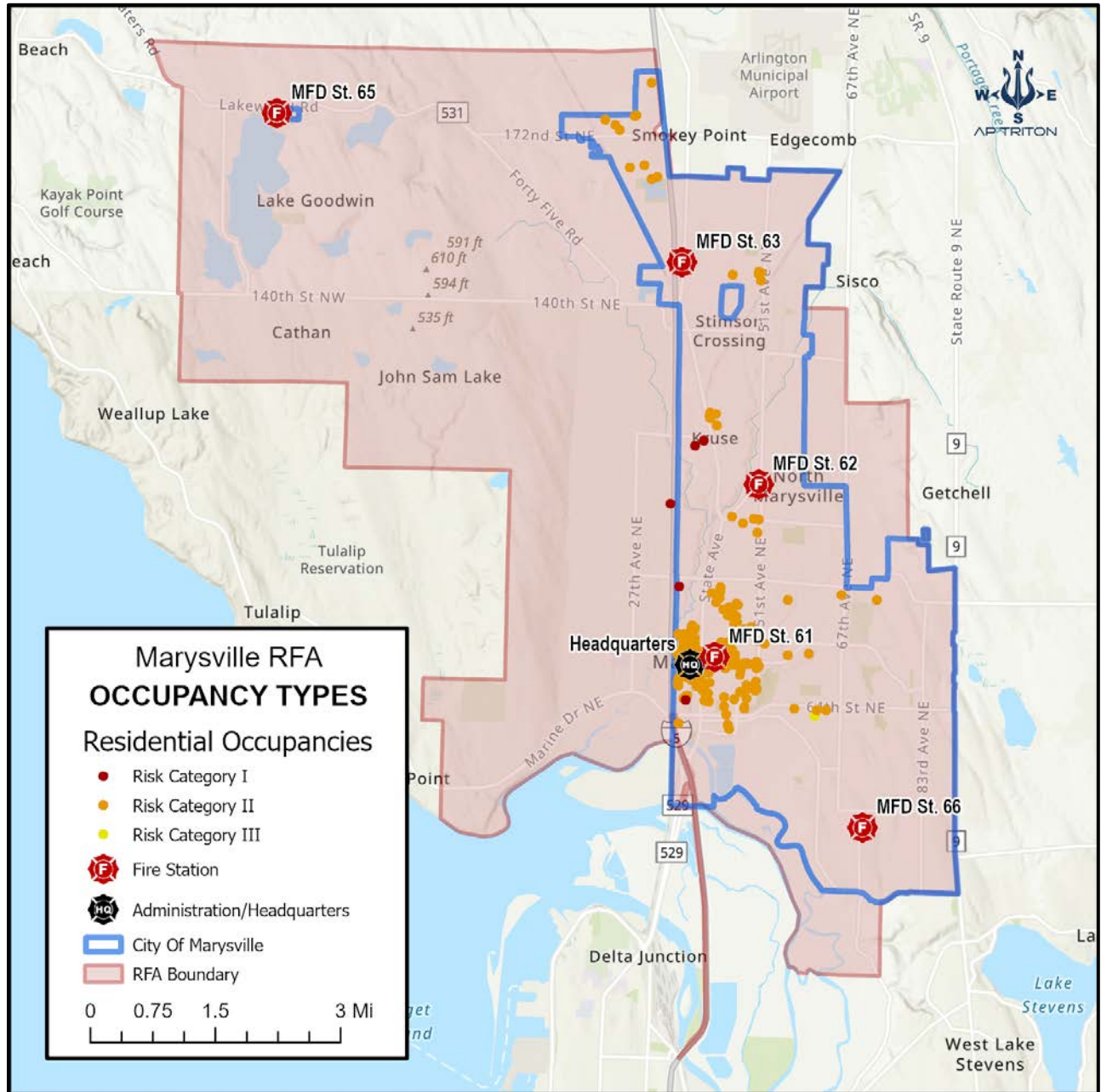
Although multifamily housing has fewer fires caused by electrical or heating malfunctions, the risk of cooking fires is twice the rate of other building fires. Updated building and fire codes now require these buildings to have a residential fire sprinkler system installed and interconnected smoke alarms in all bedrooms, hallways, and floors. These fire protection systems are designed to provide enough time for the occupants to evacuate the building.

The attics in many residential fire sprinkler installations are unprotected, creating problems when a fire reaches this location. In addition, fires can spread from exterior areas, such as when landscaping materials ignite and travel to the roof or attic. It should be noted that several multifamily residential projects are currently under construction and being proposed for development. This is important as it will increase the density and population in the City of Marysville over the next several years.

With growth comes call volume increases. Therefore, it will be essential for MFD to monitor the development and the potential increase in call volume over the next several years. The best way to monitor this is to compare the current volume per 1,000 population. This will allow the district to ensure that call volume is not increasing faster than the population.

The following figure shows the current location for multifamily residential occupancies.

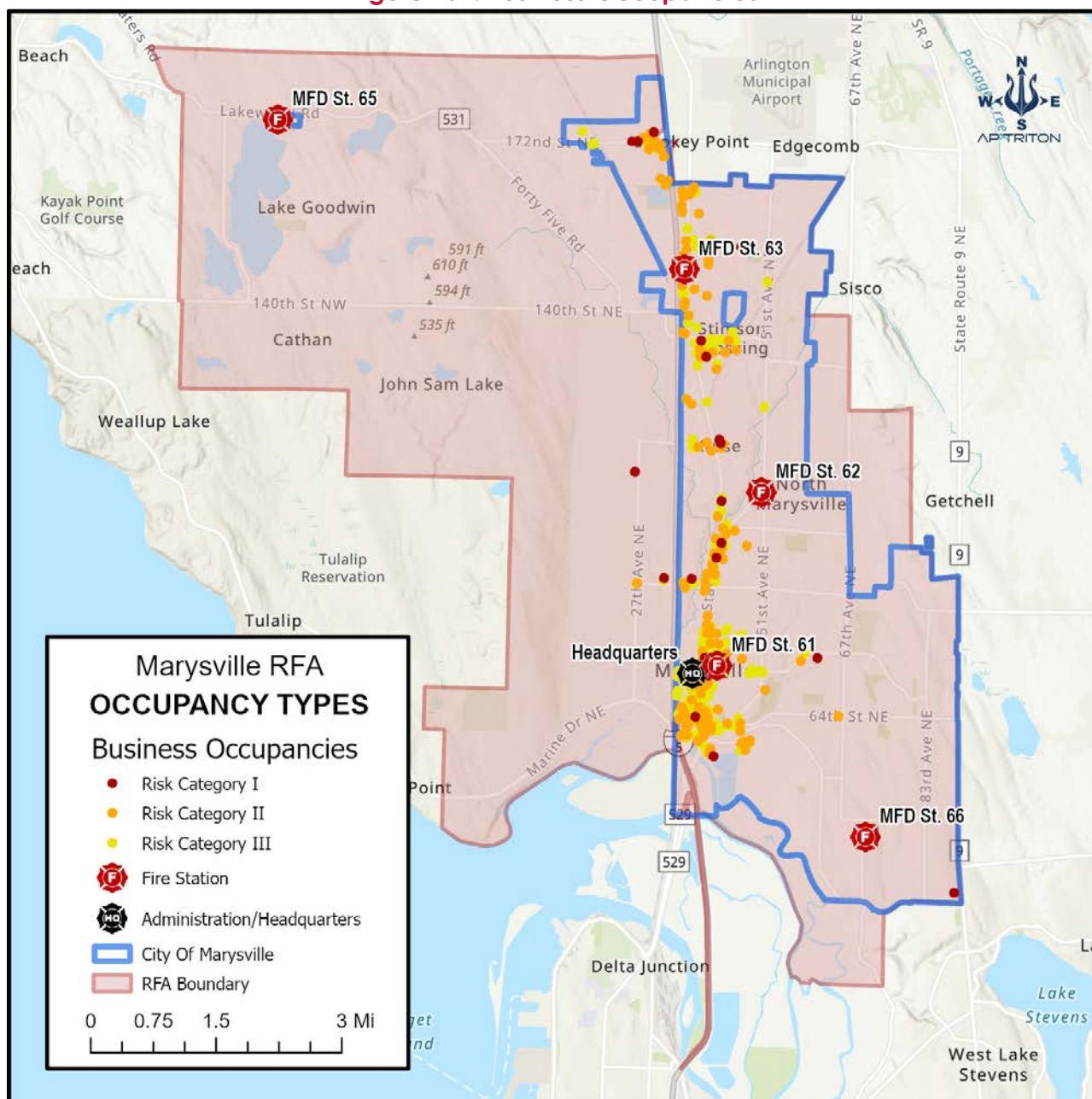
Figure 161: Multifamily Residential Occupancies



Business

Business occupancies generally encompass establishments primarily engaged in commercial, mercantile, or service-oriented activities. These can include but are not limited to retail shops and stores, office buildings, or spaces used for administrative, clerical, or professional activities. The following figure shows the MFD area at risk for business occupancies.

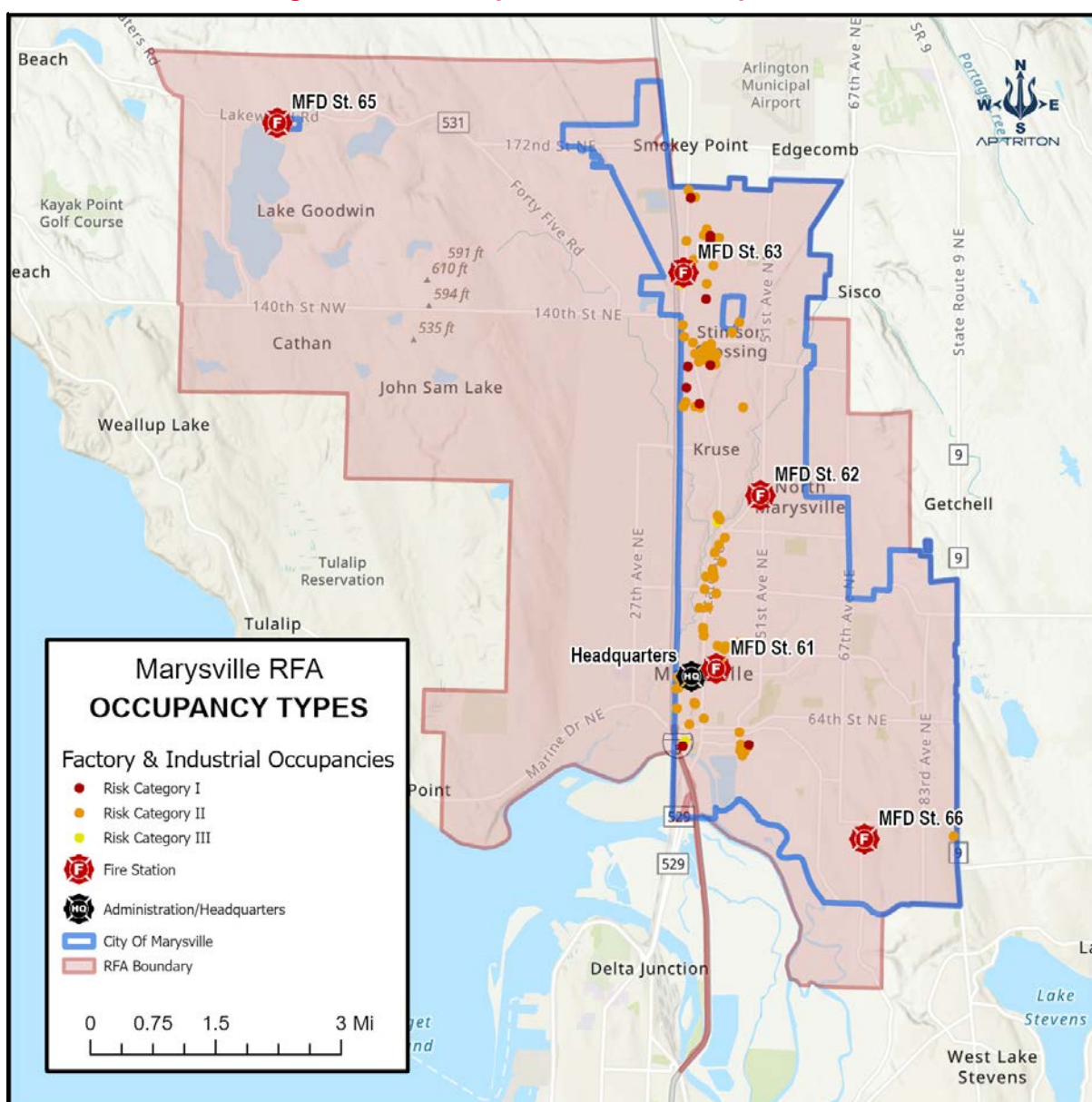
Figure 162: Business Occupancies



Factory & Industrial

Factory and industrial occupancy are where manufacturing, production, or industrial processes occur. These occupancies typically involve using heavy machinery, storing raw materials, or finished goods, and other activities that may present unique fire hazards. Factory and industrial occupancies can vary widely in their operations but include manufacturing and industrial facilities, printing facilities, heavy machinery, and metal workshops. The following figure shows the MFD area at risk for factory and industrial occupancies.

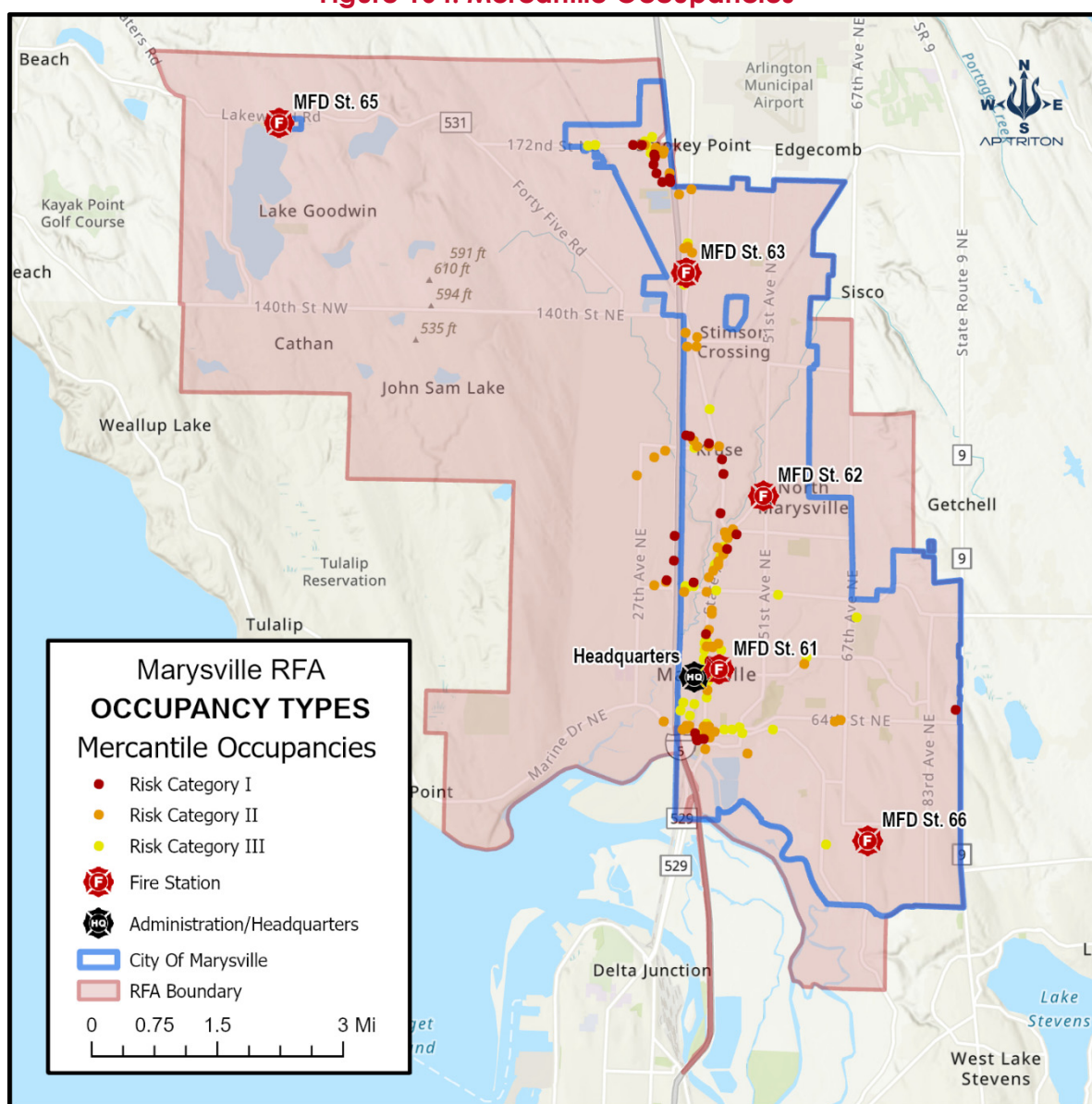
Figure 163: Factory & Industrial Occupancies



Mercantile

Mercantile occupancy refers to a specific type of occupancy classification used to categorize commercial properties primarily engaged in the retail sale of goods. These occupancies involve displaying and selling merchandise to the public and are typically characterized by customer access and inventory on display shelves or racks. They include retail shops and stores that sell goods directly to the public, large grocery stores, multi-store complexes, and convenience stores. The following figure shows the MFD area at risk for mercantile occupancies.

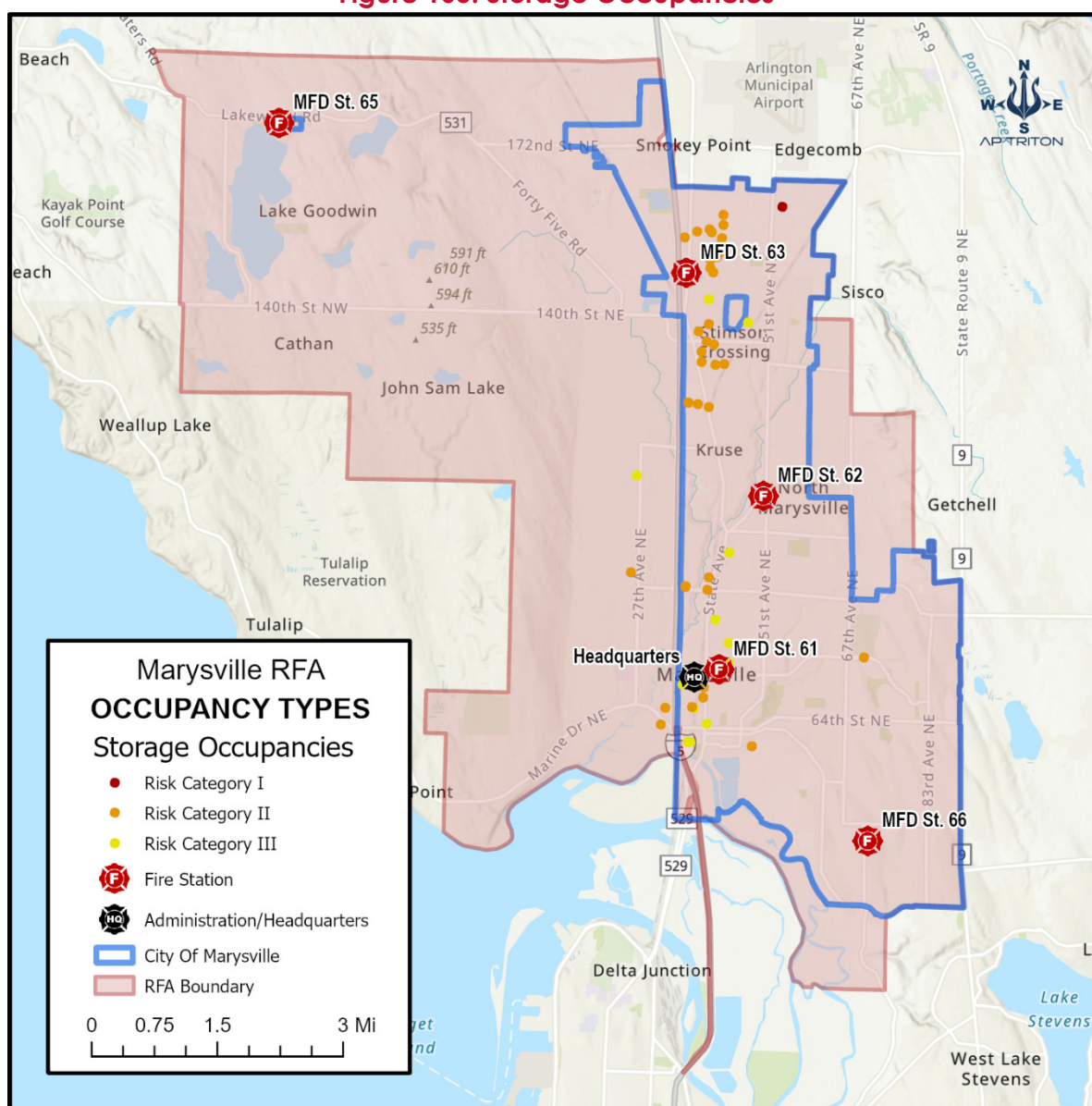
Figure 164: Mercantile Occupancies



Storage

Storage occupancy refers to a specific type of occupancy classification used to categorize properties primarily used for storing goods, materials, or merchandise. The absence of regular public access typically characterizes these occupancies, and the primary function of the building is to store items rather than engage in retail or manufacturing activities. Properties typically classified as storage occupancies include warehouses, self-storage facilities, cold storage, records storage, and bulk storage buildings. The following figure shows the MFD area at risk for storage occupancies.

