Tumwater Fire Department

Tumwater, WA

Regional Fire & Emergency Services Study

August 2019

Emergency Services Consulting International

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ACKNOWLEDGMENTS

Emergency Services Consulting International (ESCI) would like to acknowledge that without the active assistance and support of the leaders of each participating agency, including the fire chiefs and the staffs of Tumwater Fire Department, Olympia Fire Derpartment, Lacey Fire District #3, East Olympia Fire District, McLane-Black Lake Fire District, and West Thurston Regional Fire Authority, this project could not have been completed. The city administrator for Tumwater was the lead client and actively engaged in the process throughout, communicating directly with the ESCI project manager and often with officials from the other participating agencies.

Elected and/or appointed officials for each jurisdiction made themselves available for interviews, providing valuable perspectives into the process. The fire chiefs made themselves and their staffs available to provide data, review drafts, and discuss context that was important to understand going forward. In short, this report reflects the efforts of many personnel from all six agencies who invested significant time and effort in the process. Key individuals are specifically acknowledged as follows:

City of Tumwater
John Doan, City Administrator

Tumwater Fire Department
Scott LaVielle, Fire Chief

Olympia Fire Department
Greg Wright, Fire Chief

Lacey Fire District #3
Steve Brooks, Fire Chief

McLane-Black Lake Fire District
Steve North, Fire Chief

West Thurston Regional Fire Authority
Russ Kaleiwahea, Fire Chief

Finally, ESCI would like to acknowledge and once again offer its condolences to the loved ones of John Ostergard, Battalion Chief (posthumously) of East Olympia Fire District, who died while serving his community. ESCI had the honor of meeting and interviewing Chief Ostergard two weeks before his passing and found him to be a man of integrity, honor, and dedication to his avocation. His passion for his fire district, the men and women he served with, and the fire service was obvious in the interview. He will be sorely missed.

EXECUTIVE SUMMARY

The City of Tumwater engaged Emergency Services Consulting International (ESCI) on behalf of the Tumwater Fire Department (TFD), Olympia Fire Department (OFD), Lacey Fire District 3 (LFD3), East Olympia Fire District (EOFD), West Thurston Regional Fire Authority (WTRFA), and McLane-Black Lake Fire District (MBLFD) to conduct a Regional Fire & Emergency Services Study. After the departments gathered the information and data requested by ESCI in preparation for the study, the project team arrived in Thurston County to conduct a site visit to validate information and interview stakeholders. The site visit by four ESCI team members occurred alternately between November 11 and December 4, 2018. Two additional ESCI consultants conducted work remotely (GIS work and Fiscal Analysis).

Purpose and Approach

The purpose of a Regional Fire & Emergency Services Study is to evaluate the agencies in relation to each other, the risk profile for each community, anticipated community growth (and therefore associated risk), and where there might be inefficient duplication of service (and therefore potential efficiencies through integration or partnership). In short, a Regional Fire & Emergency Services Study focuses on the potential for economies of scale, leveraging strengths, shoring up weaknesses, and generally identifying strong partnership opportunities. It identifies for the policy-makers of each agency which options and which partners are most advantageous as well.

The first phase of this study was to gather agency baseline data for each of the six agencies through an extensive data request, and conduct a lengthy site assessment to validate the data provided. The second phase was to conduct a baseline assessment of the current conditions and current service performance of each participating fire department or fire district (or regional fire authority). The purpose of this phase was to assess each agency's infrastructure, operations, and service delivery in comparison to each other and to industry standards and best practices where available, as well as to create a benchmark against which the options for integration can be measured. Areas reviewed for this phase included:

- Organization Overview
- Management Components
- Fiscal Analysis
- Capital Assets
- Service Delivery and Performance
- Training Program
- Fire Prevention & Risk Reduction
- Staffing & Personnel Management

The third phase was to assess the Future Opportunities for Cooperative Service between the various agencies, the Efficiencies & Risks available/posed by various approaches, and Finances and Governance Opportunities. It concludes with a Findings and Recommendations section based on all the previous analyses.

Summary of Analysis

Each fire department, fire district, or fire authority provides the highest quality service available within their individually constrained means. There are numerous approaches to service delivery, which include staffing configurations, deployment of resources, and response performance.

Staffing

All six agencies have career staff to provide at least a base level of response capability. Five of the six participating agencies also utilize volunteer personnel to varying degrees. Some are primarily career staffed with a volunteer support system (LFD_3 and TFD), while others rely much more heavily on volunteers to augment the career staffing (EOFD, WTRFA, and MBLFD). OFD is the lone agency that does not rely on volunteer personnel to augment its staffing. The following table reflects the relative staffing reliance upon volunteer personnel. It does not connote a qualitative assessment, but implies a level of financial commitment each community invests in its fire service. ESCI acknowledges that communities providing volunteer personnel are making a different type, but just as important of an investment in its fire service.

Operational Staff Positions	TFD	OFD	LFD_3	EOFD*	WTRFA	MBLFD
Career Personnel (Firefighter thru Battalion Chief)	42	85	100	15	31	12
Volunteer Firefighters (Including Officers & Resident FFs)	11	0	20	26	47	50
Total Operations Positions	**53**	**85**	**120**	**41**	**78**	**62**
% of Operational Volunteer Staff to Total Operational Staff	**20.75%**	**0.00%**	**16.67%**	**63.41%**	**60.26%**	**80.65%**

*EOFD is the only participating agency that uses part-time personnel (included in the career staffing numbers)

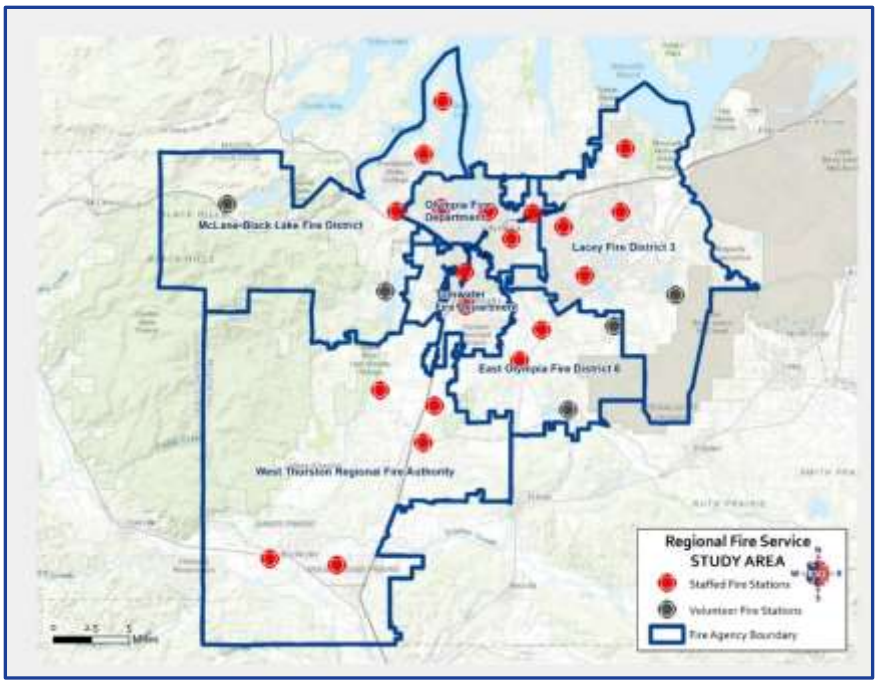
Opportunity for efficiency is often sought in the administrative and support positions in integrating fire agencies. It has been ESCI's experience that while there may be some, it is not a simple as eliminating five of the six fire chiefs, since a larger agency depends significantly on subordinate chief officers to focus on major portions of the department in support of the Fire Chief. The following table reflects the staffing levels by position in all six agencies.

Staff Positions	TFD	OFD	LFD3	EOFD	WTRFA	MBLFD
Fire Chief	1	1	1	1	1	1
Deputy Chiefs		1 Vacant	2			
Assistant Chiefs	1	2		1	1	1 Vacant
Administrative Battalion Chiefs		1				
Prevention & Public Education Positions[1]	1	4			1	
Training Officer (Capt. Or Lt.)	1	1	2			
EMS Officer	1	1	1			
Other: (Describe)		1 Project Captain				
Total Uniformed Administrative/Staff positions	**5**	**12**	**6**	**2**	**3**	**2**
% of Admin staff to total FD personnel	**10%**	**19%**	**10%**	**9%**	**6%**	**6%**

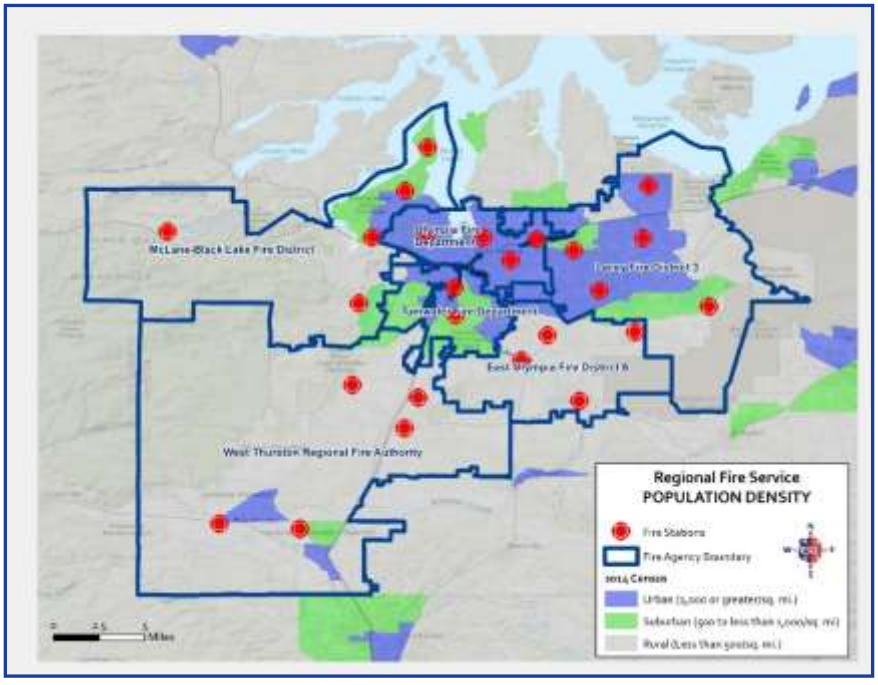
Resource Deployment

Resource deployment for each agency essentially reflects three elements: the response time standard the agency is trying to achieve; the areas with the highest level of risk the fire agency is trying to protect; and the areas of highest probable demand for services, which is predominantly driven by population density. The following map depicts the location of response stations and the population density for the region.

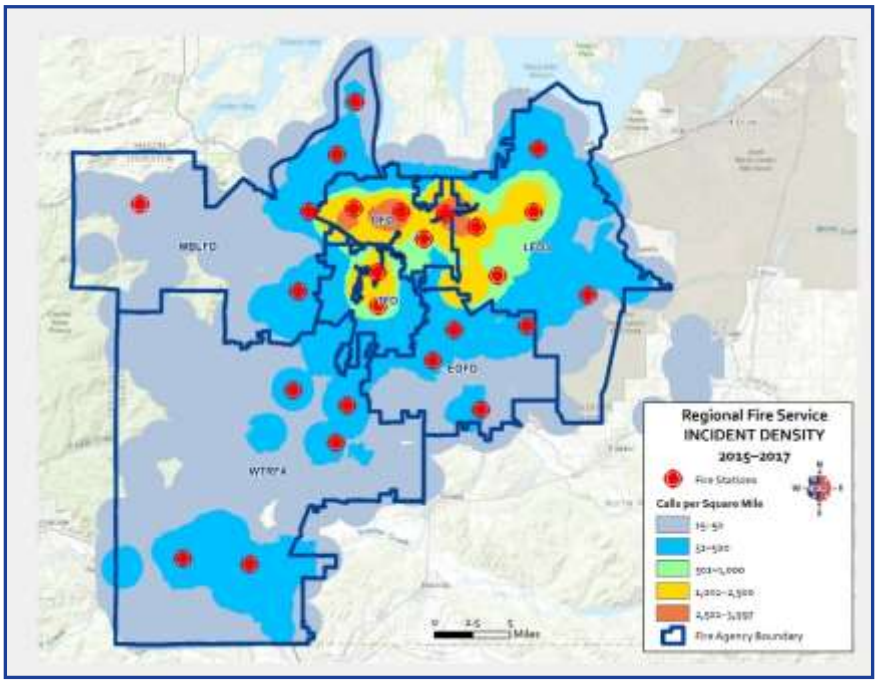
The spacing of fire stations in MBLFD and WTRFA reflects large swaths of their service areas with little or no demand (likely little population and/or geographically land-locked). The stations they do have are somewhat clustered where call volume is expected to be higher for their jurisdictions. This phenomenon is less pronounced in EOFD and even less so in LFD3. The following map reflects the response station spacing, and whether the station is career staffed or volunteer staffed (which typically reflect response time differences).



OFD, TFD, and the western half of LFD3 have their fire stations clustered more tightly in the predominantly urban areas. This reflects a more aggressive deployment strategy in an effort to meet the more frequent needs of the urban core and meet a more aggressive response time. Note that the eastern half of LFD3 is spaced further apart, designed to handle lower population density, which equates to lower response demand in these areas. It likely also reflects geographical barriers or lacking a transportation grid that facilitates a faster response. The following map overlays population density throughout the study area.



The following map depicts the location of the response stations for each agency and the number of calls for service per square mile for the period 2015-2017, according to the Computer-Aided Dispatch data from TCOMM. Note how closely the demand for service in the following map follows the population density in the previous map. Also note that there is a small spill-over of higher demand in the northern portion of EOFD and the far eastern edge of MBLFD. This likely reflects some population growth and expansion from the more urban core of the study area, which does not always respect jurisdictional boundaries.

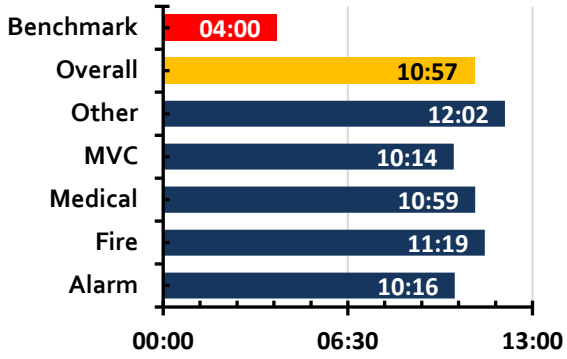


These differences can be indicators of partnership opportunities where organizations have similar deployment strategies and challenges. To state it inelegantly, the urban core obtains the water for firefighting once they get there (fire hydrants). Their more rural colleagues tend to bring their water with them (water tenders and pumper-tenders). The strategies and staffing levels needed to address the difference between the two approaches are widely disparate.

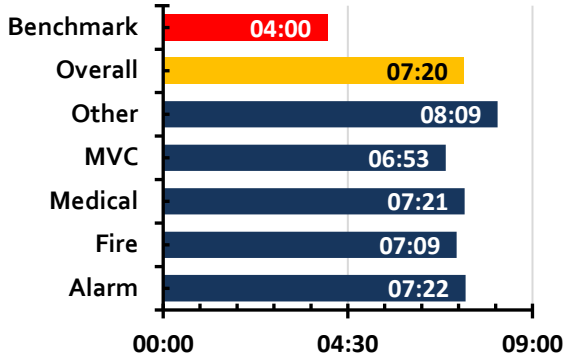
Service Delivery

In the study area, there are two relevant national standards related to service delivery (specifically, response performance): NFPA 1710, which is applicable to organizations that are, "… substantially all career fire departments," and NFPA 1720, which applies to, "… volunteer and combination fire departments." Both of these are consensus standards, and are not mandated or codified. ESCI believes that NFPA 1710 currently applies to Olympia Fire Department, Lacey Fire District 3, and Tumwater Fire Department, while NFPA 1720 is applicable to East Olympia Fire District, West Thurston Fire Authority, and McLane Black Lake Fire District. Indeed, these agencies also cite these applicable standards to guide their response performance goals and efforts. NFPA 1710 calls for a more aggressive staffing level and a faster response time than does NFPA 1720, which accounts for the challenge of relying on volunteer personnel for initial response (if applicable), and to augment staffing levels for career personnel who provide initial response. These two standards are effective factors when considering integration partners. The following tables illustrate the difference in travel time performance.

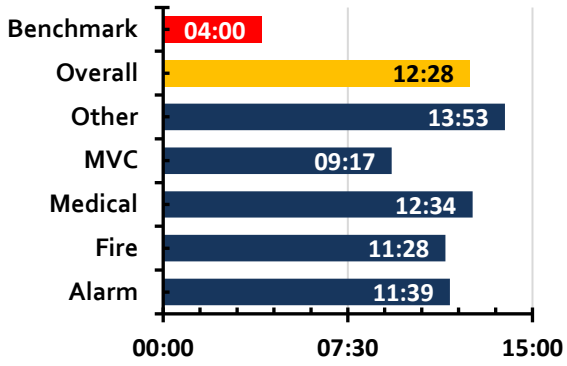
WTRFA Travel Time Performance (NFPA 1720)



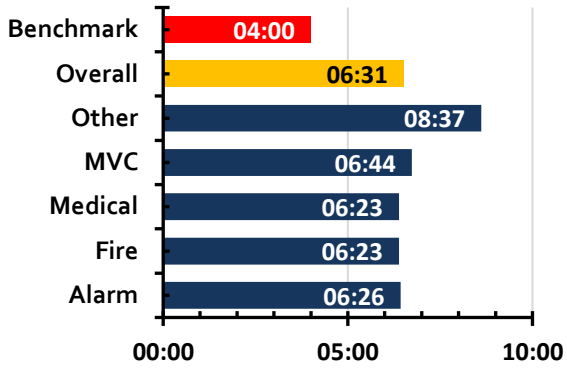
TFD Travel Time Performance (NFPA 1710)



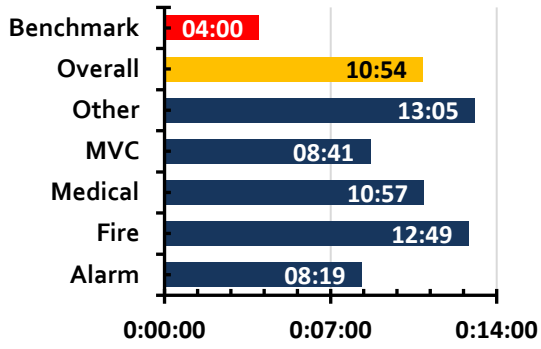
EOFD Travel Time Performance (NFPA 1720)



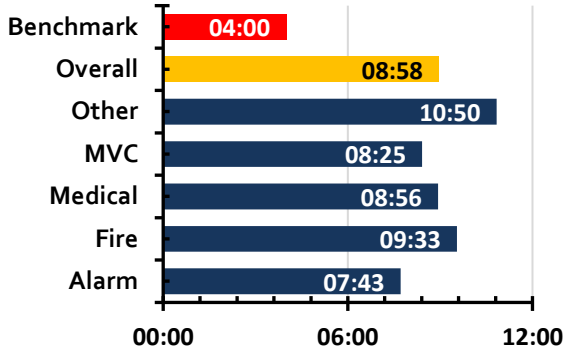
OFD Travel Time Performance (NFPA 1710)



MBLFD Travel Time Performance (NFPA 1720)



LFD3 Travel Time Performance (NFPA 1710)



Findings

All of the participating agencies work well together and cooperate when mutually beneficial. Numerous strategic partnerships already exist between the agencies. These include:

- OFD—Vehicle Repair and Maintenance Services (serving all agencies)
- OFD—Training Services (serving TFD and LFD3)
- LFD3—Vehicle Repair Facility (leased to OFD)
- West Thurston Regional Fire Consortium (WTRFA, MBLFD, and EOFD)
- Special Operations Rescue Team (all agencies)
- Medic One (all agencies)
- Mutual Aid (all agencies)

Regardless of the path(s) chosen by the agencies as it pertains to this report, the participants should continue these and other regional efforts for cost effectiveness, efficiency, and for the benefit of their respective citizens. Other potential regional efforts could include:

- Regional Fire Investigation Team (FIT)
- Regional Recruit Academy
- Regional Volunteer Recruitment & Retention Program
- Regional Training Division
- Regional Dedicated Training Relief Engine Company
- Regional Peak Demand Response Unit (Dropped Boundary)
- Regional Logistics Division
  - Joint Purchasing & Supply Standardization
  - Warehousing of Replenishable Supplies
  - Just-in-Time Inventory Management & Delivery
- Regional Command Officer Response (Dropped Boundary)

Recommendations

Five options were considered and analyzed for potential integration strategies. These include:

- Strategy A (Status Quo)
- Strategy B (Contract for Services)
- Strategy C (Annexation)
- Strategy D (Regional Fire Authority)
- Strategy E (Municipal Fire District)

Discussion for each of the strategies evaluated is included in this report. ESCI recommends two partnership configurations as follows:

1. TFD, OFD, LFD3, and EOFD should pursue Strategy D (RFA), starting with establishing an RFA Planning Committee and following the steps included in this report and within statute.
2. WTRFA and MBLFD should consider pursuing integration, but only after financial circumstances make it beneficial and balanced to do so. Joint planning sessions between elected officials to create a glide path for each agency to align finances over time will facilitate integration.

Detailed rationale is provided within this report for these two strategies.

CURRENT CONDITIONS

This section of the report provides an overview of the current conditions within Tumwater Fire Department (TFD), Olympia Fire Department (OFD), Lacey Fire District 3 (LFD3), East Olympia Fire District (EOFD), West Thurston Regional Fire Authority (WTRFA), and McLane-Black Lake Fire District (MBLFD). The current conditions include a summary of each agency's organization; management structure; fiscal condition; staffing and personnel; service delivery and performance; support programs (training, fire prevention, and emergency communications); and finally, capital facilities and equipment.

Organizational Overview

Data provided by the participating fire agencies was combined with information collected in the course of ESCI's field work and used to develop an overview of the organizations. The purpose of the following organizational overview is two-fold. First, it verifies the accuracy of the baseline information and ESCI's understanding of each agency's composition—the foundation from which the feasibility analysis is developed. Second, the overview serves as a reference for the reader who may not be familiar with the details of each agency's operations.

Thurston County Medic One is not a party to this study, but is a key stakeholder in that they provide advanced life support response and transportation services to the region and all of the agencies participating in this study. Some of the participating agencies in this study are contractors to Thurston County Medic One, providing paramedic firefighters to Medic One transport units. These units may be deployed within an employer's jurisdiction or elsewhere in the system, but are mostly or completely funded by Thurston County Medic One's EMS levy revenue.

These paramedics are employed by some of the fire departments and fire districts in this study (namely, Lacey Fire District #3, Tumwater, and Olympia) and are reflected in the staffing counts and the budgets for those agencies. They were not factored into the response times, effective response force or other response time elements included in this study unless they were first due units in the first due areas of their employer jurisdiction. From a budgetary standpoint, they are generally revenue – expense neutral (Medic One payments equal the costs of supplies, salaries and benefits) for each agency. Agencies receive between 80% and 100% of the total cost, depending on how they are staffed. Tumwater's Medic 14, which is deployed fully outside of Tumwater's service area in Rochester, is also funded at 100%. Please see the "Thurston County Medic One" section under the Current Financial Analysis for more detail.

Tumwater Fire Department

TFD is a municipal fire department formed in 1893. The department's jurisdiction encompasses approximately 18 square miles in the city limits and is home to an estimated 23,830 people. The service area is predominantly characterized as suburban. The City of Tumwater is a non-charter code city with a Mayor-Council form of government (RCW 35A.12). The seven-member City Council has legislative and policy-making powers, while the administrative authority, including veto power, is vested in the Mayor. The City Administrator is appointed by the Mayor and performs tasks within the statutory authority of the Mayor. The City Administrator oversees the day-to-day operation of the City, including budget implementation and staff supervision.

The Fire Chief reports to the City Administrator. The Fire Chief administers the daily operations of the fire department. The Fire Chief's authority is outlined in the Tumwater Municipal Code (TMC) 2.10.050 and in an employment agreement, while subordinate personnel are hired pursuant to the civil service testing and promotional regulations. TFD responds to requests for assistance from the public from two fire stations, both career-staffed and augmented by a small core of volunteers. Additional information about the facilities and staffing are contained in this report. In any organization there is a path along which information and direction flows. This chain of command is the recognized conduit of communication for organizational business and authority. As is the case with most fire departments, TFD uses a hierarchy to ensure that necessary information transmission is orderly and timely. With a span of control of one-to-five, the ratio of supervisors to subordinates is within industry norms.

Olympia Fire Department

Olympia Fire Department has evidence of volunteer fire companies in Olympia as early as 1859, but official records indicate the department was formed in 1882. The OFD responds to requests for assistance from the public from four fire stations, all of which are career-staffed. OFD is the only participating agency with no volunteer personnel. Olympia covers approximately 20 square miles with approximately 52,000 constituents. The city is urban in its make-up. Additional information about the facilities and staffing are contained in this report. As with the other participating agencies, OFD has a chain of command reflected in its organization chart. With a span of control of one-to-four, the ratio of supervisors to subordinates is well situated within industry norms.

The City is a Council-Manager form of government, with seven City Council members elected at large. The Mayor is elected as one of the seven Council members but is specifically elected as the Mayor by the citizens and presides over Council meetings. The Council adopts the City budget, sets City policy, and supervises the City Manager, who in turn supervises departments heads, including the Fire Chief.

As with fire districts and municipalities, the Fire Chief administers the organization by managing the budget, enforcing policy, and supervising subordinate personnel. The City Council adopts the budget, sets policy, and supervises the City Manager. The City Manager supervises the Fire Chief and all other department heads of the City.

Lacey Fire District 3

LFD3 was formed in 1949 as a special purpose district as established by authority of Title 52 of the Revised Code of Washington (RCW). The district originally mostly surrounded the City of Lacey and provided contracted services for fire protection, but in 2010, the district annexed the City of Lacey into its service area. The district serves approximately 98,000 citizens in a 70 square mile area. It is led by a five-member board of fire commissioners who adopt the budget, set district policy, and supervise the Fire Chief. The Fire Chief operates within the budget approved by the board, manages the expenditures, enforces the policies of the district, and supervises subordinate personnel.

The district provides emergency services to its constituents from five fire stations, four with full-time career staffing supplemented by a volunteer force and one resident volunteer station. The district is the largest of the participating agencies in this study by population served and with number of employees. Additional information and discussion about the facilities and staffing are contained in this report. As with the other agencies participating in this study, the information and direction provided in the organization follows an organizational chart which reflects the chain of command. As is the case with most fire departments, LFD3 uses a hierarchy that reflects this communication and decision-making flow. The highest span of control is one-to-six, which is on the high side of industry norms.

East Olympia Fire District

EOFD was formed first as a volunteer fire department in 1951, by the East Olympia community. On June 1, 1953, the citizens passed Resolution 1970, forming Thurston County Fire Protection District #6, also referred to as East Olympia Fire Department. The current service area is 30 square miles and is home to an estimated 11,750 people. The service area is predominantly characterized as rural. The district is governed by Title 52 RCW, Fire Protection Districts. The district is governed by three elected fire commissioners and the daily operations are managed by a full-time Fire Chief.

The district responds to requests for assistance from the public from four fire stations, two of which are staffed. One of the staffed stations has career and volunteer personnel assigned 24-hours per day, seven days per week. According to EOFD's fire chief, the other staffed station has assigned personnel approximately 90% of the time with a combination of career, part-time, and volunteers. Station 61 responds to all types of incidents with a priority to maintain EMS response at a minimum. The remaining stations do not have personnel assigned to them and essentially house fire apparatus. With a span of control is one-to-seven, the ratio of supervisors to subordinates is at the outer limit of industry norms.

West Thurston Regional Fire Authority

WTRFA was formed in 2011 as a regional fire authority, integrating two separate fire districts, Thurston County Fire District #1 (formed in 1947) and Thurston County Fire District #11 (formed in 1957). Regional fire authorities are authorized by RCW 52.26; however, the two original fire districts continue to operate legally as fire districts, levying taxes and providing elected officials to the Governing Board of the RFA. The RFA is made up of six Governing Board members, which are the three Fire Commissioners from the two fire districts. An additional benefit of keeping the two fire districts intact is that they can set a Maintenance & Operations (M&O) levy for multiple years, whereas an RFA cannot. The current service area is approximately 158 square miles and is home to an estimated 22,980 people. The service area is rural in nature.

As with fire districts and municipalities, the Fire Chief administers the organization by managing the budget, enforcing policy, and supervising subordinate personnel. The governing board adopts the budget, sets policy, and supervises the Fire Chief.

WTRFA serves its citizens from six fire stations. One of the stations, Michigan Hill, is an old three bay station that stores apparatus and equipment. No personnel are assigned there. Some of the stations are staffed with career personnel and others with volunteers. Additional information and discussion about the facilities and staffing are contained in this report. As with most fire departments, the information and direction provided in the organization follows an organizational chart which reflects the chain of command. The highest span of control in the department is one-to-six, which is on the high side of the industry norms.

McLane-Black Lake Fire District

MBLFD was formed in 1950. Two separate fire districts merged recently, combining McLane Fire District and Black Lake Fire District. A citizen approved ballot measure in August 2017 authorized a five-member Board. Like the other fire districts, McLane-Black Lake is a special purpose district as established by authority of Title 52 of the Revised Code of Washington (RCW). Also similar to the other fire districts participating in this study, the Fire Commissioners adopt the budget, set policy, and supervise the Fire Chief. The Fire Chief manages the budget, enforces the policies, and supervises subordinate personnel.

The district provides emergency services to its constituents from five stations. Two stations are career staffed and the others are staffed by the 52 volunteer personnel and live-in station Resident Firefighters. The district has a unique program that partners with the South Puget Sound Community College to administer the Fire and Emergency Services Technology (FEST) program. The college has had a fire science program since 1991, with students required to obtain fire-related experience, which McLane-Black Lake Fire District has utilized as part of its regular staffing for emergency responses. Unfortunately, this program has been cut, so the fire district has the difficult task of addressing the loss of FEST firefighters and address staffing issues with a smaller base from which to work.

The participating agencies to this study vary greatly in their internal structure, their statutory authority, their community make-up, and their approach to service delivery. Olympia Fire Department is the only fully career-staffed fire department among the study agencies, with three-person engine crews. On the other end of the spectrum, East Olympia Fire District is heavily reliant upon volunteer and part-time firefighters for their emergency responses. Demand for emergency responses also vary significantly, as reflected in the following figure.

Figure 1: Response Data, 2017

Type/Dept.	TFD	OFD	LFD3	EOFD	WTRFA	MBLFD
EMS/Rescue	3,310	8,262	10,645	875	2,247	1,157
Good Intent	325	687	950	219	327	477
Service	279	189	1,233	59	134	54
False	227	554	567	48	127	126
Fire	100	272	258	85	137	83
Other	84	1610	207	46	59	70
Totals:	**4,325**	**11,574**	**13,860**	**1,332**	**3,031**	**1,967**

The total number of responses for all types is an accurate reflection of the demand for services each agency faced in 2017. This is discussed in greater detail in the *Service Delivery & Performance* section of this report.

Management Components

Effective fire department management is a common challenge for fire service leaders. Today's fire department must address management complexities that include an effective organizational structure, adequacy of response, maintenance of competencies, a qualified workforce, and financial sustainability for the future.

To be effective, the management of a fire department needs to be based on several components. In the following report section, ESCI examines the client agencies' current efforts to manage their organizations and identify measures and best practices recommended for the future.

Strategic Planning & Regulatory Documents

There are three core elements to any fire department (or organization for that matter); a mission statement, a vision, and organizational values (or guiding principles). A *mission statement* expresses the core reason for an agency's existence. A *vision statement* expresses where the organization wants to go in the near-term future. The *values* express how the members of the organization are going to treat each other on the journey to achieve the vision. These three core elements are all contained in a strategic plan. All six agencies have a strategic plan, which is typically a five-year workplan for the organization with goals and objectives. All six agencies have contemporary strategic plans in place; however, EOFD's plan expires this year.

Regulatory documents are also in place for each of the six participating agencies of this study. Rules, regulations, standard operating procedures or guidelines, and department policies are all in place. Some are in various states of review and updating. OFD and TFD have contracted with Lexipol, a subscription service for these regulatory documents. The company customizes these documents to fit the agency and reviews them annually, updating them as necessary to reflect contemporary case law. The service provided is considered an industry best practice.