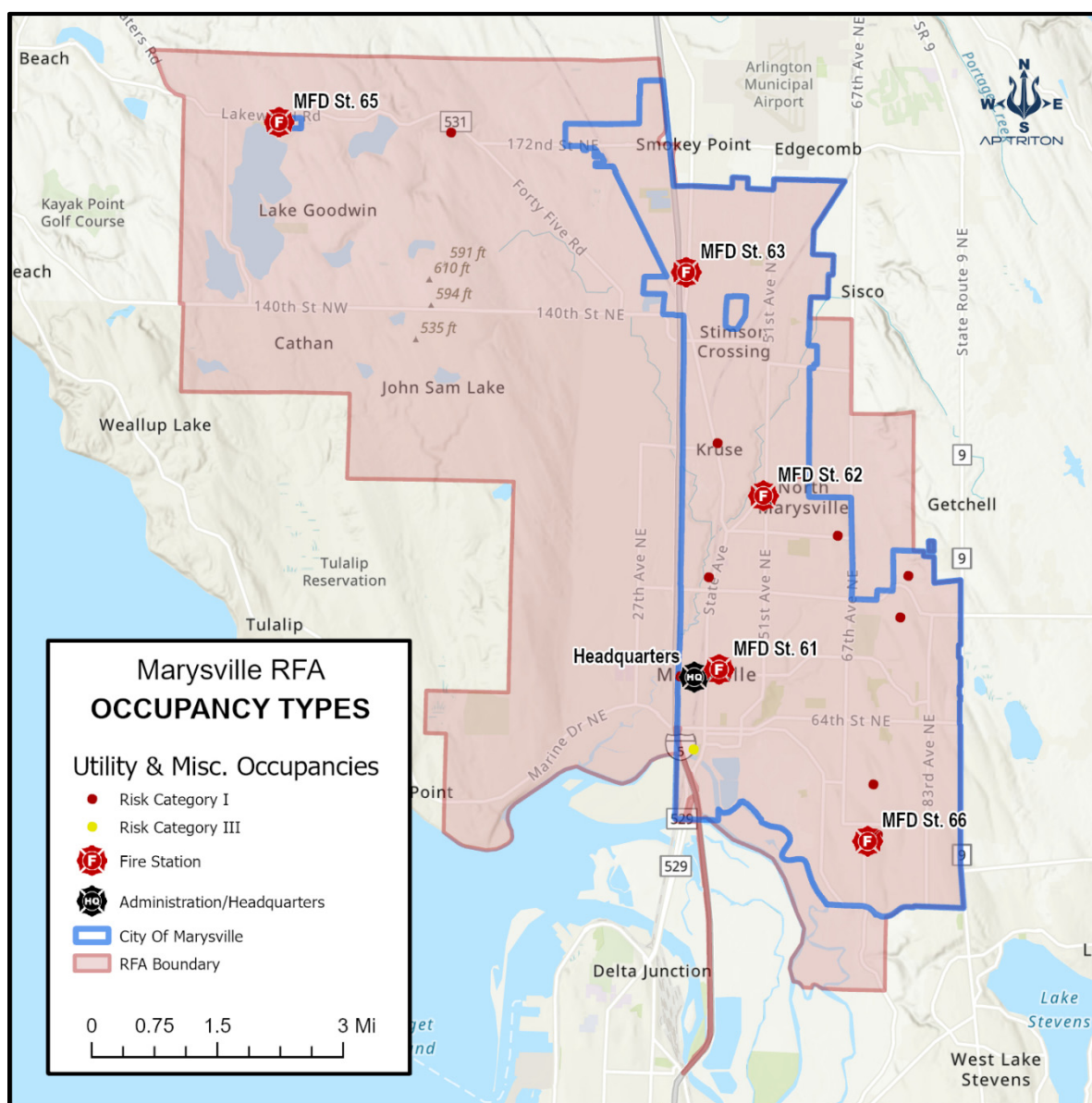
Figure 165: Storage Occupancies



Utility & Miscellaneous

Miscellaneous occupancy refers to a specific type of occupancy classification used to categorize properties that do not fit the standard occupancy groups but serve essential utility or miscellaneous purposes. These occupancies include various types of buildings and structures that support the overall functioning of a facility or perform unique functions not covered by other occupancy classifications. Examples include electrical substations or enclosures with electrical equipment, telecommunication structures and buildings, pump stations, and agricultural buildings, such as barns, silos, and agricultural storage facilities. The following figure shows the MFD area at risk for utility and miscellaneous occupancies.

Figure 166: Miscellaneous Occupancies



Critical Infrastructure Protected

Critical infrastructure and key resources (CIKR) explain what is crucial for a community to function in a modern economy. Critical infrastructure is defined as a sector “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.”

There are 16 defined Critical Infrastructure Sectors (CIS):

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

Not all sectors are represented in the MFD service area. However, each community must determine critical infrastructure locations and develop pre-incident plans for responding personnel.

Other buildings to consider as target hazards include occupancies with a potential for a significant loss of life, such as places of public assembly, schools, and childcare centers, medical and residential care facilities, and multifamily dwellings. Other considerations include buildings with substantial value to the community—economic loss, replacement cost, or historical significance—that, if damaged or destroyed, would have a significant negative impact. Responses to target hazards may require numerous MFD resources and mutual aid during an incident.

Energy

Multiple high voltage supply lines transverse MFD’s response area. They mainly run north to south, just west of 83rd Avenue, supply a maximum of 230 kV, and are owned and operated by Puget Sound Energy.

The City of Seattle owns and operates a high-voltage line running north and south, just east of State Highway 9. There is another line located along the I-5 corridor that is 115 kV, and all other lines are considered under 100 volts and are owned and operated by Puget Sound Power.

There is one significant natural gas transmission line and one hazardous liquid line, both of which pass along the district's east side and are operated by Northwest Pipeline. Snohomish County PUD operates the electric distribution for the service level within the MFD service area, and Puget Sound Energy provides natural gas services.

Figure 167: Electrical Transmission Lines

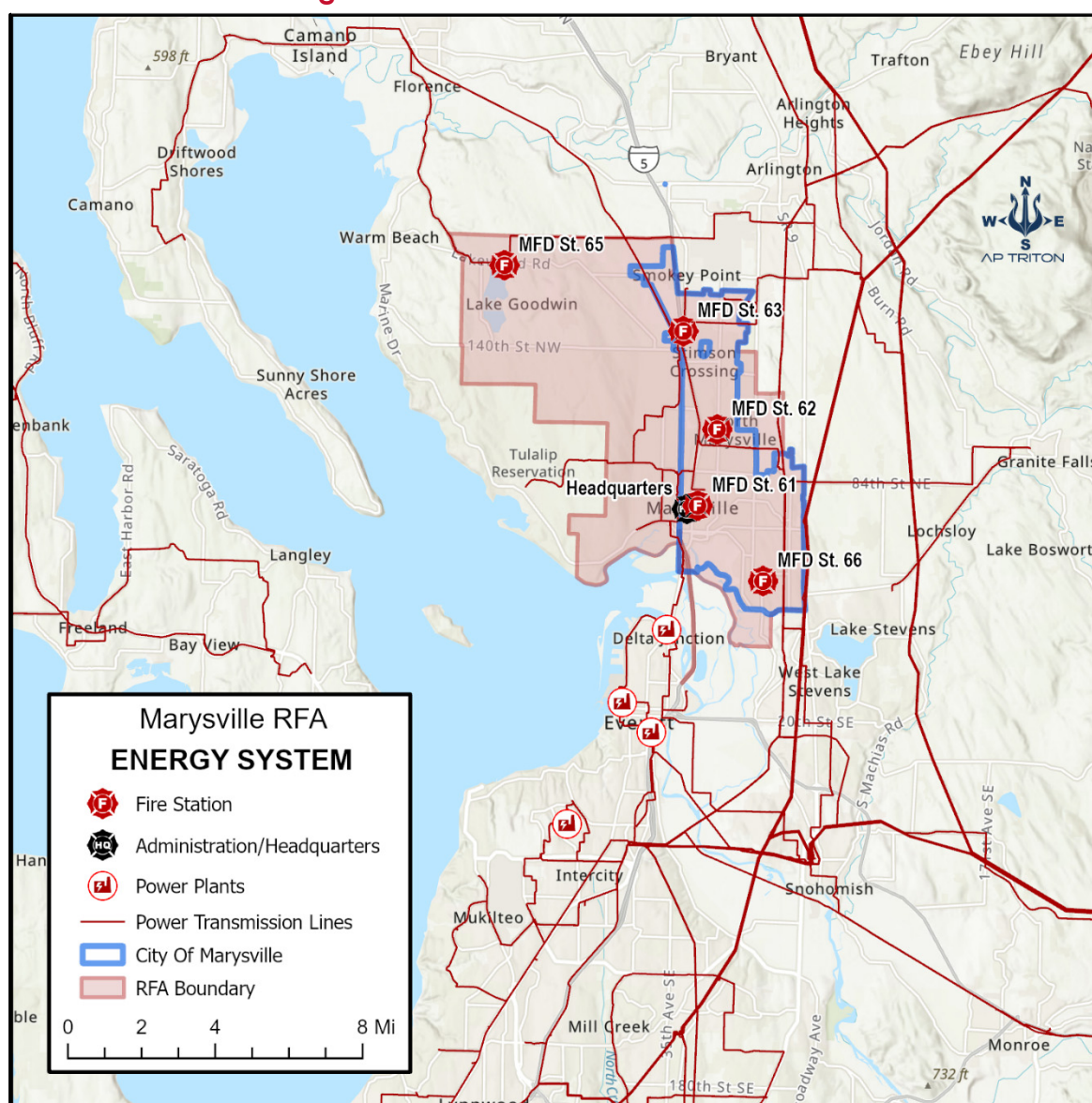
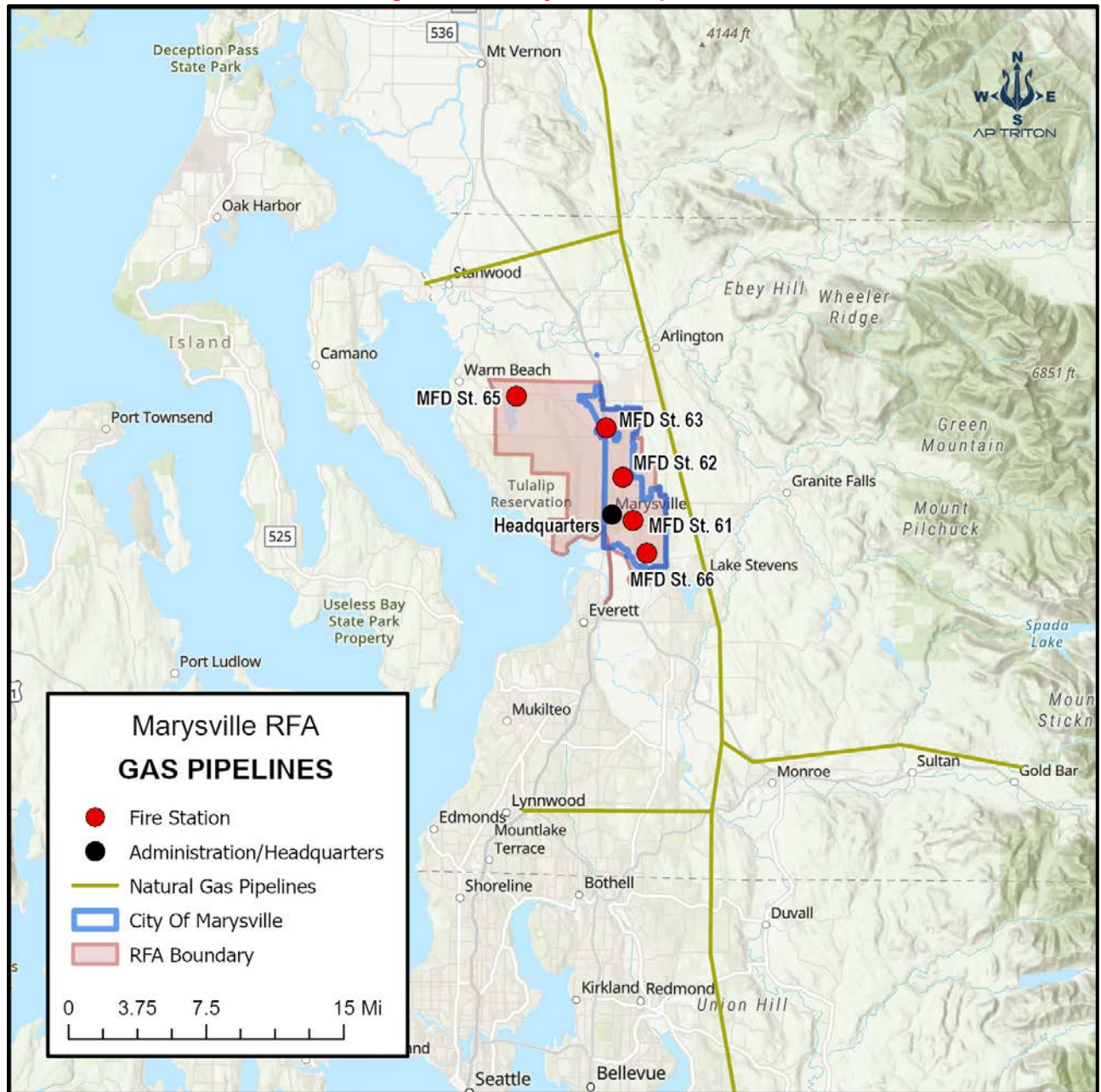


Figure 168: Major Gas Pipeline

Transportation Network

Most of the transportation network throughout MFD's service area consists of collector streets fed by residential roads. Many cul-de-sac roads could impact emergency response if they are narrow in some areas or impassable during an evacuation. Such roads should be identified to prevent a slowed response.

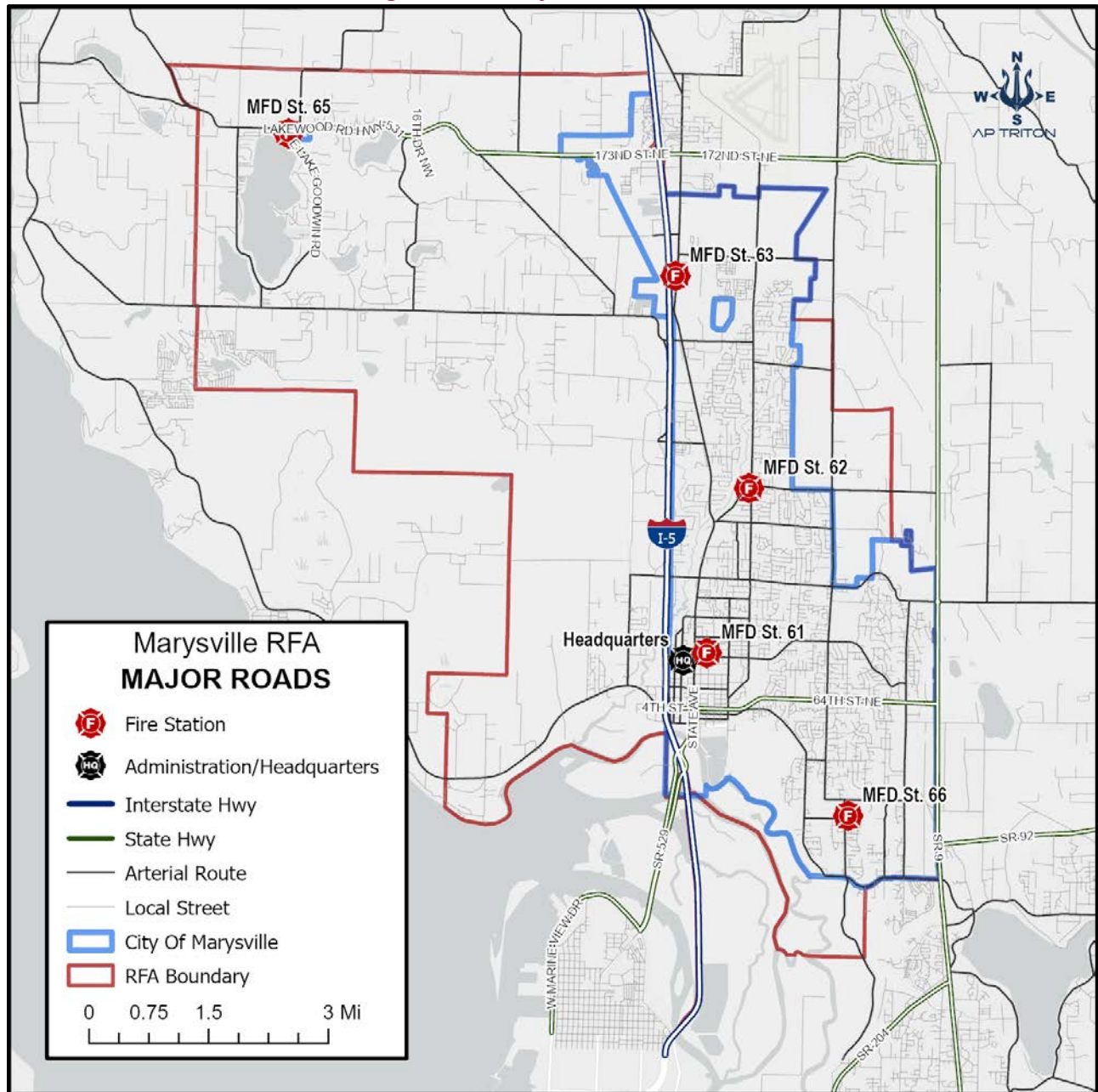
It is unknown how many trucks transport hazardous materials. The following figures show the average annual daily traffic and the most severe traffic accidents in the area.

Figure 169: Traffic Areas

Location	Avg. Annual Daily Traffic—Vehicles	Avg. Annual Daily Traffic—Trucks
State Route 529 and 1st Street	16,000	6,400
State Route 528 and 43rd Avenue EB	21,000	8,400
156th Street NW and Rose Road	1,500	600
172nd Street NE and 45 Road	9,200	3,680
I5 NB on-ramp at 116th Street NE	110,000	44,000

Figure 170: Traffic Accidents

Location	Vehicles Involved	Persons Involved	Number of Fatalities
State Route 9, 108th Street NE	2	6	4
State Route 9	2	4	2
State Route 9, Sunny School Road	2	4	2
84th Street NE, 55th Avenue NE	1	1	2
I5 NB on-ramp at 116th Street NE	5	11	3

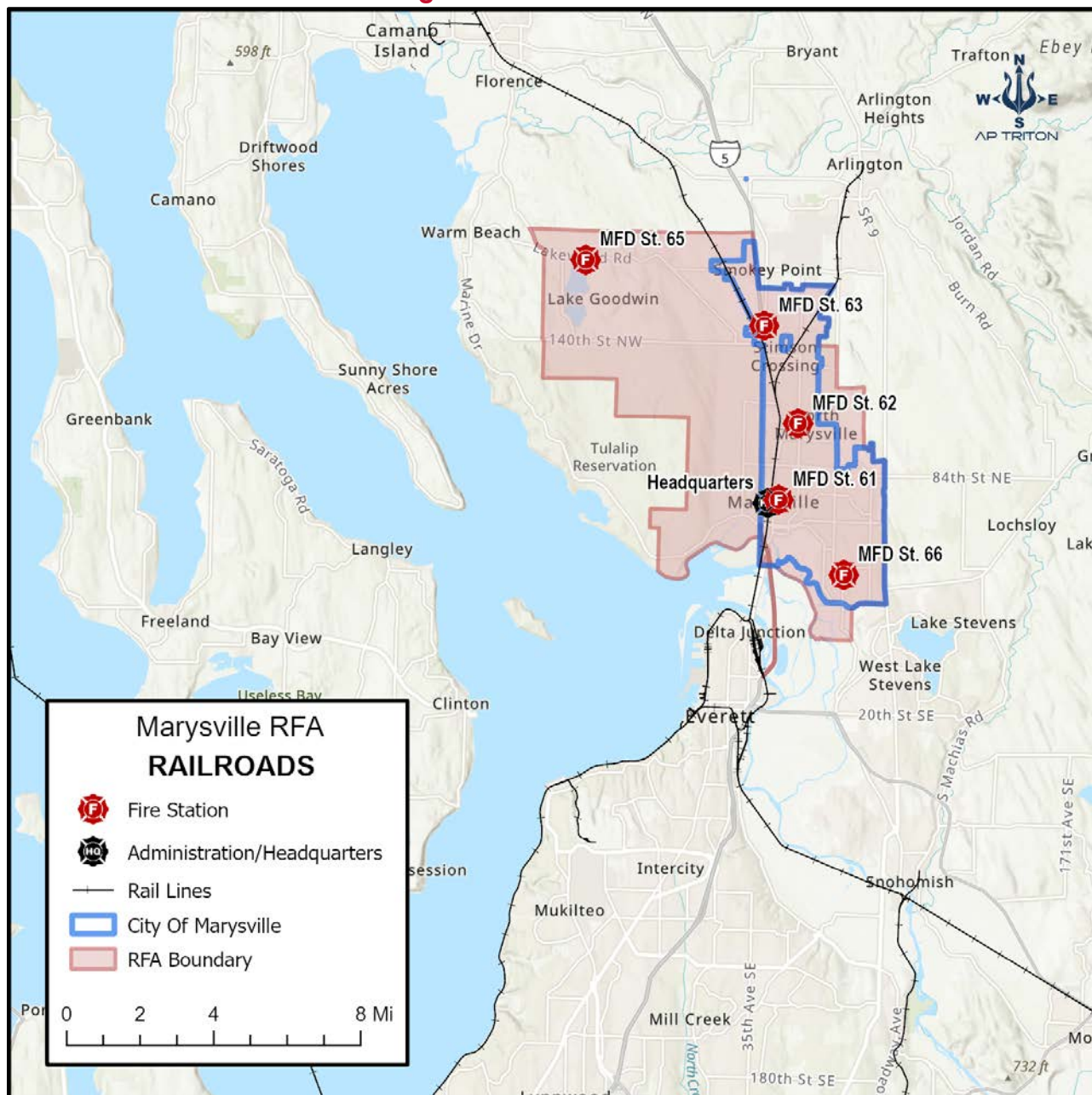
Figure 171: Major Roads in MFD

Rail

The Burlington Northern Santa Fe BNSF Railroad and Amtrak operate the mainline that travels through MFD's response area. There are a minimum of 18 railroad crossings within the service area. The response area has approximately 17 to 22 trains passing through daily.

These trains carry oil, coal, and many other hazardous materials to refineries and terminals throughout Washington and Canada, in addition to hundreds of passengers to and from Seattle to Canada. The next figure shows the various rail lines.

Figure 172: MFD Railroads

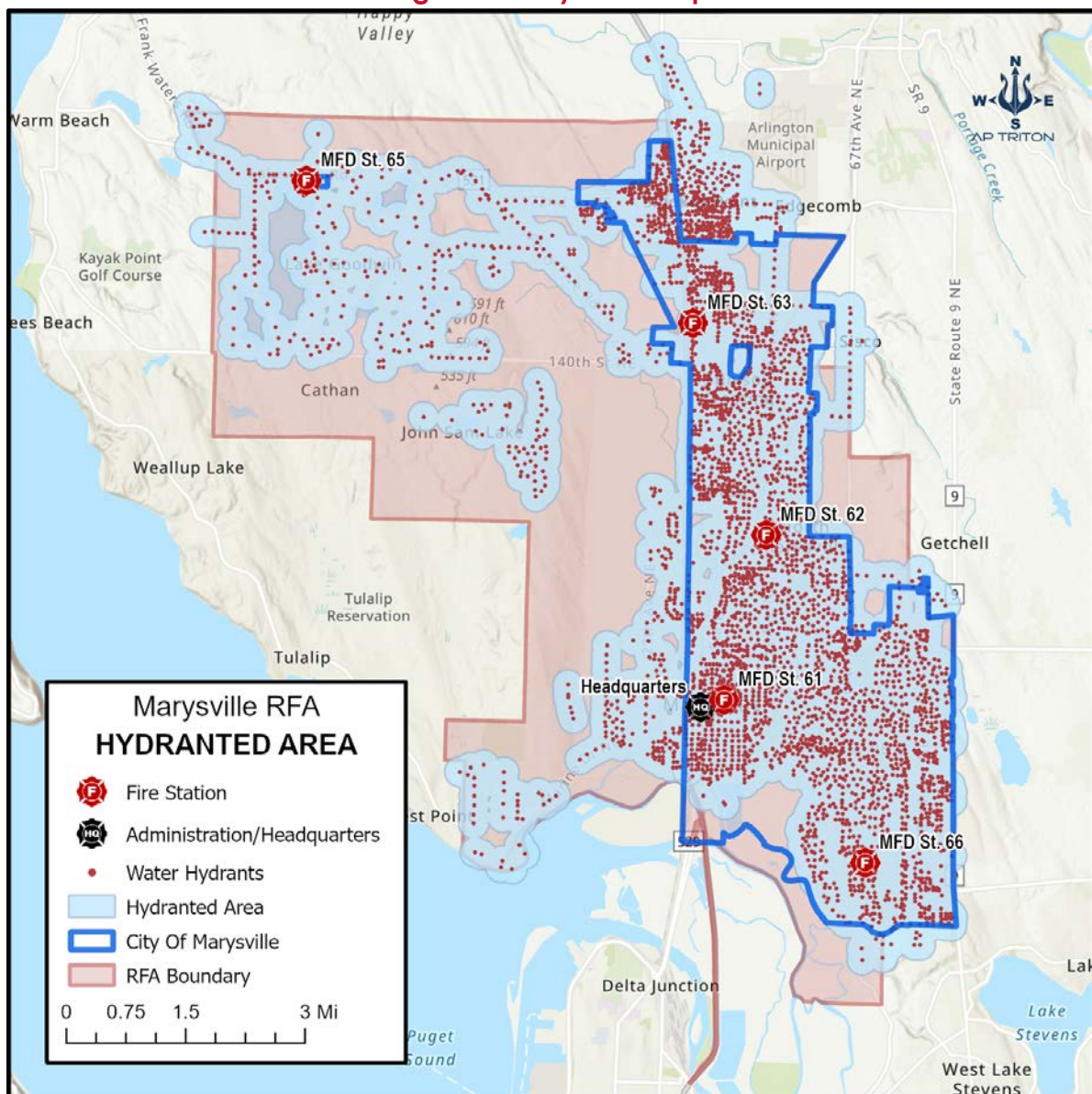


Water Supply

Without an adequate water distribution and storage system, controlling and extinguishing fires will be challenging, at best. A system of well-distributed hydrants and properly sized water mains are necessary to provide the essential water for fire ground use.

Three water companies provide water for fire protection. The Marysville Public Works provides water within the City of Marysville boundaries, and the Tulalip area is supplied with water by the Tulalip Utility Department. Each water company repairs hydrants on its water systems.

Figure 173: Hydrant Map



Governmental Facilities

Governmental buildings are considered a part of the critical infrastructure necessary to provide services by local, state, or Federal agencies. These locations may also be seen as a target of opportunity for an act of terrorism. The Navy Support Complex on 45th Avenue Northeast is considering expanding the property's residential componentry.

Risk Classifications

Risk Assessment Methodology

Developing a risk score to determine risks in a community is necessary to provide an organization with a method for creating response protocols for an incident. The Three-Axis Heron model establishes a score by reviewing probability, consequence, and impact factors and assigning a score between 2–8 in each category.⁶³ A description of the incident types for each risk will be found in Appendix A of this report.

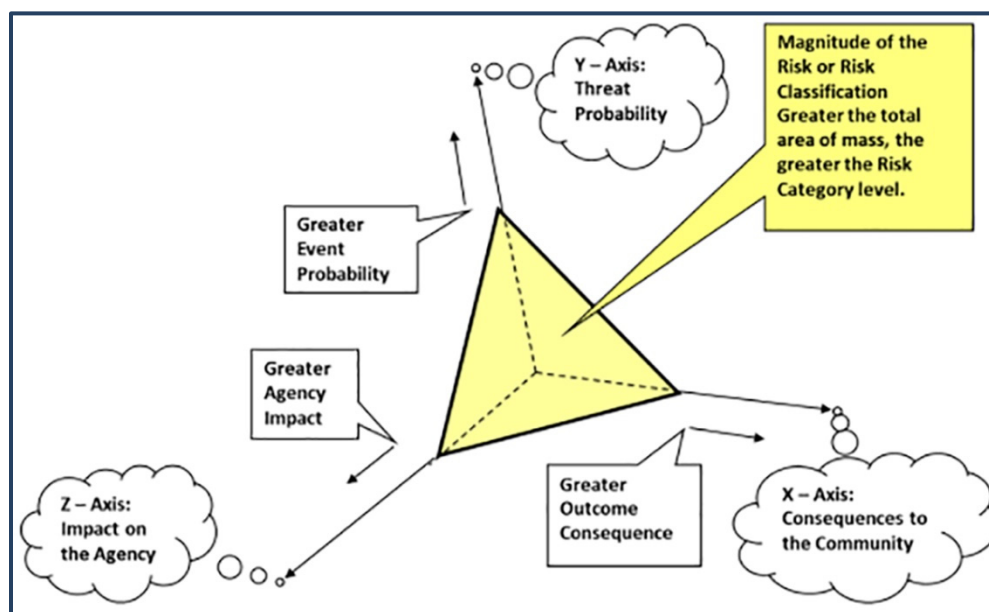
Use of the Three-Axis Heron Formula includes the following equation:

$$\text{Risk} = \sqrt{\frac{(P * C)^2}{2} + \frac{(C * I)^2}{2} + \frac{(I * P)^2}{2}}$$

The risk is graphically illustrated through a three-axis model as follows:

- **P** = Probability (Y-Axis)
- **C** = Consequences (X-Axis)
- **I** = Impact (Z-Axis)

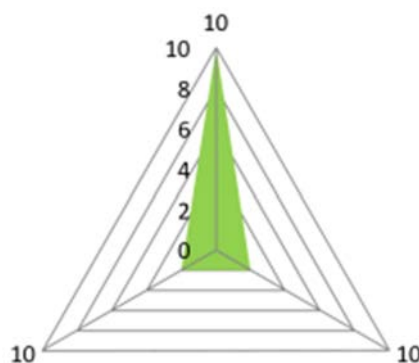
Figure 174: Three Axis Classification Model



For example, a 31-B call (BLS response low) can be used. The likelihood (probability) of this occurring would be high (it happens multiple times every day), a factor of 10. The consequence would be minor (affects one person) by a factor of 2. The impact on the district's ability to respond would be minor (one crew) by a factor of 2. Using the calculator, it looks like Heron's formula value is 20.2. This equates to a "Low Risk" incident.

Figure 175: Risk Score

Probability = 10 Consequence = 2 Impact on District = 2



Different criteria were evaluated to create a numeric value for each axis. The three-axis scoring methodology uses the square root of each risk element to determine the "surface area." The magnitude of the risk or risk classification is based on the fact that the greater the total surface area of mass, the greater the surface area of the risk category level. The scores from this method indicate the risk level associated with certain incident response types. The scores are sorted into three risk classifications: Low, Moderate, and High. The following figure demonstrates the score range for each type.

Figure 176: Three-Axis Scoring Ranges



Probability

Probability is the likelihood of an incident occurring in the community over time. This axis reflects the probability of a particular type of incident occurring (contributing to the risk level). Many factors are considered, such as time of day, location, hazard present, the season of the year, building construction and maintenance, demographic factors, and more. It can range from a rare event to one that occurs often.

Figure 177: Probability or Likelihood Occurrence

Score	Category	Probability or Likelihood
2	Minor	Unlikely: < 0.02% of total call volume. Expected to occur rarely
4	Low	Possible: 0.02%–0.07% of total call volume. Occurs rarely
6	Moderate	Probable: 0.07%–0.3% of total call volume. Occurs monthly
8	High	Likely: 0.3%–2% of total call volume. Expected to occur multiple times weekly
10	Extreme	Frequent: > 2% of total call volume. Expected to occur one or more times daily

Consequence

The consequence of an incident can vary from minor casualties to severe impacts that may destroy historical or major facilities in the community and create a large loss of employment or life.

Figure 178: Consequence to the Community

Score	Category	Consequence to the Community
2	Minor	1–2 people affected (injuries/deaths). < \$10,000 loss.
4	Low	3–4 people affected (injuries/deaths). < \$500,000 loss.
6	Moderate	5–50 people affected (injuries/deaths). \$500,000–\$1,000,000 loss.
8	High	51–100 people affected (injuries/deaths). \$1,000,000–\$5,000,000.
10	Extreme	> 100 people affected (injuries/deaths). > \$5,000,000 loss.

Impact

The third factor in determining the risk is the fire district's impact and the critical tasking needed to control or mitigate an incident. This includes the number of emergency responders and apparatus available internally or from external agencies. It measures the district's ability to respond to a given risk or incident while providing service to the remaining parts of the district.

Figure 179: Impact on Operational Forces

Score	Category	Impact on Operational Forces
2	Minor	≥ 90% Remaining Apparatus/Crews
4	Low	≥ 75% Remaining Apparatus/Crews
6	Moderate	≥ 50% Remaining Apparatus/Crews
8	High	≥ 25% Remaining Apparatus/Crews
10	Extreme	< 25% Remaining Apparatus/Crews

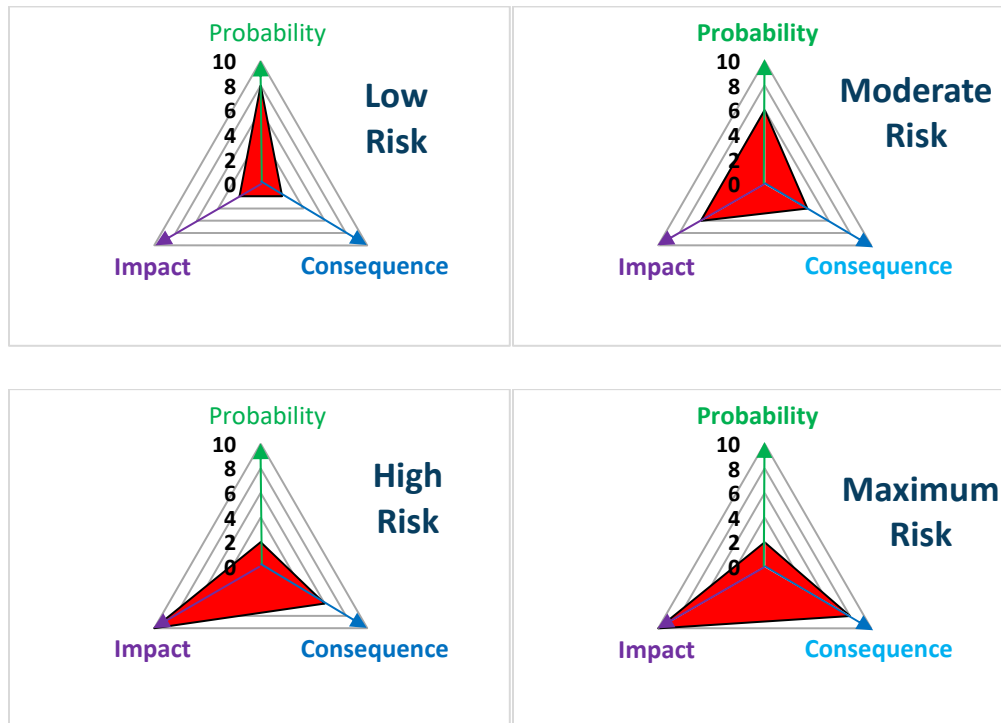
Fire Response

MFD is the primary provider of prevention or mitigation of fire-related incidents. These range from low-risk incidents such as a vehicle fire to a maximum risk for a fire involving a school. Fire risks for a vehicle fire are considered low compared to a maximum risk for a school that houses students.

This scoring is applied to four different categories of fire incidents in MFD's service area to provide staffing needs to meet critical tasks on the fire ground. The following figures provide the risk score and classifications assigned to each type of fire risk in the Marysville Fire District.

Figure 180: Fire Response Risk Assessment

Description	Low			Moderate			High			Maximum		
Risk Score	P	C	I	P	C	I	P	C	I	P	C	I
	8	2	2	6	4	6	2	6	10	2	8	10
Score Assigned:	16.25			34.99			44.09			59.40		

Figure 181: Fire Risk Classifications

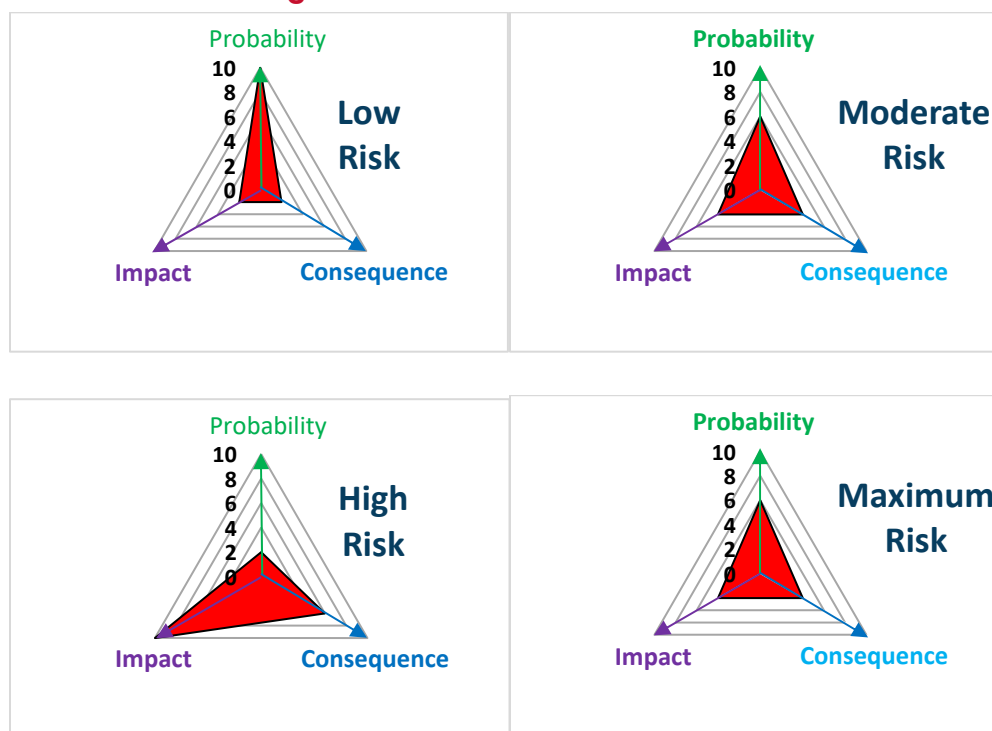
Emergency Medical Services

MFD provides advanced life support emergency medical care and transport in its service area. Low-risk incidents range from a medical assist to a maximum for an active shooter. The following figures provide the risk score and classifications assigned to each type of EMS risk for MFD.

Figure 182: EMS Response Risk Assessment

Description	Low			Moderate			High			Maximum		
	P	C	I	P	C	I	P	C	I	P	C	I
Risk Score	10	2	2	6	4	4	2	6	10	2	8	10
Score Assigned:	20.20			26.53			45.50			59.40		

Figure 183: EMS Risk Classifications



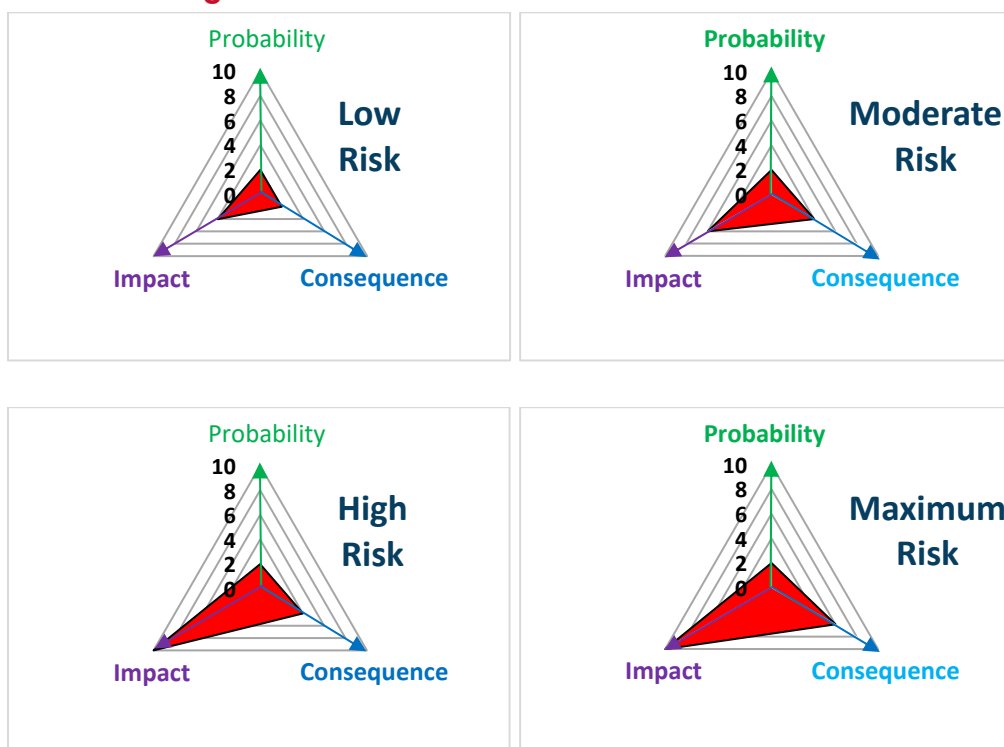
Technical Rescue

Rescue services can vary from a low-risk incident, such as accessing a locked vehicle with a child inside, to a confined space incident (maximum) that potentially requires many personnel to mitigate the incident. The following figures provide the risk score and classifications assigned to each type of technical rescue risk for MFD.