Critical Issues

The Fire Chiefs from each of the six participating agencies were asked to identify the top three most critical issues facing their departments from their perspectives. All the participating agencies except Olympia Fire Department identified some form of funding concern as their top one or two critical issues. Olympia's concern regarding staffing for growing call volume can be construed to be funding-related as well. The following figure reflects feedback concerning critical issues.

Figure 2: Critical Issues in Priority Order

Priority	TFD	OFD	LFD3
1	Service demand—continual response increase.	Homelessness (number one City issue).	Rapid growth in population and service demand.
2	Funding sustainability for future.	Staffing for growing call volume.	Funding limitations based on state statutes.
3	Implementing a diverse workforce.	Recent turnover of senior staff.	Sustainable funding for tribal service delivery.

Priority	EOFD	WTRFA	MBLFD
1	Potential for lost revenue due to municipal annexation.	Insufficient funding to sustain response objectives (legislative solutions).	Loss of FEST program
2	Consistent staffing to minimize response times—geographical barriers.	Sustaining voter support for Maintenance & Operations Levy.	Funding for career personnel
3	Retention of volunteers—rapid success in career advancement.	Lack of EMS funding versus volume.	Volunteer recruitment and retention.

Communication

Internal communication occurs frequently enough for each of the agencies, influenced by the size and complexity of the agency. Of course, content of the communication and whether the communication is one-way or two-way is not able to be determined by ESCI. Communication is frequently the most identified area cited as needing improvement within organizations. Anecdotal evidence gained by interviews indicate that communication is mostly effective in each of the organizations, with some expressing a desire for timelier or more forthcoming communication by the Fire Chief. Surprisingly, the line personnel in the larger agencies (OFD and LFD3) appear to have trustworthy, frequent two-way communication, whereas the smaller agencies (EOFD and WTRFA) tend to express a level of dissatisfaction with the amount of communication or a sense that not all of the pertinent information is shared.

Externally, OFD and TFD communicate with the community more passively than the other agencies, relying more upon the broader City mechanisms to convey fire service information pertinent to the community. This is a common trait for municipal fire departments. Often, broader City interests trump fire department communication needs when information is shared with the community through flyers, forums, or other communication efforts. Fire districts and fire authorities tend to communicate much more often with their constituents than their municipal counterparts as it relates to fire services. This is primarily due to the singular focus of a Fire District or Fire Authority, and the heavy reliance upon voters to approve funding measures that are more often relied upon than a municipal fire department.

Capital Expenditure Plans

Capital expenditure planning often determines whether an agency must bond certain improvements or have set aside adequate funding to absorb the expense from a reserve fund. Often, the existence of capital expenditure planning reflects the philosophy of the agency, typically falling into one of two schools of thought.

- Regular tax revenues should pay for ongoing expenses, whereas capital expenses should be funded through a separate initiative.
- Regular tax revenues should pay for anticipatable expenditures and ongoing expenses, and most capital expenses can be planned for and funds set aside in reserve for that purpose.

All six agencies have a plan to cover capital expenses, whether by bond issue, voter approved levy, or by accumulation of reserves set-aside. Each of the agencies has a capital expense plan, addressing such things as major facilities repair or remodel, apparatus replacement, and high value equipment, such as breathing apparatus, defibrillators, and portable radios. Regardless of the funding mechanism, all six agencies have a plan, review and update the plan annually, and stay ahead of the anticipated expenditures. Additional information regarding this type of expenditure can be found in the *Current Financial Analysis* and the *Capital Assets* portions of this report.

Capital Facilities

Three basic resources are required to successfully carry out the mission of a fire department—trained personnel, firefighting equipment, and fire stations. No matter how competent or numerous the firefighters, if appropriate capital equipment is not available for use by responders, it is impossible for a fire department to deliver services effectively. Among the most essential capital assets for use in emergency operations are fire stations and other facilities (e.g., training centers, apparatus maintenance facilities, etc.). Of course, each fire department's financing ability will determine the level of capital facilities it can acquire and make available for use by emergency personnel. This section of the report is an assessment of each of the capital facilities throughout the study area.

Fire Stations & Facilities

Fire stations play an integral role in the delivery of emergency services for a number of reasons. A station's location will dictate, to a large degree, 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 illness or injury. Fire stations also need to be designed to adequately house sufficient personnel, equipment, and apparatus; as well as meet other needs of the organization and its personnel. It is important to research needs based on service-demand, response times, types of emergencies, and projected growth prior to making a station placement commitment.

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

- The housing and cleaning of apparatus and equipment.
- Residential living space for on-duty personnel (male and female).
- Administrative and management offices with computer stations and office facilities for personnel.
- Training, classroom, and library areas.
- Firefighter fitness area.
- Public meeting space.

ESCI toured each of the stations operated by Tumwater Fire Department, Olympia Fire Department, Lacey Fire District 3, East Olympia Fire District, West Thurston Regional Fire Authority, and McLane-Black Lake Fire District. The following section and figures list and describe the results of the cursory observations made by ESCI. A more detailed inventory of each station is included in Appendix C.

The age and condition of the fire stations throughout the study area tend to vary widely—as do a number of other features (e.g., seismic protection; sprinklers and smoke detection; security; and mixed gender facilities).

The following figure lists the number of functional fire stations and their respective capacities by each of the fire departments participating in this study. The figure does not include other facilities such as training centers or maintenance facilities.

Figure 3: Summary of Fire Station Capacities in the Study Area

Fire Department	Fully Staffed Fire Stations	Maximum Staffing Capability	Maximum Apparatus Capacity (Bays)	Storage Only or Unstaffed Stations[A]
TFD	2	14	9	0
OFD	4	29	13–15	0
LFD3	4	37–39	18	1
EOFD	2	14	19	2
WTRFA	4	34	16	2
MBLFD	2	35–37	18	4
Totals:	**18**	**163–167**	**91–93**	**10**

[A]Refers to stations used for storage only, or stations staffed with resident firefighters.

The previous figure shows that, combined, there are a total of 18 currently staffed fire stations distributed throughout the study area, capable of housing approximately 163–167 personnel, and about 91–93 apparatus (depending on size and type). Another 10 stations are unstaffed, staffed with part-time residents, or used for storage and housing of reserve apparatus.

For those stations that may not be utilized for deployment of personnel and apparatus in the future, consideration should be given for possible use as reserve apparatus storage, training, and office facilities for administrative and other support staff.

Apparatus Maintenance Facilities

Several of the fire departments in this study maintain their own apparatus and equipment maintenance facilities. The East Olympia Fire Department maintains a storage and maintenance facility adjacent to Station 61, as shown in the following figure.

Figure 4: East Olympia Storage & Maintenance Facility (adjacent to Station 61)

Lacey Fire District 3 owns an apparatus maintenance facility adjacent to its Station 34, which OFD leases and does fire equipment maintenance for a bulk of the Thurston County Fire agencies and Thurston County Medic One.

Figure 5: Lacey Fire District 3 Shared Maintenance Facility

Apparatus & Vehicle Inventories

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

Apparatus must be sufficiently reliable to transport firefighters and equipment rapidly and safely to an incident scene. Such vehicles must be properly equipped and function appropriately, so as to ensure that the delivery of emergency services is not compromised. For this reason, they are very expensive and offer little flexibility in use and reassignment to other missions.

Modern medic units are complex and sophisticated vehicles which not only must be sufficiently maintained to ensure firefighters and EMS providers arrive in a timely manner, but also must be in a condition to ensure patients are transported safely to the hospital or clinical facility.

Tumwater Apparatus & Vehicles

The next two figures list the apparatus and vehicle assignments at each of the Tumwater fire stations. The following figure lists those units assigned to Tumwater Station T-1.

Figure 6: Apparatus & Vehicle Assignments—Tumwater Station T-1

Unit Designation	Unit Type	Year	Condition	Minimum Staffing	Pump Capacity	Tank Capacity
Engine T-1	1	2012	Good	3	1500 gpm	640 gal.
Engine T-13	1	2000	Fair	Reserve	1500 gpm	750 gal.
Medic-5	Type III	2018	Excellent	2	N/A	N/A
Medic-8	Type III	2014	Good	Reserve	N/A	N/A
Battalion T-1	Command	2014	Excellent	1	N/A	N/A
UV Training T-1	Staff	2014	Excellent	1	N/A	N/A
Chief T-1	Staff	2018	Excellent	1	N/A	N/A
Chief T-2	Staff	2014	Excellent	1	N/A	N/A
MSO T-1	Staff	2011	Excellent	1	N/A	N/A
Inspector T-1	Staff	2000	Fair	1	N/A	N/A
Aid Unit T-1	Aid	1988	Fair	Events	N/A	N/A

The next figure lists those units assigned to Station T-2.

Figure 7: Apparatus & Vehicle Assignments—Tumwater Station T-2

Unit Designation	Unit Type	Year	Condition	Minimum Staffing	Pump Capacity	Tank Capacity
Engine T-2	1	2018	Excellent	3	1500 gpm	500 gal.
Engine T-14	1	2000	Fair	Reserve	1500 gpm	750 gal.
Engine 26	N/A	1947	Fair	Events	N/A	N/A

Through a contractual arrangement with Thurston County Medic One, the Tumwater Fire Department also staffs a medic unit, with another in reserve, at West Thurston RFA Station 1-1 (will be shown in the West Thurston apparatus inventory).

Olympia Apparatus & Vehicles

The next four figures list the apparatus and vehicle assignments at each of the Olympia Fire Department fire stations. The following figure lists those units assigned to Station 1.

Figure 8: Apparatus & Vehicle Assignments—Olympia Station 1

Unit Designation	Unit Type	Year	Condition	Minimum Staffing	Pump Capacity	Tank Capacity
Engine 1	Type 1	2016	Good	3	1500 gpm	500 gal.
Truck 1	Aerial (100')	2010	Good	3	N/A	N/A
Aid 1	Aid unit	2003	Fair	2	N/A	N/A
Engine 371	Type 1	1998	Good	Reserve	1500 gpm	500 gal.
Truck 4	Aerial (105')	1995	Good	CS	N/A	N/A
Battalion 1	Command	2018	New	1	N/A	N/A
Battalion 2	Command	2014	Good	Reserve	N/A	N/A
Rescue 3215	Rescue	2002	Fair	0	N/A	N/A
Rescue Boat 308	Boat/trailer	1992	Fair	0	N/A	N/A
Training BC	Command	2016	Good	1	N/A	N/A
MSO 331	Command	2018	New	1	N/A	N/A

The following figure lists those units assigned to Station 2.

Figure 9: Apparatus & Vehicle Assignments—Olympia Station 2

Unit Designation	Unit Type	Year	Condition	Minimum Staffing	Pump Capacity	Tank Capacity
Engine 2	Type 1	2010	Good	3	1500 gpm	500 gal.
Engine 372	Type 1	1998	Good	Reserve	1500 gpm	500 gal.
Medic 10	ALS Medic	2018	New	2	N/A	N/A
Medic 368	ALS Medic	2011	Fair	Reserve	N/A	N/A

The following figure lists those units assigned to Station 3.

Figure 10: Apparatus & Vehicle Assignments—Olympia Station 3

Unit Designation	Unit Type	Year	Condition	Minimum Staffing	Pump Capacity	Tank Capacity
Engine 3	Type 1	2008	Good	3	1500 gpm	500 gal.
Engine 370	Type 1	1995	Good	Reserve	1500 gpm	500 gal.

The following figure lists those units assigned to Station 4.

Figure 11: Apparatus & Vehicle Assignments—Olympia Station 4

Unit Designation	Unit Type	Year	Condition	Minimum Staffing	Pump Capacity	Tank Capacity
Engine 4	Type 1	2010	Good	3	1500 gpm	500 gal.
Engine 306	Type 1	1990	Fair	Reserve	1500 gpm	500 gal.
Medic 4	ALS Medic	2018	New	2	N/A	N/A
Medic 367	ALS Medic	2011	Fair	Reserve	N/A	N/A
Command Van 393	Support	2000	Fair	N/A	N/A	N/A

Then next figure lists various command and staff vehicles assigned to various individuals and located at either the Olympia Fire Department's Training Center or Fire Station 1.

Figure 12: OFD Command & Staff Vehicles (Station 1 & Training Center)

Unit Designation	Unit Type	Year	Condition
Training Lieutenant	Support	1999	Fair
Fire Marshal	Command	2016	Good
Operations Chief	Command	2016	Good
Fire Chief	Command	2018	New
Assistant Fire Marshal	Command	2018	New
Inspector (387)	Inspector	2004	Fair
Inspector (326)	Inspector	2018	New
Inspector (327)	Inspector	2018	New
Staff Car	Pool Car	2005	Good

In addition to the vehicles listed in the preceding figure, the Olympia Fire Department maintains two new service trucks and three staff cars at their apparatus maintenance facility.

Lacey Apparatus & Vehicles

The next five figures list the apparatus and vehicle assignments at each of the Lacey Fire District 3 fire stations. The following figure lists those units assigned to Station 31.

Figure 13: Apparatus & Vehicle Assignments—Lacey Station 31

Unit Designation	Unit Type	Year	Condition	Minimum Staffing	Pump Capacity	Tank Capacity
Engine 31	Type 1	2016	Good	3	1500 gpm	500 gal.
Truck 31	Aerial (105')	2006	Good	3	N/A	N/A
Tender 31	Tender	2013	Excellent	2 (CS)	750 gpm	2500 gal.
Medic 3	Ambulance	2017	Excellent	2	N/A	N/A
Aid 31	Aid	2009	Good	Reserve	N/A	N/A
Battalion 31	Command	2015	Good	1	N/A	N/A
Engine 312	Type 1	2001	Average	Reserve	1500 gpm	500 gal.
Incident Support 31	Support	1994	Average	1 (on call)	N/A	N/A
Utility 31	Utility/Tow	2015	Good	2–3 (CS)	N/A	N/A
Boat & Watercraft	Varies	Varies	Good	2–3 (CS)	N/A	N/A
Support 31	Tech Rescue	2005	Average	2–3 (CS)	N/A	N/A
Battalion 39	Command	2007	Good	Reserve	N/A	N/A
Medic 12	Ambulance	2013	Good	Reserve	N/A	N/A

The following figure lists those units assigned to Station 32.

Figure 14: Apparatus & Vehicle Assignments—Lacey Station 32

Unit Designation	Unit Type	Year	Condition	Minimum Staffing	Pump Capacity	Tank Capacity
Engine 32	Type 1	2004	Good	2	1250 gpm	1000 gal.
	Type 1	1994	Average	Reserve	1500 gpm	500 gal.

The following figure lists those units assigned to Station 33.

Figure 15: Apparatus & Vehicle Assignments—Lacey Station 33

Unit Designation	Unit Type	Year	Condition	Minimum Staffing	Pump Capacity	Tank Capacity
Engine 33	Type 1	2012	Good	3	1500 gpm	500 gal.
Aid 33	BLS Transport	2018	New	2[A]	N/A	N/A

[A]Staffed as a peak-demand unit

The following figure lists those units assigned to Station 34.

Figure 16: Apparatus & Vehicle Assignments—Lacey Station 34

Unit Designation	Unit Type	Year	Condition	Minimum Staffing	Pump Capacity	Tank Capacity
Engine 34	1	2012	Good	3	1500 gpm	500 gal.
Medic 6	ALS Ambulance	2017	Excellent	2	N/A	N/A
Brush 34	6	2018	Excellent	2 (CS)	80 CAFS	300 gal.
Tender 34	Tender	2012	Excellent	2 (CS)	750 gpm	2500 gal.

The following figure lists those units assigned to Station 35.

Figure 17: Apparatus & Vehicle Assignments—Lacey Station 35

Unit Designation	Unit Type	Year	Condition	Minimum Staffing	Pump Capacity	Tank Capacity
Engine 35	1	2001	Average	3	1500 gpm	500 gal.
Brush 35	6	2002	Average	2 (CS)	80 CAFS	300 gal.

Figure 18: LFD3 Command & Staff Vehicles

Unit Designation	Type	Year	Make and Model	Condition	Minimum Staffing
CH31	Command Staff	2012	Ford Interceptor	Good	1
BN32	Command Staff	2018	Ford Interceptor	Excellent	1
BN33	Command Staff	2017	Ford Interceptor	Excellent	1
BN34	Command Staff	2017	Ford Interceptor	Excellent	1
BN35	Command Staff	2018	Ford Interceptor	Excellent	1
Facilities	Staff	2015	Ford F150	Excellent	1
Staff 1	Staff Pool	2012	Ford Escape	Good	Pool
Staff 2	Staff Pool	2018	Ford Escape	Excellent	Pool

East Olympia Apparatus & Vehicles

The next four figures list the apparatus and vehicle assignments at each of the East Olympia (District #6) fire stations. The following figure lists those units assigned to Station 61 (headquarters).

Figure 19: Apparatus & Vehicle Assignments—East Olympia Station 61

Unit Designation	Unit Type	Year	Condition	Minimum Staffing	Pump Capacity	Tank Capacity
Engine 61	Type 1	2007	Good	2 (CS)	1500 gpm	650 gal.
Tender 61	Tender	2005	Excellent	1 (CS)	500 gpm	2500 gal.
Aid 61	BLS Aid	2006	Good	2 (CS)	N/A	N/A
Brush 61	Wildland	2017	Excellent	2 (CS)	400 gpm	300 gal.
Incident Support 6	Other	2000	Good	1 (CS)	Cascade system	

CS = Cross staffed

The next figure lists those units assigned to Station 62 and Station 63. Both stations are unstaffed, and Station 63 has no apparatus assigned to it.

Figure 20: Apparatus & Vehicle Assignments—East Olympia Stations 62

Unit Designation	Unit Type	Year	Condition	Minimum Staffing	Pump Capacity	Tank Capacity
Station 62						
Engine 62	Type 1	1998	Good	Unstaffed	1250 gpm	750 gal.

The following figure lists those units assigned to Station 64.

Figure 21: Apparatus & Vehicle Assignments—East Olympia Station 64

Unit Designation	Unit Type	Year	Condition	Minimum Staffing	Pump Capacity	Tank Capacity
Engine 64	Type 1	1999	Fair	3	1250 gpm	750 gal.
Aid 64	BLS Aid	2006	Good	2 (CS)	N/A	N/A
Tender 64	Tender	2005	Very Good	1 (CS)	500 gpm	2500 gal.
Brush 64	Wildland	2018	New	2 (CS)		
Engine 64 (new)	Type 1	2018	New	3	1500 gpm	500 gal.

CS = Cross staffed

The following figure lists those units assigned to Station 65.

Figure 22: Apparatus & Vehicle Assignments—East Olympia Station 65

Unit Designation	Unit Type	Year	Condition	Minimum Staffing	Pump Capacity	Tank Capacity
Engine 642	Type 1	2005	Fair	Unstaffed	1250 gpm	750 gal.
Tender 65	Tender	2004	Very Good	Unstaffed	500 gpm	2500 gal.

CS =Cross staffed

East Olympia maintains three command vehicles; all in good condition. Two are due for replacement in 2022, and one in 2033. The district also maintains three other vehicles as staff "cars," which consist of one each for the mechanic, training, and administration.

West Thurston Apparatus & Vehicles

The next five figures list the apparatus and vehicle assignments at each of the West Thurston Regional Fire Authority fire stations. The following figure lists those units assigned to Station 1-1.

Figure 23: Apparatus & Vehicle Assignments—West Thurston Station 1-1

Unit Designation	Unit Type	Year	Condition	Minimum Staffing	Pump Capacity	Tank Capacity
Engine 1-7 (telesquirt)	Type 1	1995	Good	2	1500 gpm	500 gal.
Engine 1-1	Type 1	2007	Good	2	1500 gpm	750 gal.
Tender 1-1	Type 2	2002	Good	1	750 gpm	2800 gal.
Aid 1-1	Aid Unit	2015	Good	2	N/A	N/A
Brush 1-1	Type 6	2009	Good	1	50 gpm	250 gal.
Medic 14[A]	Type III	2018	Excellent	2	N/A	N/A
Medic 11[A]	Type III	2017	Good	Reserve	N/A	N/A

[A]Tumwater medic units assigned to this station by contract with Thurston County Medic One

The following figure lists those units assigned to Station 1-2.

Figure 24: Apparatus & Vehicle Assignments—West Thurston Station 1-2

Unit Designation	Unit Type	Year	Condition	Minimum Staffing	Pump Capacity	Tank Capacity
Engine 1-2	Type 1	2007	Good	2	1500 gpm	750 gal.
Tender 1-2	Type 2	2006	Good	1	750 gpm	2800 gal.
Aid 1-2	Aid Unit	2015	Good	2	N/A	N/A
Brush 1-2	Type 5	2010	Good	1	50 gpm	450 gal.
Support/Rehab 1-2	Converted Ambulance	1997	—	—	N/A	N/A

The following figure lists those units assigned to Station 1-3.

Figure 25: Apparatus & Vehicle Assignments—West Thurston Station 1-3

Unit Designation	Unit Type	Year	Condition	Minimum Staffing	Pump Capacity	Tank Capacity
Engine 1-3	Type 1	2016	Good	2	1500 gpm	500 gal.
Aid 1-3	Aid Unit	2010	Good	2	N/A	N/A
Brush 1-2	Type 6	2001	Good	1	50 gpm	300 gal.

The following figure lists those units assigned to Station 1-4.

Figure 26: Apparatus & Vehicle Assignments—West Thurston Station 1-4

Unit Designation	Unit Type	Year	Condition	Minimum Staffing	Pump Capacity	Tank Capacity
Engine 1-4	Type 1	1995	Good	2	1500 gpm	500 gal.
Aid 1-4	Aid Unit	2010	Good	2	N/A	N/A

The following figure lists those units assigned to Station 1-6.

Figure 27: Apparatus & Vehicle Assignments—West Thurston Station 1-6

Unit Designation	Unit Type	Year	Condition	Minimum Staffing	Pump Capacity	Tank Capacity
Engine 1-6	Type 1	1995	Good	2	1250 gpm	500 gal.
Aid 1-6	Aid Unit	2010	Good	2	N/A	N/A
Brush 1-6	Type 6	2002	Good	1	50 gpm	300 gal.

McLane-Black Lake Apparatus & Vehicles

The following five figures list the apparatus and vehicle assignments at each of the McLane-Black Lake Fire Department (District #9) fire stations. The following figure lists those units assigned to Station 91.

Figure 28: Apparatus & Vehicle Assignments—McLane Station 91

Unit Designation	Unit Type	Year	Condition	Minimum Staffing	Pump Capacity	Tank Capacity
Engine 91	Type 1	2019	Excellent	2	1500 gpm	750 gal.
Engine 912	Type 1	2005	Fair	Reserve	2000 gpm	750 gal.
Aid 91	Ambulance	2009	Good	2	N/A	N/A
Tender 91	Tender	2005	Excellent	1	2000 gpm	2500 gal.
Brush 91	Type 6	2008	Good	2	120 gpm	300 gal.
Brush 912	Type 3	2016	Excellent	2	220 gpm	650 gal.
Rescue 91	Rescue	1996	Good	2	N/A	N/A
Battalion 91	Command	2004	Fair	1	N/A	N/A
Utility 91	Support	2005	Good	1	N/A	N/A
ORV 91	Off-Road	2006	Fair	2	N/A	N/A

The following figure lists those units assigned to Station 92.

Figure 29: Apparatus & Vehicle Assignments—McLane Station 92

Unit Designation	Unit Type	Year	Condition	Minimum Staffing	Pump Capacity	Tank Capacity
Engine 92	Type 2	2005	Excellent	2	750 gpm	550 gal.
Aid 92	Ambulance	2003	Good	2	N/A	N/A

The following figure lists those units assigned to Station 93.

Figure 30: Apparatus & Vehicle Assignments—McLane Station 93

Unit Designation	Unit Type	Year	Condition	Minimum Staffing	Pump Capacity	Tank Capacity
Engine 93	Type 1	1994	Good	2	1250 gpm	1000 gal.
Engine 932	Type 2	1991	Good	2	1000 gpm	750 gal.
Aid 93	Ambulance	2002	Fair	2	N/A	N/A

The following figure lists those units assigned to Station 94.

Figure 31: Apparatus & Vehicle Assignments—McLane Station 94

Unit Designation	Unit Type	Year	Condition	Minimum Staffing	Pump Capacity	Tank Capacity
Engine 94	Type 1	1994	Good	2	2000 gpm	750 gal.

The following figure lists those units assigned to Station 95.

Figure 32: Apparatus & Vehicle Assignments—McLane Station 95

Unit Designation	Unit Type	Year	Condition	Minimum Staffing	Pump Capacity	Tank Capacity
Engine 95	Type 1	2019	Excellent	2	1500 gpm	750 gal.
Engine 952	Type 1	2005	Fair	Reserve	2000 gpm	750 gal.
Aid Unit 95	Ambulance	1998	Fair	2	N/A	N/A
Tender 95	Type 2	2017	Excellent	1	2500 gpm	2500 gal.
Brush 95	Type 6	2012	Excellent	2	140 gpm	150 gal.
Boat 95	Watercraft	1982	Fair	2	N/A	N/A
ORV 95	Off-Road	2002	Fair	3	N/A	N/A

Summary of Apparatus & Vehicles

The following figure is a combined inventory—as reported by each of the agencies—of the various frontline apparatus and vehicles among the fire departments participating in the regional feasibility study (reserve apparatus have been excluded).

Figure 33: Inventory of Frontline Apparatus & Vehicles in the Study Area (2018)

Unit Type	TFD	EOFD	LFD3	MBLFD	WTRFA	OFD	TOTALS
Engines	2	5	5	7	6	4	**29**
Aerials	0	0	1	0	0	1	**2**
Medic & Aid Units	1	3	3	4	6	3	**20**
Tender	0	3	2	2	2	0	**9**
Command Vehicles	3	3	1	1	4	1	**13**
Wildland (Brush)	0	2	2	3	4	0	**11**
Watercraft	0	0	3	1	0	1	**5**
Support/Rehab Units	0	1	1	1	1	1	**5**
Other Vehicles[1]	3	3	1	3	3	2	**15**

[1]Staff vehicles and other specialty vehicles

As shown in the preceding figure, the quantity and types of apparatus and vehicles tend to vary among each of the jurisdictions. This is to be expected, as the types of potential risks and incident-types within each service area tend to be different. For example, a fire district with large areas of wildland and limited water supplies may have a larger fleet of brush trucks and water tenders than a city fire department.

Staffing & Personnel Management

Many emergency services organizations consider their employees as their most valuable asset. Managing personnel to achieve maximum efficiency, professionalism, and personal satisfaction is an art as much as science. Consistency, fairness, safety, and opportunities for personal and professional growth are key values in a healthy management culture. These values are even more important when the organization relies on the participation and support of a "volunteer" workforce. Volunteer personnel may leave if they do not feel valued and/or experience personal satisfaction from their participation.

Several national organizations recommend standards to address staffing issues. The Occupational Health & Safety Administration (OSHA) *Respiratory Protection Standard*, and the National Fire Protection Association (NFPA) Standard 1710 or 1720 (whichever is applicable), are frequently cited as authoritative documents.[1,2,3] In addition, the Center for Public Safety Excellence (CPSE) publishes benchmarks for the number of personnel recommended on the emergency scene for various levels of risk.

An appropriate balance of administration and support staff, compared to operational resources and service levels, is an important consideration to achieving organizational success. It is important to remember that key administrative and logistical support positions are critical in maintaining an efficient and effective fire department. With that said, comparing these positions across the five departments may reveal opportunities for sharing and/or combining positions to improve overall efficiencies for the departments.

ESCI evaluated the job descriptions, work schedules, compensation packages, and use of personnel to identify areas of excellence, areas for improved efficiency in personnel management, and opportunities to share resources among the six departments.

Personnel Policies & Processes

The departments were surveyed to determine the administrative components used in managing their employees. All departments have contemporary personnel policy manuals, provide training on these policies to new employees, and archive copies of outdated policies. OFD and TFD use the Lexipol® web-based policy management service. All six departments maintain and securely archive personnel records, including injury and accident reports and medical/exposure records. TFD and OFD personnel records, including discipline, medical, and City administrative records are maintained within their Human Resource Departments.

[1] Respiratory Protection Standard 29 CFR 1910.134; Occupational Health & Safety Administration.

[2] NFPA 1710: *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, to the Public by Career Fire Departments*; National Fire Protection Association (NFPA).

[3] NFPA 1720: *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments*; NFPA.

Ensuring the health and safety of employees should be a high priority in any business or government organization. Many fire service organizations offer proactive health wellness programs designed to promote and support healthy lifestyles in an attempt to ward off illness and injury. Many of these programs also support mental health wellness, which is even more important for those working in emergency services. The following figure summarizes health and wellness services.

Figure 34: Health, Safety & Counseling Services

Health, Safety & Counseling Services	TFD	OFD	LFD3	EOFD	WTRFA	MBLFD
Medical Standards Established	Yes	IAFC/IAFF Wellness Program	Yes	Yes	NFPA 1582	DOT Exam for volunteers, IAFC/IAFF Wellness Program for career staff
Medical Exam Frequency	Semi-Annual	Annual	Annual	Semi-Annual	Annual	Annual
Safety Committee Established	City only	Yes	Yes	Yes	Yes	Yes
Critical Incident Stress Debriefing	Yes	Yes	Yes	Yes	Yes	Yes
Employee Assistance Program	Yes	Yes	Yes	Yes	Yes	Yes
Intervention Program	No	Yes	Yes	No	In progress	No

Ensuring firefighters are medically fit to meet the strenuous duties associated with emergency response and fireground tasks is paramount. In addition, state and federal law mandates respiratory medical assessment, clearance and fit testing for anyone required to wear a respirator. CFR 1910.134(e)(1) requires employees obtain a medical clearance from a physician or other licensed health care professional before they can wear a respirator (including N95, N100, P100, and HEPA respirators), and must be annually fit-tested.

Career Firefighter Hiring and Selection Processes

Recruiting, selecting, and retaining firefighters takes considerable investment of time, effort, and money to ensure high quality employees work in the organization. While becoming a firefighter is one of the most sought-after careers in the nation, selecting the best candidates that fit within the department and its culture requires deliberate and comprehensive evaluation. The following figure summarizes the hiring process components used by the six departments.

Figure 35: Hiring Process Components

Hiring Process Components	TFD	OFD	LFD3	EOFD	WTRFA	MBLFD
Recruitment Program	Yes	Yes	Yes	Yes	Yes	Yes
Qualifications Check	Yes	Yes	Yes	Yes	Yes	Yes
Reference Check	Yes	Yes	Yes	Yes	Yes	Yes
Background Check	Yes	Yes	Yes	Yes	Yes	Yes
Physical Agility Standards Established	CPAT	CPAT	CPAT	CPAT	CPAT	CPAT
Knowledge Testing	Yes	Yes	Yes	Yes	Yes	Yes
Interview	Yes	Yes	Yes	Yes	Yes	Yes
Medical Exam Required	Yes	Yes	Yes	Yes	Yes	Yes
Psychological Exam Required	Yes	Yes	Yes	No	No	Yes, Career only

Hiring Process Discussion

All six departments use a standardized and thorough hiring process for new full-time employees. All six departments—TFD, OFD, LFD3, EOFD, WTRFA, and MBLFD—use an outside vendor (either Public Safety Testing® or National Testing Network®) for some or all of the following services:

- Recruiting services
- Accepting and screening applications
- Background checks
- Administering the Candidate Physical Agility Test (CPAT)
- Administering a written examination
- Administering a psychological/suitability examination

EOFD accepts applicants who have a current (within a year) CPAT card. If an applicant does not have a current card, the department administers their own physical agility assessment that is very similar to the CPAT. Many fire departments in the Puget Sound area use PST or NTN for managing and administering initial fire department employee screening and testing. These services are an attractive option for departments, as they reduce the amount of staff time and resources necessary for initial testing, and reduce potential perception of bias. The service is also attractive for applicants, as their application and test results can be accessed by any or all of the participating departments, depending on the departments initially selected by the applicant.

Over the past few years, the hiring practices in fire departments across the country have been challenged by allegations of bias and discrimination. For example, the New York City and Los Angeles fire departments' new hire testing practices were questioned, resulting in the suspension of the hiring process and revocation of some conditional job offers. Outside experts were brought in to analyze historical hiring outcomes, current hiring administrative procedures, and make recommendations for improvement.[4] As a result, significant changes were made, at great expense to ensure fair and impartial hiring processes.