Figure 184: Technical Rescue Response Risk Assessment

Description	Low			Moderate			High			Maximum		
	P	C	I	P	C	I	P	C	I	P	C	I
Risk Score	2	2	4	2	4	6	2	4	10	2	6	10
Score Assigned:	8.49			19.80			32.10			45.52		

Figure 185: Technical Rescue Risk Classification



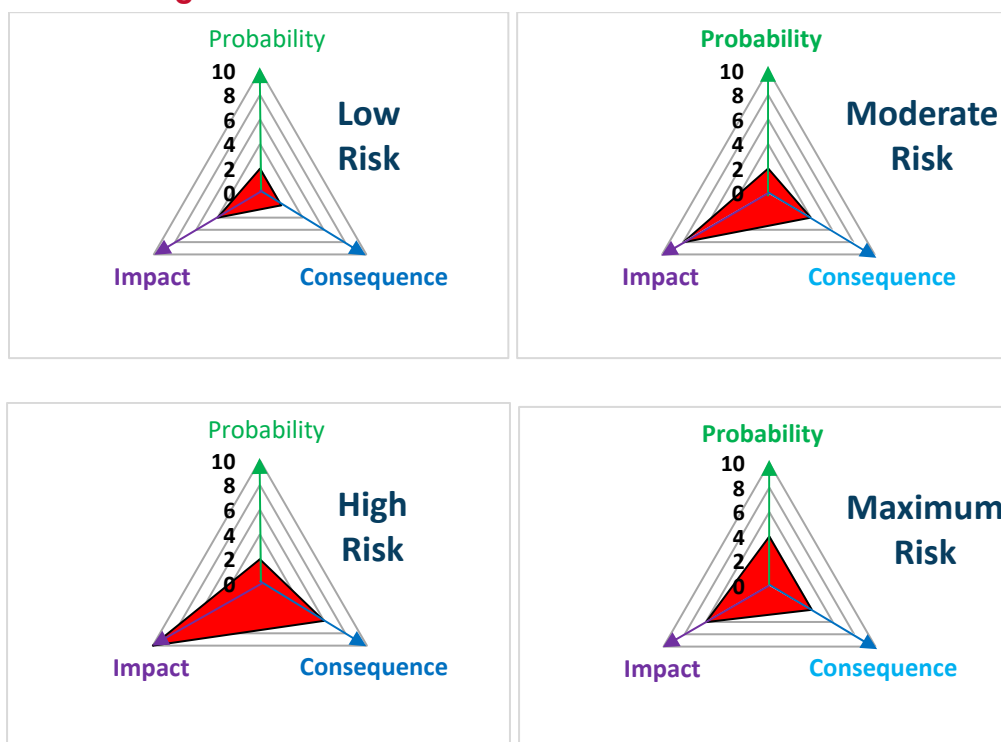
Hazardous Materials

Hazardous materials responses can vary from low-risk odor investigations to the maximum risk for a fuel tanker fire in higher-population areas. Most of these incidents can be managed by MFD, but higher risks may need assistance from outside resources. The following figures provide the risk score and classifications assigned to each type of hazardous materials risk for MFD.

Figure 186: Hazardous Materials Response Risk Assessment

Description	Low			Moderate			High			Maximum		
Risk Score	P	C	I	P	C	I	P	C	I	P	C	I
	2	2	4	2	4	6	2	4	10	2	8	10
Score Assigned:	8.49			19.80			32.10			59.40		

Figure 187: Hazardous Materials Risk Classifications



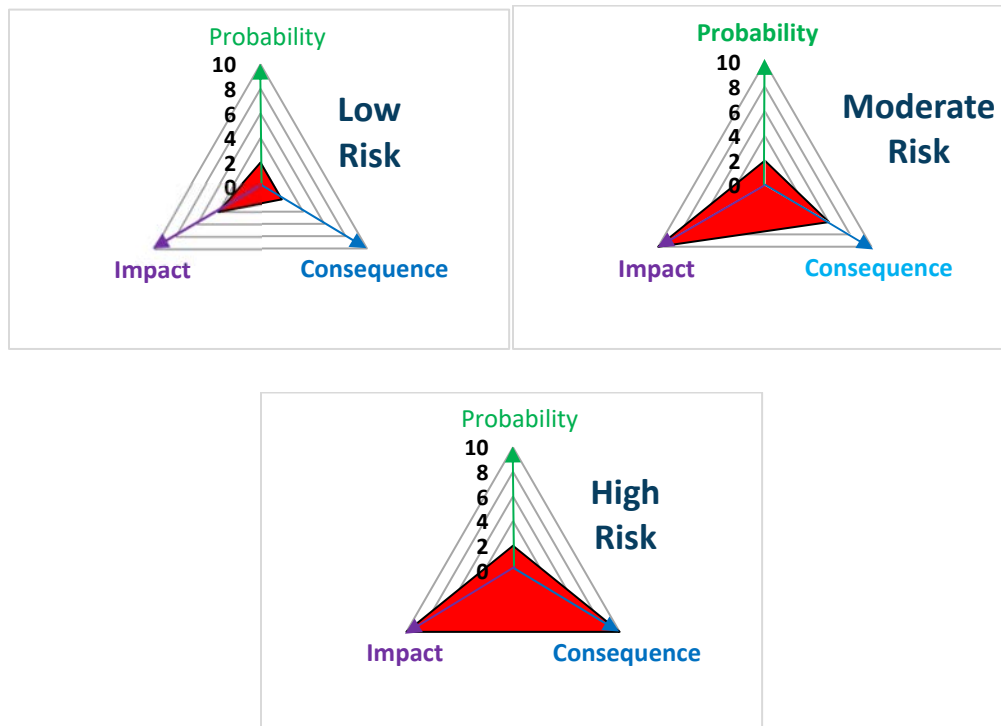
Wildland Fires

The types of wildland fire risks vary from small grass fires to large forest fires requiring many internal and external resources. The following figures provide the risk score and classifications assigned to each type of wildland fire risk for MFD.

Figure 188: Wildland Fire Response Risk Assessment

Description	Low			Moderate			Maximum		
Risk Score	P	C	I	P	C	I	P	C	I
	2	2	4	2	6	10	2	10	10
Score Assigned:	8.49			45.52			73.48		

Figure 189: Wildland Response Risk Classification



Comparison of Risk in Other Communities

Fire Loss

In 2021, fire departments responded to more than 1.35 million incidents in the United States that caused 3,800 civilian fire fatalities and over 14,700 civilian fire injuries. Property damage was estimated at more than \$15.9 billion. NFPA reported that 76% of the fire deaths occurred in one or two-family dwellings. In addition, the report stated that while smaller communities have fewer fires than larger communities, the 9.5 fires per 1,000 population for fire departments protecting communities with fewer than 2,500 people are nearly three times the overall national rate.

Figure 190: MFD Fire Per 1,000 Population

Year	MFD Fires per 1,000 Population	U.S. Fires per 1,000 Population ⁶⁴
2018	1.8	4.1
2019	1.8	4.0
2020	1.75	4.3
2021	1.7	N/A*

*Data unavailable.

Washington Surveying & Rating Bureau

The Washington State Survey and Rating Bureau (WSRB[®]) is an independent organization that collects and analyzes data from fire departments in communities throughout Washington State to determine the Protection Class of communities. Insurance companies use the Protection Class Ratings to help assess fire insurance premiums for properties.

The WSRB determines the Protection Class of cities and fire protection districts by evaluating their fire protection/suppression capabilities using a schedule approved by the Washington State Office of the Insurance Commissioner. As a result of this evaluation, the communities are assigned a Protection Class of 1 through 10, where 1 indicates exemplary fire protection capabilities, and 10 indicates the capabilities, if any, are insufficient for insurance rating credit.

The WSRB uses the Community Protection Class Grading Schedule (CPCGS) to determine a community's Protection Class. The Grading Schedule measures four primary elements of a community's fire protection system: Emergency Communications, Fire Department, Water Supply, and Fire Safety Control. Grading Schedule. These four areas are evaluated and scored independently of each other. The scores are then combined in a final calculation to determine the Protection Class for the community.

The Grading Schedule measures the fire protection capabilities of a community using a point system or, for communities without a recognized water supply, by comparison with minimum criteria. Under the point system, pertinent items are evaluated against the standards outlined in the schedule, and items are scored depending on the item's importance and the standard's degree of deviation.

In 2020, the MFD received a Class 3 rating from WSRB, one of 70 in Washington. However, as noted in the current Protection Classification Summary Report, several areas for improvement exist.

These measurements are based on the top score being 100%. Under the Water Supply measurements, the city and MFD only received a score of 44% for the city and 64% for hydrant inspection and condition and maintenance. MFD received a 0% for a reserve ladder truck, and the number of company officers on duty was 78%. The Training Division received the lowest score with the following measurements: Supervision at 60%, Company Training at 47%, the Training Center at 5%, and Pre-Fire planning at 10%. Officer, Driver, and Recruit Training received 100%.

The Fire Safety Control measurements need to be separated, one for the city and one for the Snohomish County Fire District #12 area. Related to the City of Marysville, the Fire Marshal's office is getting 100% credit for the Fire Marshal position, 90% for fire plan review, 100% for fire code inspections, 100% for confidence testing, and 61% for fire code inspections of existing occupancies. The Marysville Building Department also received a score of 80%.

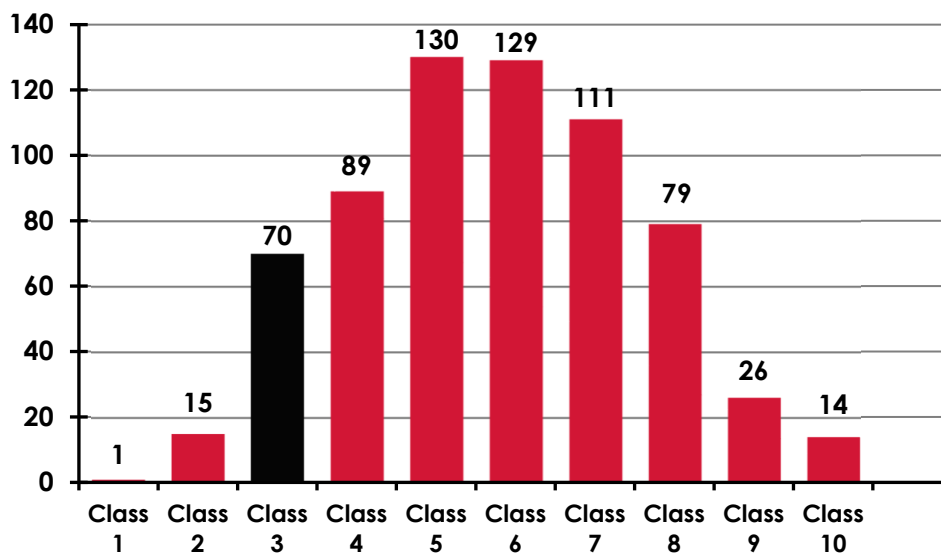
Compare this to the SCFD 12 or the Snohomish County's Fire Marshal's office, which is getting 40% credit for the Fire Marshal position, 70% for fire plan review, 100% for fire code inspections, 47% for confidence testing and 50% for fire code inspections of existing occupancies. The Snohomish County Building Department received a score of 70%.

MFD's fire prevention office under public fire education is receiving the measurement of 69% for children's programs and 100% for adult programs. The following figure shows the credits earned and available for MFD in the most recent inspection.

Figure 191: Earned & Available Credits Marysville

ISO Feature	Earned Credit	Relative Class
Fire Safety Control	74%	3
Emergency Communications	96%	1
Fire Department	64%	4
Water Supply	76%	3
Divergence	0	—

Figure 192: City of Marysville WSRB Classification



Section V: FINDINGS, STRATEGIES & RECOMMENDATIONS

Strategies & Recommendations

The following section lists the various recommendations that resulted from Triton's comprehensive evaluations and multiple analyses of the Marysville Fire District.

Staffing & Personnel

Recommendation A-1: Consider eliminating cross-staffing of the aid unit at Stations 65 and station 66 and make the two engines dedicated primary response apparatus.

Description: The current cross-staffing between engines and aid units at Stations 65 and 66 affects the crews' morale and efficiency, leaving significant, extended coverage gaps within those two stations' first-due response areas.

- Substantial feedback from operations and other staff indicated that the lengthy transport times in those units are leaving those areas unprotected (in addition to impacting crew morale and efficiency).
- The fire district should consider studying alternative models using Engines 65 and 66 as first-response apparatus for fire and medical calls with backup provided by Aid Units or Medic Units.
- If cross-staffing is eliminated, MFD should evaluate whether there is an actual need for six transport ambulances (four BLS Aid Units and two ALS Medic Units) within their response system.

Recommendation A-2: Assign an officer to each fire station as the "Station Captain" responsible for that facility's general maintenance and operation.

Description: No single individual or officer is currently responsible for the regular daily maintenance and operation at each fire station. In addition to the usual responsibilities of a Captain, the basic responsibilities should include at least:

- Provide oversight of apparatus, equipment, and resources assigned to their station.
- Plans, prioritizes, assigns, supervises, and reviews the work related to the fire station's activities, maintenance, and operation.
- Establishes budgeting needs for the fire station and monitors expenditures and payment authorizations.
 - Develops justifications for budgetary recommendations and adjustments and participates in forecasting additional funds for staffing and resources.

- Inspects and ensures maintenance of fire apparatus and equipment for operational readiness.
- Supervises the cleaning and minor maintenance of the fire station facilities, equipment, and apparatus.
 - Oversees the maintenance of the fire station exterior and grounds.
 - Ensures preventive maintenance and minor repairs to fire station facilities and equipment.
- Inspects personnel and maintains discipline.
- Ensures the station maintains adequate medical, firefighting, cleaning, bathroom, and other supplies for daily use.
- Coordinates activities with the other Station Captains.

Recommendation A-3: Evaluate the current recruitment and hiring practices to determine potential barriers and opportunities to increase employee diversity.

Description: MFD has 13 female uniformed personnel, which comprises approximately 10% of the total staff.

The district should work with local minority representation groups and other regional fire agencies to identify barriers and effective recruitment pathways to increase the interest of minorities and females in pursuing a fire service career.

Recommendation A-4: Consider hiring an additional Deputy Fire Marshal II (fire inspector) within the Fire Prevention Division.

Description: Currently, there is sufficient demand to justify the addition of one Deputy Fire Marshal II. This additional FTE will assist in keeping up with the Fire Prevention Division's CRR program, fire prevention commercial occupancy inspection program, fire hazard reduction program, and public education and life safety programs.

Recommendation A-5: Consider developing and supporting a Marysville Fire District succession planning and career development program.

Description: Triton determined that no formal succession planning program exists at the Marysville Fire District.

- MFD should support succession planning for each critical position within the organization. This should include all promoted positions.

- Consider utilizing NFPA 1021: Standard for Fire Service Officer Professional Qualifications as a general guide.
- MFD should consider training options for personnel, such as the National Fire Academy's Command & Control classes, Managing Officer Program, and Executive Officer Program.

Update: Deputy Chief has begun work on this.

Apparatus & Ambulances

Recommendation B-1: Consider replacing Engine 65 and Engine 66 with the two new engines when they arrive.

Description: Engines 65 and 66 are 13 years old and will likely have a frontline life expectancy ending in 2025; therefore, they should be the first to be replaced.

Recommendation B-2: If Engines 61 and 63 remain functional, consider ordering two new engines in 2029 or 2030.

Description: During this study, there were long delays in fire apparatus build times among the manufacturers, ranging from 24 to 36 months for final delivery. Therefore, it will be important to initiate the purchasing process of two engines about two or three years before the end of their life cycle.

Estimated Cost: Assuming a 5% inflation rate, purchasing two custom fire engines would cost over \$2.5 million.

Recommendation B-3: Consider placing SCBAs and basic firefighting hand tools on each Aid unit and Medic unit.

Description: Since MFD utilizes trained firefighters on its Aid and Medic units. Adding this equipment could be valuable during certain structure fires and rescues. Personnel on these vehicles may often arrive first, and they could be immediately prepared for entry into a hazardous environment and initiate a rescue.

Emergency Medical Services

Recommendation C-1: MFD should restructure its agreement with the current MPDD designated by the Snohomish County Medical Program Director (MPD).

Description: The current contract with the Physician Advisor needs to clearly define measurable expectations and include the following:

- Define the responsibilities delegated by the Snohomish County MPD as defined by Washington Administrative Code 246-976-920.
- Develop and participate in EMS continuous quality improvement (CQI) programs.
 - CQI programs should evaluate clinical and EMS operational performance.
- Occasionally provide continuing medical education (CME) to all MFD Firefighters (regardless of level of certification).
- Maintain regular interaction with MFD firefighters, including quarterly ride-alongs on both the Aid and Medic units, to observe the delivery of patient care in the field.
 - MFD should provide the Physician Advisor with an appropriate uniform that identifies them as a physician and a portable radio.
- Continue to review all significant ePCRs related to cardiac arrest, major trauma, patient refusals, and other significant medical conditions, and make protocol recommendations to the MPD if indicated.
 - Feedback from these reviews should be provided to MFD personnel in writing or by direct contact.
- Meet regularly with MFD EMS leadership (Medical Services Administrator and Medical Services Officers) to review performance, protocols, and patient-care delivery recommendations.

Update: In progress and a priority at Snohomish County EMS.

Recommendation C-2: Expand the responsibilities of the shift Medical Services Officers.

Description: Interviews with operations staff revealed frustration and a perceived lack of trust in performing key EMS logistical and other tasks. This included the ability to order medical supplies and drugs and maintenance functions. In addition, MSOs are not allowed to carry certain scheduled drugs ("controlled substances") in their vehicle.

- The Medical Services Officers should continue responding to EMS incidents to supplement and assist other companies, in addition to responding to other major incidents.

- District leadership should engage the MSOs in developing policies and procedures to expand their responsibilities.
- Determine if there are reasonable restrictions that prevent the MSOs from carrying all necessary ALS supplies and medications. If there are none, allow them to carry applicable controlled substances.
- Consider developing a program where the MSOs can travel to each fire station and deliver continuing medical education classes to the on-duty personnel. This would help to keep companies available to respond within their normal service areas.
- During incidents in which a patient is transported to a hospital, and it appears that the Aid unit or Medic unit will need to remain at the hospital for an extended period, the on-duty MSO should respond to that facility and monitor the patient so that the transport unit can return to service.

Recommendation C-3: Consider evaluating MFD's policy for responding to incidents with lights and sirens (L&S).

Description: The high percentage of lights & siren EMS responses by MFD units should be further explored by the Marysville Fire District, MPD, and MPDD to determine if some of the EMS incident types would be more appropriately and safely initially responded to in a non-emergent mode.

Recommendation C-4: Begin tracking EMS incidents/patients that could benefit from a Community Paramedic Program.

Description: Currently, MFD does not track EMS patients who may have conditions that can be easily analyzed (other than age, sex, and presenting medical condition) as a potential beneficiary of a Community Paramedic Program.

Recommendation C-5: MFD should address the consistently lengthy hospital turnaround ("Wall") times at the local hospitals.

Description: The average length of time EMS crews must wait to transfer a patient to Emergency Department staff is inordinately long, which needlessly reduces response coverage in the fire district.

- MFD should consider working with the Everett Fire Department, Snohomish County EMS Council, and other local EMS transport agencies to address this issue formally and publicly with the hospitals.

- This group should consider various options for addressing this issue and subsequently meet with hospital representatives to consider any proposed solutions.
- If an acceptable remedy cannot be identified and implemented, MFD should explore the feasibility of implementing a fee for extensive hospital turnaround times extending beyond 30 minutes.
- The hospitals should be invoiced at a rate based on the fire district's hourly cost to operate an Aid Unit or Medic Unit.

Fiscal Issues & Budget

Recommendation D-1: Consider a regular levy lid lift for 2025 or 2026.

Description: A levy lid lift is directly related to increasing property values. It provides a way for taxing entities to access additional revenue that would otherwise be limited by state-imposed caps, ensuring that they can continue to provide essential services in line with the community's growth and needs.

- Washington State has laws that limit the amount by which property tax revenue can increase each year. Typically, this limit is set at 1% annually.
- A levy lid lift is a mechanism to override the statutory limits on property tax revenue increases, allowing a district to benefit from increased property values by collecting more revenue.
- Choosing between 2025 and 2026 for the levy lid lift should be based on a strategic assessment of MFD's financial projections, community growth patterns, and public sentiment. It is important to align the timing with MFD's long-term financial planning and community needs.

Estimated Cost: Staff time and any election fees.

Recommendation D-2: Consider using cash to purchase apparatus in the short term.

Description: MFD has effectively positioned itself with a substantial balance in its capital funds. Given the current economic climate, characterized by higher-than-average interest rates, financing apparatus, such as ambulances, using debt would incur significant additional costs due to interest payments. Paying in cash may also open avenues for negotiating more favorable purchase terms with manufacturers or dealers.

General Recommendations

Recommendation E-1: Establish a temporary “Policy Development Committee.”

Description: The current administrative and operational Standard Operating Guidelines (SOG) should be updated, and new ones should potentially be developed.

- Establish a group of experienced officers and firefighters that can develop SOGs for eventual approval by the Fire Chief and command staff.
- Existing SOGs involving firefighter safety should be prioritized.