A 10-year review (1994–2004) of firefighter line of duty death statistics revealed that 45 percent were the result of heart disease.[5] In 2010, the National Institute for Occupational Safety and Health (NISOH) conducted a study of the prevalence of cancer in 30,000 firefighters.[6] The study concluded firefighters have a 14 percent greater risk of contracting cancer compared to the general population. Lastly, the NFPA Standard 1582: *Standard on Comprehensive Occupational Medical Program for Fire Departments*, defines the necessary components of an occupational medical program to ensure the safety and health of firefighters.[7]

Ensuring employees are medically cleared to perform rigorous fireground tasks, along with identifying any pre-existing medical condition which may place an employee in jeopardy, is an important screening component in the hiring process and beyond. All six departments have established medical standards, and require a comprehensive medical examination after being conditionally hired. However, the frequency and exam parameters of these medical examinations varies between departments.

RECOMMENDATIONS:

- Consolidate new hire candidate processing and initial testing through either PST or NTN.
- Adopt the CPAT as the standard physical agility testing program.
- Require annual wellness physicals for all employees.
  - Adopt comprehensive screening parameters that evaluate cardiovascular health, cancer screening, behavioral health, and musculoskeletal fitness.

Volunteer & Part-Time Firefighter Selection Process

In today's progressive fire departments, recruitment, selection and training of volunteer and part-time firefighters often mirrors career firefighter hiring practices, including written examinations, interviews, and physical agility testing. With the exception of OFD, all of the departments employ either volunteers and/or part-time employees. The following chart summarizes the vetting process for onboarding volunteer and part-time firefighters.

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[4] *Recommendations for Improving the Recruiting and Hiring of Los Angeles Firefighters*, Rand Corporation, 2015, https://www.rand.org/content/dam/rand/pubs/research_reports/RR600/RR687/RAND_RR687.pdf.

[5] *Emergency Duties and Deaths from Heart Disease among Firefighters in the United States*, New England Journal of Medicine, March 2007; 356:1207–1215.

[6] *Findings from a study of cancer among U.S. Firefighters, National Institute of Occupational Safety & Health*, July 2016. https://www.cdc.gov/niosh/pgms/worknotify/pdfs/ff-cancer-factsheet-final.pdf.

[7] NFPA 1582: *Standard on Comprehensive Occupational Medical Program for Fire Departments*; NFPA.

Figure 36: Volunteer Selection Components

Selection Process Elements	TFD	LFD3	EOFD	WTRFA	MBLFD
Reference Check	No	Yes	Yes	Yes	Yes
Background Check	No	Yes	Yes	Yes	Yes
Physical Agility Standards Established	No	CPAT	CPAT or PAT	CPAT-like	CPAT
Knowledge Testing	No	Yes	Yes	Yes	Yes
Chief Interview	Yes	Yes	Yes	Yes	No
Medical Exam Required	Yes	Yes	Yes	Yes	Yes
Psychological Exam Required	No	Yes	No	No	No
Pre-Academy Class	Yes	Yes	Yes	Yes	Yes

ESCI noted a unique resource available to WTRFA, a SAFER Grant funded position responsible for recruiting and supporting volunteer firefighters. This outreach position is constantly communicating and educating the community about the need for volunteers, and implementing various public education programs and advertisement strategies to attract service from amongst the community.

Volunteer Selection Discussion

With the exception of OFD (which does not use volunteers or part-time personnel), the departments administer a basic written test, oral interview, and physical agility assessment to all prospective volunteer candidates. In addition, MBLFD, WTRFA, and EOFD require completion of several fire and EMS related knowledge and skills objectives prior to sending candidates through a formal recruit academy. This is done to ensure the prospective firefighters fully understand the tasks required of firefighters, the time commitment required, and demonstrate a strong desire to serve their community.

Nationally, volunteer fire departments comprised the majority of the fire service. With that said, today's fire service is finding it more difficult to recruit, hire, and retain volunteer firefighters.

The number of volunteer firefighters in the U.S. reached a low in 2011. While there has been a slow increase since then, the growth isn't enough to meet the steady increase in call volume, which has tripled in the last 30 years due in large part to the increase in emergency medical calls. Major factors contributing to recruitment challenges include increased time demands, more rigorous training requirements, and the proliferation of two-income families whose members do not have time to volunteer. Fire departments today are also expected to provide a wide range of services and multi-hazard response, creating further challenges for resource-constrained departments.

For the past 21 years, MBLFD has had an invaluable resource for volunteers through the South Puget Sound Community College's, Fire and Emergency Services Technology Program, which supplied a steady stream of motivated students who earn college credits for fire related experience gained by spending duty time in the District's fire stations. However, the college recently announced termination of the program, effective August 2019. MBLFD, who rely on these students to meet minimum staffing requirements on apparatus, is legitimately concerned about the sustainability of its deployment model given this pending change.

Departments who wish to continue to rely on volunteers/resident firefighters to meet minimum staffing levels will need to place renewed emphasis on recruiting new volunteers from their local communities, including increased public relations and involvement in local high schools and colleges. There are several resources and techniques available that can be leveraged to increase firefighting recruitment. The *National Volunteer Fire Council* (NVFC) has resources available to assist departments in recruiting and retaining volunteers. Most of these resources involve increased marketing of the department, including strategies to motivate and inspire prospective volunteers. Marketing strategies to consider include, but are not limited to:

- Creating or modifying the department website, providing detailed information on the job of a firefighter and the benefits of belonging to the organization. It should also be designed to allow those interested to easily express interest and submit their contact information.
- Leveraging social media tools, such as *Facebook®*, *Instagram®*, and *LinkedIn®*, keeping content fresh and relevant.
- Apply for SAFER grants that can be used for recruitment and retention programs, including hiring employees and/or services for marketing and recruitment.
- Set up a department Google account through their Non-Profit Program (if the department and/or firefighters association is eligible for 501(c)(3) status. Participation in this program may allow access to $10,000 per month of in-kind advertising through Google, along with access to various Google tools and groups that can increase community interest and engagement.

Of course, consolidation of two or more of the departments who rely on volunteer/resident firefighters may be able to use their combined resources to maintain staffing levels, or hire part-time/full-time firefighters instead. Careful financial forecasting will be required to determine if this approach is financially feasible and sustainable.

RECOMMENDATIONS:

- Develop and engage in a comprehensive marketing strategy to recruit volunteer and resident firefighters.
- Continue use of third-party testing services for newly selected members.
- Adopt a CPAT-like physical agility testing program for all combat personnel.
- Require annual wellness physicals for all volunteers.
  - Adopt comprehensive screening parameters that evaluate cardiovascular health, cancer screening, behavioral health, and musculoskeletal fitness.

Union Agreements

Operations personnel from the six departments are represented by *International Association of Firefighters (IAFF)* local bargaining units as summarized in the following figure, which also notes the effective dates of their respective bargaining agreements. All six locals are within the jurisdiction of IAFF District 7.

Figure 37: Current IAFF Bargaining Unit Agreement Periods

Department	Agreement Period
TFD/Local 2409	2017–2019
OFD/Local 468	2017–2019
LFD3/Local 2903	2016–2018[8]
EOFD/Local 3825	2017–2018[9]
WTRFA/Local 3825	2018–2019
MBLFD/Local 3825	2017–2019

Union Agreement Discussion

The success of any type of consolidation of the six departments will hinge in large part on Union participation, compromise, and agreement. The variation in work schedules, benefits, and other conditions currently outlined in the bargaining unit agreements of the four local union affiliates will need to be carefully addressed and homogenized for an effective and efficient consolidation. This can take the form of one affiliate absorbing the membership and obligations of other affiliates, commonly called a "merger," or by legally dissolving the current IAFF affiliates and forming an entirely new bargaining unit, commonly called an "amalgamation."

Merger or amalgamation of local union affiliates is encouraged by the IAFF where it makes sense. In 2012, the *IAFF Legal Department* published a manual to guide union leaders in merger/amalgamation efforts. The manual reviews the applicable sections in the *IAFF Constitution and Bylaws* and defines the reporting requirements, legal requirements, and specific duties of merged and amalgamated affiliates. In the manual they state:

> *The Executive Board recommends that when the consolidation, unification, or merger of two or more counties, cities, or townships is anticipated, all locals involved should merge as soon as possible. If a merger of locals is not immediately possible, a joint committee should be established to work with the department administration to negotiate the benefits for all members. Every effort should be made to conclude the bargaining prior to the merger.*

[8] A new collective bargaining agreement has been ratified.

[9] *Ibid*.

Given the number of significant labor implications related to an identified new consolidated fire agency, including internal union governance issues, the involved local affiliates would likely benefit from the participation of the IAFF District Vice President and other legal resources available through the IAFF. Also, given the complexity and variation of wages and benefits between the affiliates, if consolidation is actively pursued by two or more of the departments, they should engage in internal union planning as soon as practical to reach agreement on how the affiliates would be organized in the new fire agency organization.

Administrative Support Staffing

Each of the six departments have varying levels of administrative support positions due primarily to their size, and because the city fire departments can rely on other city departments for administrative support services—Information Technology and Human Resource services, for example—which are typically not available to county fire districts. However, as the following figure shows, OFD has the largest number of administrative positions, compared to the other departments.

The following figure illustrates the various uniformed and non-uniformed administrative positions.

Figure 38: Administrative & Support Uniformed Staff Positions

Staff Positions	TFD	OFD	LFD3	EOFD	WTRFA	MBLFD
Fire Chief	1	1	1	1	1	1
Deputy Chiefs		Currently Vacant	2			
Assistant Chiefs	1	2		1	1	1 Currently Vacant
Administrative Battalion Chiefs		1				
Prevention & Public Education Positions[1]	1	4			1	
Training Officer (Capt. Or Lt.)	1	1	2			
EMS Officer	1	1	1			
Other: (Describe)		1 Project Captain				
Total Uniformed Administrative/Staff positions	**5**	**12**	**6**	**2**	**3**	**2**
% of Admin staff to total FD personnel	**10%**	**19%**	**10%**	**9%**	**6%**	**6%**

[1] These members have 3 functions: Fire Investigation, Fire Inspections, and Education

OFD clearly has the most uniformed administrative support positions among the six agencies, especially as it relates to fire/life safety prevention and education functions. The following figure shows who provides administrative support functions among the six agencies.

Figure 39: Non-Uniformed Administrative Positions

Non-Uniformed Administrative Positions	TFD	OFD	LFD3	EOFD	WTRFA	MBLFD
Management Analyst						
IT Technician			1			
Office Manager	1	1		1	1	1
Finance Director			1			
Human Resources Director			1			
Accounting Specialist			1			
Payroll Administrator			1			
Facilities/Technology Director			1			
Administrative Assistant	1	2	3	1	.75	1
Emergency Management		1				
Chief Mechanic		1				
Mechanic		3[1]		1		
Other: (Describe)		1 Inventory Control Specialist II			1 – .75 FTE Volunteer Grant Coordinator 1 – .25 Admin. Asst. 3 – Share .6 FTE Position	
Total Positions:	**2**	**10**	**9**	**3**	**3.4**	**2**

[1]An additional Mechanic started 04/16/19.

Administrative Staffing Discussion

Analyzing the ratio of administrative and support positions to the total operational positions of the department facilitates an understanding of the relative number of resources committed to this important function. The ratios between administrative positions and total number of department positions in each department does not appear excessive. OFD appears to have the highest number of uniformed and civilian administrative support positions compared to the other five departments. However, it should be noted that OFD's administrative head count includes five Apparatus Mechanic Positions, who provide apparatus repair services to eight local fire departments and Thurston County Medic One.

During the site visit, ESCI learned the OFD Fire Chief is planning on retiring in approximately one year, and at least two other Chiefs in other departments are also contemplating retirement. In addition, MBLFD is planning on not filling a vacant Assistant Chief position until after the findings and recommendations of this study are released, and potential consolidation planning steps identified. EOFD has a vacant battalion chief position, which they plan to fill (or underfill) this year.

RECOMMENDATION (IF CONSOLIDATIONS OCCUR):

- Leave current/planned administrative uniformed personnel vacancies unfilled until subsequent consolidation planning/implementation strategies are agreed upon.

Emergency Operations Staffing

Next, we evaluated the type and number of operations staff positions. The following figure summarizes the number of operations positions in each department.

Figure 40: Operations Staff Positions

Staff Positions	TFD	OFD	LFD3	EOFD	WTRFA	MBLFD
Battalion Chiefs	N/A	3	4	Vacant	1	N/A
Captains	3	N/A	2	N/A[a]	3	3
Lieutenants (Including Paramedic)	9	25	24	4	6	6
Firefighter/Paramedics	14	14	22	N/A	N/A	N/A
Firefighters-Full-time	16	43*	50	2	21	3
Firefighters-Part-time	N/A	N/A	N/A	9	N/A	N/A
Volunteer Firefighters (Including Officers & Resident FFs)	11	0	20	26	47	50
Total Operations Positions	**53**	**85**	**120**	**41**	**78**	**62**
% of Operations Officers to Firefighters	**20%**	**32%**	**16%**	**8%**	**11%**	**14%**

*Includes six "project" funded positions. [a]Vacant B/C position may be underfilled as Captain this year

OFD's six "project" positions are Firefighter/EMTs who staff a BLS unit part-time to respond to incidents in the downtown area where there is a significant indigent/homeless population. These positions are temporarily funded through a SAFER Grant.

ESCI also calculated the theoretical total number of full-time employees required to meet the various average leave hours used by employees in 2017 in each department, and compared the results to the current minimum number of operations employees assigned to each shift. This calculation compared the average available scheduled weekly work hours per employee, subtracted the average various leave types—based on 2017 historical leave use data—and calculated sick and vacation relief factors. ESCI then multiplied the number of personnel needed to cover a single position at 24-hours per day with the relief factor to determine the total number of employees required to meet daily minimum staffing, without taking into account the use of volunteers or part-time employees to backfill vacancies. The following figure summarizes the results of these calculations:

Figure 41: Theoretical Relief Factor Calculation (2017)

Relief Factor	TFD	OFD	LFD3	EOFD	WTRFA	MBLFD
Sick Leave	1.22	1.11	1.17	1.22	1.09	1.10
Vacation Leave	1.16	1.19	1.20	1.07	1.18	1.12
Total Relief Factor:[1]	**1.27**	**1.21**	**1.27**	**1.27**	**1.18**	**1.15**

[1]Includes Holiday leave, Personal leave, FMLA, bereavement, short-term disability, military leaves, etc.

The total leave factors were multiplied by the number of personnel needed to cover one 24-hour position. The following figure compares the theoretical number of positions needed with the current number of employees assigned to the work schedules.

Figure 42: Calculated Operational Staff Overage (Shortage)

Department	Number of Positions Required 24/7	Total Number of Operations FTEs	Theoretical Number of FTEs	Overage (Shortage)
TFD	10	42	45	(-3)
OFD	20	85	82	3
LFD3	22	100	102	(-2)
EOFD	1.5	6	6	0
WTRFA	7	31	30	3
MBLFD[1]	4	12	12	0
Total:	**65**	**275**	**324**	**+1**

Emergency Staffing Discussion

As shown in the preceding figure, each department's staffing levels are close to the theoretical number of personnel needed to cover scheduled and unscheduled leaves for each agency. Reconciling the results of this staffing resource analysis with current staffing levels and resource allocation strategies among the six departments should be approached carefully. In ESCI's experience, theoretical analysis does not necessarily take into account an organization's inherent flexibility and resources that can be potentially leveraged to reduce workload and personnel costs—nor does it take into account the ongoing costs of providing the various benefits to full-time employees. Full-time employee benefit expenses must be considered when analyzing the cost of adding full-time employees versus using overtime or part-time employees who do not receive benefits.

Lastly, as a result of collective bargaining, consolidation of two or more of the departments may result in changes to the employee average workweek hours, leave time, and work schedules. Each, or all of these factors, may have an impact on the total number of employees required to ensure minimum daily staffing levels.

Effective Response Force Analysis

In addition to reviewing the total number of operations staff available, ESCI also reviewed daily staffing levels in each department, and compared them to national consensus standards related to providing sufficient personnel and resources to quickly mitigate emergency incidents—specifically, structure fires and critical EMS situations. Given there is a large number of paramedics among the three ALS career departments, including medics who provide medical first response (MFR), ESCI focused on each department's ability to marshal an Effective Response Force (ERF) to mitigate structure fires or other complex and dynamic emergencies. Effective Response Force and Critical Task Analysis are both discussed in detail in the *Service Delivery & Performance* section of this report.

The fire service assesses the relative risk of properties and occurrences based on a number of factors. Properties with high fire risk often require greater numbers of personnel and apparatus to effectively mitigate the fire emergency. Staffing and deployment decisions should be made with consideration of the level of risk involved.

The level of risk categories used by CFAI relate as follows:

- **Low Risk:** Areas and properties used for agricultural purposes, open space, low-density residential and other low intensity uses.
- **Moderate Risk:** Areas and properties used for medium density single family residences, small commercial and offices uses, low intensity retail sales and equivalently-sized business activities.
- **High Risk:** Higher density business districts and structures, mixed-use areas, high density residential, industrial, warehousing, and large mercantile structures.

Each department's minimal daily staffing resources, as noted in Figure 42: *Calculated Operational Staff Overage (Shortage)*, was compared to the NFPA and CFAI criteria previously noted. Not surprisingly, this comparison shows OFD and LFD3 are the only departments currently able to independently meet the staffing standard for up to a Moderate Risk incident. *It must also be noted that this comparison assumes all on-duty personnel and response units are available to respond to the incident in any one department*. Concurrent calls can severely impact any single department's ability to safely and effectively mitigate a Moderate to High Risk incident.

Wages & Benefits

Depending on the depth and breadth of future consolidation efforts, the wages and benefits paid to the employees of the six departments will need to be taken into consideration. ESCI analyzed the average wages of the various administrative and operational positions between the departments, and the various benefit packages to identify significant similarities and differences that would need to be incorporated into future consolidation planning efforts.

In evaluating the salary tables provided by each department and/or listed in the six bargaining unit agreements, ESCI noted variations in position titles and associated pays between departments. The following figure summarizes the various salary pays by position in each department.

Figure 43: Operations Pay Classifications By Department

Career Operations Positions	TFD	OFD	LFD3	EOFD	WTRFA	MBLFD
Battalion Chief		X	X		X	
Fire Captain/EMT	X		X	X	X	X
Fire Captain/Paramedic		X	X			
Fire Lieutenant/Paramedic	X	X	X			
Fire Lieutenant/EMT	X	X	X	X	X	X
Firefighter/EMT	X	X	X	X	X	X
Firefighter/Paramedic	X	X	X			
Volunteer & Part-Time Positions	**TFD**	**OFD**	**LFD3**	**EOFD**	**WTRFA**	**MBLFD**
Volunteer Deputy Chief					X	
Volunteer Battalion Chief	X			X[1]	X	X
Volunteer Fire Captain	X				X	
Volunteer Fire Lieutenant	X			X	X	X
Volunteer Firefighter			X	X	X	X
Volunteer EMT only				X	X	X
Resident Firefighter				X	X	X
Part-Time Fire Captain						
Part-Time Firefighter				X		

[1]The Volunteer Battalion Chief passed away during this report compilation and position will not be filled in the near term.

As noted in the preceding figure, the most common career positions across the six career departments were Fire Lieutenant/EMT and Firefighter/EMT, and Firefighter was the most common volunteer position. OFD is the only department that does not use volunteer firefighters. EOFD is the only department utilizing part-time firefighters.

The salary data submitted from the six departments revealed significant variations in pay among the various positions. Some departments submitted current salaries for personnel in the positions, and others provided data that included all pay steps. For comparison purposes, the top step pay was used in comparing to those departments that reported only one pay. The following figure summarizes the salary comparisons between the annual average salaries between the career departments for the basic full-time uniformed positions:

Figure 44: Uniformed Staff Average Salary Comparisons, 2018[1]

Operations Positions	Lowest Pay	Highest Pay	% Difference
Fire Chief	$110,580	$170,832	35%
Assistant Chief	$101,142	$142,662	29%
Deputy Chief	$142,641	$144,666	1.4%
Battalion Chief (Operations)	$93,600	$120,319	22%
Fire Captain/EMT	$89,288	$109,056	18%
Fire Lieutenant/EMT	$75,563	$107,158	29%
Firefighter/EMT	$61,619	$93,999	34%
Firefighter/Paramedic	$96,744	$103,399	6%

[1] EOFD and LFD3 ratified new CBAs after compilation of this report, which will change compensation rates.

None of the operations position salaries listed include regularly scheduled FLSA overtime pay. The pay disparity is greatest at the Fire Chief position (35%). With the exception of the Firefighter/Paramedic pay, the pay disparity in the remaining positions is significant.

With the exception of TFD and EOFD, the departments have various levels of longevity pay included in their bargaining unit agreements.

Next, we analyzed the various benefits provided by each of the career departments, which are summarized in the following figure:

Figure 45: Employee Benefits Provided by Career Departments

Benefits Provided	TFD	OFD	LFD3	EOFD	WTRFA	MBLFD
Uniform Allowance	Uniforms provided	$500	$450	Uniforms provided	$250	No
Educational Incentives	Yes	Yes	Yes	Yes	No	No
Social Security	No	No	No	Yes	No	Yes
Workers Compensation	Yes	Yes	Yes	Yes	Yes	Yes
Pension	Yes	Yes	Yes	Yes	Yes	Yes
Deferred Compensation	Yes	Yes	Yes	Yes	Yes	Yes, no match
Medical	Yes	Yes	Yes	Yes	Yes	Yes
Dental	Yes	Yes	Yes	Yes	Yes	Yes
Short-term Disability	Yes	Yes, self pay	Yes	Yes	Yes	Yes
Vision	Yes	Yes	Yes	Yes	Yes	Yes
Life Insurance	Yes	Yes	Yes	Yes	Yes	Yes

Analysis of the benefits packages among the six departments revealed significant similarities, with all providing comprehensive medical, dental, vision, and life insurance packages. Additional life insurance is available to employees in all departments, and is paid for by the employees. There is significant variation in the uniform allowance pay. Educational incentive pay is included for all but WTRFA and MBLFD. All full-time firefighters are enrolled in the *Washington State Law Enforcement and Firefighters (LEOFF) Plan 2 Retirement System*. EOFD part-time firefighters are enrolled in the *Washington State Public Employees Retirement System (PERS)*.

Salary & Benefits Discussion

The pay disparity is greatest in the Fire Chief and Battalion Chief positions, and the least disparity is in the Firefighter/EMT position. All of the other positions have pay differences in the 13–15 percent range. While the difference in the Fire Chief pay is significant, given the relatively small number of positions, and potential attrition, it seems reasonable to expect the financial impact and reconfiguration of these positions would be very feasible in an administrative consolidation, compared to the much larger impact of reconciling the different pays in the operations staff positions.

In the planning and negotiation process resulting from integration of two or more agencies, those issues effecting wages, hours and working conditions are required to be negotiated with the bargaining unit(s). Certain other changes may require impact bargaining. The Washington Public Employees Relations Commission (PERC) oversees collective bargaining between public agencies and employees, and assists in the resolution of contract disputes between the parties, including administering the Binding Interest Arbitration (BIA) process. Salary and benefits decisions in BIA cases involving fire departments and districts in Washington have typically been made considering the salary and benefits provided by other comparable fire departments or districts with similar assessed values and populations. If two or more departments functionally consolidate, merge, or otherwise integrate, it is likely that these comparable fire departments or fire districts will be used to guide the establishment of new salaries, benefits, and certain working conditions in the new agency.

Operations Work Schedules

The six departments deploy three different shift schedules for full-time employees. The following figure summarizes the shift schedules, FLSA work periods, and average scheduled hours for full-time and part-time operations employees:

Figure 46: Operations Staff Work Schedule

Schedule Components	TFD	OFD	LFD3	EOFD	WTRFA	MBLFD
Shift Rotation	24-on, 48-off	24-on, 48-off	24-on, 48-off, 24-on, 96-off	24-on, 24-off, 24-on, 24-off, 24-on, 96-off	24-on, 48- off	24-on, 48-off
Average Workweek Hours	49.8	49.8	46.7	53[1]	49.8	48
FLSA Work Period	27 days	27 days	24 days	27 days	27 days	28 days
Total Annual Hours	2590	2596	2526	2746[2]	2596	2502
Shift Start Time	0730	0730	0730	0800	0730	0700
Kelly/Debit Days in work cycle?	Kelly	Kelly	Debit	Kelly	Kelly	Kelly

[1] EOFD modified its workweek in latest CBA to phase in a 49.8 workweek over three-year period.

[2] EOFD phasing in workweek reduction to 2596 over three years in latest CBA.

In addition, EOFD employs part-time firefighters, who are scheduled to one of three shifts and work approximately 33 hours per week. These firefighters work six 24-hour shifts and one 12-hour shift per month. Resident and volunteer firefighters in the departments that use volunteers are assigned to a shift for scheduling and continuity purposes.

Work Schedule & Staffing Discussion

The average hours worked between the six departments is 49.5 hours per week, and with the exception of EOFD, the annual hours worked are comparable.[10]

The 24-hour shift remains the predominant schedule for fire departments, including the six departments studied. However, some departments have transitioned to a 48-hour shift. This is an especially attractive shift schedule if employees must commute from long distances due to high housing costs, low housing inventory, or other demographic factors. However, the 48-hour schedule has been questioned due to concerns about sleep deprivation and safety impacts during the latter portion of the 48-hour shift.

The federal government aggressively regulates and monitors commercial transportation workers, including commercial pilots, railroad workers, long-haul truck drivers, and ship workers due to fatigue concerns. With regard to long-haul truck and passenger carrying drivers, there are very restrictive rules in place to address potential driver fatigue. ESCI highlights these specific requirements because Fire/EMS employees routinely drive emergency vehicles in all types of weather conditions—often for extended periods (long-distance interfacility transfers, for example). The following figure is a summary of the rules for truck drivers. This is presented to provide context on the level of the federal government's concern on driver fatigue.[11]

[10] EOFD's new collective bargaining agreement brings EOFD into a comparable workweek as the other five agencies.

[11] 349 Code of Federal Register 395.1-5.

Figure 47: Commercial Driver Rules for Work Hours

Property Carrying Drivers	Passenger Carrying Drivers
11-Hour Driving Limit May drive a maximum of 11 hours after 10 consecutive hours off-duty.	**10-Hour Driving Limit** May drive a maximum of 10 hours after 8 consecutive hours off-duty.
14-Hour Limit May not drive beyond the 14th consecutive hour after coming on duty, following 10 consecutive hours off-duty. Off-duty time does not extend the 14-hour period.	**15-Hour Limit** May not drive after having been on duty for 15 hours, following 8 consecutive hours off-duty. Off-duty time is not included in the 15-hour period.
Rest Breaks May drive only if 8 hours or less have passed since end of the driver's last off-duty or sleeper berth period of at least 30 minutes.	**60/70-Hour Limit** May not drive after 60/70 hours on duty in 7/8 consecutive days.

As noted in the preceding figure, the focus is not only on the length of the work periods, but also *the length of the off-duty/rest periods.* This is an important distinction relative to EOFD's use of hourly employees—many of whom have other full-time jobs, including working for private ambulance companies. However, there is no policy requiring a minimum number of off-duty/rest hours between work shifts. This produces potential liability and safety issues, and may also increase the risk of injury on the fireground or patient-care errors.

In ESCI's experience, a functional and operationally efficient consolidation will require a homogenized shift schedule. While each department has slightly different work schedules and annual hours for full-time operations personnel, they are likely close enough that it should not present a significant obstacle in operational consolidation efforts. However, as with any proposed change to working conditions, especially resulting from a planned consolidation, it likely would require focused collaboration between the various bargaining units and with department leadership to identify an acceptable and cost-effective enterprise-wide solution.

Service Delivery and Response Performance

In this section of the Regional Feasibility Study, a review of current service delivery and performance within the study area was conducted. Observations were made concerning service delivery for the study area as a whole and for the individual departments where appropriate, depending on the available data. In the *Service Delivery and Response Performance* section, ESCI reviewed current and historical service demand by incident type and temporal variation for the study area and the participating jurisdictions. GIS software is used to provide a geographic display of demand within the overall study area.

Data Sources

The data used in this section is derived from both CAD data provided by the Thurston County Communications Center (TCOMM) and National Fire Incident Reporting System (NFIRS) totals submitted by the departments.

The CAD data that was submitted included a total of 188,409 records from the period 2015 through 2017 and from all study departments the TCOMM dispatched. Specifically included were 2015 records totaling 59,558, 2016 included 62,412, and 66,439 from 2017. These total records included multiple records for each incident when more than one unit responded.

The first step in the analysis was to just pull the records for departments in the study area. At the completion of this step, 181,212 records remained. Next, when multiple records existed, these had to have the best performance calculated and duplicates removed.

The NFIRS data was provided by each department as part of ESCI's data request and was reported on the table provided. Each department provided total incidents for the 2017 calendar year.

Data is selected depending on which source is best suited for the analysis.

NFPA 1710 and 1720 Standards

In the study area, there are two relevant national standards: NFPA 1710, which is applicable to organizations that are, "... substantially all career fire departments," and NFPA 1720, which applies to, "... volunteer and combination fire departments."[12] Both of these are consensus standards, and are not mandated or codified. ESCI believes that NFPA 1710 currently applies to Olympia Fire Department, Lacey Fire District 3, and Tumwater Fire Department, while NFPA 1720 is applicable to East Olympia Fire District, West Thurston Fire Authority, and McLane Black Lake Fire District.

[12] NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations & Special Operations to the Public by Career Fire Departments*; NFPA 1720, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations & Special Operations to the Public by Volunteer Fire Departments.

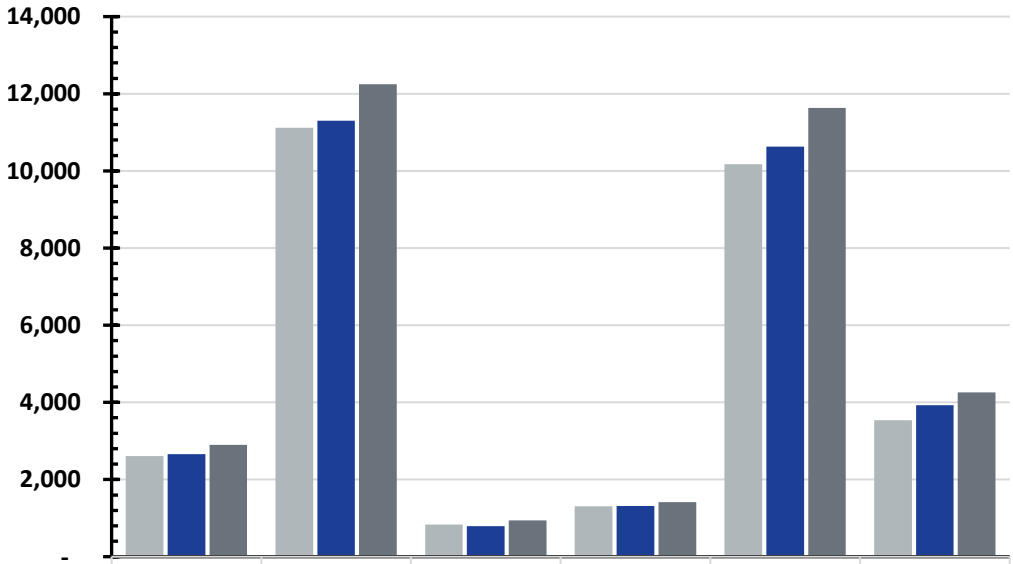
Wherever possible in this section, ESCI will distinguish which standard applies to those particular agencies. However, to conduct a direct comparison between agencies, all response performance elements codified in NFPA 1710 (the most rigorous of the two standards) will be listed for all agencies. Those agencies which NFPA 1720 currently applies to will also be discussed in the context of 1720 throughout this section. It is important to note that integration of fire departments and fire district that are defined by the application of 1710 and 1720 introduces a level of complexity that must be seriously weighed. It is not impossible but does require the agencies to consider how to integrate given the significantly different performance standards each agency independently applies to.

The specific and pertinent response performance elements in NFPA 1720 and 1710 are provided in this report in Appendix D and E respectively.

Service Demand

The next figure shows historical service demand for the departments in the study area. These results are based on CAD data inclusive of the years 2015 through 2017.