Update: This has been nearly completed and expected to be submitted to the Board in January 2024.

Recommendation E-2: Consider establishing a Marysville Fire District Citizens Advisory Planning Committee (CAPC).

Description: This should be a 7–9-member group comprised of residents and business owners that reside within the fire district. The group should include representation from the Tulalip Tribes and the Quil Ceda Village.

The purpose of the Citizens Advisory Planning Committee should be, but not necessarily limited to:

- Communicating the Marysville Fire District’s purpose and programs to the community.
- Assessing and providing advisory recommendations on community needs and resources.
- Increasing MFD’s visibility, credibility, and importance to the community.
- Providing feedback to the MFD Fire Chief, command staff, and members of the Board of Directors from a citizen, business owner, and taxpayer’s perspective.
- Providing an open forum for public discussion on MFD fire protection, EMS-related, and other issues.

Estimated Cost: Staff time.

Fire Stations & Facilities

Recommendation F-1: Consider retaining a qualified architectural firm to conduct a comprehensive fire station facility assessment of Station 61, Station 63, and Station 65.

Description: These stations should have a comprehensive evaluation by a qualified and experienced engineering and architectural firm. However, a perfunctory review and evaluation indicated that some of these fire stations need to be replaced without requiring an engineering study. If a study of one or more of these is done, it should include at least the following:

- An existing conditions assessment.
- Functionality and best practices assessment.
- Firefighter health and safety assessment.
- Assessment of future space needs.
- Capital improvement estimations and cost estimates.

Recommendation F-2: MFD should consider beginning the development of immediate plans to replace or upgrade Station 61, Station 63, and Station 65.

Description: During Triton's inspections of the facilities, including feedback from staff, it was evident that the current condition of these three stations warrants potential upgrades or replacement and *possible* relocation. The rationale for this was observed and cited throughout this report.

- Station 61 is in an adequate location and is now integrated with the new MFD administrative facility.
 - While this move was important and resulted in space necessary to house administration staff, it did not include upgrades to Station 61.
 - Preferably, Station 61 should be upgraded to house at least seven operations staff (including the on-duty MSO).
- Station 65 is currently located on property adequate to construct a new facility. However, it would likely be better to move and construct a new station in a more strategic location (see map in Recommendation G-4).
- Station 63 is on a large lot with sufficient property to expand and maintain the adjacent storage building.

Recommendation F-3: Establish an interagency planning process to address the future ramifications of adding a Fire District 15 station in an area currently served by MFD.

Description: MFD was notified late in this study that the Tulalip Tribes has entered into an agreement with the Tulalip Bay Fire Department (Snohomish County Fire District 15) to construct a new fire station that will serve a significant portion of the Tulalip Indian Reservation that MFD currently serves. Construction of this facility is expected to occur sometime in the next 2–3 years.

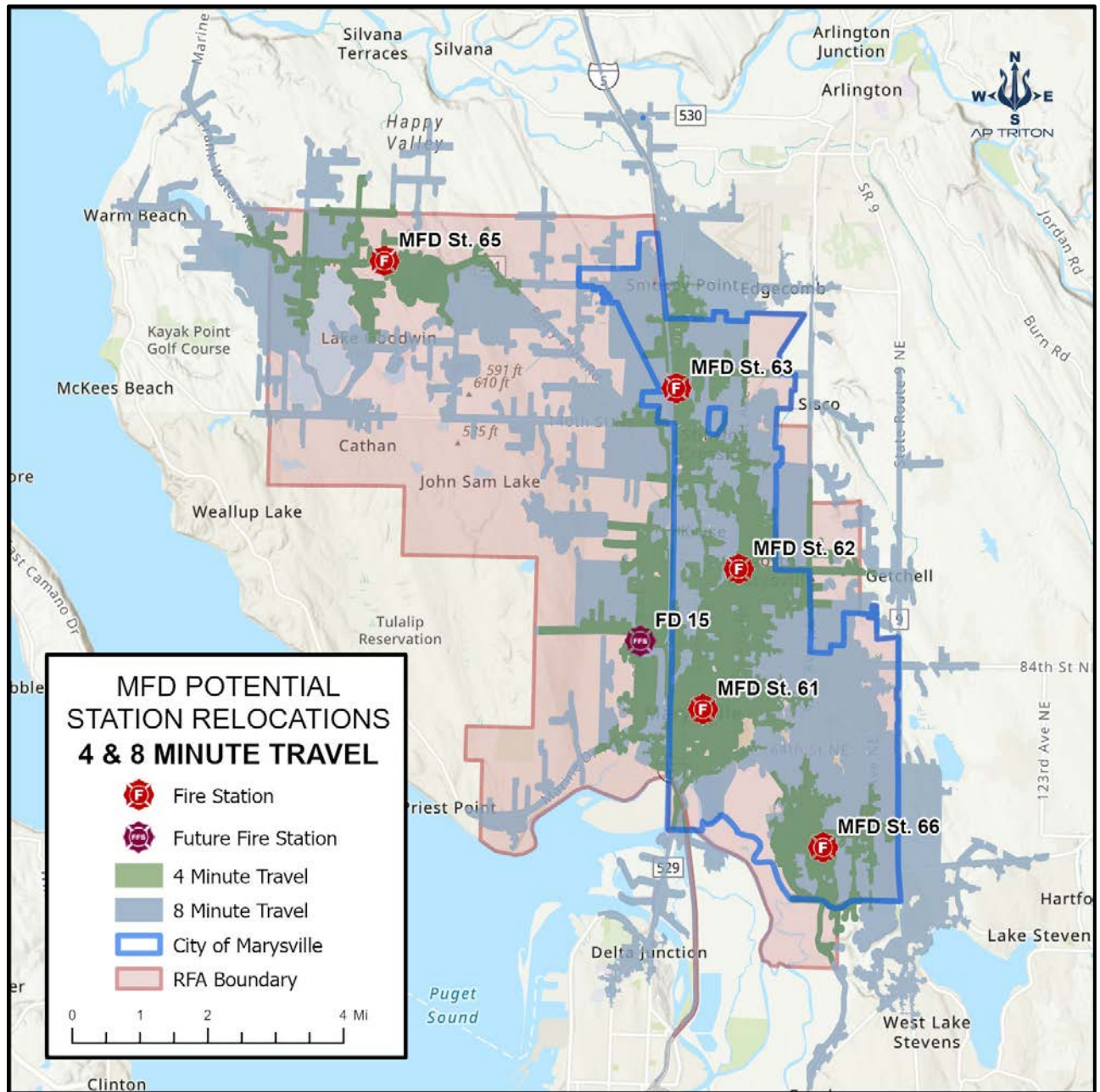
While the financial and operational ramifications of this decision are outside the scope of this study, Triton believes the impact on the fire district will likely be substantial. This will require careful study, discussion, and—most importantly—collaboration with the key stakeholders to determine the long-term impacts on the Marysville Fire District and the citizens and businesses they now serve.

Triton encourages each of the jurisdictions and organizations to immediately begin engaging in a formal planning process to identify, assess, and mitigate these impacts, including, but not limited to, dispatch protocols and deployment of an effective response force (ERF), incident concurrency in the future service area, loss of revenue, mutual and automatic aid agreements, and other interlocal agreements.

If structured carefully, adding a new fire station at the corner of 88th Street NE and 27th Avenue NE could ultimately benefit the Marysville Fire District by providing additional resources—especially during major events and times of system overload.

The following figure illustrates the proposed location of a new fire station built with outside funds and operated by Snohomish County Fire District 15.

In addition, the figure shows the 4-minute and 8-minute travel time distances from each fire station, including the proposed District 15 facility. Based on the model in the next image, nearly 22% of the Marysville Fire District can be accessed from all stations within 4 minutes and about 56% within 8 minutes.

Figure 193: Travel Times from Stations with a New Fire District 15 Station Added

Recommendation F-4: Consider relocating Station 65 and constructing a new Station 67 in strategic locations.

Description: Based on historic incident density maps, ISO travel distance maps, NFPA four-minute travel time maps, and effective response force maps, each of the MFD fire stations is currently in logistically effective locations—except for Station 65. In addition, Station 65 has the lowest service demand among all the stations.

- Triton believes moving Station 65 east or southeast of its present location may be more effective and efficient.
- A freeway overpass separates the response zones of all the facilities except Station 65. More notably, a busy railway line with significant daily train delays limits access to the west side of Interstate 5.
- Increasing service demand and limitations in accessing the west side of the fire district indicate the potential need for MFD to construct and staff a new Station 67.

The next figure shows an approximate location for a new Station 67 around the area of Old Tulalip Road and 27th Avenue Northeast. In addition, a new Station 65 would be constructed and moved east to the area around 800 block of 172nd Steet Northeast.

Of course, these locations would depend upon commercial property availability. In addition, this map assumes that Snohomish County Fire District 15 does *not* build a new station.

Using the model in the following figure, nearly 24% of the Marysville Fire District can be accessed from all stations within 4 minutes, and just over 60% within 8 minutes.

Figure 194: Proposed Relocation of Station 65 & Addition of Station 67—Travel Times

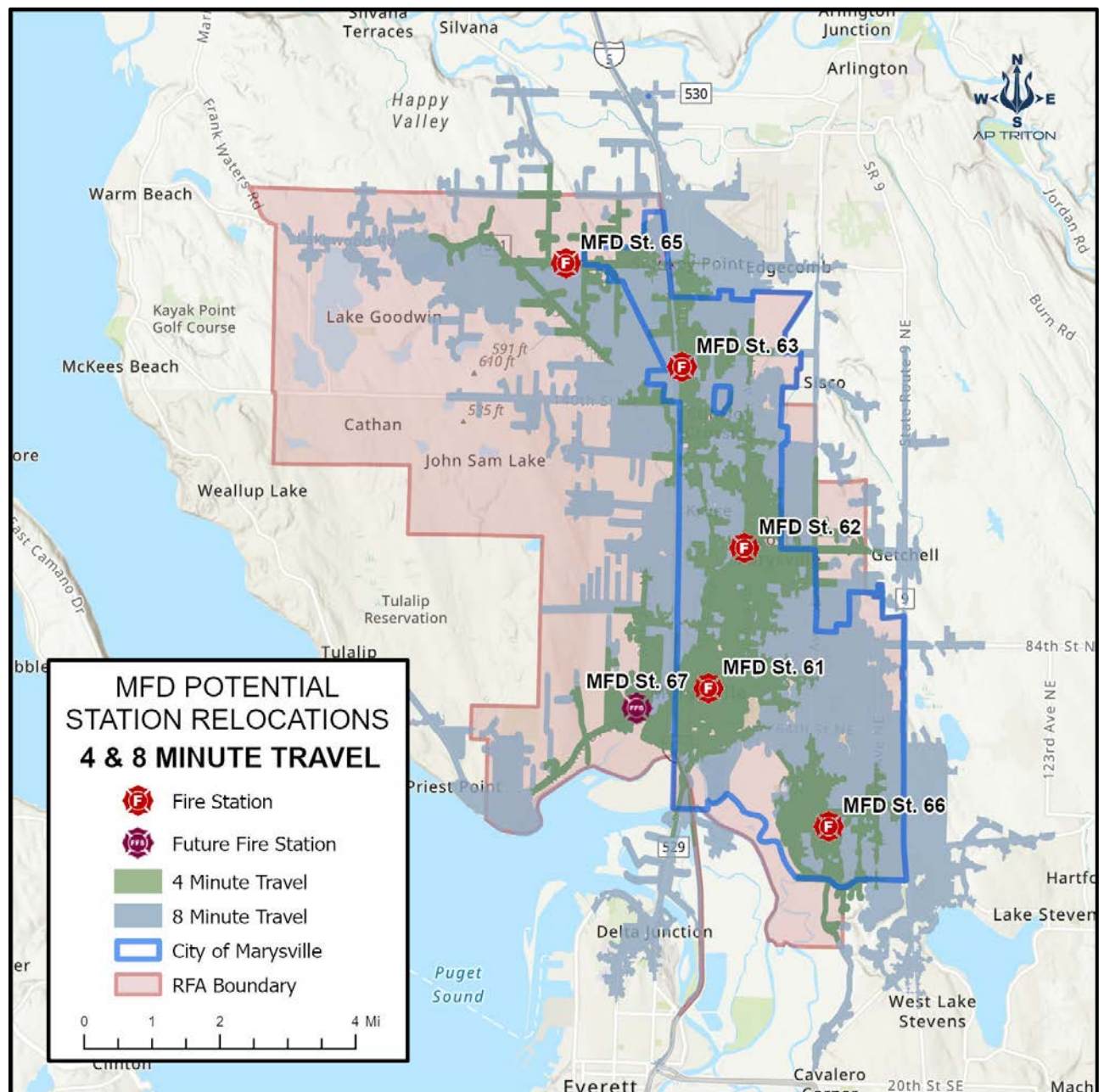


Figure 195: Comparison of Coverage by Fire Station Location Models

Models	4-Minute Travel		8-Minute Travel	
	Sq. Miles Covered	% District Accessed	Sq. Miles Covered	% District Accessed
A: Station 65 Relocated; New Station 67	14 sq. mi.	24%	36 sq. mi.	60%
B: Addition of District 15 Station	13 sq. mi.	22%	34 sq. mi.	56%
Current MFD Configuration	12 sq. mi.	21%	35 sq. mi.	58%

Note: Percentages rounded to the nearest integer.

As the preceding figure indicates, Model A has slightly better travel time coverage than Model B and the Marysville Fire District's current configuration.

Recommendation F-5: Consider planning for the future construction of a training facility on Station 63's current property.

Description: MFD does not maintain a formal training center or training tower within the fire district. Operations personnel do not have access to locally designated training grounds. There appears to be sufficient property at Station 63's location to allow for the eventual construction of a training facility.

- If MFD initiates construction to replace Station 63, consider planning for a future training center at that location.
- Adding a new training center does not have to be initially all-inclusive but could be constructed incrementally over 2–3 years or longer.
- Consider appointing a "Training Facility Committee" of operations personnel and training staff to identify priorities for a facility.
- An alternative location to consider is the empty lot adjacent to Station 61.

Recommendation F-6: Consider moving or upgrading MFD's fleet maintenance facility.

Description: MFD currently maintains and provides its own internal fleet and facility maintenance program under the direction of a Fleet and Facilities Supervisor with a full-time fleet mechanic and facilities technician.

- The fleet maintenance facility is located at an older former fire station. It is inadequate for MFD's current and future needs.

- The building is unable to house some of MFD's apparatus, requiring some maintenance to be completed outside during inclement weather.

Recommendation F-7: Consider placing a capital facilities bond before the Marysville Regional Fire Authority electorate.

Description: MFD should strongly consider the capital needs of the facilities described in "Fire Stations & Facilities" recommendations in this report.

MFD could conduct a bond campaign to replace and upgrade three fire stations. These facilities are in communities that previously comprised the original fire agencies before the RFA was formed.

Station 65 is in the former Snohomish County Fire District 20, Station 63 is in the previous Snohomish Fire District 12, and Station 61 is in the former City of Marysville Fire Department.

The potential for a successful bond campaign for *all* three stations may be higher since most MFD voters would enjoy the improvements to their local community fire station—rather than just one facility in the local community. Triton has found that voter approval for multiple facilities using this regional approach has typically been successful.

- Replacement or upgrades of the fire stations should be completed in the following order of priority:
 - Station 63.
 - Station 65.
 - Maintenance Facility
 - Station 61.
- If possible, the initial construction of a training facility should be included.

Section VI: APPENDICES

Appendix A: Results of the Staff Online Survey

As a part of this study, Triton conducted a survey of the Marysville Fire District staff, elected officials, and others affiliated with the district. The survey was web-based and confidential, without the ability to identify the respondents.

The questions were developed by Triton staff, along with input from MFD command staff. The primary intent was to allow individuals to confidentially provide their opinions and perspectives and share that information with the MFD leadership.

The survey consisted of 11 questions with an estimated time to complete it of five minutes. In addition, most questions had the option of including written comments. In some cases, the spelling and grammar of the comments were corrected in a manner that did not change the content substance. There was a total of 49 respondents to the survey.

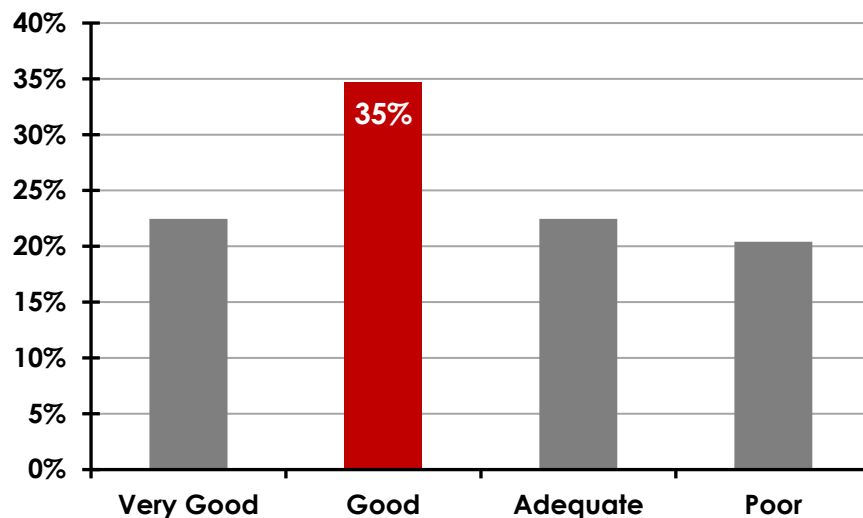
Question 1: “What is your current affiliation with the Marysville Fire District?”

Position	% of Total
Firefighter	31%
Driver Operator	12%
Captain	29%
Chief Officer (including Fire Chief)	10%
Fire Prevention Staff	4%
Administrative Position	4%
Elected Official	4%
Other	6%

Note: Percentages rounded to the nearest integer.

As shown in the preceding figure, most respondents represented staff assigned to the Operations Division.

Question 2: "How do you rate the level of quality of fire suppression and protection provided by the Marysville Fire District?"



Question 2 Comments:

- The district cross-staffs 40% of its fire stations, meaning that engines are offline and unavailable for EMS calls, including interfacility type transports and low acuity patients that result in some of the longest wait times at the hospital, leaving large areas uncovered.
- Many times, with cross-manned stations out for transport, those area of coverage are diminished.
- We get the job done because we have extremely experienced people but we are lacking in staffing to be good or very good! (2)
- Cross staffing causing lack of service in 65 and 66 areas (3).
- Fast, safe, and aggressive response has been my experience.
- We do well [while] learning on calls (good & bad), but need more allotted time for training. We are such a young department within the FF/DO ranks that I fear this may catch up to us.
- To be classified as, Very Good, I feel we require an increase in personnel, and better locations for stations.
- Community growth is impacting our delivery.
- Room for improvement in wildland.

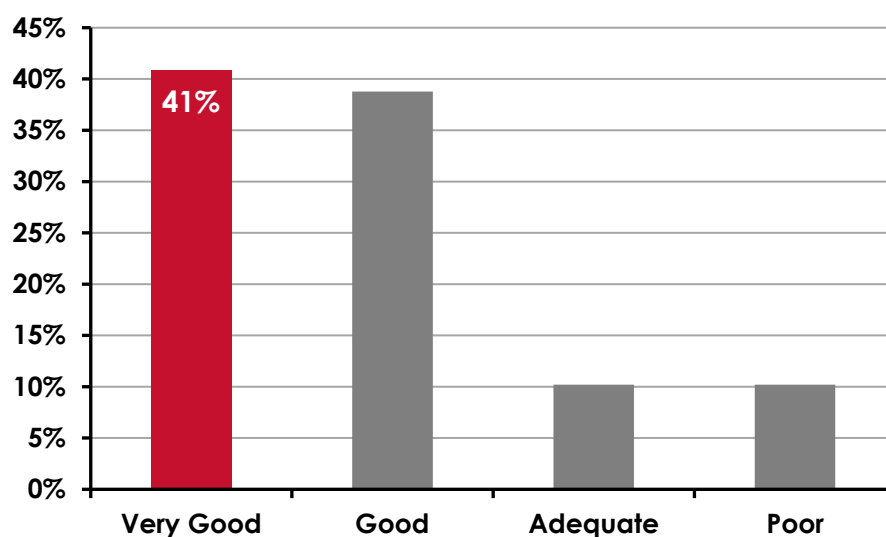
- We are severely understaffed on all fronts for the community needs and geographic area we serve. We leave the ends of our district wide open prioritizing BLS transports leaving homes and residence[s] up to 10 + minutes from the next up emergency services. Our need for fire suppression apparatus is increasing rapidly due to increased fire danger and density of population.

We are a fire service too, not just EMS. I believe along the way we have forgotten that we are paid to be ready and on call to fight fire or other rescue needs. The public pays us to be their insurance policy. And when we sit at the hospital for 4+ hours, we are leaving their properties unprotected.

- Need more dedicated training times, most training has to be completed in a short time frame in-between calls. Lack of quality training leads to poorer performances on the fire ground.
- Training still lacks due to an always increasing demand on call volume and day to day activities. Also training still severely lacks in implementing new equipment.
- The crews are very good at providing a professional fire suppression service (2).
- I think getting by simply isn't good enough for life safety. [We have] been too good at doing too much with too little. I think [we are] lying to ourselves and the community members if we think this level of service is good. It is NOT sustainable.
- The line staff do an excellent job but are running thin.
- I believe that we are aggressive and do a good job on fires but I think our "search culture" could be more prioritized and aggressive.
- Apparatus are unacceptable, outdated, unsafe, and very uncomfortable to patients during transport.
- An increase in staffing and an upgrade to apparatus/equipment is needed.
- The few fire incidents I have been on have operated very smoothly, efficiently, and aggressively. We place a strong emphasis on getting lines in place quickly and do a great job on fire attack, however I think we are sometimes delayed on assigning primary search.
- We have bare minimum staffing levels for the square miles and population that we serve.
- MFD seems to have more structure fires than other agencies, so [we are] pretty good at residential fires. commercial industrial might be more taxing.
- Severe lack of training and support of training is creating a deficient workforce.

- I rate the quality of fire suppression poor. This is for three reasons. One being, the lack of quality/safe apparatus. For example, the age and milage of first out and back up suppression vehicles. Two, the inability to have adequately tainted/knowledgeable [personnel] across the board. This is due to call volume being high compared to line staff on a day-to-day basis. Three, lack of the number of support staff to make adequate training available.
- Undisciplined on incidents and need better access to uniformity and training to ensure safety. We have been lucky over the years that we have not experienced a catastrophic event.

Question 3: "How do you rate the level of quality of Emergency Medical Services and patient transport provided by the Marysville Fire District?"



Question 3 Comments:

- The skill set by the members is second to [none]. However, due to the poor staffing and large areas between stations, Marysville citizens often have EMS services provided by outside agencies.
- As a Firefighter/Paramedic for this organization I'm proud to say we have some of the best EMT's and Paramedics in the state or even county. [It is] all because of our system. Two medics on dedicated rigs, dedicated BLS rigs, tiered dispatching. Our EMTs [must] make critical decisions and triage using our protocols. If our system had to many medics our EMTs would do less in return less experience.
- We are good at EMS, but need more support and staff (2).

- Consistency in paramedic training quality has declined with the loss of Harborview. Also, poor logistical support and lack of supplies have negatively affected patient care. Five years ago, I would have rated this category as great.
- We employ some of the best EMTs & Medics I have ever worked with.
- The vast majority of our calls are EMS which leads to experienced EMT's. That coupled with frequent high acuity calls has developed well rounded providers. ER wall times and BLS transports of non-emergent patients leads to burnt out and jaded members. Our level of service and care is Very Good, however, if we do not change the way we operate and/or add aid cars we will continue to see junior member seek other employment opportunities.
- With the high volume of calls and transports we develop a great deal of experience fast. However, because of that demand we tend to rush training or in some cases forgo training for people filling seats.
- I feel our abilities are excellent; however due to being so busy I believe crews take it upon themselves to make decisions on transporting. Crews need to realize we provide a service, and with this we need to have a service mindset. I believe that crews need training on what providing a service really means. If we can raise the bar in the area. MFD would have a very good transport service.
- The lack of staffing has our EMS providers busy, takes away from quality service.
- Apparatus and equipment is outdated and unsafe for transportation of patients. They are often very uncomfortable with the ride.
- We have excellent EMTs and Medics but would benefit from an increase in staffing to either add additional ambulance and/or un-cross staff station 65 and 66 to make those ambulance dedicated units.
- Crews provide good quality EMS services; however, the call volume becomes issues for transport at times.
- Our transport units are some of the busiest in the county so each individual has a lot of experience with treating and transporting patients. Our junior members gain experience and knowledge quickly and are usually guided by our senior members and their wealth of knowledge.
- This has been the departments main focus and priority for decades. For example we have 4 MSO's but only one BC of training and one training Captain.

- We have bare minimum staffing levels for the square miles and population that we serve. We have failed to keep up with the demand for service and often run out of aid units to cover the transport requests which trickles down to suppression units having to extended wait times on scenes waiting for mutual aid to transport.
- Some of the best FF/PMs around work here. crews work well as a team. lesser acuity calls might suffer from constant similar calls, thus providing for assumptions being made that might diminish the service level or customer care. if you are sick, this is the place to be sick. if [you are] not so sick, the crew might not show the same level of concern as you do.
- To be classified as, Very Good, I feel that requires an increase in personnel, and a redistribution of current stations.
- Overall performance is adequate but crews are run down and tired of dealing with issues at the emergency rooms. It is creating less quality care and a burning out members. The medical administrative support is severely lacking and causing many people to be disgruntled.
- We have highly skilled employees but need to do better at coordinating efforts and improving overall crew training to become even better. Lots of good things happening but room for improvement always.

Question 4: *"In your opinion, what are the top three critical issues related to the Marysville Fire District?"*

Critical Issue 1—

- Culturally, the MFD is ok running its apparatus, facilities and members into the ground.
- Need for additional staffing (39)
- Staffing Shortages (due to sick leave abuse and long-term disability)
- Cross-staffed aid cars sitting at the hospital for extended times.
- Political aspects between admin and the local, and how COVID-19 was dealt with.
- Managing growth with sufficient staff.
- Stations outdated and in poor condition (3).
- Culture.
- Increasing call volume without increasing or improving stations or apparatus.
- Need another aid car/ambulance (9)

- Burnout (2)
- Lack of accountability (4)
- Increase in demand for service in the north end of the district. Station 63 can no longer provide the necessary resources to keep up with demand. Mostly due to very poor planning on the district's part as a whole.
- Wall times at hospital.
- Lack of trust/communication/transparency from leadership (4).
- Line staff need better support in staffing and apparatus.
- Stable funding sources (2).
- Public relations and funding.
- Eliminate cross- staffed stations and staff to meet the increase demand for service.
- Lack of trust between line personnel and administration (2).

Critical Issue 2—

- Administration staffing.
- Apparatus in poor condition (2).
- Facilities [fire stations] and apparatus [fleet] conditions and replacement plans (31).
- Drugs in our community.
- Lack of a dedicated training facility.
- Small unit leadership development.
- Micromanagement from [administration] staff and lack of empowering MSOs, BCs, and Captains.
- Mixed expectations between shifts and stations.
- Crossed-staffed stations and suppression units being committed to BLS calls.
- Training. No area dedicated to training, very limited time to train, no annual or quarterly standards that must be met by all members (2).
- Lack of support for training and professionalism (2)
- Transparency and consistent communication/follow up at the [administration] level, (2).

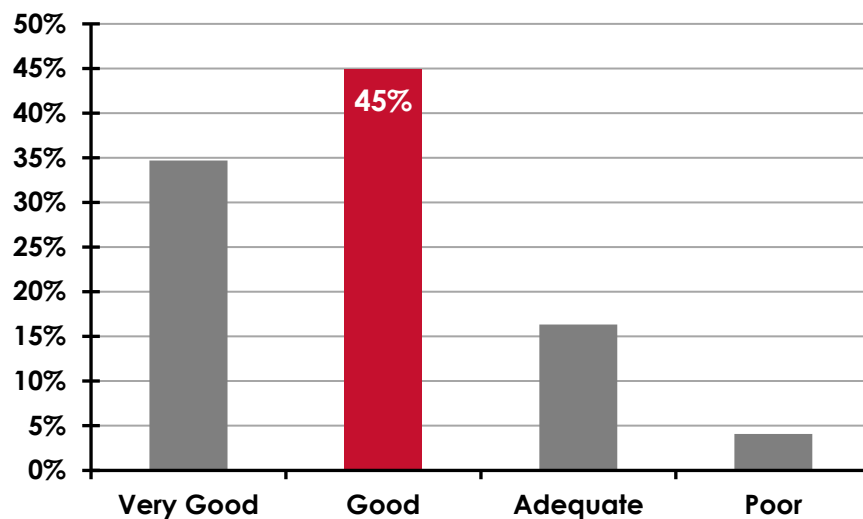
- Lack of operational support in almost every aspect of the organization, training ((need division chief to be a part of everyday discussions of total operations, this would help in planning for new recruits, planning for ongoing training, planning for future training with operations and special ops, as well as being (as it should be) a very influential position for the future of the organization). Maintenance (mostly facilities, again we are very poor at keeping facilities maintained and planning), HR (with promotions, employee resources, new hires, disciplinary actions, and liability mitigation [it] is imperative to get help in this position).

Critical Issue 3—

- Being reactive and not proactive. There is no forward thinking amongst the chief officers. Everything is reactive to an internal disaster instead of being thought out and planned. When plans are made, there is zero follow through.
- Desperately need an [Field Training Officer] program for incoming laterals & paramedic students.
- Planning, staffing, apparatus, stop cross staffing transport rigs with suppression rigs its bad service.
- Need for additional stations on west side of I-5.
- Lack of accountability regarding company level inspections being completed.
- Quality time for training.
- Efforts to keep all units not cross-staffed/overcrowding in ERs.
- Not enough personnel assigned to Administration to help with task delegation.
- Recruitment. We have been hiring a fair amount recently and not receiving as many applicants as neighboring departments.
- Large Scale incident preparation/ training (We struggle with any [large-scale] incident and are totally unprepared for a catastrophic/ natural disaster).
- Professional Development/Succession Planning.
- Lack of standardization for entry level and promotions.
- The lack of TOG's (tactical operation guidelines) This is a tool to help keep operational consistency across all shifts.
- Customer service.
- Ignoring the many reasons why we continue to lose amazing members to other neighboring agencies.

- Consistent expectations and a clear path of growth.
- No dedicated training time while on duty.
- Medical related issues: [Providence Hospital] wait times, MSO job description, expectations, consistency, Drug ordering and outages/borrowing from neighbors, Frequent caller education and mitigation, MPD [involuntary] frequency and options.
- The amount of pay line staff receives. We are compensated less than neighboring departments and run significantly more calls per person than the neighboring departments.
- Line personnel, which includes Captains, are creating poor working conditions for new hires.
- Low-tech rescue member numbers.
- Organization culture/negativity.

Question 5: "In your opinion, how would you rate the community's opinions and perception of the Marysville Fire District?"

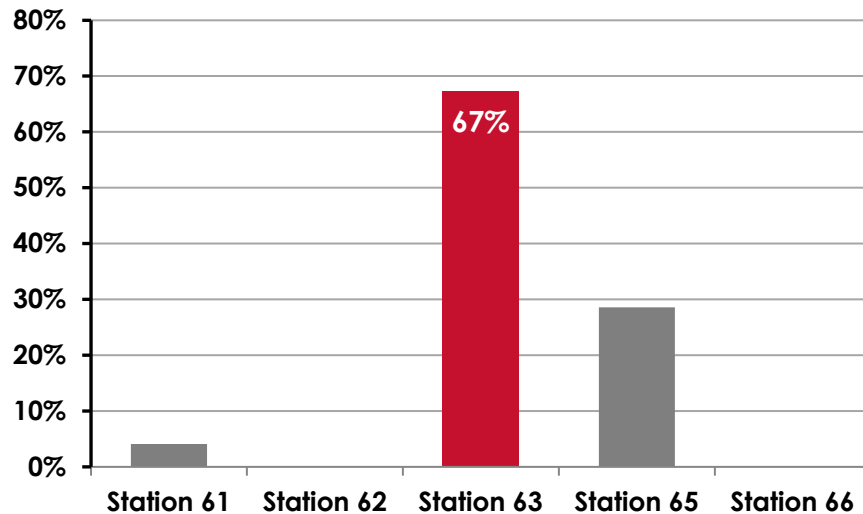


Question 5 Comments:

- [We have] done an incredible job in my [entire] career being in good graces with the citizens we serve. It is one of the best things about MFD. Ya line people truly care for the people and do anything for them. They recognize it thankfully.

- A passing levy is a good sign for things to come.
- believe that citizens perceive us trying to decide quickly if we should transport or require ALS eval as us rushing them and being disrespectful to their emergency. When we see the other side where every unit is on a call and we are trying to make a decision to let another department respond or try to clear to take their place.
- I think the majority of the public feels we provide a good service, but I have also encountered citizens that wish we had more community involvement (2).
- Many citizens are irate because they were lied to during the RFA vote.
- The majority of public interactions that I have experienced are positive, it is rare to see negative reactions from the public.
- I really don't have a grasp on our public image.
- As the latest levy votes indicated. We have a pro EMS and Fire community.
- Crews are always running on "E." Take care of your people and they will go to the ends of the world to take care of others. Companies that do this absolutely thrive.
- I believe the community does have a positive opinion regarding MFD and the recent EMS levy passing by a large margin reflects that.
- Citizens still struggle with taxes. continued educational efforts (not just during levy years) will be key so citizens continue to support the RFA.
- EMS levy results show some of that. feedback on social media is always good. and interactions with the public is always supportive. we have a good reputation and need to be aware of that, and continue it.
- The community has always rated MFD good.
- We need to be more involved with ALL of our communities. We represent a diverse population but fail to immerse, recruit, or engage outside of the city of Marysville...WE need to do better.

Question 6: "In your opinion, which fire station should be the FIRST priority for replacement?"

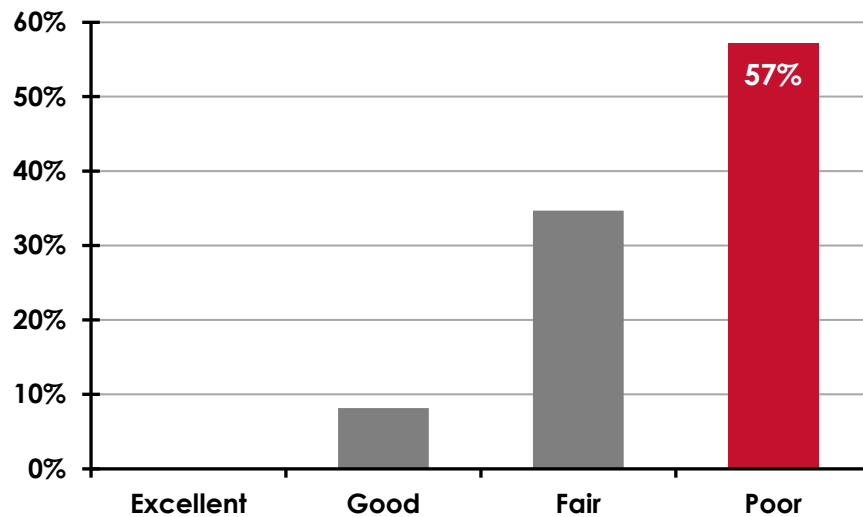


Question 6 Comments:

- The Smokey Point area and Station 63 have needed an aid car for years now but the facility cannot house any [additional] units or personnel. The workout/wellness area is in the apparatus bay which is dangerous to the members and takes up an entire bay that could be used for apparatus.
- As there is only one button to choose. Station 61, 63 and 65 should be bundled into one capital improvement project under an emergency funding mechanism.
- Really need an aid car here for the rapid growth of that area, but there is no place to put personnel or aid unit. As well as the station being old & outdated.
- Either full gut job remodeling that should have been done years and years ago or tear it down and find a new place for a station that fits two engines, two air cars, tender, boat and rig to tow it, and add a brush truck. Great place for extra storage. Have appropriate rigs for the location. Oh and make sure the bay height is tall enough that you don't have to special order the engine so it's not too tall. Oh and one more thing. The station still has a roll away dishwasher that plugs into the kitchen sink at night for our dishes. Add commercial grade sanitizer dishwashers in the stations like Seattle fire has they use less water and soap and dishes are sanitized! The station has a lot of history but it's long past a time of kicking the can down the road.
- The station is not adequately set up to allow for a north end aid car.

- Station 63 and 65 are in dire need of replacement and have been for the last 10 years.
- [I would] place 63 in a close second, because their call volume is higher. Rebuild 65 with more staffing and specialty teams?
- The area 63 covers has so many multi-family dwellings and a large increase in people in their area that they need a new station. A station that is built for growth and can immediately house a engine, aid car, and medic unit with future growth for more units.
- This was a difficult choice, because Station 65 is also badly in need of replacement. I feel that Station 63 needs expansion, modernization, and to have a BLS transport unit permanently assigned to it. There are not adequate parking spaces for apparatus, personal vehicles, room for training, nor housing for more firefighters. Station 65's building is in worse shape, and of a much poorer design for housing personnel and having them respond in a timely manner but does have a lower call volume.
- We need to have a plan for facility upkeep, shop upgrades, and replacement of 63 as well.
- This station, like 66, has the fastest growth and need for an Aid car. However, 63, will not fit another crew without a remodel.
- We know from previous studies that St63 is inadequately staffed and in a bad location. The Smokey Point area has thousands of new residents, along with new commercial business and manufacturing yet has not added apparatus since I-5 was built in 1965.
- Demand for service has already outrun station 63 ability to serve adequate service and is the fastest growing area, as its has-been for past 15 years with more to come. Station 65 even with its restrictions on apparatus housing should be a second priority. However, it should not dictate how apparatus should be built for the entire district. One new engine should last a long time out at that station which essentially buys us time to plan for replacement.
- This is the oldest station, and the apparatus bay doesn't fit most modern engines. The options are to either build engines to fit in this station (which isn't beneficial for other areas we cover) or to build a specific engine for this station.
- [Station] 63 should be the first replaced so that it able to accommodate a BLS aid car and two additional crew members.

- Build it according to the massive recent and upcoming growth of the Smokey Point area. Aid63 is long overdue.
- [Station] 61 is already being remodeled, 63 needs to be remodeled or replaced. We need another aid car or two up north but 63 cannot house more personnel.
- Must be able to fit the need of the growing area and demand. More app bays, aid car, personnel accommodations.
- This is a close decision between stations 65 and 63. Although 65 has multiple areas that need improvement, I believe that station 63 needs to be replaced first due to the lack of space to house more staff and units.
- Replacement of Station 63 would give the district more flexibility and opportunity to grow and add more personnel and units. Some days we have enough personnel to staff an additional aid car and 63's area would be a great place to house them and the unit, however they remain at station 62 due to the limitations of bay size and dorm space at Station 63.
- Station 63 needs an upgrade to house another full-time aid car and possibly a training facility.
- Should be obvious. It was built in the early 1960's and has been added on to and remodeled several times. The facility was never intended to be a staffed fire station. It also has damage from the Nisqually Earthquake in 2001.
- [Stations] 62 and 66 are not on the list. the others are all in need. but 65 is probably the worst condition for firefighter safety. and the one having the potentially greatest impact to service levels as its loss puts a community too many miles from the nearest overlap station. 65 will soon be the only station where crews sleep upstairs. it has limited earthquake safety. it has been added on to at least twice since it was originally built. it operates on a septic system. did i mention it might fall down in a stiff wind? this station survives but will likely be the first to collapse in the event of a seismic event. for the record; 63 is a close second place, and not too far behind is 61, all for the same seismic reasons. 63 and 61 also share the problem of lack of adequate/appropriate staffing quarters.
- [Station] 63 is a disgrace and 65 close to that. We should be embarrassed by the lack of planning and ability to replace this obsolete and unsafe work site.
- In order to add capacity for an aid car.
- That station is a hazard to the safety of anyone who enters it.

Question 7: "How do you rate the overall status of the entire fleet of apparatus?"**Question 7 Comments:**

- We have many first out Suppression and EMS apparatus that should be in the back-up status. We need a brush truck, for all the Wildland Urban Interface we have. We are also in need of a heavy rescue in the north end of the county to support rescue effort in the north in the event of a major natural disaster that cuts us off from the south.
- [Our] apparatus are high mileage and old. Our replacement plan does not cover our needs fast enough, so we are left with apparatus that have over 250k miles on it. Our district battles with snow and wrecks every winter and yet none of our ambulances have 4x4 capability. Our district covers over 70 [square] miles and a large portion of that is wildland/urban interface type with an increasing number of brush fires, and the district still has no plan on getting a brush type apparatus. The tender is inappropriately utilized and sits out at Station 65. The mechanics at MFD are absolutely amazing and some of the most talented people. They are the only reason our fleet has limped this far along.
- Our two newest engines are out of service at least once a week. The rest of apparatus is high mileage.
- Aging apparatus on both operations side as well as staff.
- Most of our first out apparatus are now serviceable but the back-ups we frequently end up in are embarrassing.

- Multiple high mile[age] rigs, waiting to long to pull the trigger on ordering things have us set back even further, back up rigs that are not safe or ok for people to work in or be patients in. Glad E One rigs are coming. Best engines I've ever driven or worked on, Ford Ambulances are also great!!!! Just need a few more. At 100k miles are we starting the planning for making it a back-up rig because we should!!!! Our citizens deserve the best rigs when being transported by us. I have cared for some very sick citizens in the back of old international rigs with over 320k miles. It should not be allowed period.
- Back-up units are often a challenge to find. A number of our frontline units are already high mileage & worn out. We have a high call volume so I think a good fleet replacement program would be highly beneficial.
- Our fleet is an embarrassment. I've ran calls on very sick pt's and RSI'd pts in the back of a rig with almost 400,000 miles. These rigs are not adequately stocked and are difficult to be working in while they are going down the road. It should be unacceptable.
- Our fleet is too old and we have no back-up apparatus. Our fleet has to many miles on them and need to be replaced and for some reason running apparatus with 300,000 miles is ok. We have a poor apparatus replacement plan. There is no reason we do not have updated equipment with the amount of call volume we have.
- I'm used to things "breaking" in the fire service, and am impressed by how quickly our maintenance team gets apparatus back in service.
- Tender 65 was the first out suppression unit out of Station 62 due to the Ladder and all other back up engines being OOS. We are barely getting by with what we have, but I am glad to hear we have engines purchased.
- I do not feel that this is related to the work provided by the shop, but rather a fleet age and high usage issue. We should have been on a more stringent replacement plan, years ago, that would see no Suppression or EMS apparatus being in service with Marysville Fire District, beyond 15 years, in any capacity. Due to mileage and repair history (major problems or accidents), that time frame should be reduced.
- Our equipment is well used and with the current replacement challenges we might need to think more multiple purchases to try to out place usefulness.