Figure 48: Study Area Historical Service Demand CAD, 2015–2017

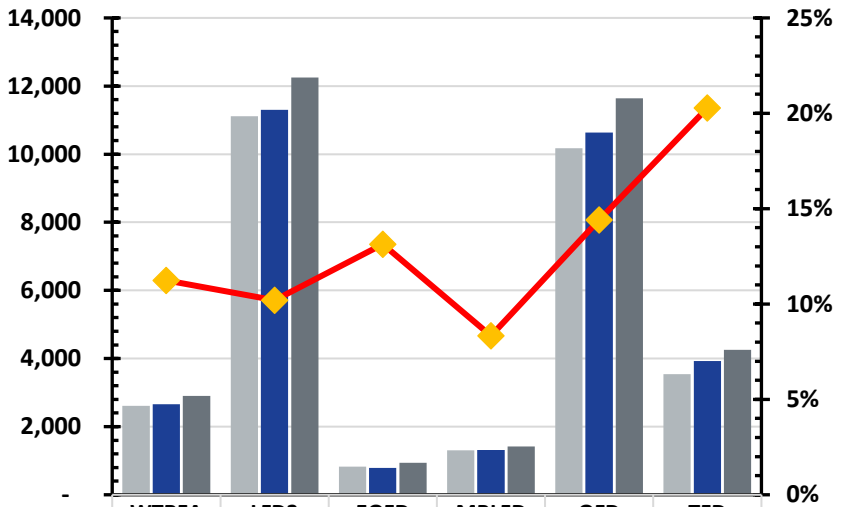


	WTRFA	LFD3	EOFD	MBLFD	OFD	TFD
2015	2,607	11,116	830	1,308	10,170	3,541
2016	2,654	11,305	791	1,310	10,632	3,927
2017	2,900	12,249	939	1,417	11,635	4,259

Demand for fire department services varies throughout the study area. LFD3 experienced the greatest demand while EOFD experienced the least demand during the 36-month study period. Except for the EOFD in 2016—when they had a small decrease in demand—each department's demand increased each year.

The next figure displays the change in service demand over the last three years, summarized by agency.

Figure 49: Percent Change in Service Demand CAD, 2015–2017



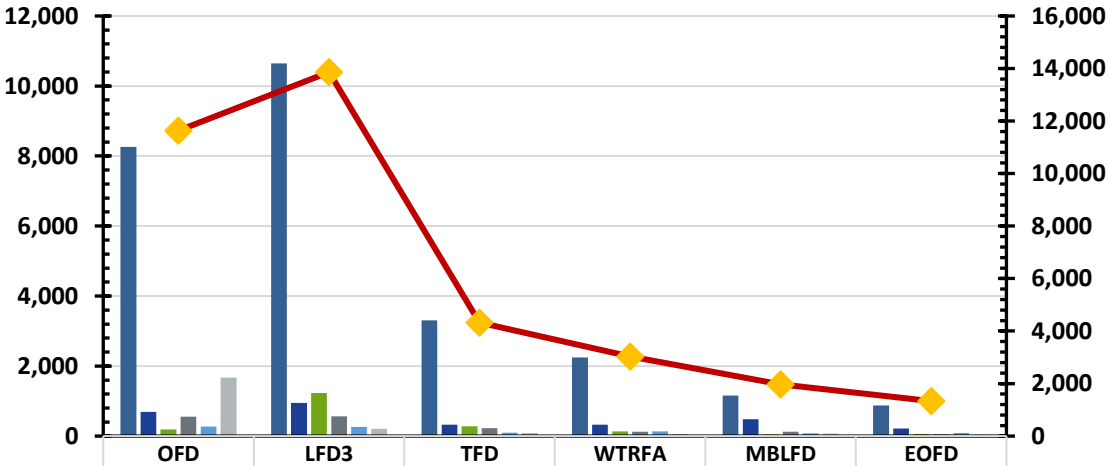
	WTRFA	LFD3	EOFD	MBLFD	OFD	TFD
2015	2,607	11,116	830	1,308	10,170	3,541
2016	2,654	11,305	791	1,310	10,632	3,927
2017	2,900	12,249	939	1,417	11,635	4,259
Percentage Increase	11%	10%	13%	8%	14%	20%

The previous figure demonstrates that all the departments in the study area had an increase in service demand from 2015 to 2017. Overall, the service demand increased by 13 percent within the study area. TFD experienced the greatest change—a 20 percent increase; while MBLFD experienced the smallest percentage increase at 8 percent.

Incident Type and Frequency

The next figure illustrates the service demand by type of incident based on the NFIRS data.

Figure 50: Agency Service Demand by Incident Type NFIRS, 2017

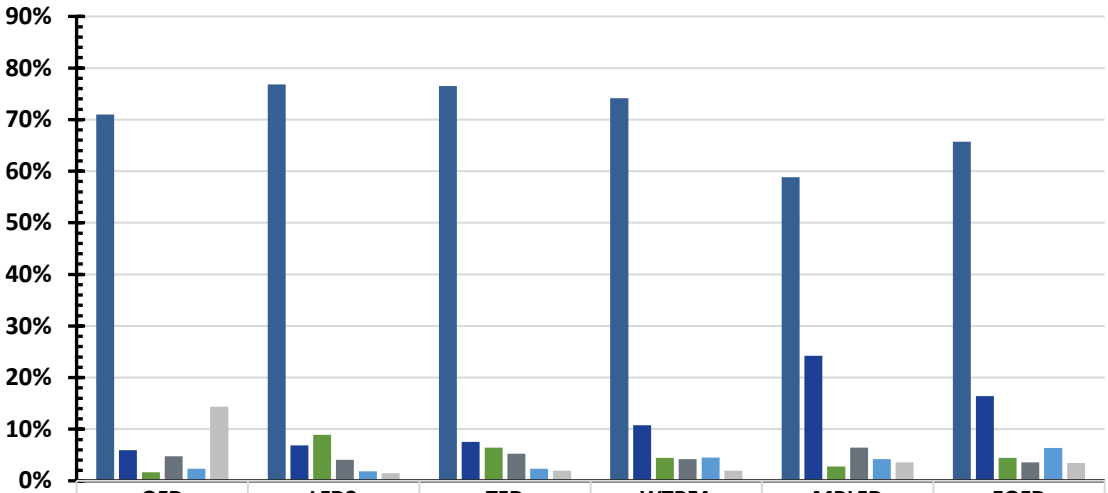


	OFD	LFD3	TFD	WTRFA	MBLFD	EOFD
EMS/Rescue	8,262	10,645	3,310	2,247	1,157	875
Good intent call	687	950	325	327	477	219
Service call	189	1,233	279	134	54	59
False call	554	567	227	127	126	48
Fires	272	258	100	137	83	85
Other	1671	207	84	59	70	46
Total	11,635	13,860	4,325	3,031	1,967	1,332

Although there is a variation in numbers of incidents throughout the study area, EMS incidents constitute the greatest workload for all the participating departments. The *EMS/Rescue* category includes all calls for medical service including motor vehicle accidents (MVAs) and rescue incidents. The *Good Intent* category includes cancelled calls and incidents in which an emergency was not found. The *Other* category not only includes those incidents coded as other but also includes incidents such as hazardous conditions, explosions, and weather-related incidents. The category of service calls are public service calls such as lockouts or assisting the police. *Fire Alarms* include manual and automatic fire alarms and the final category—*Fires* refer to all types of fires (structure, wildland, vehicle, etc.).

The percentages displayed in the next figure are comparable to similar fire jurisdictions that provide EMS services.

Figure 51: Agency Service Demand by Incident Type Percentages NFIRS, 2017

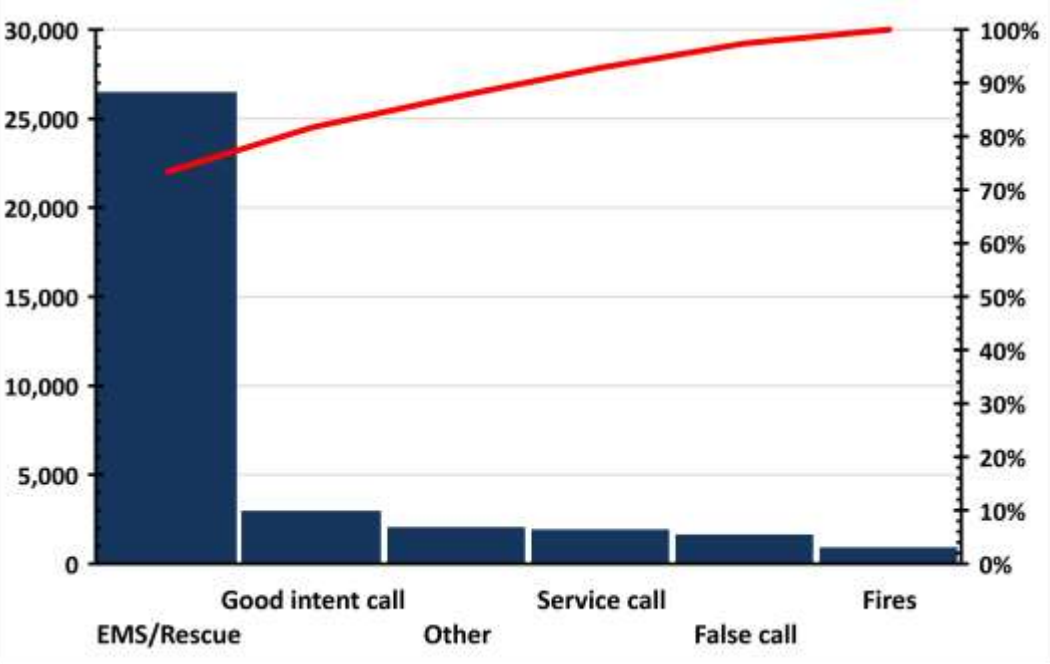


	OFD	LFD3	TFD	WTRFA	MBLFD	EOFD
EMS/Rescue	71%	77%	77%	74%	59%	66%
Good intent call	6%	7%	8%	11%	24%	16%
Service call	2%	9%	6%	4%	3%	4%
False call	5%	4%	5%	4%	6%	4%
Fires	2%	2%	2%	5%	4%	6%
Other	14%	1%	2%	2%	4%	3%

The highest service demand of EMS incidents ranges from a low of 59 percent at the MBLFD, to a high of 77 percent in Lacey and Tumwater. For departments that provide EMS, it is generally expected that EMS incidents result in 70 to 80 percent of a department's service demand. While four of the study area departments are within this range, two—MBLFD and EOFD—fall below the percentage that might be expected.

The next figure displays service demand by type of incident for the entire study area.

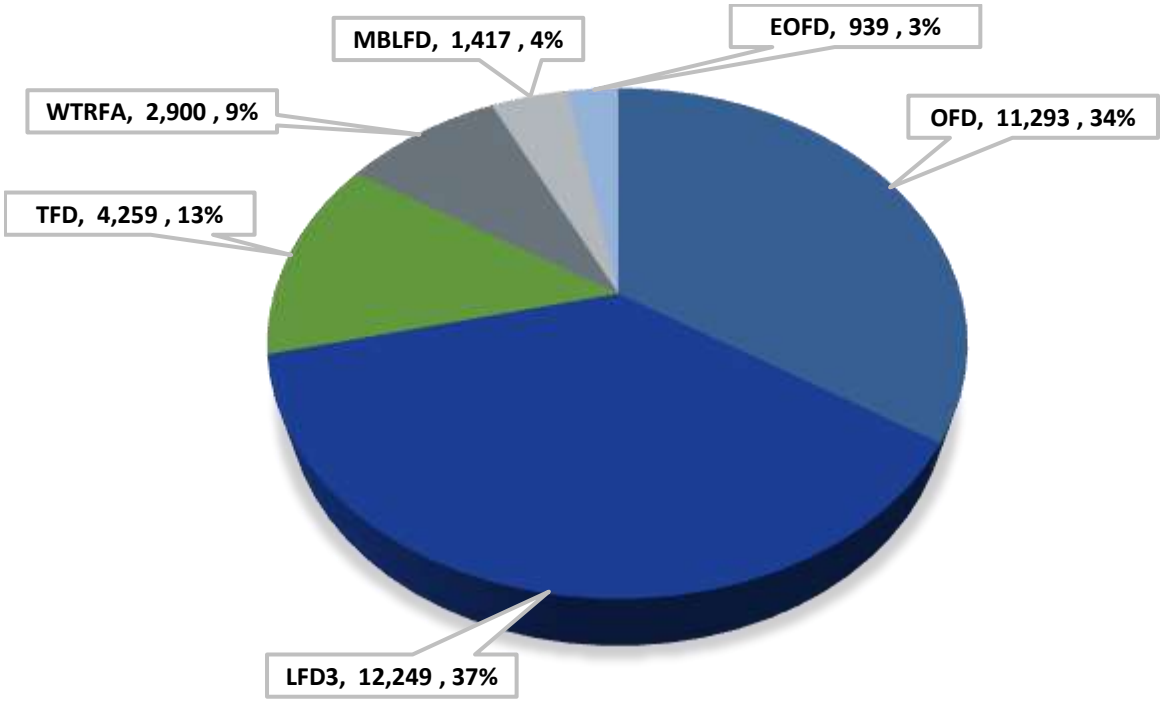
Figure 52: Aggregate Service Demand by Incident Type in the Study Area NFIRS, 2017



As shown in the previous figure, 73 percent of the incidents throughout the study area were for EMS/Rescue incidents. Fires accounted for three percent of total incidents followed by good intent and other incidents at eight and six percent respectively. Service calls and false alarms at four percent were the lowest in demand.

The next figure provides the proportion of incidents from each agency into the total 33,057 incidents from the CAD records.

Figure 53: Proportion of Total Service Demand in the Study Area from Each Department CAD, 2017

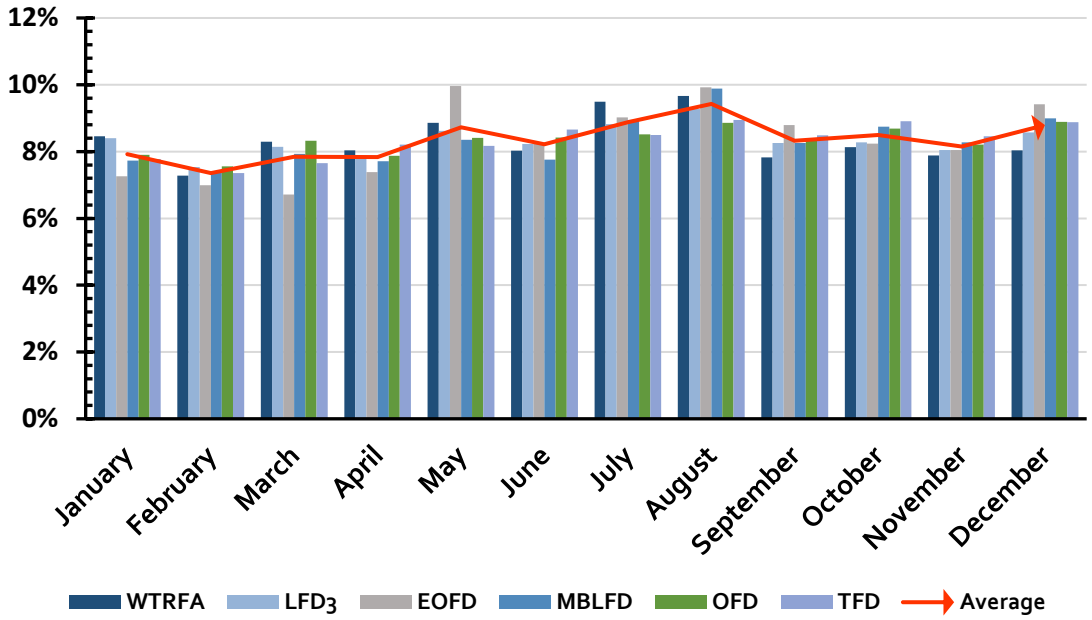


According to CAD data, the LFD3 and OFD account for over 70 percent of the incidents in the study area. Adding TFD to LFD3 and OFD's total shows that nearly 85 percent of the incidents are handled by three departments. As will be shown in this section these departments cover the most populated sections of the study area.

Temporal Variation

A temporal analysis of incidents reveals when the greatest response demand occurs. The following figures illustrate how activity and demand changed for the study area and individual fire departments based on various time measurements. The data used is 2015 through 2017 CAD data for each participating agency.

Figure 54: Study Area Service Demand by Month CAD, 2015–2017



Service demand across the study area is fairly consistent throughout the year. One exception is the EOFD during the month of May in which the EOFD has nearly 1.25 percent higher demand than the average for May. On average the busiest month in the study area is August at almost 9.5 percent. The slowest month on average is February—the shortest month—with 7.3 percent of the incidents occurring. If February as a short month is not considered, then March and April are the slowest months with 7.8 percent of the demand. Overall, average service demand varies. The range between the average busiest month and slowest month is 2 percent. The next figure is a summary of the demand by month for each department.

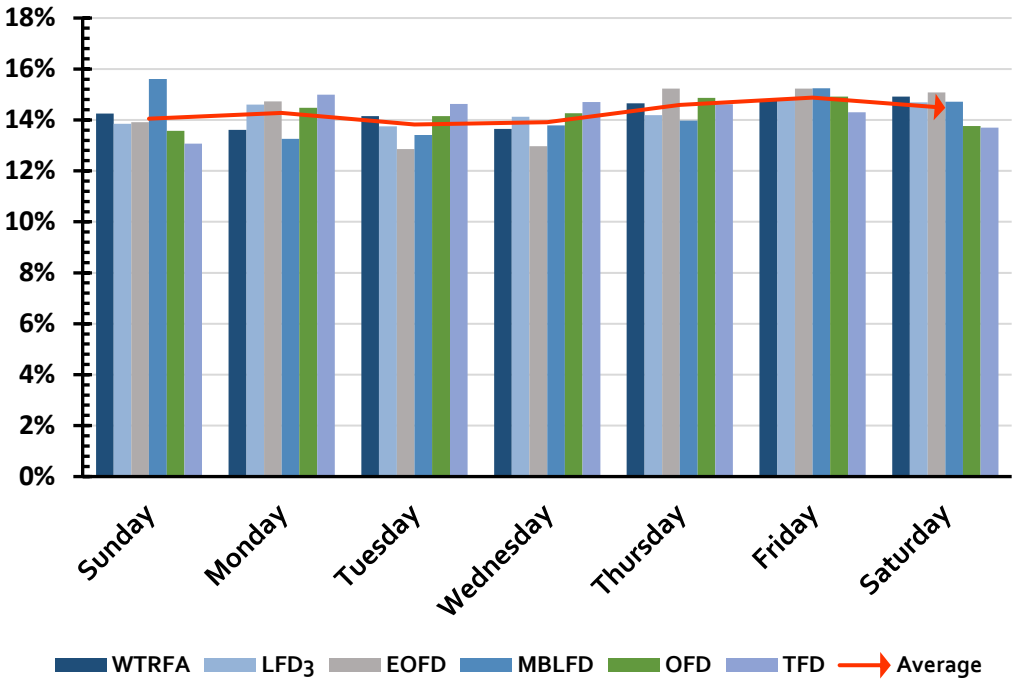
Figure 55: Study Area Service Demand by Month Summary CAD, 2015–2017

Fire Department/District	Busiest Month	Slowest Month	Slowest Month[1]
Tumwater Fire Department	August (9.0%)	February (7.4%)	March (7.7%)
Olympia Fire Department	December (8.9%)	February (7.6%)	April (7.9%)
Lacey Fire District	August (9.03%)	February (7.5%)	November (8.0%)
East Olympia District	May (10.0%)	March (6.7%)	March (6.7%)
West Thurston Regional Fire Authority	August (9.7%)	February (7.3%)	September (7.8%)
McLane/Black Lake District	August (9.9%)	February (7.4%)	April (7.7%)

[1] Excluding February

The next figure analyzes service demand by day of the week.

Figure 56: Study Area Service Demand by Day of the Week CAD, 2015–2017



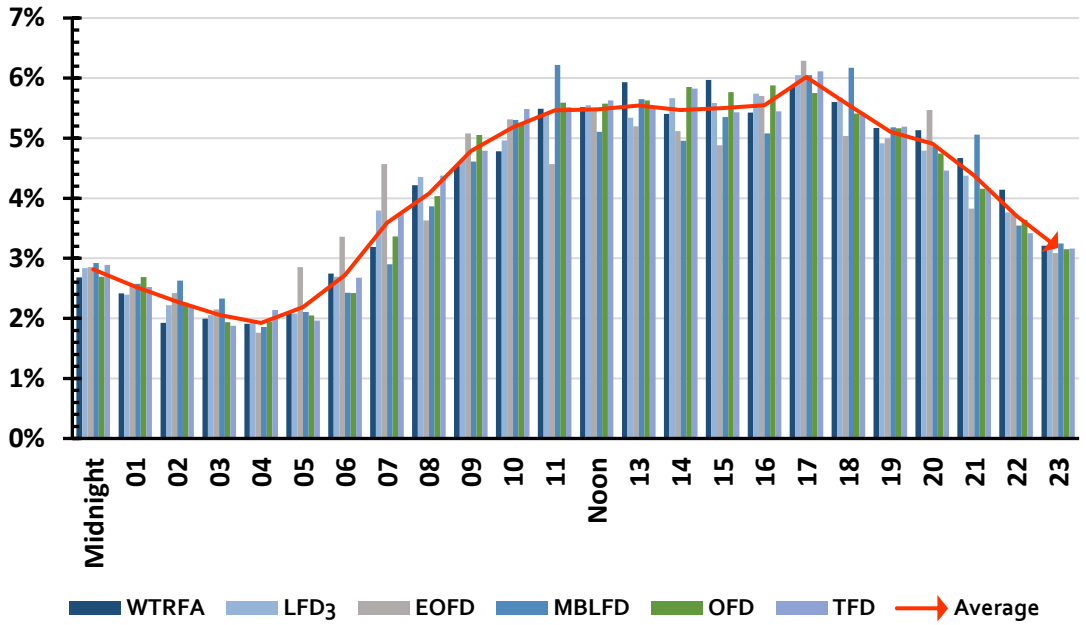
Service demand by day of the week does not vary much across the study area. The MBLFD demand on Sundays is above average. The average busiest day in the study area is Fridays with nearly 15 percent of the weekly demand. Overall, the average service demand throughout the week varies within a range of approximately 1 percent between the lowest and the highest average demand. The next figure is a summary of daily demand for each department.

Figure 57: Study Area Service Demand by Day of Week Summary CAD, 2015–2017

Fire Department/District	Busiest Day	Slowest Day
Tumwater Fire Department	Monday (15.0%)	Sunday (13.1%)
Olympia Fire Department	Friday (15%)	Sunday (13.6%)
Lacey Fire District	Friday (14.8%)	Tuesday (13.7%)
East Olympia District	Friday (14.9%)	Sunday (13.6%)
West Thurston Regional Fire Authority	Saturday (15.0%)	Monday (13.6%)
McLane/Black Lake District	Sunday (15.6%)	Monday (13.3%)

The final temporal analysis of service demand examines demand summarized by hour of the day and is illustrated in the next figure.

Figure 58: Study Area Service Demand by Hour of the Day, CAD 2016–2017



The previous figure demonstrates a distinct curve that closely follows typical population activity patterns. Incident activity begins to increase in the morning and continues to increase throughout the workday and into the early evening. The demand gradually decreases throughout the evening hours and into the early morning hours. In the study area—the six departments—demand remains high throughout the day until approximately 5 pm on average. The next figure summarizes the busiest and slowest hours by department.

Figure 59: Study Area Service Demand by Day of Week Summary CAD, 2015–2017

Fire Department/District	Busiest Hour	Slowest Hour
Tumwater Fire Department	5 pm (6.1%)	3 am (1.9%)
Olympia Fire Department	4 pm (5.9%)	3 am (1.9%)
Lacey Fire District	5 pm (6.0%)	4 am (1.9%)
East Olympia District	5 pm (6.3%)	4 am (1.8%)
West Thurston Regional Fire Authority	3 pm (6.0%)	4 am (1.9%)
McLane/Black Lake District	11 am (6.2%)	4 am (1.9%)

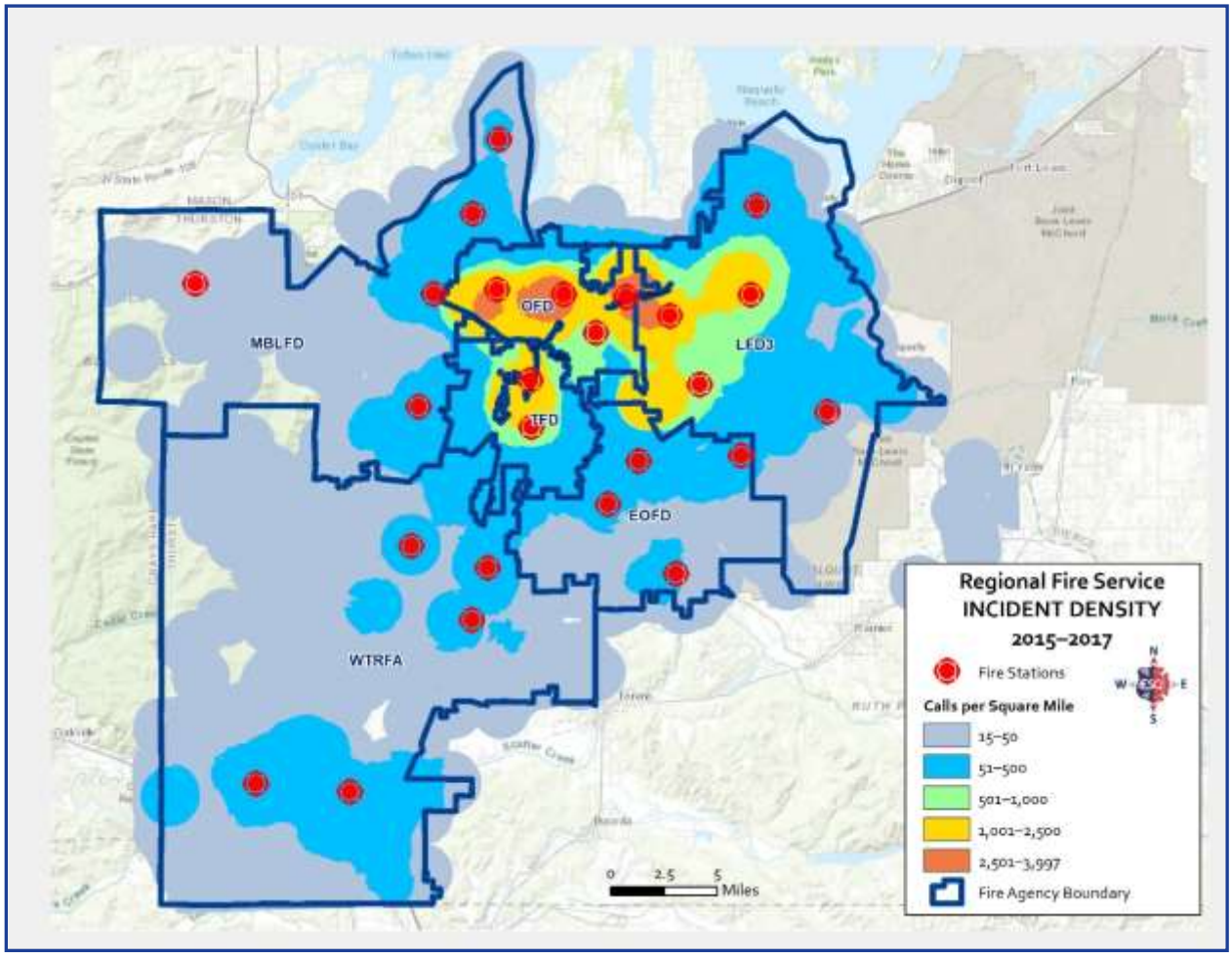
Of note is that while demand is lower in the early morning hours, residential fatal fires occur most frequently late at night or in the early morning. From 2009 to 2011, residential fatal fires were highest between 1:00 am to 2:00 am and 4:00 am to 5:00 am. The 8-hour peak period (11 pm to 7 am) accounted for 48 percent of residential fatal fires.[13]

[13] Fatal Fires in Residential Buildings (2009–2011), Topical Fire report Series Volume 14, Issue 3/May 2013, U.S. Department of Homeland Security, U.S. Fire Administration, National Fire Data Center.

Geographic Distribution

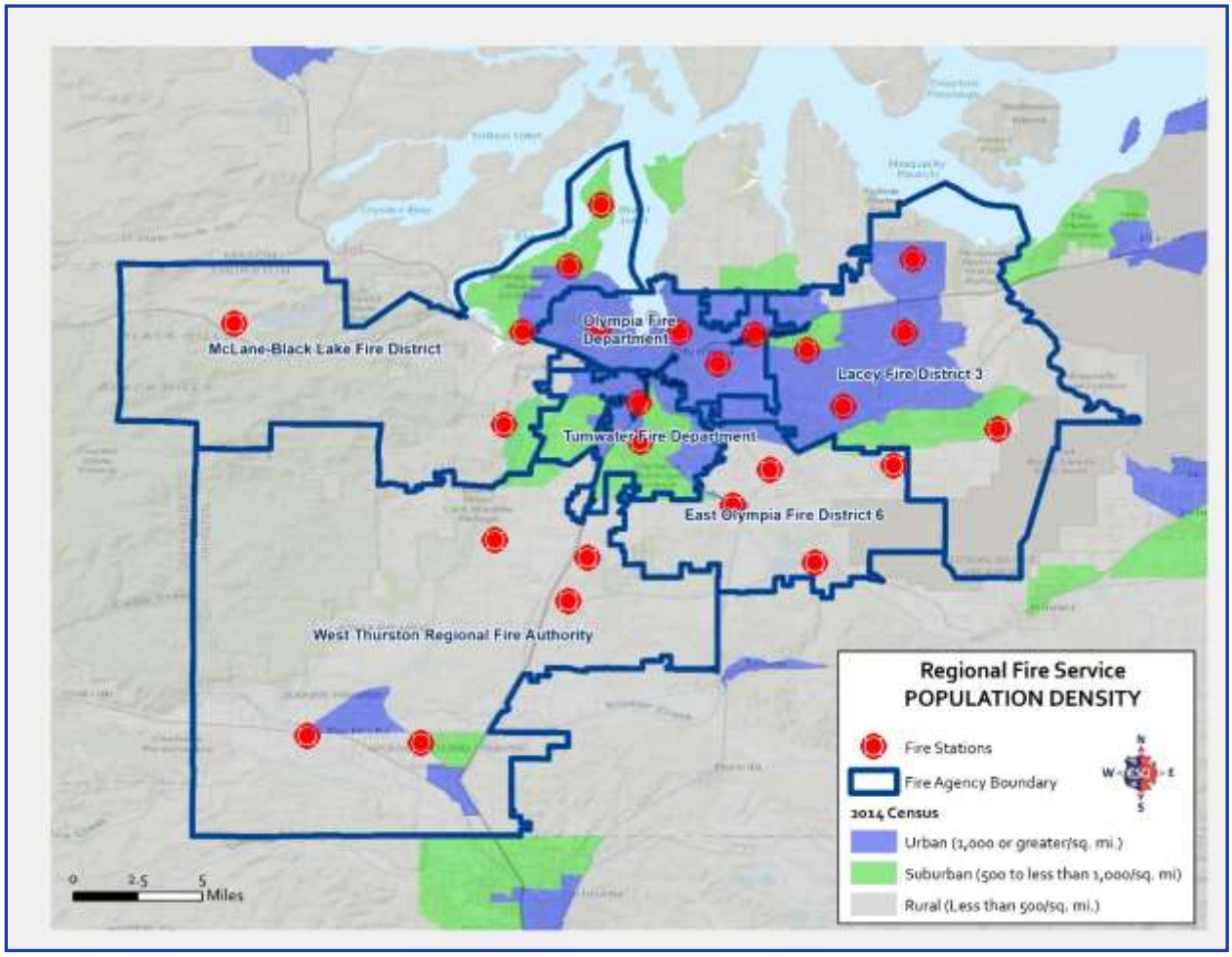
In addition to the temporal analysis of service demand, it is useful to examine the geographic distribution of service demand. Utilizing the CAD data, ESCI calculated the mathematical density of incidents from 2015 through 2017 throughout the study area. The next figure shows the result of this calculation.

Figure 60: Incident Density CAD, 2015–2017



In this analysis, the relative proximity of incident locations is compared using GIS software and a relative scale of incident rate per square mile calculated. Also referred to as a Hot Spot analysis, this figure displays where the highest density of incidents occurred relative to each other and provides areas of frequent activity. Service demand is spread throughout the study area. As expected, the high incident density areas tend to be in the areas of higher population.

Figure 61: Census Estimate Population Density, 2014

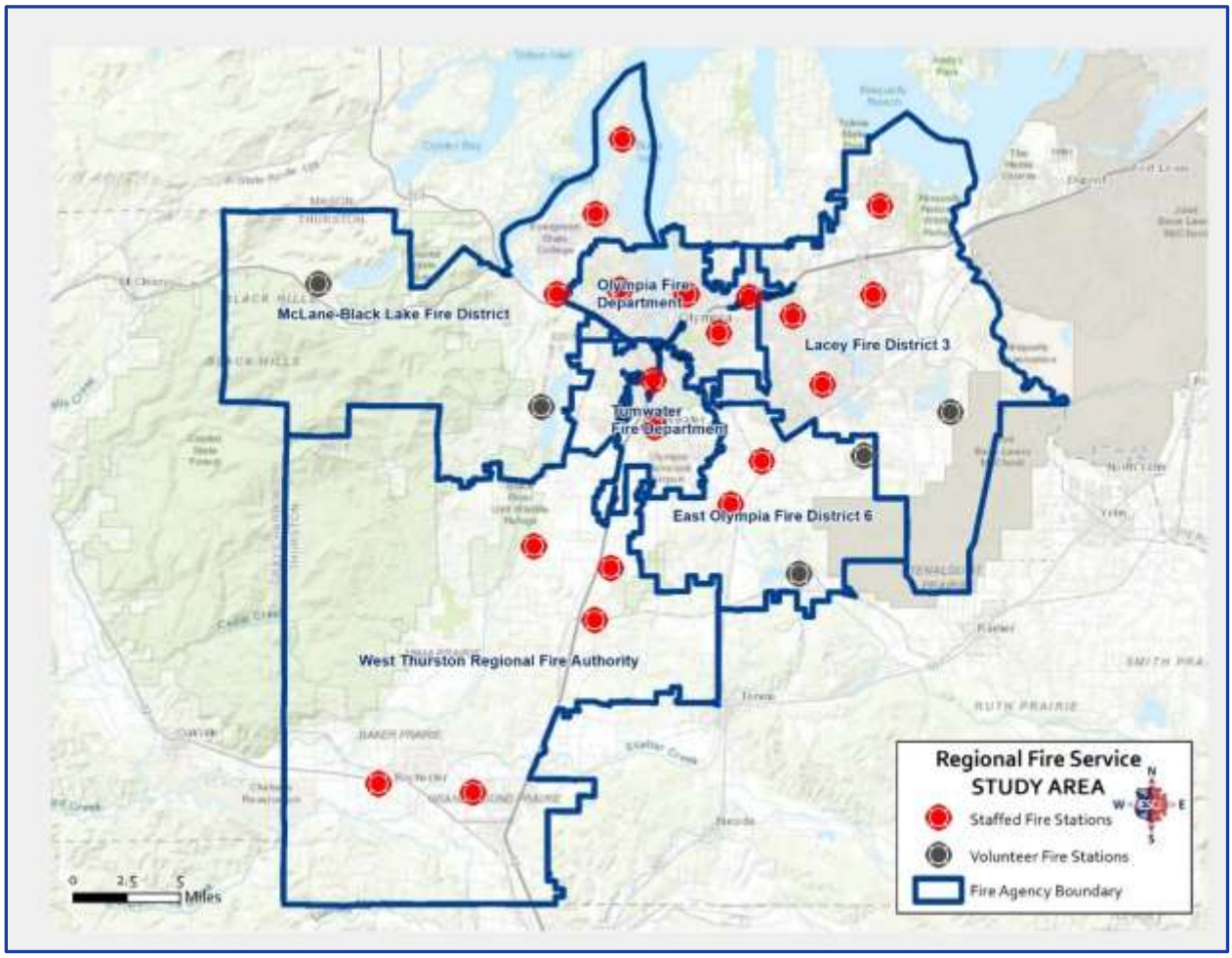


The previous figure displays the population density from the 2014 census estimation showing people per square mile. The highest population density is in the northeastern end of the study area. This is in the area of the Olympia Fire Department, Tumwater Fire Department, and Lacey Fire District 3; although there are very small pockets in WTRFA, EOFD, and MBLFD that have urban densities. Note that the areas with the highest population density correspond with the areas of highest incident density displayed in the demand analysis.

Resource Distribution

In the distribution analysis, ESCI presents an overview of the current distribution of fire agency resources in the study area. The following figure displays the study area and the participating fire jurisdictions.

Figure 62: Regional Fire Service Study Area



The study area encompasses a total of approximately 384 square miles of Thurston County. The next figure illustrates a summary of resource distribution across the area.

Figure 63: Resource Distribution in the Study Area

Fire Department/District	Area in Sq. Mi.	No. of Stations
Tumwater Fire Department	18	2
Olympia Fire Department	20	4
Lacey Fire District	70	5
East Olympia District	30	4
West Thurston Regional Fire Authority	158	5
McLane/Black Lake District	84	5
Total:	**384**	**25**

Washington Surveying and Rating Bureau Criteria

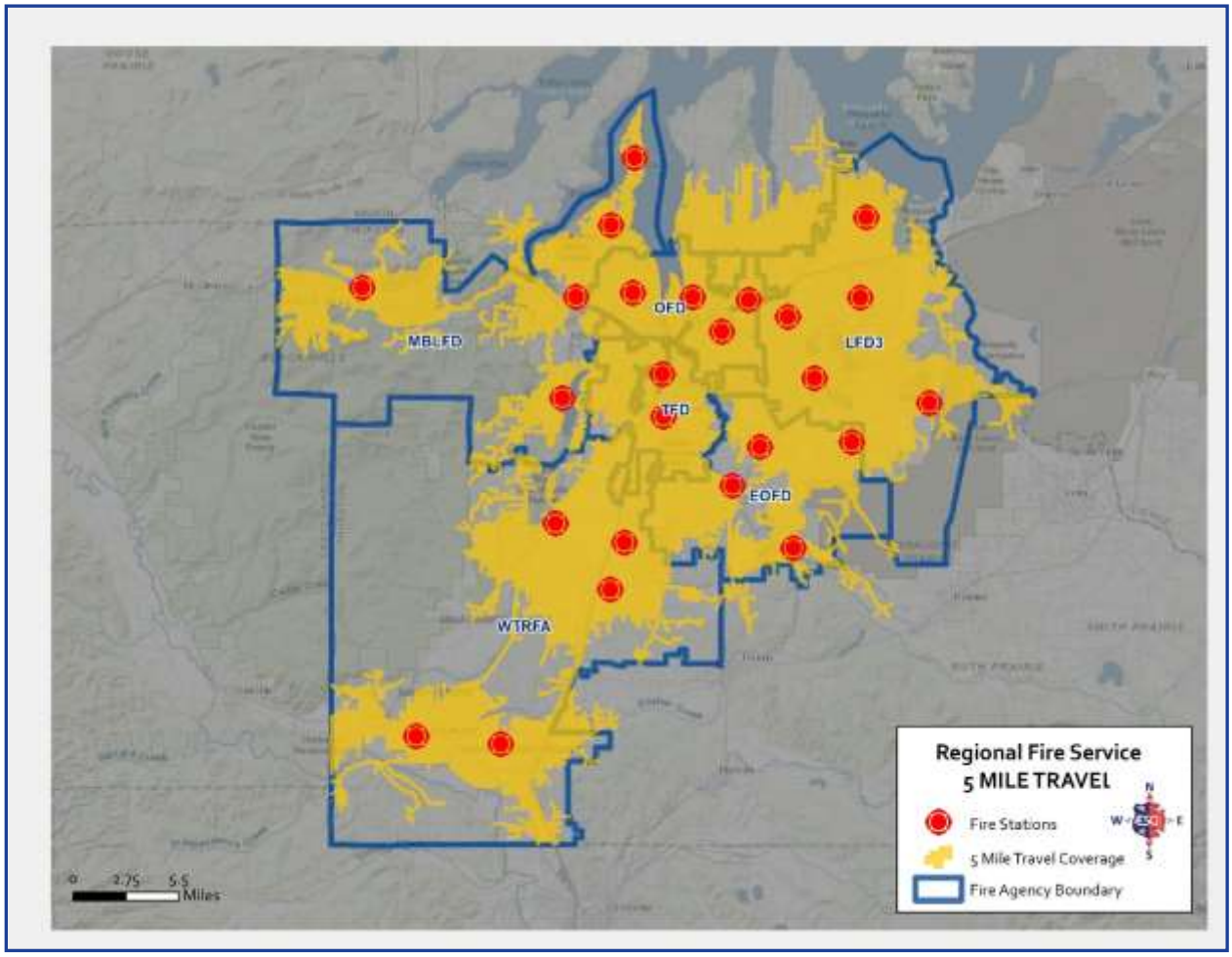
The Washington Surveying and Rating Bureau (WSRB) is a national insurance industry organization that evaluates fire protection for communities across the country. A jurisdiction's WSRB rating is an important factor when considering fire station and apparatus distribution as it can affect the cost of fire insurance for individuals and businesses. The rating is awarded by the WSRB based on a point scale after analysis of the various components contained in the Public Protection Classification (PPC). An agency receiving a PPC rating of one is considered to have exemplary fire protection capabilities, the highest score possible. A score of ten is considered to have insufficient capabilities to receive insurance credit. The following figure reflects the PPC ratings for each of the participating agencies.

Figure 64: Washington Surveying & Rating Bureau Public Protection Classifications by Agency

Fire Department/District	PPC Rating	Year Rated
Tumwater Fire Department	4	Rerate in process
Olympia Fire Department	2	2016
Lacey Fire District	3/5	Rerate in process
East Olympia District	5/9	2017
West Thurston Regional Fire Authority	4	2018
McLane/Black Lake District	4	2018

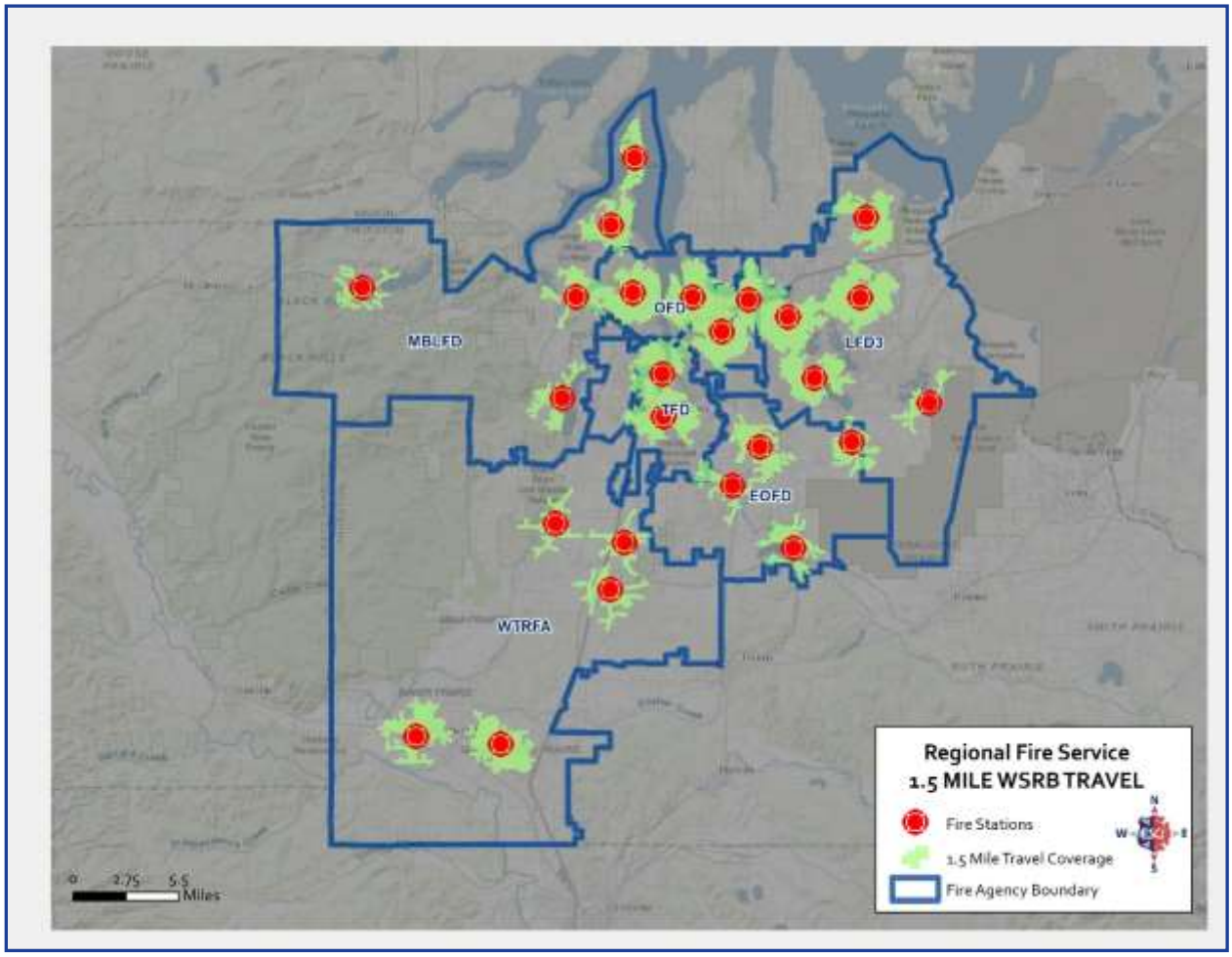
To receive maximum credit for station and apparatus distribution, WSRB recommends that all "built upon" areas in a community, be within 1.5 road miles of an engine company. Additionally, a structure should be within five miles of a fire station and have an adequate water supply to receive any fire protection rating for insurance purposes. In the following figures, ESCI examined fire facility distribution by distance over the existing road network.

Figure 65: Study Area Station Distribution, 5 Mile Travel Service Area



Depicted in the previous figure is the WSRB five-mile travel requirement to receive a fire protection rating. Overall most of the populated portions of the study area are within the five-mile requirement. The areas outside the five-mile travel areas are generally areas that have a population density of less than 500 people per square mile.

Figure 66: Study Area Station Distribution, 1.5 Mile WSRB Criterion Engine Company

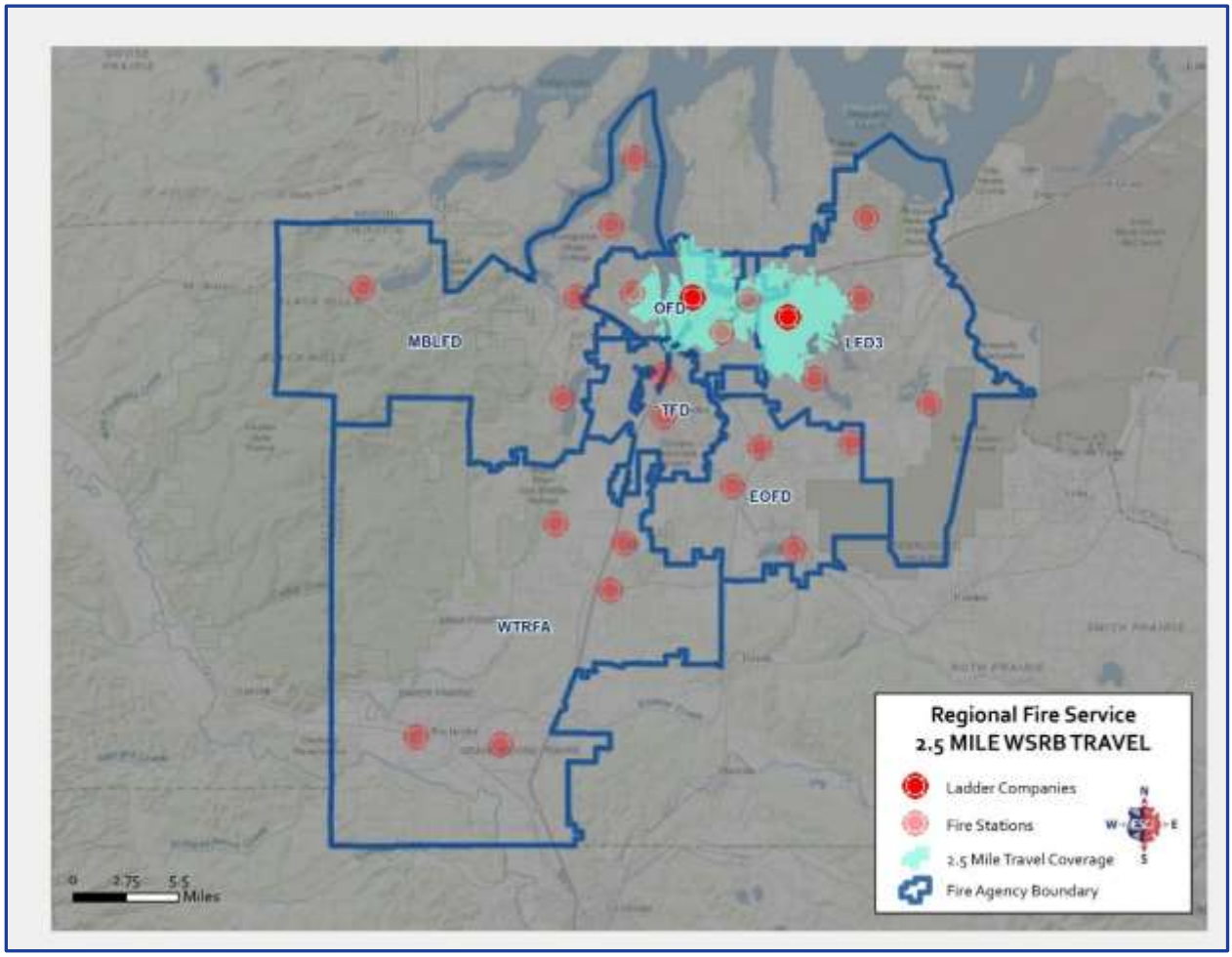


The current fire station locations within the study area meet the WSRB requirements of 1.5 miles in the built-up and higher population density areas. The rural areas are outside the 1.5-mile travel distance.

Like the 1.5-mile engine company criteria, WSRB recommends that truck companies (aerial apparatus) be placed at 2.5-mile intervals in areas with at least five buildings over three stories in height.

The fire departments in the study area deploy ladder companies from two locations—Lacey District 3 Headquarters and Olympia Station 1. The next figure demonstrates the 2.5-mile service area for the aerial apparatus.

Figure 67: Study Area Station Distribution, 2.5 Mile WSRB Criterion Ladder Company

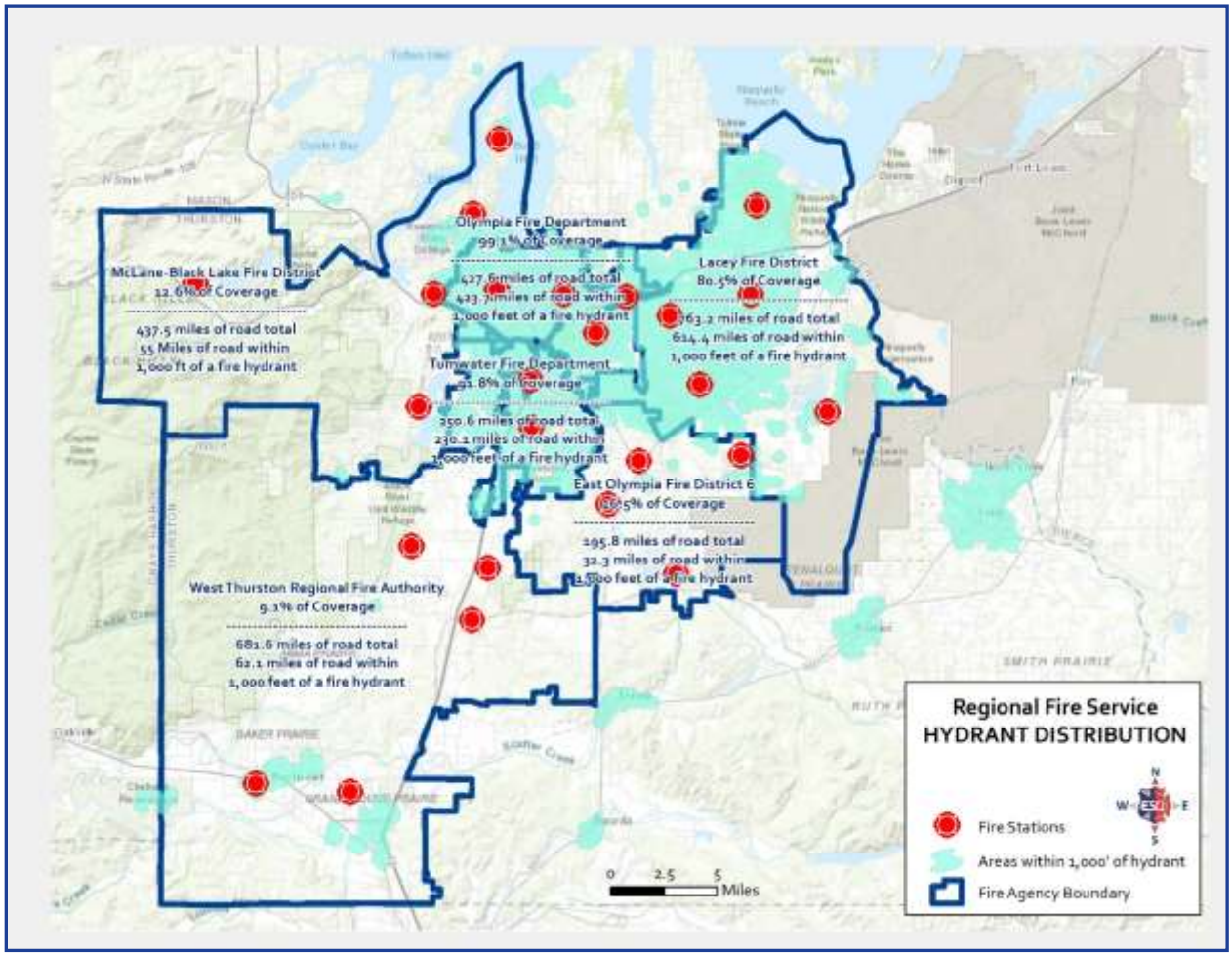


The aerial apparatus—as deployed—provides coverage in the urban areas. Departments within the study area should evaluate the location of buildings over three stories in relationship to the 2.5-mile travel distance

The ability of a fire department to arrive on scene of a fire within a given time or distance, represents only part of the WSRB classification. Other elements include the ability to assemble personnel, resources, and water sufficient to extinguish the fire.

The next figure illustrates the areas that are 1,000 feet from a fire hydrant.

Figure 68: WSRB Hydrant Distribution



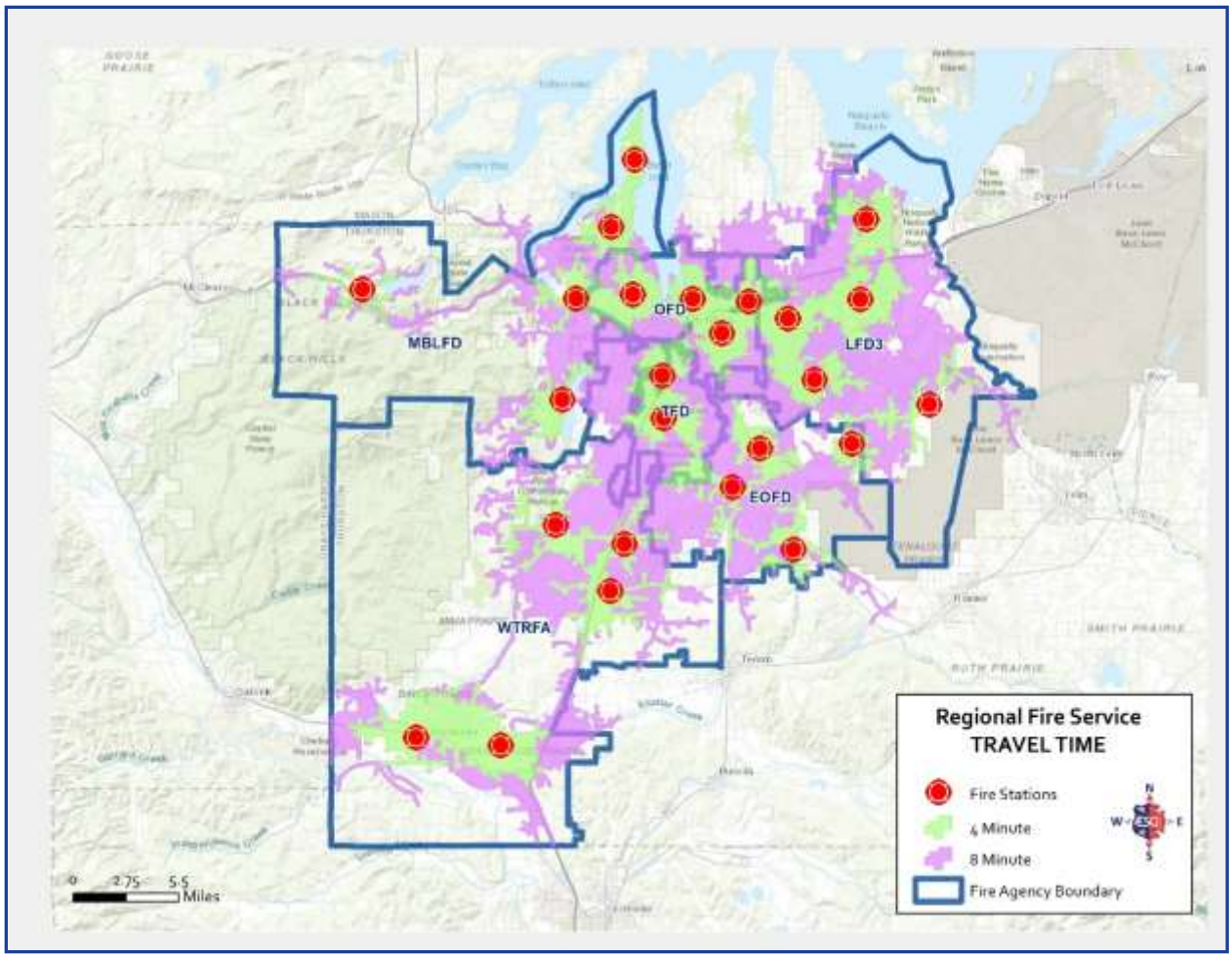
Those structures outside of the 1,000-foot radius are subject to receive an WSRB Class 10 rating, signifying that no fire protection capabilities exist, unless the fire department can demonstrate a suitable tender shuttle operation and transport a sufficient volume of water to a fire for suppression activities within a specified period. All of the participating agencies needing to rely on tender shuttle operations for inadequate hydrant distribution have received tender shuttle credit from WSRB.

Again, the urbanized areas are within the required distance for water supply. Departments also operate tenders for those areas where water supply is a challenge.

In closing, it bears mentioning that the addition of fire stations or changes to type of apparatus deployed can have negative impacts to the overall WSRB rating if personnel are insufficient to staff those locations based on WSRB minimum criteria. Prior to implementing new deployment strategies, the WSRB regional representative should be consulted to assess the potential impacts of changes to the deployment strategy. While WSRB criteria is focused on fire suppression activities exclusively, NFPA standards establish benchmarks for all areas of responsibility for a fire department.

Utilizing current GIS data, the figures on the following pages demonstrate potential travel times from the fire stations in the study area over the existing road network. Illustrated travel time is calculated using the posted speed limit and adjusted for negotiating one-way streets, turn delays, and intersection elevations. The following analysis demonstrates the predicted four and eight-minute travel time, which is a standard within NFPA 1710, specifically applicable to OFD, TFD, and LFD3.

Figure 69: 4- and 8-Minute Travel Time

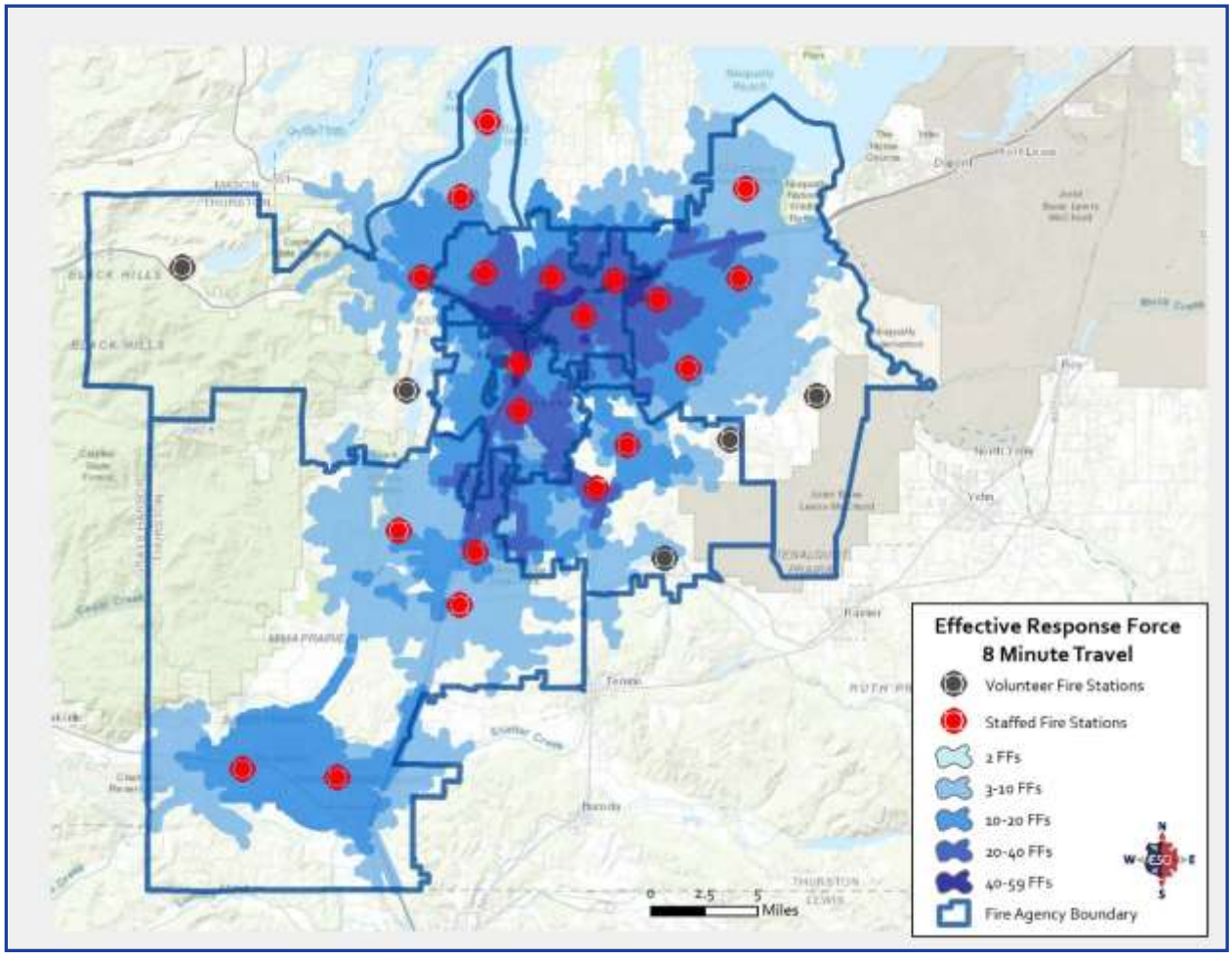


The geography and nature of the road network presents challenges to the fire jurisdictions within the study area. However, it is apparent in the figure above that the majority of the study area is within eight minutes of a fire station, with travel times over eight minutes in areas of low population density.

Resource Concentration

The ability for fire departments to assemble resources from multiple areas to initiate safe and effective fire suppression and rescue operations is critical to the overall success of the department. The following figure presents a resource concentration analysis using NFPA 1710 standards for the assembly of an Effective Response Force (ERF) for the study area. In the figure, fire resources within eight minutes of travel from their respective stations to the incident are displayed. Again, this is specifically applicable to OFD, TFD, and LFD3.

Figure 70: Assembly of an Effective Response Force; 8-minute Travel



The fire service assesses the relative risk of properties and occurrences based on several factors. Properties with high fire risk often require greater numbers of personnel and apparatus to effectively mitigate the fire emergency; properties with lower risk may require fewer people, apparatus, and equipment. Staffing and deployment decisions should be made with consideration of the level of risk involved. The Commission for Public Safety Excellence (CPSE) uses the following levels of risk categories:

- **Low Risk**: Areas and properties used for agricultural purposes, open space, low-density residential and other low intensity uses.
- **Moderate Risk**: Areas and properties used for medium density single family residences, small commercial and office uses, low intensity retail sales and equivalently-sized business activities.
- **High or maximum Risk**: Higher density businesses and structures, mixed-use areas, high density residential, industrial, warehousing, and large mercantile structures.