- Most people would say poor. However, we could be a lot worse off. We do have apparatus on order which is reassuring. Unfortunately, our current vehicles have high miles and spend a lot of time in the shop. Our Rosenbauer engines are constantly breaking down and our reserve fleet is lacking quality. Our aid cars and medic units are in the process of being replaced. However, we continue to have lots of problems with them too because of the high call volume. Our foam pro's have been intermittently broken since we got the Rosenbauer [apparatus]. This is unacceptable. Things like air conditioning in all our apparatus that is either barely working or only work during the winter is unacceptable.
- I believe that with the new engine already being ordered and new engines that our fleet is fair. I think getting new aid cars should be something looked at more frequently so we have more up to date rigs as reserves but our shop does a fantastic job keeping our rigs operational.
- The first out rigs are in good shape, but reserve apparatus with over 300k is unacceptable.
- We still [do not] have adequate reserve apparatuses. Because the district has insisted on using every new apparatus in high demand areas and use them until they are well past their intended reliability use, they become subpar reserve apparatuses. Reserve apparatuses not only fill in for repairs and general maintenance they are also used for training and extra staffing when the district needs them. Having better and more reliable reserve apparatuses allows the maintenance on other apparatuses to be more thorough and effective prolonging the life of those apparatus.
- Our shop does a good job of keeping our units in service. Our back up units are over 20 years old. The back up Ladder will have over 100k miles on it. Aid units have excessive miles on them. The turnaround time for ordering to delivery is longest I've seen. The cost to purchase any new vehicle has also increased higher than I ever expected. This has made it very difficult to forecast a replacement plan. A new replacement plan will need to be developed in order to meet these changes and keep our fleet functional.
- Some of our first out ambulances have over 200,000-300,000 miles on them. I would like to see one fully stocked back up rig for each category, BLS, ALS, Engine. Currently when a rig need servicing, we are moving most of the gear off the rig and onto the back-up rig. I would like to see that we move (over the life or the engines we have, not right away) to having all engines of the same make and model.

- We run everything into the ground. We have engines that take multiple times to go into pump gear and aid cars with 300+ thousand miles on them. Both frequently used as first out rigs. Our shop division is just working to keep things afloat/running vs being able to bolster our fleet to fulfill the needs of an ever increasing community and call volume.
- I am not sure if our apparatus or our line staff are more tired and beat up. The new engines seem to be in for repair a lot. Our "backup" aid cars have over 300k miles on them and are poor representation of the care we can and do provide to the citizens. The community deserves apparatus that are reliable and updated.
- We have much room for improvement. We have a lot of high mile rigs that are constantly out of service. Our fleet and facilities crew does a great job but can only keep up for so long. Also, maintaining the same make (E-One) for our entire fleet would be preferred.
- We now have plans in place for new apparatus, because of putting off the purchase of new apparatus we have fleet issues weekly. Ask the fire board to rate the fleet.
- Absolutely unacceptable. Unsafe aid units and back up fire engines. Some aid units ride so bad patients can't tolerate it. It's heartbreaking during transport for the patients, they deserve better. It worries me for newer drivers to handle the loose steering of these old units. Back up engines are a total joke, unsafe with pieced in equipment rattling around you, bucking and kicking down the road aggravates my lower back like no other.
- There are multiples suppression units that need to be replaced as well as the need for more BLS apparatus is becoming a more increasing issue.
- Reserve fleet needs bolstering [as first-out] rigs being kept in service for too long (5).
- Several rigs are very old and/or have high mileage. We get lots of comments how terrible the ride is in the back of the aid car when transporting. Our new engines are constantly having problems, then we [must] operate out of our back up rigs which are 20+ years old.
- All units are constantly in need of repair, reserve units are often in service.
- Just look at the milage on each emergency vehicle.

- Fire Engines still in service that are older than the fire fighters learning to drive them. No reason a 1994 Darley should still be in service even as a reserve apparatus. The ladder truck has 134,000 miles on it, the new one will be here soon however the fact that purchasing its replacement was put off way for so long is the reason for the increase on miles and aerial wear and tear. Aid cars and medic units with 150,000 miles on them. If EMS is 80% of what we do, then we need to replace our units more regularly and not allow first out units to build those kinds of miles.

Reserve fleet again, non-existent, we are unprepared for a large-scale event and trying to back fill our stations. Special operations rigs are always an afterthought. We still use 29-year-old engines so what is the point in asking because we know the answer. Utilizing a converted aid units and second owner apparatus to make do with our special operations response rigs.

Snohomish County has invested a lot of money in specialized equipment, the least we could do as an organization is invest in the rigs that respond and carry the equipment. Boat 65 is embarrassing, again another old piece of equipment that should have been upgraded and replaced 10 years ago. We have a significant water response area, and our current boat is in adequate.

- Some units are in good shape, but others are taking a beating. and reserve apparatus are being used way too much for the age and condition they are in. this was a workable system a few years ago, but call loads have gone up and on duty staffing positions have not. so the rigs for first due use are being run constantly, wearing them out sooner, and resulting in more maintenance and repairs, thus forcing reserve units back into the rotation quicker and more often.
- Our fleet is aging quickly and there is always vehicles being shuffled around when something breaks. Let's just do what other agencies do and buy enough FULLY OUTFITTED back up vehicles.
- Massive improvements here but room for improvement. Back up rigs are unsafe and dated, first out better and improved with new ladder on order.

Question 8: *“What are the three most significant threats to firefighter safety and civilian safety in the district?”*

First

- Not enough employees, people getting “mandatoried” on a regular basis becomes a safety concern. If a employee says they don’t want OT and because they are tired or burned out and then get forced to take it, then that isn’t safe.
- Not enough rigs. We routinely and constantly [must] rely on mutual aid to run calls.
- Understaffing that leads to OT and more mistakes due to not enough recovery (24).
- Lack of training with law enforcement on scenes of violence.
- Fatigue, sleep deprivation, burnout (7).
- Mentally unhealthy citizens (4).
- Drug use and criminal activity within community (11).
- Lack of annual fire code inspections being conducted on all occupancies. Unknown hazards exist and lack of building familiarity by crews.
- [Firefighter] high-risk, low-frequency activities (search in a commercial structure).
- The biggest threat to firefighters is the people we interact with on calls.
- High volume of structure fires compared to surrounding [departments] (2).
- The lack of a Training Facility within the boundaries of Marysville Fire District puts our employees at risk of not having proper training, that can lead to injuries and/or death on incidents.
- Slow response times.
- Stripped resources during peak activity times or large events.
- Growth and densities.
- Both quantity and quality of new members.
- Unchecked criminal activity.
- Lack of consistency in training and operations.
- Crews run a lot of high-acuity calls. More staffing would allow these exposures to happen less often.
- Lack of available transport units.
- Stress (poor work environment).

- Adequate resources to handle major disasters.
- Ensuring adequate time and funding available for training.
- Dependency on mutual aid.
- Call volume (2).
- Train derailment (2).
- Leadership experience.

Second

- Lack of any formal wildland fire fighting practices.
- Apparatus failure and condition (11).
- Old, heavily remodeled buildings in poor condition (6).
- Lack of unit coverage during busy times (2)
- Understaffed for the volume of calls we run (2)
- Sufficient training (12).
- Excessive overtime for line personnel, lack of rest (2).
- Anything in the water and natural disasters.
- As we continue to hire our average experience level is declining and the possibility of a poor decision being made is increasing.
- Homeless/drug-using population becoming "invol" involving [police] (2).
- Cross-staffed units in busy areas.
- Being on the roadways especially highways and interstates with out dedicating a policy for having a rig specifically for lane closure. Our only line of duty death was I-5. It is a very dangerous road for us all to be on (2).
- Response times for recurrent calls in 65's area.
- Traffic control and mitigation training. Training on proper parking and precautions on I-5 and other busy roads.
- Health screenings.

Third

- No baseline training for firefighters [only certain individuals hand-picked to go to the academy].
- Inability to provide fast(er) service on the west of I-5.
- Lack of annual fire inspections on all buildings.
- Civilian 65's area when 65 is out.
- It appears [that] the bulk of the personnel with over three years at Marysville is [burned] out.
- Frequency of mandatory overtime means lack of rest/fatigue [and] burnout for drivers and medics.
- Lack of discipline and accountability (2).
- Exposure to carcinogens.
- Real poor planning.
- Lack of secondary command staff.
- Poor preparation for Acting Captains.
- All workout areas need to be removed from the apparatus bays due to exposure issues.
- Wait times at hospital.
- High-rise/wide rise fires (casino hotel).
- Behavioral health issues in and out of station.

Question 9: "What are the top three Target Hazards in the Marysville Fire District (A target hazard is an occupancy or a building that poses specific risks to occupants and fire service responders. The facility may also provide essential products or services to the general public or fulfill important public safety function)?"

First

- Tulalip Resort & Casino (19).
- Amazon.
- From a stance of volume of people both casinos and an MCI.
- Apartments with old or no alarms (4).
- Safran (5).

- Railroad/rail lines (9).
- Quil Ceda Creek apartments.
- The Vintage.
- The large AFH—Marysville Care Center, The Cottages, Fieldstone, Smokey Point, and others (11).
- Central Welding (3).
- Interstate 5 (4).
- Radiac Abrasives (2).
- Majority of our schools (5).
- Thomas Foundry (2).
- Eby Arms (2)
- Costco.
- Homeless encampments (2).
- Industrial Parks (3).
- Industrial locations housing hazardous materials or high threats to firefighter and community safety, acute and chronic.
- Water treatment plant.

Second

- Large apartment complexes.
- Commercial businesses with all the hazardous materials in multiple places in the community.
- Any residence in very rural areas with limited or no water source.
- Furniture World (2).
- Any mobile home parks.
- Artisan Finishing (3)
- All of third street.
- Boom City.
- Low-income apartment complexes.
- Any facility that stores large amounts of hazardous materials.
- Civic Center/jail (3).

Third

- High-density housing projects and their occupants (2).
- Opera House (2).
- Quil Ceda Creek Casino.
- Slumber Ease Mattress Factory.
- Boys & Girls Club.
- Zodiac.
- Compass Health.
- Donna's.
- Tesla Facility.
- Downtown district.
- Naval operations.
- All high-density housing.

Question 10: "What are the three most important topics for an effective public education program?"

Topic 1:

- Employment retention.
- Childhood education on Fire Safety.
- Smoke alarms (13).
- Planning (2).
- Awareness of what is happening around you and how to handle it. Be Alert!
- When it is appropriate to call 911 (5).
- In the current state of our staffing and crews being [burned] out. The public education program needs to be self-reliant and not request help from line personnel.
- How to safely heat your home in the winter (lower income).
- Fire Hazards within the home/workplace (2).
- School visits and station tours.
- Regular information about our agency (4).
- Active social media and public information dissemination through televised media.

- Increased public outreach based on data (11).
- Fire prevention (8).
- Connection with the school districts and elderly communities (8).
- Firefighters need to understand that this is part of their job.
- Bystander CPR (8).
- Give the PIO autonomy and trust to do their job. (This is why we keep losing them).
- Consistency is pivotal for public education to ensure that we are all learning the same material in the same way.
- Community health education [and] drug and alcohol education.

Topic 2:

- Happy employees that want to come to work.
- Kids window fall prevention (2).
- Focus on firework safety, or discouraging use.
- The difference between aid cars and medic units.
- CERT (2).
- Fall prevention (5).
- Mentor programs in the schools to promote the fire service as a career path.
- Seasonal safety.
- Explanation of how fire service is funded.
- Proper use of extension cords.
- Exit plans (2).
- Better social media presence.
- Fire extinguisher ownership and use.
- Get the crews coverage so they can do great outreach and build relations with the community. From doing more drills in neighborhoods, to cool school visits.
- Fire safety in the home (4).
- Natural disasters (2).
- The material needs to be taught by people who have extensive experience in the subject matter of the program itself.
- BLS/ALS.

Topic 3:

- Starting a explorer program to get people in our community interested.
- Safe cooking practices in the home.
- Quality educating subjects.
- The more the public knows what we do, the more they support us.
- Life jackets.
- Injury prevention.
- Burn bans.
- Active in public events.
- Resources and support for the PIO position. (Example, trying to share information with an outdated iPhone is something that is easily fixed, this just shows the lack of support for the position.
- Water safety.
- "Ask" the community through a proactive vs reactive approach.
- Safe driving habits.
- Cooking safety.
- Knowledge of opioid use and what to do in the event of witnessing an overdose.
- We might want to start to incorporate workforce potential into this aspect; start teaching people what is done for potential new firefighters, what is expected before they apply, and what they can expect after they are hired. there might be a lot of people who do not even consider this as an option because they do not know it is one. Job fairs work for those looking for a job, but public education and social media might reach more potential future firefighters that do not think they can because they do not know it is something they can attain.
- More than just helmets and stickers.

Question 11: *"List any suggestions you have on how Fire/EMS service delivery can be improved throughout the Marysville Fire District."*

- I cannot tell you because I have not had to use them but my guess is we have some amazing people Doing the job already.
- Trust, empower and listen to your employees. Stop cross staffing. Add an aid car at station 63.

- In 2010, the MFD staffed with 24 persons on duty and ran around 9,700 calls. In 2022, MFD [staffed] with 25 persons on duty, and ran just under 16,000 calls. The increase in call volume without the appropriate resources is dangerous. MFD needs additional responders to help with the large burden of calls, which will then allow time for all the things that have gone by the wayside (inspections, hands-on training, mentorship, projects). If MFD is not going to increase staffing, then they need to look at ways to decrease call volume. Telling Marysville Police and Tulalip Bay Police that MFD will no longer transport a [patient] who is an involuntary commitment with no medical need, would be one of the only ways to reduce calls immediately. Our Chief officers need to stick up for what is right. Firefighters transporting non-medical patients to the Emergency Room because the police department "doesn't have the staffing" is unacceptable. Changing the priorities of the district from BLS transports to Emergency Services. Transport revenue has been the driving force of our department since my arrival in 2010. We are here to protect "Mr and Mrs Smith" (at least that is what an old Chief Officer told us) and that does not seem like it's the priority.
- Buy medic and aid cars BEFORE we need them. Buy engines BEFORE we need them. By waiting until the need is upon us we then find ourselves scrambling to get by. If a fire engine was to get totaled or blow a motor we are screwed. That puts us in a fire engine that is older than some of our employees. Come up with a realistic plan to replace aging stations. Even if it is not for 10–20 years... have a plan and goal in place. Feels like we do not have leadership or direction unless we hear there is a plan in place for replacing the stations and rigs which leads to employee mistrust. Mistrust then leads to retention issues which we most certainly have the last few years. We run more calls per FF then almost any other fire department in the state which is also leading to employee retention. That cannot continue forever. We need light in the tunnel by having a plan in place to hire more employees.
- Start with a robust training division that works to improve fire and EMS services. Fully staff the stations we have and look to build relationship with neighboring agencies and foster mergers. Look at a private ambulance service for our Clinic transports and all non-emergent transports.

- Continuing to add staffing from the line to the office, adding more positions in training, purchasing apparatus, OT for Vacation it's the cost of doing business start to have that mindset and it will help a lot. From a service stance stop having A62A if we have enough people to have that rig staffed put them at 65 or 66 and uncross staff that suppression rig with the ambulance. Stop cross staffing suppression rigs with transport rigs in general, it's bad service.

If I could change MFD tomorrow it is an easy fix. These rigs are dedicated 24 hrs a day from these houses! St 61 E61 (3) crossed w/ BT 61, A61 (2), M61 (2) St 62 B61 (1), MSO 61 (1), L62 (3) crossed with TR61, A62 (2) St 63 E63 (3), A63 (2), M63 (2) St 65 E65 (3) crossed w/ BT65, T65 and (add a brush truck), A65 (2) St 66 E66 (3) crossed w/ HZ61, A66 (2) 31 people on duty a day is what needs to be committed to as a minimum. Then start working towards meeting NFPA 1710!!! It would fix so many problems on the line. It would be hard to beat and put us up with starting to work towards being one of the best departments in Snohomish County from a staffing perspective.

If a rig goes out also our BLS transport rigs don't take priority over suppression rigs. I have seen too many times E66 is detu but we keep A66 in service due to being down one person. Bad way to do business. Should brown out a different ambulance and staff that engine instead. From a staffed suppression rig BLS can be done great along with every other call types we go on. Fires being put out by ambulances doesn't work that great it's all about priorities and I think sometimes ours are more about BLS transports and less about the bigger picture.

Again 31 FTE on duty a day minimum let's make that happen!!! Thank you for this survey. For what it is worth MFD is an amazing place to work. We have a long way to go but I am thankful every day I get to put on the uniform and help the community and I have seen us come a long way already.

- I think our Firefighter/EMT's and their skills are very good already, but they could be improved in different ways. Having a dedicated training facility would allow for a better variety of training drills and improve crew morale. Improved company level inspections would lead to greater awareness / appreciation of buildings as well as resolving potential hazards they will come across that could lead to avoidable and preventable incidents.

- We need more admin staffing to help support training and all the paperwork that is needed for day-to-day operations. We need more line staffing to help ease the work burden to reduce errors and burnout. We need more FMO staffing to allow for more annual fire inspections and fire related construction inspections and plan review. We need quality apparatus for transports and fire suppression. We need updated stations at 63 and 65 to better serve the firefighters who serve the citizens so that they can do their job more efficiently. That would improve moral which will result in serving the citizens better.
- Increasing line personnel. No more cross staffing. Aid car at 63. Dispatching needs to improve to prevent sending unnecessary units to calls. Improve our first out apparatus and back-ups. Admin needs a better understanding of what it's like working on the rigs today (not when we ran half the calls).
- MFD has always had a them (Admin staff) vs line personnel attitude. For example admin will fix up station 61 for the admin staff but not the crews. That station has been good enough for crews for the past 15 plus years with nothing being updated and now admin is moving in there and now it's time to update it. Plus station 63 and 65 need help and again nothings being done. It is ok for line personnel but not admin. Our apparatus shortage is a failure on admin and continues to be more and more of a failure with a 1994 Darley as a first out engine. Administration has no trust in the crews and it has been that way for a long time.

We are expected to do more with less. We need shift bids, so people can work with people they get along with. There are certain shifts and stations people cannot work at or with. The old school mentality needs to leave. Treating people with no respect is unacceptable. Quit mixing crews up every year. Start treating us like we mean something to MFD.

- [Administration] needs to start showing crews we do matter and they do care about us at work and off. Start treating us like family and less like criminals. It's all about liability for MFD, even if that means dragging a member's name through the mud so MFD is clear. It is all about saving money with admin. Start treating us like we belong here and prove you care about us! If not we are going to continue down the same path we have been down for the past 10 years. It's not working. It's time to make a change.

- Crew continuity—establishing shift bids where people can be teamed with others they know they work well together with, and keeping that crew together as long as possible. A [well-oiled] machine where everyone knows their roles and works efficiently together. This builds morale and positive attitudes, which reflects in your work, and with the community. A consistent probationary training plan (i.e. practical drills) that all officers on all shifts buy in to, so everyone is on the same page when working with new hires. Partnering with the [Emergency Departments] in our area to work together and help find a solution for the delays in transferring EMS patients. Consistent available EMS supplies when needed (back stock).
- The biggest thing I notice is how every station on every shift has different expectations on the day to day, how to respond to calls, when we can talk on the radio, and when a pt is ALS vs BLS. The inconsistency causes confusion when FF's work debit days or overtime shifts as to what they are expected to do in different situations. Implementation of the policies and EMS protocols while holding people accountable when they do not stick to them will help the new FF's with having a solid career foundation.
- Develop and adhere to an apparatus replacement schedule. Replace what needs to be replaced and do not move rigs around so the new stuff doesn't always end up downtown. Hire enough to fully staff more than [two] BLS cars. 80% of our transports are BLS and we have the same number of dedicated BLS units as ALS units. Have 2-2 medic ALS cars and put a medic and an EMT on the other EMS units, allowing them to transport "basic" ALS calls without taking the other medic units out of service. The argument against this has always been that the medics need [two]medics on the call, which would almost always be the case due to multiple units being dispatched. We should be willing to examine how we deploy our resources in a way that best serves the citizens of the district.
- A new station located on the west side of the freeway, to response times, increased staffing at Station 63 to assist in the timely response to calls in the Smokey Point area, and provide another BLS transport unit, elimination of cross staffed stations in the entire district.
- Continue to encourage member involvement to improve program delivery with realistic expectations.