The following figure shows one example of critical task resource requirements and recommended number of personnel for fires, irrespective of volunteer or paid status. This is for illustration purposes only and does not necessarily reflect the critical tasks or number of personnel recommended for structure fires.

Figure 71: Example of Critical Task Staffing Analysis Based on Risk[14]

Firefighter Personnel Needed Based on Level of Risk				
	Structure Maximum Risk	Structure High Risk	Structure Moderate Risk	Non-Structure Low Risk
Attack Line	4	4	2	2
Back-up Line		2	2	(2)
Support for Hose Lines/Water Supply		3	2#	
Ventilation	4	2	2	
Search and Rescue	4	2	2	
Forcible Entry/Support		2	2	
Standby/Rapid Intervention Team	4	2	2	
Driver/Pump Operator	1	1	1	1
2nd Apparatus/Ladder Operator		1		
Command	2	1	1	1#
Communications/Safety	1	1	1	
Accountability		1		
Salvage				
Rehabilitation	2			
Building Fire Pump Monitor	(1)			
Attack Line – Floor Above the Fire	2			
Evacuation Management Teams	4			
Elevator Operations Manager	1			
Lobby Operations	1			
Transport Equipment to Staging	2			
EMS Crews	4			
Division/Group Supervisors	4			
Total	**40–41**	**28**	**16–17**	**3–6**

( ) indicates tasks may not be required at all incidents. # indicates task may be completed concurrently with others.

This methodology may be used to determine the number and type of resources required for any incident type. Four scenarios of commonly encountered emergencies are a non-structural fire, hazardous materials incident, a traffic collision with trapped victim, and a medical emergency. These critical tasks specifically relate to NFPA 1710 applicable agencies (OFD, TFD, and LFD3). While NFPA 1720 is silent on these types of risks, it is an industry best practice to identify critical tasks by risk type.

The next figures illustrate an example for each.

[14] *Adapted from "Community Risk Assessment and Standards of Cover," 6th edition; Center for Public Safety Excellence.*

Figure 72: Sample Non-Structure Fire Critical Tasking

Task	Personnel
Command	1
Pump Operator	1
Primary Attack Line	2
Total	**4**

Figure 73: Sample EMS Incident Critical Tasking

Task	Personnel
Command	1
Patient Care	2
Total	**3**

Figure 74: Sample Motor Vehicle Collision with Entrapment Critical Tasking

Task	Personnel
Command	1
Pump Operator	1
Primary Attack Line	2
Extrication	3
Patient Care	2
Total	**9**

Figure 75: Sample Hazardous Materials Incident Critical Tasking

Task	Personnel
Command	1
Pump Operator	1
Primary Attack Line	2
Back-Up Line	2
Support Personnel	7
Total	**13**

The previous figures are provided as an example for these types of incidents, although ESCI recommends the departments conduct their own field validation exercises with their crews, including automatic aid resources, to verify the critical tasking analysis provided. After field validation is complete, the departments may find that the critical tasking can be adjusted appropriately upward or downward for each incident type. However, critical tasks are specifically identified for 2,000 square foot single family homes, garden-style apartments, strip malls, and high rises within NFPA 1710.

The previously mentioned minimum staffing criteria can be used as a planning tool in setting specific service level objectives for each of the incident types.

In summary, critical tasks are those activities that must be conducted in a timely manner by firefighters at emergency incidents to control the situation, stop loss, and to perform necessary tasks required for a medical emergency. The six departments in the study area are responsible for assuring that responding companies can perform all the described tasks in a prompt, efficient, and safe manner.

Resource Reliability

The workload of emergency response units can be a factor in response time performance. Concurrent incidents and the amount of time individual units are committed to an incident can affect a jurisdiction's ability to muster enough resources to respond to additional emergencies.

In the following figure, ESCI examined 2015 through 2017 incidents for each agency and the overall study area to find the frequency that the jurisdictions are handling multiple calls. This is important because, the more calls occurring at one time, the more stretched available resources become leading to extended response times from more distant responding available apparatus.

Figure 76: Study Area Concurrent Incidents CAD, 2015–2017

District	Single Incident	2 Incidents	3 Incidents	4 Incidents	5 Incidents	6 or More Incidents
TFD	75%	22%	3%	< 1%	< 1%	-
OFD	49%	34%	13%	3%	1%	< 1%
LFD3	41%	35%	16%	5%	1%	< 1%
EOFD	90%	9%	< 1%	< 1%	< 1%	-
WTRFA	72%	23%	4%	1%	< 1%	-
MBLFD	86%	12%	1%	< 1%	< 1%	-
Overall	**11%**	**21%**	**23%**	**19%**	**12%**	**13%**

In the study area overall, three concurrent incidents occurred 23 percent of the time—the most frequent. Single incidents occurred 70 or more percent of the time in EOFD, MBLFD, WTRFA, and TFD. Concurrent incidents were most likely to occur in OFD (51% of the time) and LFD3 (59% if the time). When considering the study area overall—three or less incidents are occurring concurrently 56 percent of the time. On May 4, 2017, a storm effected the study area causing a high number of concurrent calls—many for storm related issues. This influenced the percentage of six or more incidents.

Unit hour utilization (UHU) describes the amount of time that a unit is not available for response because it is already committed to another incident. The larger the number, the greater its utilization and the less available it is for assignment to subsequent calls for service. UHU rates are expressed as a percentage of the total hours in a year. The following figures display the amount of time response units were committed to an incident in 2015 through 2017 according to the CAD records provided. While all units were analyzed, only those with a UHU of greater than one percent are included in the following figure.

Figure 77: UHU Rates by Department CAD, 2015–2017

Department	Unit	Total Incidents	Total Time	Average Time	UHU
WTRFA	A11	2,927	2635:27:32	0:54:01	10.03%
	A12	2,467	2539:28:06	1:01:46	9.66%
	A13	2,513	2497:37:15	0:59:38	9.50%
	A16	689	678:03:13	0:59:03	2.58%
	B12	189	302:34:48	1:36:03	1.15%
	BN16	1,959	1789:12:26	0:54:48	6.81%
	CH11	291	460:25:15	1:34:56	1.75%
	E11	1,710	1520:02:13	0:53:20	5.78%
	E12	1,177	1142:17:56	0:58:14	4.35%
	E13	1,053	1028:49:59	0:58:37	3.91%
	E16	523	575:52:01	1:06:04	2.19%
	SU18	104	316:07:37	3:02:23	1.20%
	T11	305	469:14:06	1:32:19	1.79%
	T12	326	650:24:35	1:59:42	2.47%
Averages of WTRFA Units:				**1:19:21**	**4.51%**
LFD_3	A33[1]	989	746:44:45	0:45:18	17.95%
	BN31	3,130	2438:38:09	0:46:45	9.28%
	E31	11,460	6979:36:57	0:36:33	26.56%
	E33	10,157	7278:50:42	0:43:00	27.70%
	E34	9,561	6539:26:26	0:41:02	24.88%
	E35	3,465	2653:07:14	0:45:56	10.10%
	M3	5,987	5262:14:28	0:52:44	20.02%
	M6	4,704	4295:27:20	0:54:47	16.34%
	TK31	6,055	4847:53:52	0:48:02	18.45%
Averages of LFD_3 Units:				**0:46:01**	**19.03%**
EOFD	A61	1,120	1091:26:50	0:58:28	4.15%
	A64	1,362	1194:02:04	0:52:36	4.54%
	E61	1,396	1268:25:43	0:54:31	4.83%
	E64	1,977	1765:03:34	0:53:34	6.72%
	ISU6	76	366:21:38	4:49:14	1.39%
	T61	186	325:51:38	1:45:07	1.24%
	T64	242	489:53:15	2:01:28	1.86%
Averages of EOFD Units:				1:45:00	3.53%

Department	Unit	Total Incidents	Total Time	Average Time	UHU
MBLFD	A91	2,620	2073:25:18	0:47:29	7.89%
	A93	418	369:07:27	0:52:59	1.40%
	B91	105	261:35:38	2:29:29	1.00%
	CH91	112	277:00:03	2:28:24	1.05%
	E91	3,898	2955:17:51	0:45:29	11.25%
	E95	1,947	1628:33:02	0:50:11	6.20%
	T91	291	567:24:00	1:56:59	2.16%
	T95	206	467:16:51	2:16:06	1.78%
	WTB	416	675:41:41	1:37:27	2.57%
Averages of MBLFD Units:				**1:33:50**	**3.92%**
OFD	AO1	1,081	578:21:09	0:32:06	2.20%
	BNO1	3,811	2122:50:42	0:33:25	8.08%
	EO1	9,773	5291:54:31	0:32:29	20.14%
	EO2	10,606	6135:39:32	0:34:43	23.35%
	EO3	5,277	3372:53:26	0:38:21	12.83%
	EO4	7,903	4697:26:09	0:35:40	17.87%
	M10	6,084	4621:39:11	0:45:35	17.59%
	M4	6,295	4945:54:51	0:47:08	18.82%
	TKO1	4,701	3066:11:41	0:39:08	11.67%
Averages of OFD Units:				**0:37:37**	**14.73%**
TFD	BNT1	2,802	1521:44:39	0:32:35	5.79%
	ET1	8,762	5257:37:59	0:36:00	20.0%
	ET13	467	328:18:12	0:42:11	1.25%
	ET2	3,779	2430:09:19	0:38:35	9.25%
	M14	1,741	2048:26:57	1:10:36	7.79%
	M5	4,306	4066:02:45	0:56:39	15.47%
	PGRT2	597	366:50:23	0:36:52	1.40%
Averages of TFD Units:				**0:44:47**	**8.71%**
Averages of all Units Combined:				**1:08:18**	**8.87%**

[1] A33-Peaktime Unit operating 40 hours per week in 2017–2018

The UHU varies among the departments and the units in each department. The lowest average is found in the EOFD—3.53 percent—while the highest average is in the OFD at 14.73 percent. Overall for the entire study area the average UHU is 8.36 percent.

Further, ESCI has found that fire-based EMS transport services typically try to keep UHU for their units at or below 30 percent. UHU rates higher than 30 percent tend to cause system failure in other areas, such as response time performance and fire effective response force (ERF) delivery degradation. When UHUs approach and exceed 30 percent, that implies that units are not available at least 70 percent of the time in their first due areas.

In May 2016, Henrico County (VA) Division of Fire published an article after they studied their department's EMS workload.[15] The commitment factors discussed were calculated as ESCI has calculated UHU for the study agencies.

As a result of the study, they developed a general commitment factor scale for their department. The next figure is a summary of those findings as they relate to commitment factors.

Figure 78: Commitment Factors as Developed by Henrico County (VA) Division, 2016

Factor	Indication	Description
0.16–0.24	Ideal Commitment Range	Personnel can maintain training requirements and physical fitness and can consistently achieve response time benchmarks. Units are available to the community more than 75 percent of the day.
0.25	System Stress	Community availability and unit sustainability are not questioned. First-due units are responding to their assigned community 75 percent of the time, and response benchmarks are rarely missed.
0.26–0.29	Evaluation Range	The community served will experience delayed incident responses. Just under 30 percent of the day, first-due ambulances are unavailable; thus, neighboring responders will likely exceed goals.
0.30	"Line in the Sand"	Not Sustainable: Commitment Threshold—community has less than a 70 percent chance of timely emergency service and immediate relief is vital. Personnel assigned to units at or exceeding 0.3 may show signs of fatigue and burnout and may be at increased risk of errors. Required training and physical fitness sessions are not consistently completed.

Units in the study area departments that are at or approaching 25 percent utilization should be monitored and evaluated for consequences of the workload and the potential need for additional resources. These include LFD3 E31 and 33 (currently exceed 25%), while LFD3 E34 and OFD EO2 are close to that threshold.

The next figure examines the frequency of multiple unit utilization for incidents occurring in 2015 through 2017. Only included are units that had an on-scene timestamp.

[15] How Busy Is Busy?; Retrieved from https://www.fireengineering.com/articles/print/volume-169/issue-5/departments/fireems/how-busy-is-busy.html

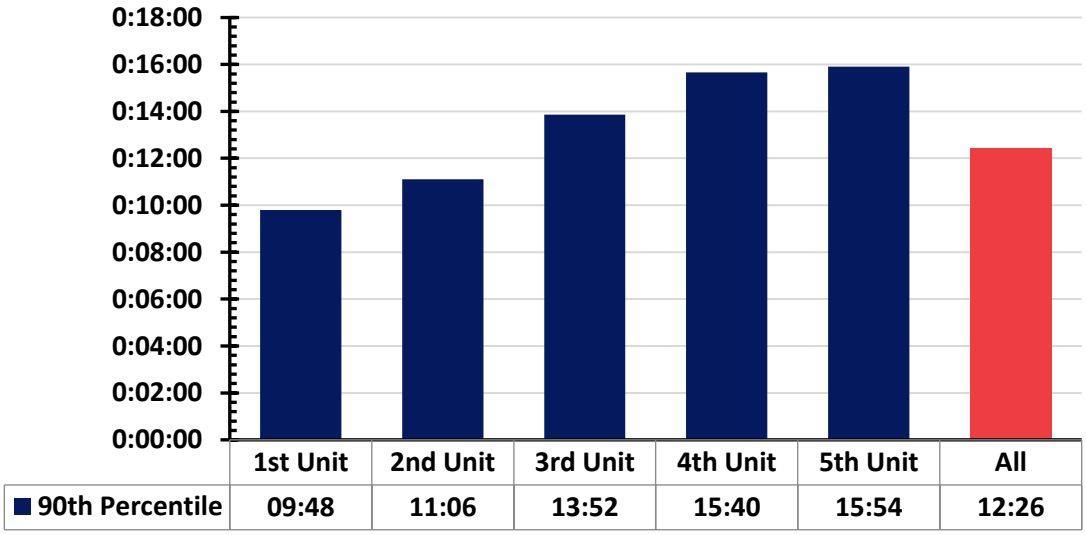
Figure 79: Percentage of Incidents by Number of Units Utilized CAD, 2015–2017

Number of Units	WTRFA	LFD3	EOFD	MBLFD	OFD	TFD	Overall
1	48.4%	60.3%	23.3%	41.0%	62.1%	61.0%	**57.4%**
2	22.0%	25.9%	43.5%	32.3%	26.4%	27.7%	**26.8%**
3	13.1%	7.4%	20.0%	16.2%	6.6%	6.7%	**8.6%**
4	7.4%	2.8%	7.2%	6.3%	2.2%	2.2%	**3.3%**
5	3.1%	1.2%	3.0%	2.1%	0.8%	0.8%	**1.3%**
6 or more	5.9%	2.3%	3.0%	2.2%	2.0%	1.7%	**2.5%**

Based on the data provided—over the entire study area—over ninety percent of the incidents were handled with three or less units. Across the departments, the need for multiple units was varied. Over 60 percent of the time incidents in the LFD3, OFD, and TFD area were handled by one unit. While incidents in WTRFA, EOFD, and MBLFD used one unit under 50 percent of the time.

Finally, response performance for order of arrival for the first five units arriving to structure fires was analyzed for incidents occurring in 2015 through 2017. For this analysis, only residential and commercial structure fires as listed in the CAD data and only using Engines, Trucks, Medic and Aid units; command officers were not included. To be measured, the unit had to have an on-scene timestamp in CAD. Response time, a combination of turnout time and travel time, was used as the measurement. The analysis was performed on all calls within the study area regardless of jurisdiction or the agency responding. This is an NFPA 1710 element. While NFPA 1720 has an arrival time element for structure fires, the criteria is different, and will be discussed separately later in this section.

Figure 80: Response Performance at 90th Percentile for Structure Fires by Order on Scene CAD, 2015–2017



The performance illustrated in this figure was calculated at the 90th percentile as recommended in NFPA 1710. In this case, the first unit arrived in just under 10 minutes. Followed by units at 11:06, 13.52, 15:40, and 15:54. The overall performance for structural fires in the study area was 12 minutes, 26 seconds.

Performance Summary

In the performance summary, ESCI examined emergency incident response time performance for the study area and for the individual departments. The data for this analysis is the 2015 through 2017 CAD data provided by TCOMM. Mutual aid incidents outside the study area, data outliers, and invalid data were removed from the data set whenever possible. Response performance is measured from when fire apparatus are dispatched to when the first fire department unit arrives on scene.

NFPA 1710 Criteria

In this section of the analysis, a four- and eight-minute travel time will be applied to each fire station. A four-minute standard (NFPA 1710 – 4.1.2.1(3), 4.1.2.4, 4.1.2.1(6)) was used for travel times for arrival of the 1st Engine Company of 1st responder unit. The eight-minute standard (NFPA 1710 – 4.1.2.1(4), 4.1.2.4, 5.2.4.1, 5.2.4.2, 5.2.4.3, 5.2.4.4, and 4.1.2.1(7)) was used for travel times for arrival of an ALS unit supporting a fire-based BLS unit, and the travel times for deployment of an initial full alarm for a residential fire, an open-air strip mall, a garden-style apartment building, and a high-rise building fire. Use of NFPA 1710 helps determine the service delivery potential should all agencies apply themselves to NFPA 1710 as a result of integration. Agencies currently applying themselves to NFPA 1720 will also be discussed in that context within this section of the report.

Percentile measurements are an industry best practice and has been incorporated into NFPA 1710 and 1720. It is a higher standard of performance since it shows that the vast majority of the data set has achieved a particular level of performance. The 90th percentile means that 10 percent of the values are greater than the value stated, and all other data is at or below this level. This can be compared to the desired performance objective to determine the degree of success in achieving the goal. Tracking the individual components of total response time helps identify discrete deficiencies and areas for improvement.

As this report progresses through the performance analysis, it is important to keep in mind that each component of response performance is not cumulative. Each is analyzed as an individual component and the fractile is data point unto itself.

The response time continuum, the time between when the caller dials 911 and when assistance arrives, is comprised of several components:

- *Call Processing Time*—The amount of time between when a dispatcher answers the 911 call and resources are dispatched.
- *Turnout Time*—The amount of time between when units are notified of the incident and when they are responding.
- *Travel Time*—The amount of time the responding unit spends on the road to the incident.
- *Response Time*—A combination of turnout time and travel time and the most commonly used measure of fire department response performance.
- *Total Response Time*—The time from when the 911 call is answered until the dispatched unit arrives on the scene and initiates mitigating action.

Total response time is the amount of time a resident or business waits for resources to arrive at the scene of an emergency and begins mitigating action once their 911 call is answered. The NFPA standard for call processing is derived from NFPA 1221: *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems (referenced by NFPA 1710)*, and provides for communication centers to have alarm time processing of not more than 60 seconds, 90 percent of the time for high acuity incidents

Similarly, NFPA 1710 requires the alarm handling (call processing) time to be 60 seconds or less 90 percent of the time.

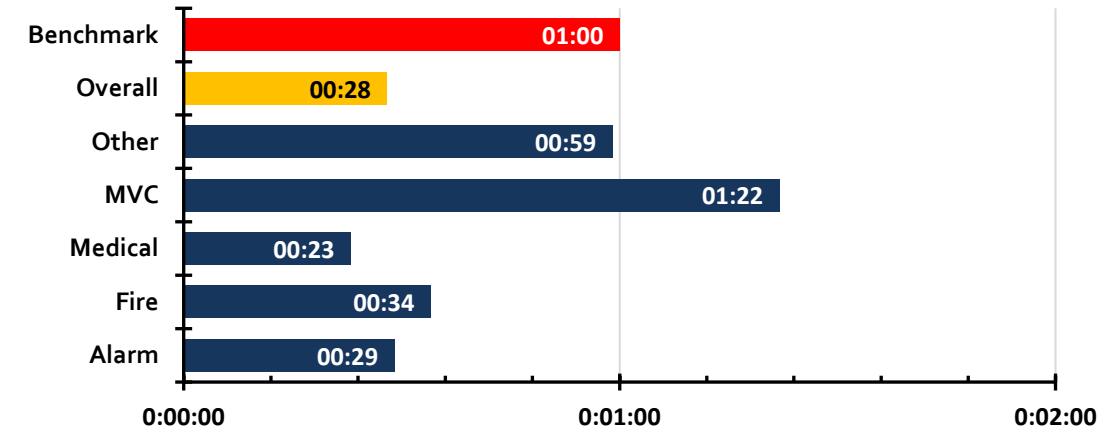
Figure 81: NFPA 1710 Standards for Fire/EMS Responses

Response Interval	NFPA Standard
Alarm Processing (NFPA 1221)	60 seconds or less at 90% for High Acuity Calls
Turnout Time	60 seconds or less at 90% for EMS 80 Seconds or less at 90% for Fire and Special Operations
Travel Time	240 seconds for the first arriving unit

Call Processing

As described previously—in the study area—emergency call taking, and dispatch is handled by TCOMM. Therefore, the fire departments have little control (but some influence) over the performance of the alarm handling time. The analysis is provided here primarily to allow for a comparison between the current performance and best practices. As all of the departments use TCOMM, the analysis below includes overall performance regardless of department. The benchmark reflects NFPA 1710 standards. NFPA 1720 is silent on alarm processing time.

Figure 82: Study Area Alarm Handling Performance CAD, 2015–2017



	Alarm	Fire	Medical	MVC	Other	Overall	Benchmark
90th Percentile	00:29	00:34	00:23	01:22	00:59	00:28	01:00

As seen in the previous figure, call processing times are less than those recommended in the standards except for those for motor vehicle crashes (MVCs). ESCI has seen lengthened call processing times as they relate to MVCs when the dispatch center does both law enforcement and fire rescue as TCOMM does. There are times when law enforcement is dispatched to an MVC and later into the incident a request for EMS resources is made. The original incident creation time does not change resulting in an artificially increased call processing time for MVCs as related to EMS resources.

Additionally, the CAD software does not record the response mode to incidents. Therefore, the performance described in this section includes both emergency and non-emergency incidents.

RECOMMENDATION:

- If possible, with the existing CAD software—add a field in the CAD to track response mode emergency versus non-emergency.

It should be noted that many of the incidents included in the category of *other* are likely incidents that would have a non-emergency response.

Turnout

Turnout time is the period that begins when emergency personnel are notified to respond and ends when an apparatus begins to respond. Turnout time is an important piece of total response performance and can be influenced by factors such as station design, apparatus staffing and the performance of the assigned personnel. The following figure looks at turnout time performance for each agency in the study area. This element of response performance is specifically defined in NFPA 1710. Although 1720 also addresses turnout time, it is only for staffed stations (which is defined by the authority having jurisdiction). However, NFPA 1720 defines turnout time as ten seconds slower for fires and special operations responses than is called for in NFPA 1710. EMS turnout time is the same for both 1710 and 1720 (60 seconds, 90% of the time).

Figure 83: WTRFA Turnout Time Performance CAD, 2015–2017

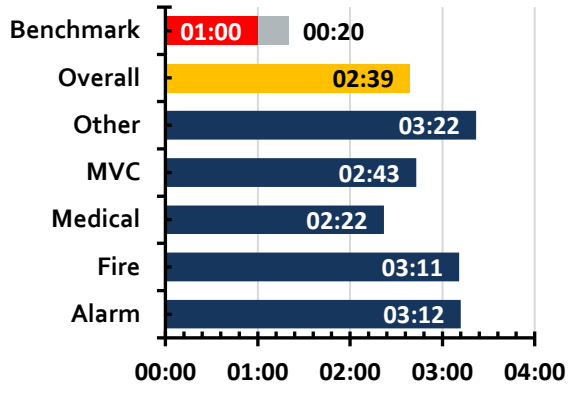


Figure 84: EOFD Turnout Time Performance CAD, 2015–2017

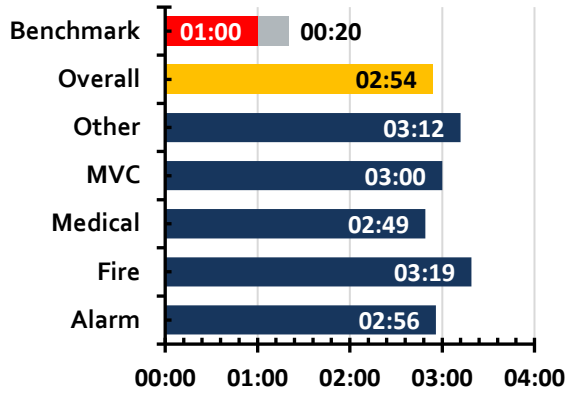


Figure 85: TFD Turnout Time Performance CAD, 2015–2017

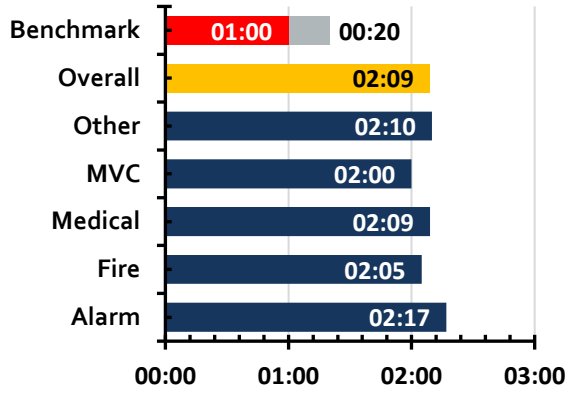


Figure 86: OFD Turnout Time Performance CAD, 2015–2017

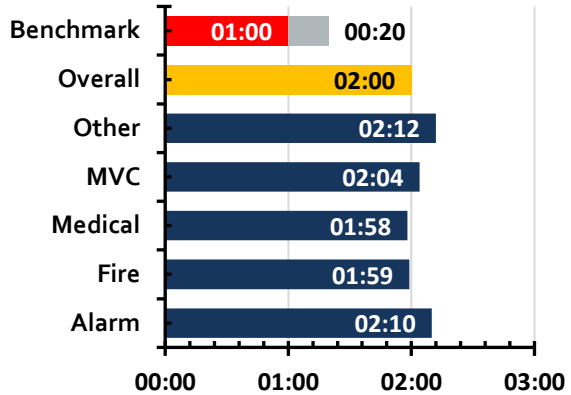


Figure 87: MBLFD Turnout Time Performance CAD, 2015–2017

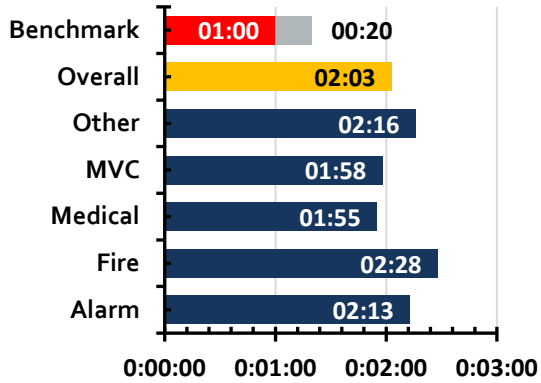
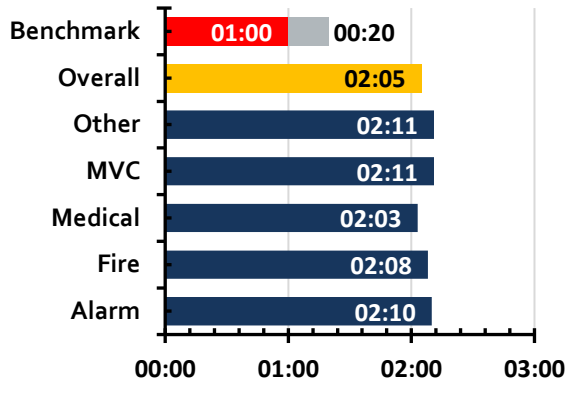
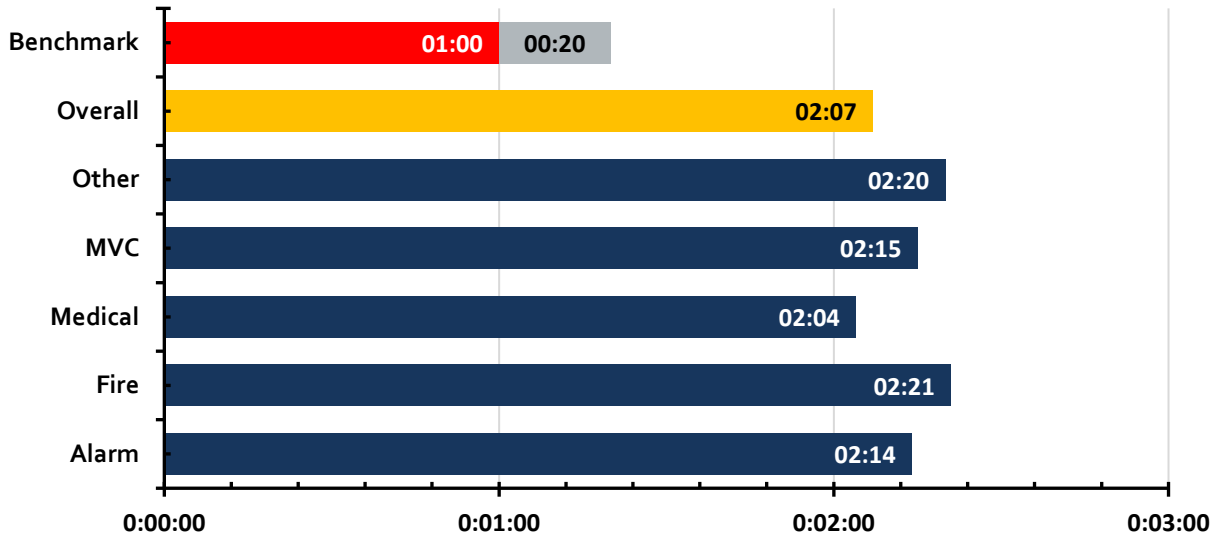


Figure 88: LFD3 Turnout Time Performance CAD, 2015–2017



The next figure is the turnout time performance for all departments combined. As illustrated, for each type of incidents and overall, the performance is over twice the benchmark of 60 seconds required in NFPA 1710. EOFD and WTRFA likely skew the turnout time performance since they have numerous unstaffed stations that necessitate slower turnout times. MBLFD performs surprisingly consistent with the NFPA 1710 applied agencies (OFD, TFD, and LFD3).

Figure 89: Study Area Departments Turnout Time Performance CAD, 2015–2017



Travel Time

Travel time is the time from when an apparatus leaves the station to when the apparatus reaches the scene of the emergency. The existing road network, traffic congestion, geographic barriers, and the size of the service area all affect travel time performance. The following figure examines travel time performance for each agency in the study area. Travel time is a uniquely NFPA 1710 data point.

Figure 90: WTRFA Travel Time Performance CAD, 2015–2017

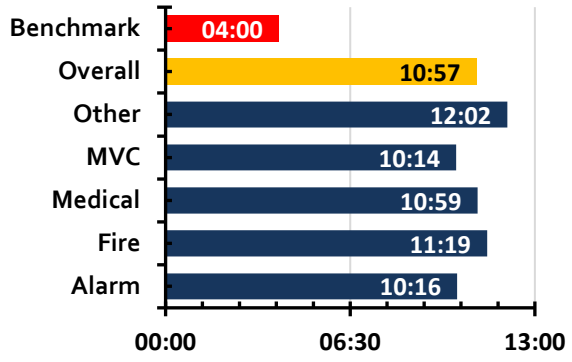


Figure 91: EOFD Travel Time Performance CAD, 2015–2017

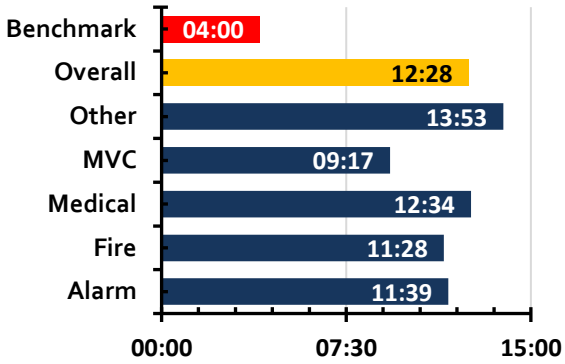


Figure 92: TFD Travel Time Performance CAD, 2015–2017

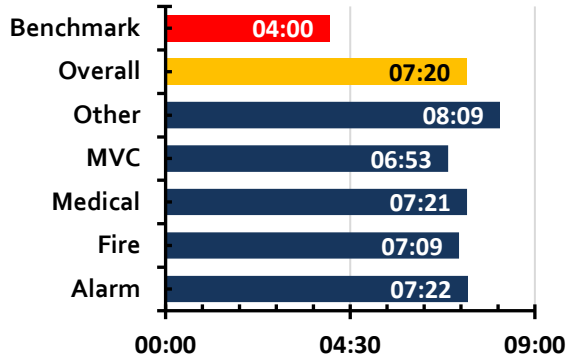


Figure 93: OFD Travel Time Performance CAD, 2015–2017

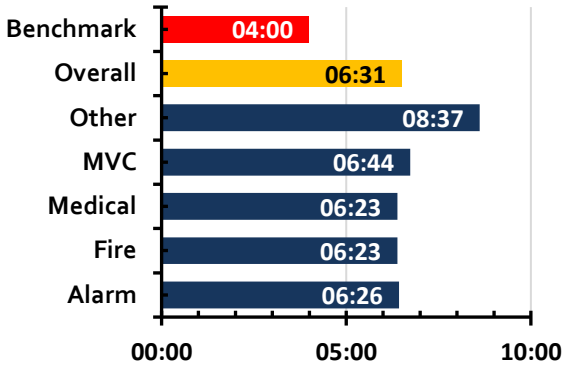


Figure 94: MBLFD Travel Time Performance CAD, 2015–2017

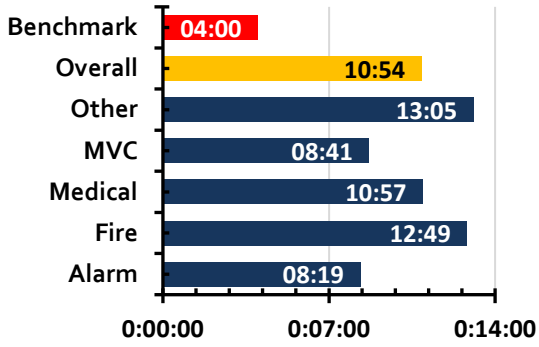


Figure 95: LFD3 Travel Time Performance CAD, 2015–2017

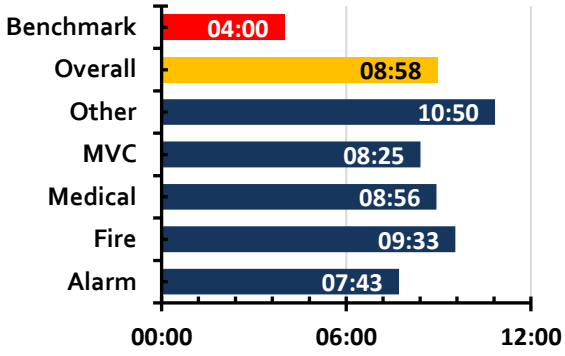
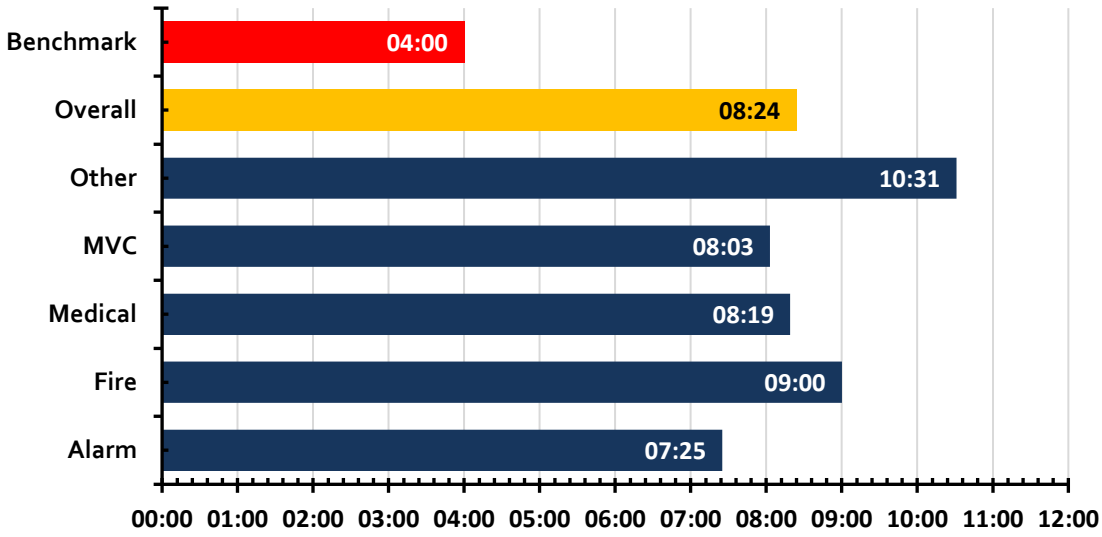


Figure 96: Study Area Departments Travel Time Performance CAD, 2015–2017



The previous figure illustrates the travel time performance for the study area overall using the NFPA 1710 benchmark. All the departments individually and collectively exceed the NFPA 1710 recommendation of four minutes.

Response Time

The most commonly used measure of fire department response performance is a combination of turnout time and travel time. That is, the time from when fire personnel are notified of an emergency to when the first apparatus arrives on scene. The following figure illustrates emergency response performance for the departments in the study area from 2015 through 2017. While the benchmark is shown at 5 minutes and additional 20 seconds is permitted for fire and special operations incidents.

Figure 97: WTRFA Response Time Performance CAD, 2015–2017

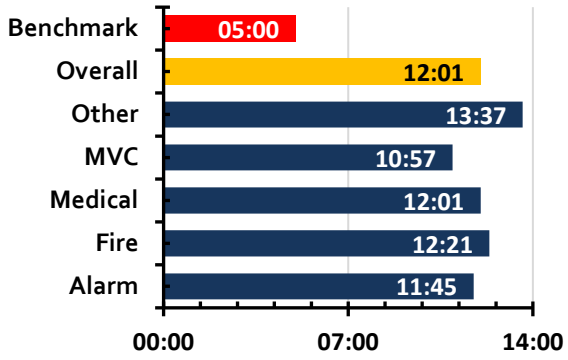


Figure 98: EOFD Response Time Performance CAD, 2015–2017

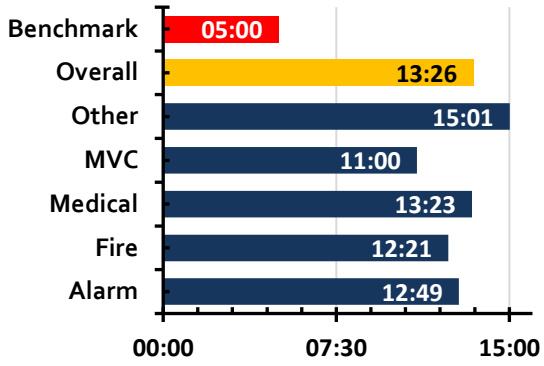


Figure 99: TFD Response Time Performance CAD, 2015–2017

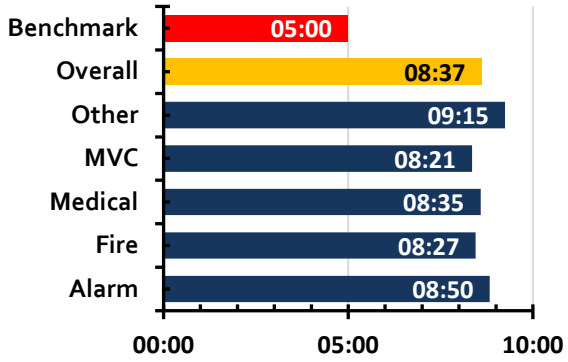


Figure 100: OFD Response Time Performance CAD, 2015–2017

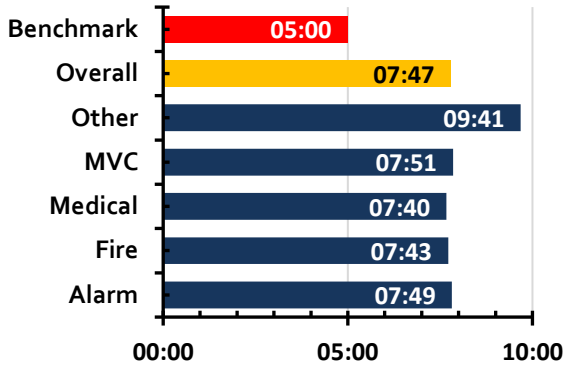


Figure 101: MBLFD Response Time Performance CAD, 2015–2017

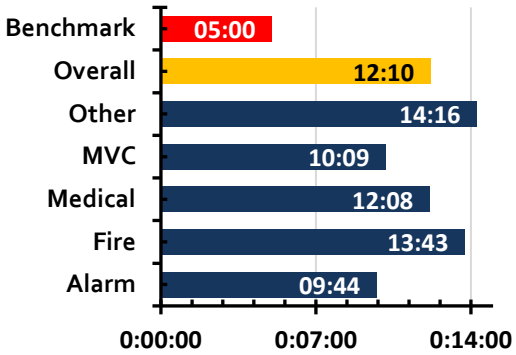
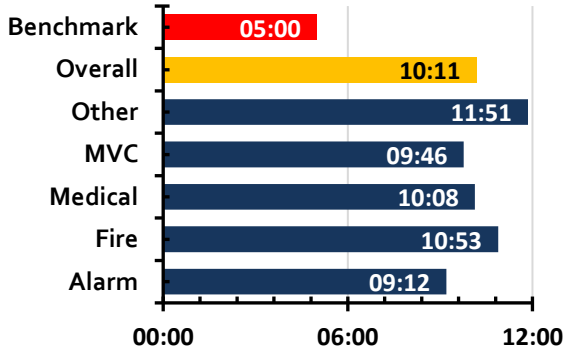
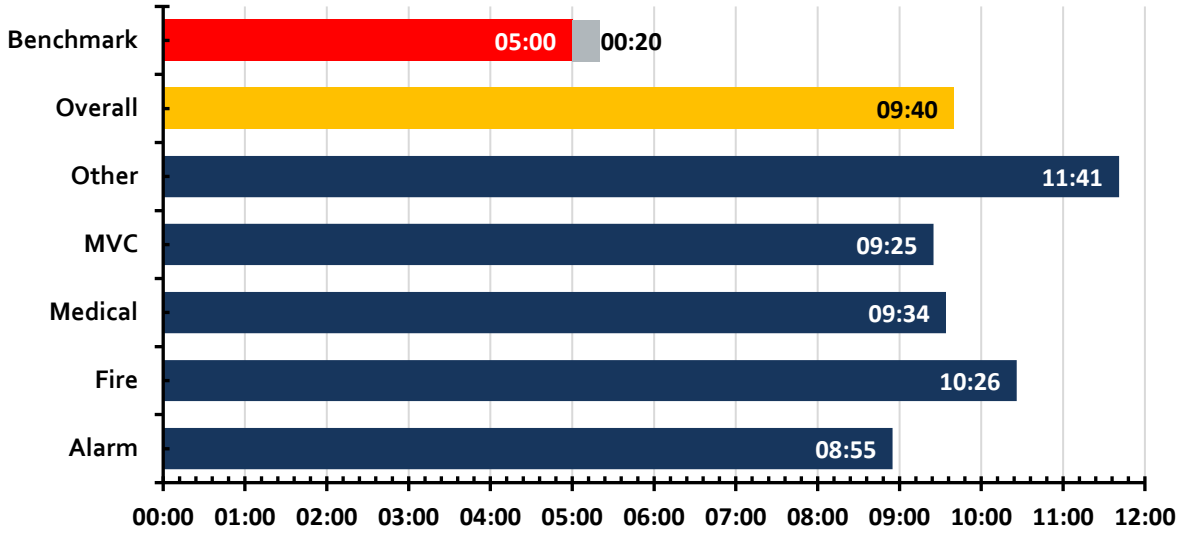


Figure 102: LFD3 Response Time Performance CAD, 2015–2017



The next figure is the response time performance for all departments.

Figure 103: Study Area Departments Response Time (Turnout + Travel Time) Performance CAD, 2015–2017



The NFPA recommendation of 60 seconds turnout (for EMS incidents) or 80 seconds turnout (for fire and special operations) plus four minutes response time equals five minutes (EMS) or 5 minutes, 20 seconds (Fire & Special Operations) for response time. Again, each department exceeds the recommended time by various amounts.

NFPA 1720 does not define or measure travel time as a separate data point. Rather, it combines turnout time and travel time based on population density characteristics, which the following figure illustrates.

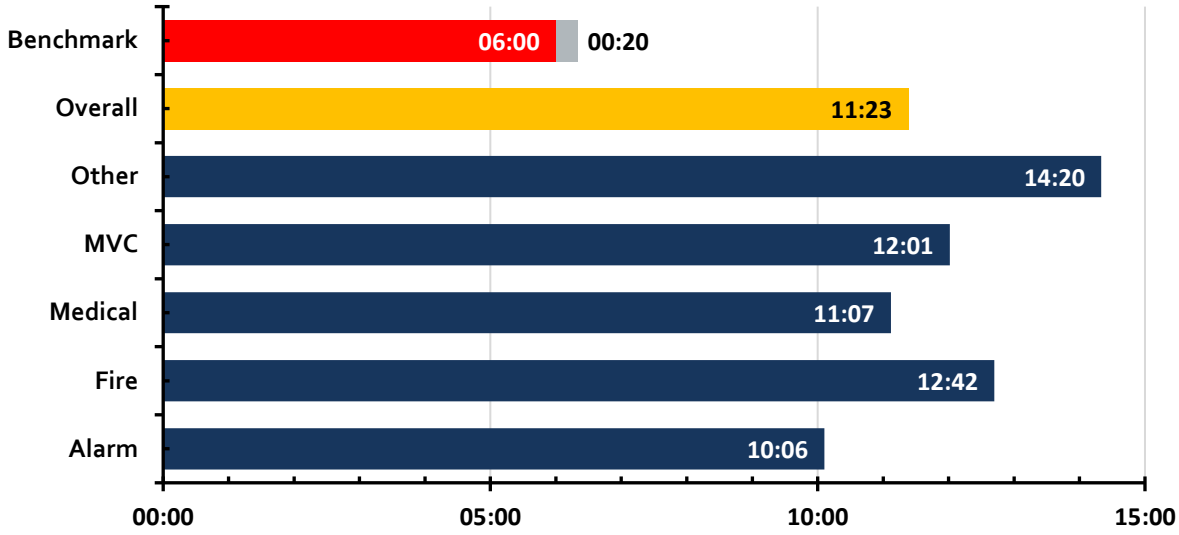
Figure 104: NFPA 1720 Response Time (Turnout + Travel Time) Standard by Population Density

Population Density	Standard
Urban (> 1,000 people/mi²)	15 FFs delivered within 9 min/90%
Suburban (500–1,000 people/mi²)	10 FFs delivered within 10 min/80%
Rural (< 500 people/mi²)	6 FFs within 14 min/80%
Remote (travel distance ≥ 8 miles)	4 FFs within timeframe dependent on travel distance/90%
Special Risk (determined by AHJ)	Number of FFs and response time determined by AHJ

Total Response Time

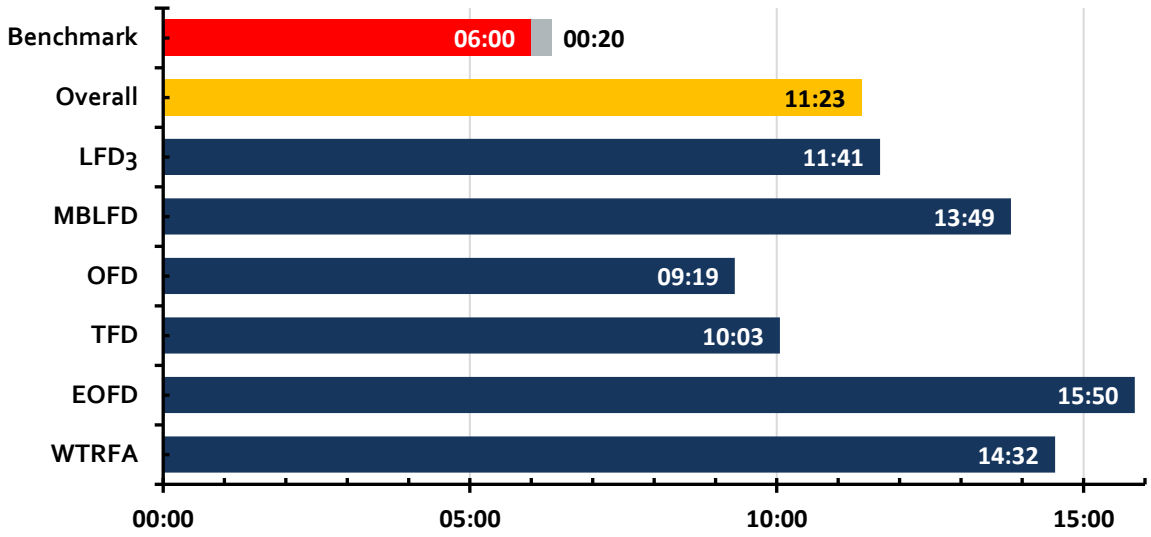
Although not completely consistent with the NFPA definition of total response time—since initiating action is not timestamped—the next figures show the total response time defined in this report as the time from when the 911 call is answered until the dispatched unit arrives on the scene. Using the total response time continuum from NFPA 1710, the recommendation for total response time at the 90th percentile is 6 minutes for EMS (or 6 minutes, 20 seconds for fires and special operations). Each district's performance, as well as the performance overall, exceeds this benchmark.

Figure 105: Study Area Departments Total Response Time Performance by Incident Type CAD, 2015–2017



The next figure illustrates the total response time for all incident types by department. While by varied amounts, each departments performance is greater than the NFPA 1710 requirement of six minutes.

Figure 106: Study Area Departments Total Response Time Performance by Department CAD, 2015–2017



Monitoring and reporting performance for each of the components of the response continuum allows fire department leaders to identify and correct deficiencies. ESCI encourages all the study area departments to develop a report on response performance and utilize response time goals that match the needs of the constituents and the capabilities of the jurisdictions.

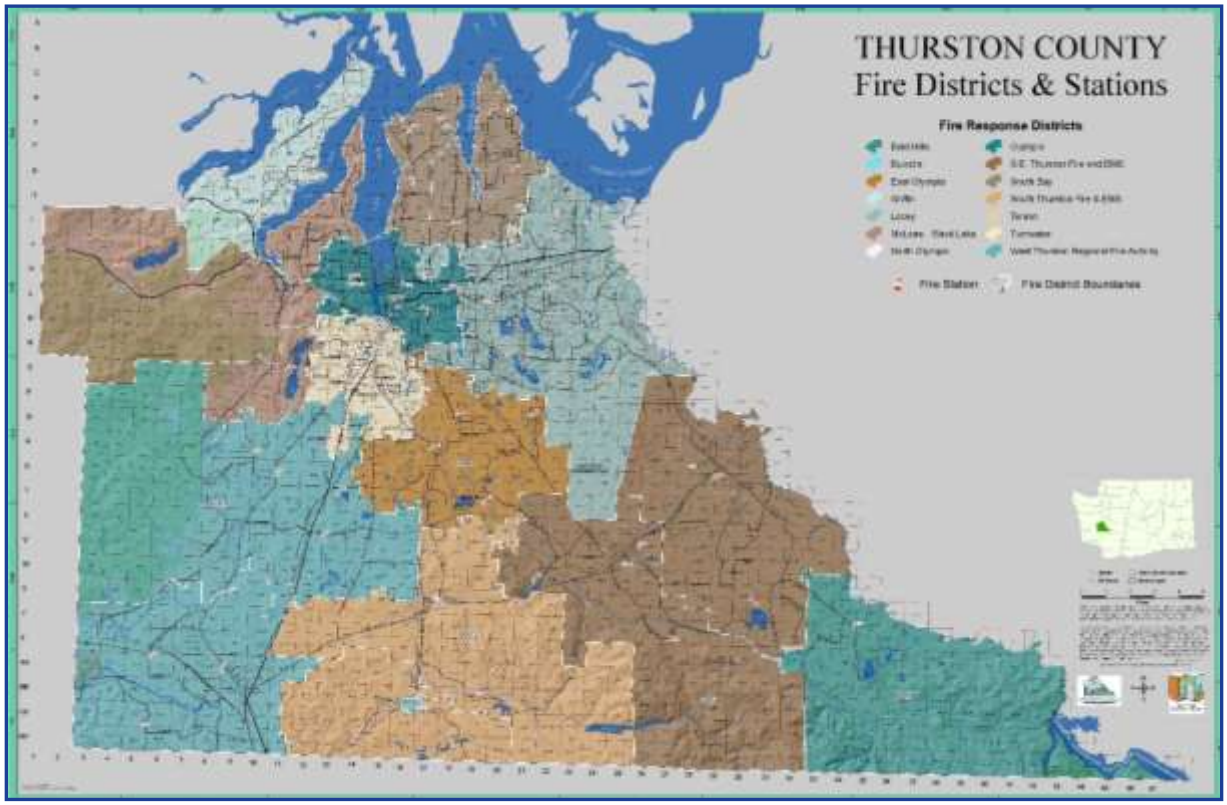
Mutual/Automatic Aid Systems

There are mutual and automatic aid agreements in place between the six departments. The agencies frequently assist each other, and other Thurston County fire jurisdictions.

Mutual aid is typically employed on an as needed basis where units are called for and specified through an Incident Commander. Automatic aid differs from mutual aid in that under certain mutually agreed upon criteria, resources from the assisting agency are automatically dispatched as part of the initial response. These agreements facilitate the necessary number of personnel and the right number of appropriate apparatus responding to specific incidents. Automatic aid response resources are defined in the dispatch runcards for all the participating departments.

The following figure shows the other fire departments in the county which are all potential requesters or providers of mutual aid.

Figure 107: Thurston County Fire Departments



For this analysis, ESCI focused on mutual and automatic aid between the six jurisdictions in the study area. The following figure illustrates the number of times a department in the study area responded under mutual or automatic aid to a grid belonging to another department.

Figure 108: Study Area Agency's Response to Another's Jurisdiction, 2017

Type of Aid	TFD	OFD	LFD3	EOFD	WTRFA	MBLFD
Given	39	235	154	205	119	527
Received	77	72	65	19	26	83

Mutual and automatic aid operations are an integral part of emergency operations within the study area. The study area jurisdictions effectively incorporate mutual or automatic aid between each other and with the surrounding fire jurisdiction. This increases the concentration of resources available to mitigate incidents throughout the study area.

The best use of mutual and automatic aid is dependent on the departments working well together. To be most effective, the following should be considered:

- Fireground operations must be conducted in a similar manner and should be based on common Standard Operating Guidelines.
- Firefighters must know how to work in concert with personnel for another agency, based on common training programs and procedures.
- Dispatch procedures should be in place that clearly define which response types and locations are to receive Automatic Aid response.
- Procedures for the request of and provision of mutual aid should be clearly established in the Mutual Aid Agreement.
- Personnel should be fully trained on mutual and automatic aid practices and remain informed on changes.

Fire Prevention Programs

An aggressive risk management program, through proactive fire and life safety services, is a fire department's best opportunity to minimize the losses and human trauma associated with fires and other community risks.

The National Fire Protection Association recommends a multifaceted, coordinated risk reduction process at the community level to address local risks. This requires engaging all segments of the community, identifying the highest priority risks, and then developing and implementing strategies designed to mitigate the risks.[16]

A fire department needs to review and understand the importance of fire prevention and public education, appreciating their role in the planning process of a community with diversified zoning including residential, commercial, and industrial properties. This is particularly important in Thurston County, given its robust commercial and residential urban growth. The fundamental components of an effective fire prevention program are listed in the following figure, accompanied by the elements needed to address each component.

Figure 109: Fire Prevention Program Components

Fire Prevention Program Components	Elements Needed to Address Program Components
Fire Code Enforcement	Proposed construction and plans review New construction inspections Existing structure/occupancy inspections Internal protection systems design review Storage and handling of hazardous materials
Public Fire and Life Safety Education	Public education Specialized education Juvenile fire setter intervention Prevention information dissemination
Fire Cause Investigation	Fire cause and origin determination Fire death investigation Arson investigation and prosecution

Fire and Life Safety Code Enforcement

The most effective way to combat fires is to prevent them. A strong fire prevention program, based on locally identified risks and relevant codes and ordinances, reduces loss of property, life, and the often-crippling impact on a community's economy. With the exception of TFD, OFD, and LFD3, all fire code inspections and new construction fire code plan reviews are the responsibility of the Thurston County Fire Marshal's Office (TCFMO). The following figure summarizes the new construction and fire protection system plan review programs, and ancillary programs among the six departments.

[16] NFPA Standard 1730*: Organizing and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations*, 2019 Edition.

Figure 110: New Construction Plan Review and Inspection

Code Enforcement	TFD	OFD	LFD3	EOFD	WTRFA	MBLFD
New Construction Inspections & Involvement						
FD consulted in proposed new construction?	Yes	Yes, City	Yes	Yes	Yes	Yes
FD consulted on proposed occupancy changes/tenant improvements?	Yes	Yes	Yes	Yes	Yes	Yes
Perform fire & life-safety plan reviews?	Performed by City Building Official	City & OFD performs	City and County performs	County performs	County performs	County performs
Charges for inspections or reviews?	Yes, City	Yes, City	Yes, City and County	Yes, County	Yes, County	Yes, County
Special risk inspections?	Yes, City	Yes, City	Yes, City & County staff	Count performs	County performs	County performs
Storage tank inspections?	Yes, City	Yes, City	Yes, City & County staff	County performs	County performs	County performs
Key-box entry program in place?	Yes	Yes	Yes	Yes	Yes	Yes
Hydrant flow records maintained?	Yes, FD&PW	Yes, PW	Yes, by water purveyor & county	Yes, by water purveyor & county	Yes, by water purveyor & county	Yes, FD, water purveyor & county

The following sections provide detail on the qualifications and resources dedicated to fire and life safety code enforcement provided by each of the departments and Thurston County.

Thurston County Fire Marshal

The TCFMO is part of the Thurston County Development Services Department, and is responsible for the inspection and fire code compliance of approximately 17,000 structures in the unincorporated areas of Thurston County. It uses the Washington State Building Code Chapter 51-54A2014, and the 2015 edition of the International Fire Code (IFC), with 2017 amendments enacted through the Thurston County Title 14 Building Code. All inspections, fire protection system acceptance testing, and new construction fire code plan reviews in the unincorporated county area are conducted by the TCFMO.

Tumwater Fire Department

TFD employs one ICC certified Fire Inspector, who performs commercial building fire inspections. The Fire Inspector has a goal of inspecting all commercial structures within 18 months, with the exception of Washington State owned buildings, which are inspected annually. The Fire Chief is credentialed as a Fire Marshal through the Center for Public Safety Excellence and assists the Fire Inspector and the Tumwater Community Development with regard to access, water supply and built in fire protection evaluation and location. TFD uses the 2018 edition of the IFC, and OFD uses the 2015 version of the IFC and most recent NFPA standards. TFD previously had a very close working relationship with the Tumwater Building Department on new commercial construction plan reviews and fire protection systems. Due to recent leadership changes in the Building Department, TFD is working on improving their collaboration. New construction fire code and fire protection system plan reviews are conducted by the Tumwater Community Development Department.

TFD charges a fee for inspection of commercial occupancies. The minimum fee is $40 per inspection, and increases from there based on a formula that factors square footage and inspection complexity.

Olympia Fire Department

Fire Inspections and new construction fire code plan reviews are performed by OFD's Fire Prevention Division, which consists of five personnel, including an Assistant Chief/Fire Marshal, Fire Captain/Assistant Fire Marshal, and three Fire Prevention Officers. These positions are all tested promotions and members typically have a long tenure providing consistency and quality. All are IFC Fire Inspector I certified, and two are IFC Fire Inspector II certified. The department performs fire code plan reviews, but none of the reviewers are IFC or ICC certified. The department plans on having certified plan reviewers by the end of 2019. OFD has a contract with Washington State to inspect all State Capital campus buildings twice a year. All inspections, fire protection system acceptance testing, and new construction fire code plan reviews in the unincorporated county area are conducted by the OFD Fire Prevention Division.

OFD charges a fee for inspection of commercial occupancies and plan reviews and acceptance testing for installation of fire protection systems. The minimum inspection fee is $43.48 per inspection, and increases from there based on a formula that factors square footage and inspection complexity. Fire code plan review fees are based on the estimated value of the project. The fee-based inspection program is 19 years old and may be the link to the low amount of commercial structure fires.

OFD includes public education and fire investigation within the role of the members assigned to Fire Prevention. This linkage allows the department to connect the data for most common issues found during inspections and fire cause investigation with education efforts.

Lacey Fire District 3

Fire inspections and new construction fire code plan reviews within the Lacey city limits are performed primarily by the Fire Code Specialist (FCC), a civilian position supervised by the Building Official/Fire Marshal. Engine companies in the city perform bi-annual inspections of multi-family residential buildings. The FCC is ICC Fire Inspector certified, and is pursuing ICC Plans Reviewer certification. Fire code enforcement within the city limits is assigned to the Lacey Community and Economic Development Department.

LFD3 does not charge a fee for annual fire inspections, but the City of Lacey does charge for plan reviews and acceptance testing for installation of fire protection systems. Fire sprinkler fee amounts are based on the value of the system. Fire alarm fees are based on the square footage of the building and the 2017 Washington State Labor and Industries Electrical Fees Worksheet.

Discussion

During the site visit, ESCI noted the City of Olympia's residential sprinkler ordinance, which mandates installation of fire sprinklers in new Group R occupancies, including single family homes. A similar ordinance has yet to be adopted by Thurston County.

Mandating installation of fire sprinkler systems in new and remodeled residential construction is a controversial issue in many jurisdictions. The 2009 *International Residential Code* (IRC) mandates the installation of fire sprinkler systems in all single and multi-family residential structures and dwellings. However, state and local jurisdictions regularly amend building codes to meet local needs. Developers, building industry associations, and lobbyists have strongly lobbied state and local governments against requiring residential fire sprinklers in new construction—asserting cost-prohibitive installation; ongoing maintenance costs; and an overall negative cost versus benefit. Conversely, life-safety advocates, fire service associations, and insurance groups continue to push for formal adoption of residential fire sprinkler installations. They cite scientific evidence; advances in cost-effective sprinkler system technology; and real-world experience in which fire-sprinkler activations saved lives and property.

Evidence-based research and experience has proven the effectiveness and speed of fixed fire-sprinkler systems in containing and/or extinguishing incipient fires in commercial and residential structures. As more residential systems are installed, the number of fire incidents involving residential sprinkler installations should bring clarity and consensus as to their cost-effectiveness and safety.

ESCI also noted that LFD3 uses on duty fire suppression personnel to conduct routine fire inspections, while the other agencies utilize Fire Inspectors in the municipalities, or the TCFMO in unincorporated areas, to ensure fire code and life safety compliance on an ongoing basis. Utilizing fire suppression personnel who are adequately trained in basic fire inspection practices can be an effective practice in some instances and doing so has the benefit of increasing inspection capabilities and frequency. Furthermore, it provides excellent opportunities for engine crew building familiarization and pre-incident planning, and affords opportunities to update pre-incident plans when new hazards are identified in the field.

Community Risk Reduction Program

Lately, U.S. fire departments have begun to recognize the value of Community Risk Reduction (CRR) programs that go beyond traditional fire prevention activities. Some have gone so far as to re-name their "fire prevention" divisions to "Community Risk Reduction Divisions."

Figure 111: Six Steps of CRR Planning

Regardless of the name, fire departments should be able to accurately identify the various potential community risks before developing prevention programs. This is not meant to imply diminishing the focus and importance of addressing the fire problem in a community, rather it affords an opportunity to identify and mitigate additional community risks through targeted prevention activities.

The first step in developing an effective CRR plan is identifying risks unique to a particular community by conducting a community risk assessment. A key component of the assessment process is the collection and analysis of incident data. However, firefighters, officers, and inspectors can also provide substantial anecdotal information on the various risks found within their respective response-areas.

As noted earlier, except for TFD, OFD, and LFD3's formal fire code and life safety code compliance efforts within their respective municipal jurisdictions, there does not appear to have been any comprehensive community risk assessment and resulting formal CRR planning conducted for the unincorporated areas. The county and respective communities would likely benefit from adopting a CRR plan. The process does not have to be complex and could consist of simply identifying the most prevalent risks and developing strategies to mitigate those risks.

Fire & Life Safety Public Education Program

Providing fire and life safety education to the public to minimize the number of emergencies while training the community to take appropriate actions when an emergency occurs is essential to a fire and life safety program. Life and fire safety education provides the best chance for minimizing the effects of fire, injury, and illness to the community.

Public education and outreach are conducted in various ways in each department. The following is a summary of the programs offered by each department.