- Finances have always been a forced "fear" among our department. We have been given the doom and gloom for over a decade. We've been threatened with layoffs and reduction in forces. What we cannot afford to continue to project this fear into our members. It does not give certainty to our positions which increases unnecessary stress and ultimately causes good members to leave. Our department needs to stop cross staffing effective immediately and hire appropriate staffing levels. Our department needs 2–3 more aid cars now. With the 1000 plus homes in 66's areas and the over billion square feet of commercial space being developed in 63's area, we are desperately behind. Obviously, this takes money and resources. Maybe alternative sources of revenue need to be an area of focus.
- Staffing: I suggest taking the Aid car from St65 and bringing it to St63. Staff S65 with a 3-person cross staff of E65/Bt65/T65. This would keep responders in the 65 area 24/7. A63 would cover the Smokey Pt area and take the few BLS transports from the 65 area when needed. At St63 build a 20x20 pole building in the back for a workout area, this would get crews away from exercising in the truck bay and make room for the Aid car. Sleeping quarters for the additional crew could be accomplished by either an interior remodel or temporary trailer until a new station is built. I believe that this would bridge the gap between our needs right now and the construction of a new station with little cost or changes to our response model.
- Provide a clear process for entry level firefighters (update [probationary] book based on committee suggestions). Provide clear process for internal promotions. Update/unify/standardize policies and procedures into a department operations manual.
- Place Captains that have their paramedic certification at a station (66 or 65) with the 5th medic on shift. This allows for the operation of a third medic unit without additional staffing, maintains skills for medic captains, and gives paramedics more engine time.
- We need to improve our staffing levels. Personnel are incredibly burned out, fatigued, and frustrated. We want to have a better relationship with admin, but there are several roadblocks in the leadership tree. We need to figure out hospital wait times; this is hard to tackle but not a good use of community funds to have units sitting on the wall for 1–3 [hours]. It's also very hard for personnel when they sit on the wall for 1–3 [hours] immediately get called for another transport. When do they eat? when do they sleep? when do they rest?

- Take better care of the members and they will thrive. Trust in your members polishes their pride. The lack corrodes it. We can do this! It's just gonna take some ownership and change of past practices.
- Thank you for the opportunity to add my thoughts. This is the order I see needs. 1—Replace all "International" aid units immediately. 2—Add 1 fulltime aid unit in north end, temporary accommodations for unit and staff (whatever it takes). 3-Purchase fire engines and remove H&W and Darleys from inventory. 3—New Station 63 with adequate accommodations.
- Increase in staffing. -Clear upfront communication to all staff on what is happening within the MFD. -Increase in training for both fire and EMS skills. -Efforts to decrease the amount of wait time at hospitals. -An update to inventory, apparatus, and training etc. books/binders at all stations. -dedicated areas for exercise outside of the apparatus bays. -An update to the probationary firefighter's book. -The ability for line staff making long commutes to stay at stations the night before a shift. -There needs to be an expectation for all company officers to be willing to train/drill during a shift. There has been too many company officers that have shot down training request for reasons that are unacceptable.

There needs to be a culture shift on how probationary firefighters are perceived and treated. I understand that the first year as a firefighter is one of the most pivotal in a career. Having said that, I believe that developing a relationship and trust with your crew is the most important aspect of the job. Being told you cannot and will not sit in recliners, you [must] be the last one to go sleep and the first one to wake up, that you must do most if not all the daily chores and tasks with little to no help and are expected to know everything is no conducive to success and puts unnecessary stress on the probationary firefighter. It should be encouraged to spend quality time with your crew and the workload needs to be spread evenly.

- Increase in training for both Fire and EMS skills/knowledge, remembering why we are here and always putting the citizens needs above our own.
- Continue to participate in and promote community PR events such as the fire vs. police sporting events, Night Out, and other highly visible events within the community. One idea is to host a water safety educational program at Lake Goodwin and Ebey Waterfront.

- Develop contingency plans for large scale events Fully staffed fire stations (NO CROSS-STAFFING) Add an aid unit to 63 Build a reserve fleet of apparatus that aren't 25 to 30 years old or has a ridiculous [number] of miles Increase support and admin staff Replace Tech Rescue, HazMat and Boat 65 with newer apparatus Invest in a brush unit for local use Plan and anticipate, stop being reactive Communicate—All levels.
- Training facility was not on this survey and that's too bad. it is something that is necessary and should be a deep part of the planning that is taking place. also, working with the tribes is not part of the planning discussed here, but should be a high consideration. they are local government jurisdiction that represents a population base and a funding base that is important to the RFA's future and current operations. but to be more specific to the question asked; one or two more bls units to shoulder the load and reduce suppression units out of service time would do wonders for a complete package to positively affect service levels. even if one is a peak activity unit.

Two 24-hour units would likely provide a safer environment for firefighters as it would reduce the chance of no sleep over a shift rotation; even 3 or 4 hours of sleep a shift is less damaging to the physical and mental health of firefighters over the long term than constant no sleep during shifts. the damage seems minimal, but it compounds over time. we need 30-year firefighters not 17-year medical retirements.

- Administration could improve crew continuity by leaving the shifts alone and not moving people around every year. People are struggling to learn how to work with new coworkers every year which creates an unstable work environment. If the daily operations were stabilized, there would be a huge improvement of fire and EMS delivery to the citizens.
- Getting rid of the "old guard/boys club". Changing the culture at MFD. Working towards teamwork and supporting each other.
- Its starts with policy makers and leadership and how the general membership feels valued. We have 30 plus years of feeling undervalued and mistreated. Concerns are often swept under the rug and we focus on trivial issues vs fixing the "real" problems. We MUST do a better job at recruitment and more importantly retaining. The fire service is flooded with competing agencies; What will make the MFD RFA stand out so that highly talented recruits pick us. We must also do better at improving programs of diversity, equity, and inclusion.

- This is 2023 and this organization and others like it must create programs that will be welcoming to persons regardless of sex, ethnicity, or sexual orientation. We currently have zero programs to address this and in fact its problematic in the station. Leadership knows this and is doing nothing. IF you want to improve the product on the street, you MUST first start in house; this starts with leaders, training, and overall internal values. We consistently fall short. It is well past time to quit talking and start doing.
- The "do more with less" mentality needs to be eliminated. Do more with more. Mentoring for possible promotions. Support the line staff, creating ownership through support.

Appendix B: Summary of Onsite Stakeholder Interviews

Introduction to the Onsite Stakeholder Interviews

During its site visit, Triton interviewed stakeholders representing various groups within the Marysville Fire District. These interviews aimed to better understand issues, current service levels, concerns, options regarding the emergency service delivery system, opportunities for improvements, and expectations.

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 comments to identify specific patterns or trends. Based on the information reviewed, the team identified a series of observations, recommendations, needs, and general comments that were significant enough to be included in this report.

Stakeholders were identified within the following groups: Marysville Fire District officers, line personnel, and chief officers, and administrative staff. It is important to note that many of the comments received during the personnel interviews mirrored those in the online survey.

Officers, Rank & File, Firefighter Line Personnel

What strengths contribute to the successes of the Marysville Fire District?

- The department is efficient at running calls and we support each other.
- The department is always staffed and never works short.
- There is nothing we can't figure out when we need to.
- Our people and our firefighters are our strength.
- Stations 62 and 66 have good facilities including meeting rooms for the community. These are good for both the community and the station personnel. Stations 61, 63, and 65 do not and upgrades need to be made a priority.
- We have a new chief who is being honest about what we need which is good.
- The recent driver position as a tested promotion was a positive change.
- We provide outstanding service. Our deployment could use improvement though as the cross staffing at stations 65 and 66 is an issue.

What are some areas in which you think the fire dept could make improvements?

- We currently have no adequate training facilities. Each station finds an area in the community to get permission from the property owners and to train on the road.
- Some of our fire stations are in desperate shape. We need to be realistic and admit the issue and find a solution.
- Communication needs to improve. The communication preferences of the new younger personnel are different than those of the older personnel.
- We currently have no training for secession.
- Four firefighter staffing can be done via a staffing levy. It is a management and community commitment that should be explored.
- The cross staffing of stations 65 and 66 is a problem. It is a heavy burden and drag on both the firefighters and the community's protection.
- We sometimes need to be more professional and respect others opinions and perspectives.
- Our station conditions at 61, 63, and 65 are very poor and unacceptable for a modern fire department.
- The tower at station 61 is not a usable training tower due to safety issues. We need an adequate training facility. This need could be built into a bond along with new fire stations.
- We would like to see more goals for the future. We seem to never get ahead. We know we need facility upgrades but there is no plan with timelines.
- We currently have no logistics division and could use one.
- We need to improve the relationship with the tribe before its too late. Not being an autonomous fire district and having city councilors as fire board members is part of the fire district-tribe relationship problem.
- Having city councilors as fire board members, they sometimes advocate more for police & other city departments rather than for the fire district.
- We need more communications outside of the three chief's circle.
- We sometimes operate like its 1975. Nothing changes. We try to work on staffing and station upgrades but won't spend any funds and put it in reserves. We operate like it's a personal savings account and not a public fund.
- There were additional numerous comments regarding the poor condition of stations 61, 63, and 65 and the need for immediate station upgrades and/or replacement.

What do you see as Marysville Fire District's greatest risks?

- One of the largest safety risks in the department and the fire service in general is the mental and physical well-being of the firefighters. They need to feel supported and provided adequate facilities, equipment. and emotional support.
- Greatest risk is the transportation route of the railroad (oil, liquid gas, ect).
- Having old apparatus is a risk to both our personnel and to the community.

What do you see as the top critical issues face by the Marysville Fire District?

- Top three critical issues are rail & derailment potential, multi-family dwellings, and large development in the North portion of district with battery storage and special processes.
- We have a lot of rail and freeway traffic. There is a potential for a large spill.
- Top critical issues are culture, communication, leadership, staffing, and station conditions.
- The department has culture issues. Some feel the city rules the district.
- We are in jeopardy of losing the protection of the tribal area.
- #1 – Our stations need to be replaced (61, 65., 66). #2 – our apparatus are not acceptable, both fire apparatus and transport apparatus. #3 – our manpower is staffed at a minimum and there are a lot of mandates.
- We need to go to a district model of a true independent district separate from the city that has an “at large” election of elected board members.
- The continuing cross staffing of fire engine crews to BLS aid cars is a continuing problem. The times and call volume on aid cars has gone up with no help or support. The community is now relying on our fire department aid cars as their primary care medical.
- Top critical issues are the state of our apparatus, the safety concerns of the railroad, and continued cross staffing.
- No training center or facility to do adequate, safe, and consistent training for crews.
- Firefighters today need support, encouragement, and opportunities to be heard.
- Poor apparatus is #1, inadequate staffing is #2, poor fire stations is #3.

If you could change one thing in the Marysville Fire District, what would it be?

- We should explore a bond for stations and apparatus. It is the logical thing to do. The city council mindset and experience overseeing competing city departments sometimes stops this logical route from happening.
- We should set up various committees within the organization and figure out what works and what doesn't. The committees need to be tasked and follow through. We set up a uniform committee then nothing done, no follow through, and no consistency.
- The fire chief and the union representative don't meet regularly and need to in order to communicate more effectively.
- The work load is heavy and we don't have enough managers. We are trying to do too much to too few personnel.
- The district desperately needs a training facility of some type.
- The admin improvements at station 61 are going well. There is still plenty of room at station 61 from the old law enforcement areas. The upgrades should now continue by expanding the station 61 crew quarters and upgrading their side of the facility.
- We need more delegation of authority in operations. There needs to be more empowerment. Currently it is lacking.
- We should have a dedicated fire district model with dedicated directors looking out for the best interests of the fire protection of the community.
- Uncross staff 65 & 66 and have aid car responses using other aid cars and those fire engines used as first response engines for both fire and medical calls.
- Something needs to change on our mindset and our approach. We need to have open leadership that is forward thinking, and willing to spend resources for the improvement of the fire protection for the community. This close mindedness has hurt us in the past and will so in the future if not changed.
- Stations 65 and 66 should not transport as first due in their response areas. We need to look at an alternative model.

Fire Department Chief Officers & Administrative Staff**What strengths contribute to the successes of the Marysville Fire District?**

- Our personnel are dedicated and are the best.
- The new truck and two new engines on order will greatly help our capital apparatus assets.
- All of our personnel do their jobs very well. They are excellent at what they do, they are well trained, and well equipped.
- Our personnel adapt and overcome well.
- Our people are our strength. They are motivated and professional.

What are some areas in which you think the fire dept could make improvements?

- We have the reserves and the ability to replace our stations that are in poor shape, we just need a plan and move forward.
- We are in the process of upgrading our apparatus and need to do the same with some of our fire stations.
- At least three of our stations are outdated. They don't work for our personnel or the public any more.
- We are working to bring human resources into the 20th century with the entry level and onboarding processes.
- The department needs more diversity within the personnel.
- The cross staffing at two stations (65 & 66) is a morale issue, a safety issue, and is leaving gaps in coverage while on "clinic" calls.
- We need a better succession planning program. We don't do a good job of mentoring our personnel.
- We had a previous Fire Chief that was fiscally conservative. So conservative that we didn't replace stations when we needed to.
- Our facilities are in dire need. Stations 63, 65, and 61 are in poor shape and all three need replacement. Stations 66 and 62 are in good shape.
- There is a time lag in ordering apparatus and we need to stay ahead of the curve and order early.
- To adequately complete the inspection program, we need one more inspector.

What do you see as Marysville Fire District's greatest risks?

- Equipment and station assets having "too many miles" on them is a safety risk.
- Our community's greatest risks are homelessness, drug abuse, and no plan to address them, they only get worse.

What do you see as the top critical issues face by the Marysville Fire District?

- Station replacement for stations 65, 63, and 61 is a top critical issue.
- We need to complete the organizational chart reorganization.
- The cross staffing at stations 65 & 66 is a draw on the system. Many times during each day, those two communities have no protection with the crossed staffed aid cars being on long BLS transport calls.
- We need better apparatus as the aid cars are breaking down. It is critical that we keep up with our fleet needs.
- Being underprepared for large incident (earthquake), keeping up with adequate staffing levels, and keeping up department morale (there are lots of mandates).
- Preparing our employees for promotion. We need a career officer development program.
- Adequate staffing is 1st critical issue. Adequate facilities is 2nd critical issue as some stations are in terrible condition, the fleet building in terrible shape, and we have no training center. Adequate funding is 3rd critical issue as we are always playing catch up and never ahead.

If you could change one thing in the fire department, what would it be?

- Our station capital assets are deteriorating and need upgrading.
- I would like to see more support from the firefighting crews on entry level recruiting.
- No cross staffing at station 65 and 66. Those two companies need to be fully staffed engine companies.

Appendix C: Risk Classifications

The following are the risk classifications determined by incident type.

Fire

Low Risk

These incidents are considered low-risk and minor in scope and intensity. It requires a single fire apparatus and crew to manage fires involving passenger vehicles, fences, trash or dumpsters, downed power lines, residential or commercial alarm investigations, or an odor investigation.

Moderate Risk

These incidents are the first alarm response needed to manage a moderate fire risk incident. These incidents include smoke in a building, small outside building fires, commercial vehicle fires, a single-family residence, a lightning strike to a building, an automatic fire alarm at a high-risk occupancy, or a hazardous materials pipeline fire.

High Risk

These incidents are a second alarm response needed to manage a high-fire risk incident. These incidents include smoke in a high-life hazard property (school, skilled nursing, etc.), a single-family residence with injured or trapped victims, a multifamily residential building, or a moderate-sized commercial/industrial occupancy.

Maximum Risk

A third alarm response is needed to manage a maximum fire risk incident. These incidents include a hospital, assisted living facility, fire in an apartment building, high-rise building fire, a large commercial or industrial occupancy, hazardous materials railcar, or storage occupancy. Incident assignments will include additional command staff, recalling off-duty personnel, and mutual aid assistance for other critical tasking needs.

EMS Risks

Low Risk

A single EMS unit can manage a low-risk EMS incident involving an assessment of a patient with a critical injury or illness, no life-threatening medical call, lift assist, or standby.

Moderate Risk

A two-unit response is required to control or mitigate a moderate-risk EMS incident. It involves assessing and treating one or two patients with critical injuries or illnesses or a motor vehicle crash with 1–2 patients.

High Risk

A multiple-unit response is required to control or mitigate a high-risk EMS incident. It involves 3–8 patients with injuries ranging from minor to critical. Patient care will involve triage, BLS, ALS treatment, and a coordinated transport of patients.

Maximum Risk

A multiple-unit response is required to control or mitigate a maximum-risk EMS incident. It involves more than nine patients with injuries ranging from minor to critical. Patient care will involve triage, BLS, ALS treatment, and a coordinated transport of patients. If this is an active shooter incident, the response may require a casualty collection area unit to treat patients not in the hot zone.

Technical Rescue**Low Risk**

A single fire unit can manage a low-risk technical rescue incident involving minor rescues, such as a child locked in a vehicle, elevator entrapment, or minor mechanical entrapment.

Moderate Risk

A two-unit response is required to control or mitigate a moderate technical rescue risk incident. Support is not usually required from a technical rescue team. This type of incident involves a motor vehicle crash that requires patient extrication, removal of a patient entangled in machinery or other equipment, or a person trapped by downed power lines.

High Risk

A multiple-unit response is required to control or mitigate a high-risk technical rescue incident. This type of incident may involve full-scale technical rescue operations ranging from structural collapse to swift water rescues. It may involve multiple motor vehicles requiring extrication, commercial passenger carriers, or a building impacting a building. Support is usually needed to be required from a technical rescue team. In addition, this incident may require multiple alarms.

Maximum Risk

A multiple-unit response is required to control or mitigate a maximum-risk technical rescue incident. Support is required from a specialized technical rescue team and may have multiple operations locations. This type of incident will involve full-scale technical rescue operations such as victims endangered or trapped by structural collapse, swift water, or earth cave-ins.

This incident will require multiple alarms and may expand beyond the identified critical tasking. Recall of off-duty personnel or assistance from auto or mutual aid may occur during a disaster or when additional alarms and command staff are needed.

Hazardous Materials

Low Risk

A single fire unit can manage a low-risk hazardous materials incident involving carbon monoxide alarms and other unknown hazmat investigations without symptomatic victims, less than 20 gallons of fuel, a natural gas meter incident, downed power lines, equipment, or electrical problems, or attempted burning. Automatic alarms that may originate from a hazardous material.

Moderate Risk

A two-unit response is required to control or mitigate a moderate risk hazardous materials incident. Direct support is not usually required from a hazardous materials team. This type of incident involves a carbon monoxide alarm with symptomatic patients, a fuel spill of 20–55 gallons, or a gas or petroleum products pipeline break not threatening any exposures.

High Risk

A multiple-unit response with a hazmat team is required to control or mitigate a high-risk hazardous materials incident. For example, support is needed for a Level 2 hazmat incident that involves establishing operational zones (hot/warm/cold) and assigning multiple support divisions and groups. This response includes a release with 3-8 victims, gas leaks in a structure, hazmat alarm releases with victims, flammable gas or liquid pipeline breaks with exposures, fuel spills greater than 55 gallons, fuel spills in underground drainage or sewer systems, transportation or industrial chemical releases, or radiological incidents. Additional assistance may be required to expand operations past the identified critical tasks.

Maximum Risk

A multiple-unit response is required to control or mitigate a maximum-risk hazardous materials incident. Support is required from an on-duty hazmat team and their specialized equipment. This type of incident involves establishing operational zones (hot/warm/cold) and assigning multiple support divisions and groups. Examples include nine or more contaminated or exposed victims, a large storage tank failure, a hazmat railcar failure, or a weapon of mass destruction incident.

This incident will require multiple alarms and may expand beyond the identified critical tasking. Recall of off-duty personnel or assistance from auto or mutual aid may occur during a disaster or when additional alarms and command staff are needed.

Wildland Urban Interface

Low Risk

A single fire unit can manage a low-risk wildland firefighting incident involving a fire minor in scope, structures not threatened, and Red Flag conditions do not exist. These include low-risk wildland or grass fires, an outside smoke investigation, illegal or controlled burns, or small vegetation fires.

Moderate Risk

Multiple units are needed to manage a moderate-risk wildland firefighting incident involving a significant brush or brush pile fire at a chipping site, grass, or cultivated vegetation. Red Flag conditions do not exist, and structures may or may not be threatened.

High Risk

Multiple units or alarms are needed to manage a high-risk wildland firefighting incident. The level is associated with Red Flag warnings with structures that may or may not be threatened. This fire involves a significant wildfire in brush, grasses, and cultivated vegetation. And woodland areas. Additional alarm assignment, command staff, recall of off-duty personnel, and mutual aid assistance may require the operations to extend beyond the identified critical tasks.

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Appendix E: References

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⁵⁴ National Fire Protection Association. *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Departments*. (2020) [Appendix D].

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⁵⁶ www.census.gov/data.html.

⁵⁷ www.census.gov/data.html.

⁵⁸ US Bureau of Labor Statistics.

⁵⁹ <http://www.city-data.com/city/North-Ogden-Utah.html>.

⁶⁰ [Wildfirerisk.org](http://wildfirerisk.org).

⁶¹ [Riskfactor.com](http://riskfactor.com).

⁶² Marysville Plan (2015).

⁶³ Quality Improvement for the Fire and Emergency Services.

⁶⁴ Ibid.