Figure 112: Life Safety & Public Education Services

Life Safety & Public Education	TFD	OFD	LFD3	EOFD	WTRFA	MBLFD
PIO/Public Educator Assigned?	Fire Chief	Fire Chief	No	No	Yes	Yes
911 Education Program	Yes	Yes	Yes	Yes	Yes	Yes
Exit Drills In Home (EDITH)	Yes	Yes	Yes	Yes	Yes	Yes
Smoke Alarm Installation	Yes	Yes	Yes	Yes	Yes	Yes
Carbon Monoxide Alarm Installation	Yes	Yes	Yes	Yes, On request	Yes, On request	Yes
Bike Helmet Program	Yes	Yes	Yes	Yes	Yes	Yes
Elder Safety/Fall prevention/Safe Driving	Yes	Yes	No	No	Yes (Safe Driving)	Yes
Home Safety Inspections	Yes, Upon Request	Yes, Upon Request	No	Yes	Yes	No
Babysitting Classes	Yes	No	No	No	No	No
Address Sign Program	Yes	No	Yes	Yes	Yes	Yes
CPR/First Aid Classes	Yes	Yes	No	No	Yes	Yes
BP Checks	Yes	Yes	Yes	Yes	Yes	Yes
Car Seat Safety Inspections	Yes	No	Yes	No	Yes	Yes
Fire Extinguisher Classes	Yes	Yes	Yes, on request	Yes	Yes	Yes
Map Your Neighborhood Program	Yes, In coordination with County EM	Yes, In coordination with County EM	No	Yes	Yes, In coordination with County EM	No
K–12 Fire Prevention curriculum delivery in schools	Yes	Yes	Yes	Yes	Yes	Yes
Wildfire Defensible Space Education	Yes, upon request	Yes, upon request	No	No	Yes	Yes
Water Safety Program	Yes, upon request	Yes, upon request	Yes	No	No	Yes
Smart 911 Training	No	No	No	No	Yes	No
Safety Fairs	Yes	Yes	Yes	No	Yes	Yes

There were some additional specialty safety training programs delivered occasionally by various departments as well, and they are not reflected in the preceding figure.

Discussion

All six departments engage in similar public education activities and life safety programs, including; distributing bike helmets, blood pressure screening, car seat inspections, smoke alarm installations, and basic fire safety education. Coordination and delivery of these programs varies between the departments, with WTRFA, OFD, and MBLFD having dedicated Public Information Officers and/or Public Educators.

In today's fire service, public fire and injury prevention education is much more important than in the past. This is likely the result of evolving community expectations, coupled with the realization by fire departments that community engagement and safety education outreach can build tremendous community support.

If consolidation is pursued, consideration should be given to conducting a formal Community Risk Assessment, with the goal of coalescing and focusing public education efforts on the significant risks identified in the assessment process. The U.S. Fire Administration identified a five-step assessment process for improving public safety education:[17]

1. Conduct a community analysis.
2. Develop community partnerships.
3. Create an Implementation strategy.
4. Implement the strategy.
5. Evaluate the results.

They also emphasized the need for this pragmatic approach, noting:

> *The temptation to "just get something implemented" is hard to resist. Unfortunately, this is a trap. Yes, it's easy to schedule some presentations at a school; pass out brochures, stickers, and plastic helmets; and do some media interviews. But do those presentations address the community's worst fire or injury problems? Do the solutions being promoted really work? Is the appropriate target audience even being reached? Are community groups working together? Is the program being implemented in the best way?*
>
> *A "ready, fire, aim" approach will not hit the target. It can give the impression that the department is out there educating the public, but may achieve little else. Successfully reducing fires and preventable injuries involves effective community planning. Notable public education programs around the country always prove this to be true.*

Fire Cause & Origin Investigation

Accurately determining the cause of a fire is an essential element of a fire prevention program. When fires are intentionally set, identification and/or prosecution of the responsible offender is critical in preventing additional fires, injuries and fatalities, and catastrophic economic impact. Further, identifying cause and potential trends enables the department to provide specific public information and fire prevention education to prevent reoccurrence.

All six departments have personnel trained in basic fire investigation techniques, and have established procedures and excellent partnerships with their respective law enforcement agencies, including maintaining evidence chain of custody. Trained personnel include line Firefighters and Officers, and Fire Inspectors. OFD has Fire Prevention Team members (above company officer) that conduct most investigations.

[17] *Ibid.*

The results of professional and thorough fire investigations can be extremely powerful in:

- Prosecuting arsonists
- Identifying product safety issues
- Educating the public about the outcomes of unsafe behaviors and conditions
- Assisting insurance companies and property owners with insurance claims
- Providing solid evidence criminal and civil court proceedings
- Identifying necessary life safety code changes

The study agencies have established sound practices for the determination of fire cause and origin and investigation of suspicious fires. During the OFD site visit, ESCI learned that after a recent, large commercial fire with suspicious circumstances, outside agency fire investigation personnel were requested from the Region 4 Fire Investigation Council to assist in analyzing the scene and collect evidence. This Council is comprised of Fire Investigators from Snohomish, King, and Pierce counties. No such regional organization has been formed for Thurston, Mason, Grays Harbor, or Lewis Counties.

The six departments should consider creating a formal regional Fire Investigation Team, which could enhance sharing of information related to fire trends, improve the quality and efficiency in fire investigations, and provide back-up investigation capability for large scale/complex fire incidents.

Training

Providing safe and effective fire protection, EMS, and other emergency services requires a well-trained workforce. Initial, ongoing, and high-quality training and education is critical for fire department effectiveness and the safety of its personnel. A comprehensive training program is necessary to achieve this goal; this is true in all-career or combination fire departments that provide a broad range of services throughout the community.

To ensure maximum effectiveness and safety in complex environments, firefighters and officers must acquire and maintain sufficient initial training, ongoing training, and continuing medical education (CME). Failure to provide necessary training endangers firefighters and citizens, and exposes fire departments to liability. In addition, a well-trained workforce substantially contributes to better emergency incident outcomes and community services.

Newly hired firefighters must participate in a structured recruit training and testing process. The *Washington State Fire Marshal's Office* (WSFMO) has adopted the *National Fire Protection Association*'s NFPA 1001 (Firefighter I and II) standard—which identifies the minimum training requirements that serves as the basis for entry-level firefighters. The NFPA recommends other standards that address initial and ongoing training for firefighters and officers in a variety of specific topics. In addition, new recruits must complete, or previously completed, basic emergency medical training.

Following initial training, firefighters (i.e., all emergency services personnel) must actively participate in ongoing training that includes testing as well as ensuring practical skills and knowledge are maintained. In its *Fire & Emergency Service Self-Assessment Manual (8th edition)*, the Commission on Fire Accreditation International (CFAI) addresses "Training and Competency," and lists a number of performance indicators under the headings of training and education program requirements, performance, and resources.

To accomplish this, fire departments must have access to qualified instructors and training resources—either within the organization, externally with regional partners, or both.

Training programs must go beyond simply fulfilling mandatory hours. Emergency services training administrators and instructors must ensure that firefighters, EMS personnel, and officers are not only competent, but also self-confident in the variety of skills necessary to perform effectively in high-stress situations. Industry standards outline specific areas that are considered integral to effective training programs. The program should include the following:

- Training administration
- Recordkeeping (records management systems)
- Training facilities and resources
- General training competencies
- Training methodologies

In the following section, ESCI has reviewed the various training practices and resources of each of the fire departments involved in this study.

Training Administration

In this section, ESCI examines administrative and other resources devoted to fire, EMS, and other training topics among the fire departments. The following two figures list the various components for each department in the study.

Figure 113: Training Administration & Budget (TFD, EOFD, LFD3)

Survey Component	TFD	EOFD	LFD3
Director of training program	Lieutenant	Assistant Chief	Captain
Training goals & objectives identified	Yes	Yes	Yes
Certified instructors used	Instructor 1	Instructor 1	Instructor 1
Training manual developed/used	Task books	Task books	No
Annual training report produced	Yes	No	No
Priority by management toward training	Yes	Yes	Yes
Condition of training admin. facilities	Use MNRFTC[1]	Good; expanding	Use MNRFTC
Adequate office space, equip., supplies	Yes	Yes	Yes
Budget allocated to training	$124,750[2]	$54,500[2]	$243,000[2]
Clerical staff assigned to training	None	None	Shared

[1]Mark Noble Regional Fire Training Center; owned & operated by the Olympia Fire Department

[2]Excludes training staff wages and benefits

Figure 114: Training Administration & Budget (WTRFA, OFD, MBLFD)

Survey Component	WTRFA	OFD	MBLFD
Director of training program	Captain	Battalion Chief	Captain
Training goals & objectives identified	Yes	Yes	Yes
Certified instructors used	Instructor 1	Instructor 1 & 2	Instructor 1
Training manual developed/used	Task books	Multiple manuals	In process
Annual training report produced	Monthly	No	No
Priority by management toward training	Yes	Yes	Yes
Condition of training admin. facilities	Good	Excellent[1]	Good
Adequate office space, equip., supplies	Yes	Yes	Yes
Budget allocated to training	$112,616[2]	$389,163[2]	$82,600[2]
Clerical staff assigned to training	Shared	Shared	Shared

[1]Mark Noble Regional Fire Training Center

[2]Excludes training staff wages and benefits

Tumwater assigns a Lieutenant the responsibility for managing and delivering fire training, while Lacey Fire District 3, West Thurston, and McLane-Black Lake assigns a Captain. East Olympia has assigned an assistant chief to this task. A Battalion Chief is responsible for fire training at the Olympia Fire Department. None of the departments has administrative support staff specifically assigned to their training divisions. Most share support staff when necessary.

Each of the fire departments develops annual training goals and objectives. At a minimum, each utilizes instructors certified as an *Instructor I*. The Olympia Fire Department utilizes *Instructor IIs* when training Captains and Battalion Chiefs. When conducting live-fire training, OFD uses *Live Fire Instructors* certified by the *International Society of Fire Service Instructors* (ISFSI).

Most of the departments utilize training manuals and task books, with the exception of McLane-Black Lake (which is in progress). With the exception of Tumwater and West Thurston (who does a monthly report), none of the department publishes an annual training report.

Training Priority by Management

It was evident during ESCI's site visit and interviews with the various Training Officers that the leadership among each of the fire departments participating in this study recognizes the importance and value of training, and has tended to devote the necessary time and resources to accomplish the necessary goals.

Training Budgets

Each of the fire departments in this study is allocated funding specifically for training. The following figure shows the 2018 budgeted amounts among each of the fire departments. It is important to note that these figures do not include salaries, benefits, or overtime costs of personnel assigned to manage and/or conduct training sessions.

Figure 115: Combined 2018 Training Budgets

Fire Department	2018 Budget
Tumwater Fire Department	$124,750
East Olympia Fire Department	$54,500
Lacey Fire District 3	$243,000
West Thurston Fire Department	$112,616
Olympia Fire Department	$389,163
McLane-Black Lake Fire Department	$82,600
Total of Training Budgets:	**$1,006,629**

As shown in the preceding figure, the combined funds allocated for training among all the study participants exceeds $1.1 million annually. Excluding Olympia and McLane-Black Lake, who each maintain regional training centers, the average amount allocated to training among the other four departments was $164,654.

Thurston County Training Officers

Under the auspices of the *Thurston County Fire Chiefs Association*, Training Officers from the fire departments meet regularly to develop and share resources, as well as promote fire training locally.

Training Facilities & Resources

The next section describes the various training facilities and resources among the fire departments participating in this study. The next two figures list these by individual organization.

Figure 116: Training Facilities & Resources (TFD, EOFD, LFD3)

Description	TFD	EOFD	LFD3
Adequate training ground space/equipment	Minimal	Yes	Yes
Live fire props	At MNRFTC	Vent, car, live fire, etc.	At MNRFTC
Fire & driving grounds	Yes	Yes	Yes
Training facility maintenance adequate	N/A	Yes	Yes
Classroom facilities adequate	Yes	Yes	Yes
Video & computer simulations available	Yes	Yes	Yes
Instructional materials available	Yes	Yes	Yes

Figure 117: Training Facilities & Resources (WTRFA, OFD, MBLFD)

Description	WTRFA	OFD	MBLFD
Adequate training ground space/equipment	Shared ownership with MBLFD	Yes	Yes
Live fire props	None on site	Numerous props	At MNRFTC
Fire & driving grounds	Yes	Yes	Yes
Training facility maintenance adequate	Remodel pending	Yes	Yes
Classroom facilities adequate	Yes	Yes	Yes
Video & computer simulations available	Yes	Yes	Yes
Instructional materials available	Yes	Yes	Yes

Each of the fire departments maintain, or have access to, adequate regional training facilities, as well as a broad range of props for roof ventilation, vehicle fires, LPG fires, towers, and much more. One of the features of Olympia's Mark Noble Regional Fire Training Center is a state-of-the-art Command Training Center.

Training Facilities in Thurston County

The Olympia Fire Department has a separate state-of-the-art training center which is utilized by a number of departments in Thurston County. The training center is equipped with a wide variety of equipment, props, and other facilities, as shown in the next figure.

Figure 118: Mark Noble Regional Training Center (OFD)

Address/Physical Location:	1305 Fones Rd, Olympia, WA 98501
	**General Description:** The Olympia Fire Department owns and operates the Mark Noble Regional Training Center (MNRTC). The center consists of several buildings. Two towers with smoke and one with a burn room, classroom, computer lab, storage, and restrooms. They maintain numerous props and a standalone Command Training Center.
Structure	
Construction Type	Multiple facilities; mostly masonry
Date of Construction	2012
Seismic Protection	Yes
Auxiliary Power	Yes
General Condition	Excellent
Special considerations (ADA, etc.)	N/A
Square Footage	N/A
Facilities Available	
Exercise/Workout Facilities	No
Kitchen/Dormitory	Kitchenette for day staff
Shower Facilities	One
Safety & Security	
Sprinklers and/or Smoke Detection	Yes/Yes (fire alarm)
Security	Yes
Apparatus Exhaust System	N/A

Figure 120: Roof Props at the OFD Training Center

Figure 119: OFD Command Training Facility

The McLane-Black Lake Fire Department maintains a training tower and drill yard, which is considered a shared training center with several other fire districts. The other participating departments contributed funds towards the construction of the facility, although the majority of costs were absorbed by MBLFD. The training center is located adjacent to its headquarters station.

Figure 121: McLane-Black Lake Regional Training Center

West Thurston maintains a three-story training tower with multiple props at Station 1-1. The East Olympia Fire Department has a small connect cluster which it uses for training, and are rebuilding a new drill complex of connection boxes that will include a Class A burn room and drill yard sometime in 2019. Funding for this project has already been allocated.

Washington State Fire Training Academy

Another resource available to the fire departments is the *Washington State Fire Training Academy* (FTA) located in North Bend. The WSFTA has a substantial inventory of training props and facilities that include:

- Burn buildings
- ARFF building, field area, and prop
- Marine shipboard prop
- Forcible entry prop
- Hazmat building and outside props
- Flammable liquid pads
- Classrooms, dormitory, and dining facility
- Ventilation props

Training Records Maintenance

The following two figures describe the methods by which each of the fire departments maintain and track individual and organizational training records.

Figure 122: Training Records Maintenance (TFD, EOFD, LFD3)

Description	TFD	EOFD	LFD3
Individual training files maintained	TargetSolutions	Yes	Yes
Records & files computerized	Yes	Yes	Yes
Daily training records kept	Yes	Yes	Yes
Annual training hours tracked	Yes	Yes	Yes
Company training records kept	Yes	Yes	Yes
Responsibility for records	Training Division	Assistant Chief	Training Division
Training equipment inventoried	No	No	No

Figure 123: Training Records Maintenance (WTRFA, OFD, MBLFD)

Description	WTRFA	OFD	MBLFD
Individual training files maintained	Yes	TargetSolutions	Yes
Records & files computerized	Yes	Yes	Yes
Daily training records kept	Yes	Yes	Yes
Annual training hours tracked	Yes	Yes	Yes
Company training records kept	Yes	Yes	Yes
Responsibility for records	TO & Admin. Staff	Training Division	Training Division
Training equipment inventoried	Annually	Annually	No

General Training Competencies

For training to be fully effective, it should be based on established standards. The following two figures list the general training competencies regularly delivered to the members of each of the fire departments participating in the study. As will be shown, each of the departments has adequately addressed basic, general training competencies.

Figure 124: General Training Competencies (TFD, EOFD, LFD3)

Description	TFD	EOFD	LFD3
Incident command system	Yes	Yes	Yes
Accountability procedures in place	Yes	Yes	Yes
Policy & procedures on training	Yes	Yes	Yes
Safety procedures in place	Yes	Yes	Yes
Recruit academy	Bates[1] & County[2]	County[2]	Bates[1]
Special rescue	SORT training[3]	SORT training[3]	SORT training[3]
Hazmat certification	Operations level	Operations level	Operations level
Wildland firefighter	Wildland interface	50% Red Card	40% Red Card
Vehicle extrication	Yes	Yes	Yes
Defensive driving	EVIP	EVIP	EVIP
Use, safety, & care of small tools	Yes	Yes	Yes
Use & care of power equipment	Yes	Yes	Yes
Radio communications & dispatch	Yes	Yes	Yes
EMS skills & protocols	OTEP/TCMO	OTEP/TCMO	OTEP/TCMO

[1]Bates Technical College [2]Refers to Thurston County recruit academy [3]Special Operations Response Team

Figure 125: General Training Competencies (WTRFA, OFD, MBLFD)

Description	WTRFA	OFD	MBLFD
Incident command system	Yes (Policy 1.4000)	Yes	Yes
Accountability procedures in place	Yes (Policy 1.4003)	Yes	Yes
Policy & procedures on training	Yes	Yes	Yes
Safety procedures in place	Yes	Yes	Yes
Recruit academy	County; biannually[2]	Bates[1] & Internally	County[2]
Special rescue	SORT training[3]	SORT training[3]	SORT training[3]
Hazmat certification	Operations level	Operations level	Operations level
Wildland firefighter	90% Red Card+	No; developing	90% Red Card
Vehicle extrication	Yes	Yes	Yes
Defensive driving	EVIP	IAPD	Yes
Use, safety, & care of small tools	Yes	Yes	Yes
Use & care of power equipment	Yes	Yes	Yes
Radio communications & dispatch	Yes	With TCOMM	Yes
EMS skills & protocols	OTEP/TCMO	OTEP/TCMO	OTEP/TCMO

[1]Bates Technical College [2]Refers to Thurston County recruit academy [3]Special Operations Response Team

EMS Training & Continuing Medical Education

All of the departments in this study rely on *Thurston County Medic One* (TCMO) for basic and advanced life support continuing medical education. Medic One utilizes an online platform called 24/7; a state-approved *Ongoing Training & Evaluation Program* (OTEP) for basic life support providers; and locally produced skill-set videos. OTEP courses are scheduled monthly at various locations, and open to any Thurston County EMS providers.

Training Methodologies

Certain resources are necessary to arm the instructor with the tools necessary to deliver adequate educational content to produce effective training to fire and EMS personnel. In addition to such tools, effective methodologies must be employed if training delivery is to be sufficient to meet the needs. Each of the fire departments in this study employs various methodologies to deliver training, as well as maintaining a focus on safety, and a culture of safe practices—both on the fireground and during training activities.

The following two figures list the various training methodologies and training operations utilized by each of the fire departments participating in this study.

Figure 126: Training Methodologies & Operations (TFD, EOFD, LFD3)

Description	TFD	EOFD	LFD3
Manipulative skills	Yes	Yes	Yes
Task performances/frequency	WAC quarterly	Per WAC	Per WAC+
Annual training hour requirements	None required	Exceeds WSRB	None required
Use of lesson plans	Yes	Yes	Yes
Produced in-house or commercially	Both	Both	Both
Night drills	Annually	Weekly	Annually
Multi-agency drills	Multiple time/year	Quarterly	Bi-Annually
Inter-station drills	Yes	Yes (varies)	Yes (varies)
Disaster drills conducted	Every few years	No	No
Pre-fire planning included in training	Yes	Yes (monthly)	Yes
Safety incorporated in training	Yes	Yes	Yes
Post-incident analysis conducted	Structure fires & multi-agency calls	After-action review; IRPG	First-alarm or greater incidents

Figure 127: 2017 Training Methodologies & Operations (WTRFA, OFD, MBLFD)

Description	WTRFA	OFD	MBLFD
Manipulative skills	Yes	Yes	Yes
Task performances/frequency	Varies	Weekly	Varies
Annual training hour requirements	Per WSRB & WAC	144 hours	Per WSRB & WAC
Use of lesson plans	Yes	Yes	Yes
Produced in-house or commercially	Both	Both	Both
Night drills	Bi-Annually	Annually	Bi-Annually
Multi-agency drills	Quarterly	Frequently	Bi-Annually
Inter-station drills	Yes (quarterly)	Yes (weekly)	Yes (quarterly)
Disaster drills conducted	Annually	City EM	Varies
Pre-fire planning included in training	Yes	Yes	Yes
Safety incorporated in training	Yes	Yes	Yes
Post-incident analysis conducted	Structure fires & multi-alarm calls	Most fires	First-alarm or greater incidents

All of the fire departments conduct training on a monthly and/or weekly basis, and meet their annual training requirements. Multi-agency, night, and inter-station drills are conducted regularly by each of the departments.

The following two figures list the most current training activities among the six departments.

Figure 128: 2017 Fire Department Training Activities (TFD, EOFD, LFD3)

Description	TFD	EOFD	LFD_3
Number of personnel trained	50	45	115
Fire-related training hours	5,763	3,726	9,200
EMS-related training hours	1,661	446	3,300
Other training hours	—	200 (recruits)	—
Total Training Hours Delivered:	**7,424**	**4,372**	**12,500**

Figure 129: 2017 Fire Department Training Activities (WTRFA, OFD, MBLFD)

Description	WTRFA	OFD	MBLFD
Number of personnel trained	85	107	70
Fire-related training hours	4,873	9,454	5,960
EMS-related training hours	600	3,366	509
Other training hours	2,240[A]	2,494	688
Total Training Hours Delivered:	**7,713**	**15,314**	**7,157**

[A]Represents 1,440 hours in recruit academy; 100 hours for technical rescue; and 900 hours for EMT training

The next figure represents the combined training activities of the six fire departments and fire districts participating in this study. As shown, fire-related training comprised approximately 72 percent of the total training hours; EMS-related training just over 18 percent; with all other training topics making up just over 10 percent of the total training hours.

Figure 130: Combined Training Activities Summary

Description	Totals
Number of personnel trained	472
Fire-related training hours	38,976
EMS-related training hours	9,882
Other training hours	5,622
Total Training Hours Delivered:	**54,480**

Training Discussion

It was evident from ESCI's site visit that each of the fire departments in this study considers training as a high priority. If consolidated or even partially consolidated, they would have a large amount of resources and qualified personnel to provide ongoing fire-related and other training. Assuming Thurston County Medic One would continue the provision of continuing medical education and initial EMT-Basic training, EMS training should not be an issue in the event of consolidation. If not, it would be necessary for a consolidated department to assign and/or employ qualified instructors and management staff to deliver mandatory EMS continuing medical education.

RECOMMENDATIONS:

- As described earlier, fire training is a critical element of a successful fire department, and requires substantial skills, knowledge, and experience to manage effectively. Tumwater & Lacey should assign (or promote) their Training Lieutenants to manage and deliver fire training.
- Each department should consider publishing an annual training report—either independently or incorporated within their department's annual report. The reports should be shared with all members.
- Tumwater, Lacey, and McLane-Black Lake should annually inventory all of their training equipment and props, and maintain regular maintenance records.

Current Financial Analysis

Economic Setting

The national economy, which sets the stage for the local economy, continues its nine-year trend of modest growth. The current economic expansion is the second longest on record, and appears likely to break the record in July 2019 (the previous record was 120 months from 1991–2001). Even though there are concerns regarding the stock market and regarding the implications of certain national and international policies, the consensus is that the current growth trends can be expected to continue at least through 2019.

Washington's economy has been growing at a faster pace than the nation as a whole since 2012, in terms of GDP. Washington State's unemployment rate of 4.5 percent is at historic low, and job growth is expected to continue growing at 1.8 percent through 2020. The state's retail sales tax collections are up 33 percent between 2014 and 2018. These are both indicators of a strong economy and key drivers of government payrolls, which bodes well for Thurston County.

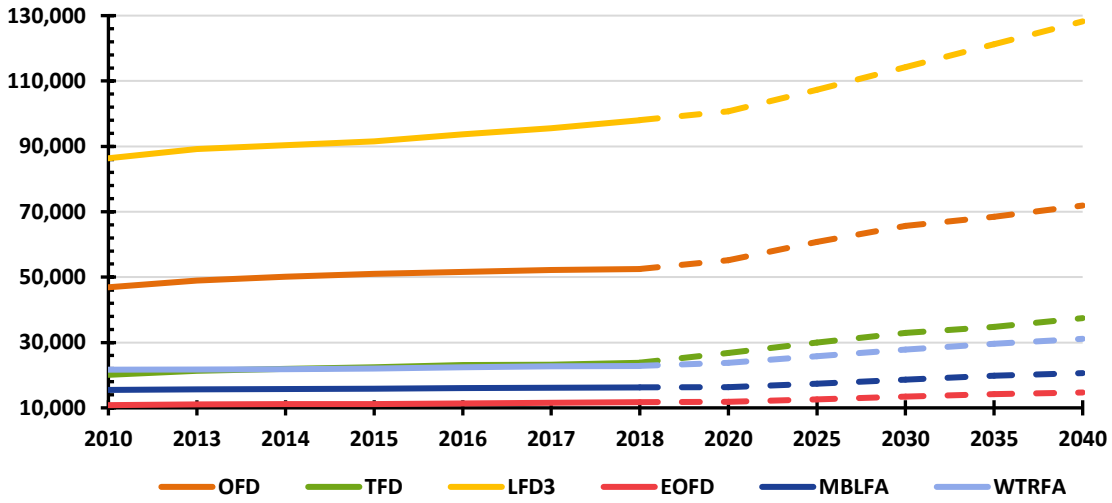
Dominated by the state capital in Olympia and state department offices in Tumwater, Thurston County is heavily dependent on government employment—Employment Security data shows 32.5 percent of all nonfarm employment in the county can be attributed to federal, state, and local government jobs. As of October 2018, the area enjoyed a low 4.2 percent unemployment rate on a civilian labor force of 139,037. The County's strong economic position is further indicated by its 7 percent growth in assessed value (AV), from $30 billion in 2016 to $32.2 billion in 2017, which included $488 million in new construction (itself up 10.6% from 2016).

The six subject fire departments cover much of Thurston County, including the bulk of metropolitan areas (excluding the small cities of Yelm, Rainier and Tenino), with a population of 236,000 out of a county total of 277,000 (85% of total) and 381 square miles out of 774 square miles (49%). Their combined assessed value (AV) is $25.7 billion out of $32.2 billion (80%). Since the subject area accounts for a majority of the economic activity of the county, we can confidently assume that published County-wide trends closely match subject area trends.

The local economy is also augmented by large public construction projects (though the fire departments receive no direct tax benefit from them). Olympia, Tumwater, and North Thurston school districts continue to build and renovate schools thanks to recent voter-approved bonds. Olympia voters approved $160 million in 2016. North Thurston, working off its 2014 bond package, has capital construction plans of over $104 million between 2017 and 2023 ($35 million was approved for the 2018/19 school year). Tumwater is completing projects from its 2014 bond package and is contemplating $124 million in projects in its 2018–24 capital facilities plan.

The area is also growing in population (Figure 131). Thurston County has been one of the fastest growing counties in Washington for the last thirty years. In the last 10 years, the county has grown roughly 10 percent from about 249,000 in 2009, to 282,000 in 2018. Within the cities of Lacey, Olympia, and Tumwater, the average growth rate was 2.4 percent each year, and almost 21 percent over the 10-year period. From 2015 to 2018, the average was 2.9 percent per year, and 8.7 percent overall. Per a 2011 Thurston County Regional Planning Council study, Thurston County will need to add 55,000 new residential units between 2010 and 2030.

Figure 131: Fire Agency Population Projections



While the strong economy provides confidence for the six fire departments' budgets, this confidence is somewhat offset by strong population growth; and with it, growing expenses. Most of the departments' property tax revenue has recently grown faster than the population; over all they increased their levies by almost 26 percent from 2015 to 2018 (see Figure 132). WTRFA and the Medic 1 regular levies are the exceptions, with WTRFA regular levy shrinking by 11 percent over the four-year period (excluding its M&O levy), and Medic 1 only increasing by 8 percent. However, when WTRFA's M&O levy is included its total levy increases are in line with those of other departments. Medic 1 remains a more concerning funding source.

Along with the economic setting described above, we note that one of the main challenges facing fire agencies (and other local government agencies) are various property tax constraints. The two that are most difficult are the 1 percent limit on growth and the $5.90 limit on total property tax rates. The impact of the 1 percent limit is that it prohibits revenues from rising as quickly as inflation (which often exceeds 1%), unless voters approve larger increases. This leads to a structural imbalance in funding for all local governments in Washington State. The impact of the $5.90 limit is that it restricts how much tax voters can approve. While a thorough explanation of these issues is beyond the scope of this document, an excellent overview can be found online.[18]

[18] See: http://mrsc.org/Home/Explore-Topics/Finance/Revenues/The-Property-Tax-in-Washington-State.aspx.

Figure 132: Summary of Levies

Taxing District	Levies				Increase from			
	2015	2016	2017	2018	15–16	16–17	17–18	15–18
Tumwater	$ 7,477,416	$ 7,806,532	$9,267,533	$9,493,468	4.4%	18.7%	2.4%	27.0%
Olympia	$14,789,950	$15,139,775	$15,591,403	$18,597,989	2.4%	3.0%	19.3%	25.7%
EOFD	$ 2,004,648	$ 2,090,533	$ 2,297,825	$ 2,457,039	4.3%	9.9%	6.9%	22.6%
LFD3	$12,895,122	$13,515,914	$14,525,783	$16,091,971	4.8%	7.5%	10.8%	24.8%
WTRFA	$ 3,156,659	$ 2,605,709	$ 2,730,045	$ 2,795,429	-17.5%	4.8%	2.4%	-11.4%
M&O	$ -	$ -	$ 1,194,017	$ 1,202,146	0.0%	0.0%	0.7%	0.7%
Total	$ 3,156,659	$ 2,605,709	$ 3,924,062	$ 3,997,575	-17.5%	50.6%	1.9%	26.6%
MBLFD	$ 3,440,667	$ 3,940,408	$ 4,142,931	$ 4,404,587	14.5%	5.1%	6.3%	28.0%
M&O	$ -	$ 373,650	$ 404,524	$ 430,906	0.0%	8.3%	6.5%	15.3%
Total	$ 3,440,667	$ 4,314,058	$ 4,547,455	$ 4,835,493	25.4%	5.4%	6.3%	12.1%
Totals:	**$43,764,463**	**$45,472,521**	**$50,154,061**	**$55,473,535**	**3.9%**	**10.3%**	**10.6%**	**26.8%**
Medic One	$ 9,958,158	$10,225,254	$10,514,594	$10,758,206	2.7%	2.8%	2.3%	8.0%

With a strong economy, solid financials, and significant levels of cross-connection, now is a good time to look at consolidation options. Making such transitions will be eased by the over-all strong financial position.

Interconnectedness

The agencies all lie within Thurston County, which has a county-wide Medic One EMS levy of $0.33 (2018) totaling $10,758,206. We discuss the Medic One system as a separate issue below, but it is worth noting that the studied agencies already work together through it. TFD, OFD, and LFD3 provide advanced life support and ambulance services through Medic One within their own areas and to the rest of the county. There is additionally a significant level of interconnectedness among the six departments in this study, with interlocal contracts for a variety of services. A summary of these contracts follows:

- OFD—Vehicle Repair and Maintenance Services (serving all agencies)
- OFD—Training Services (serving TFD and LFD3)
- LFD3—Vehicle Repair Facility (leased to OFD)
- West Thurston Regional Fire Consortium (WTRFA, MBLFD and EOFD)
- Special Operations Rescue Team (all agencies)
- Medic One (all agencies)
- Mutual Aid (all agencies)

Loss of any of these contracts due to a merger or other cooperative arrangement will have no net impact to the system. For instance, if LFD3 and OFD were to merge, the resulting combined agency would lose the $62,500 lease income from LFD3, but gain the $62,500 savings from OFD.

Thurston County Medic One

Authorized by voters in 1999 at a rate of $0.50 per $1,000 AV, the Medic One/EMS Levy's mission is to "Provide efficient and effective pre-hospital emergency medical services (EMS) throughout Thurston County (Washington State)." Services are coordinated through County staff with the support of the Thurston County Emergency Medical Services Council.

In 2018, the Medic One EMS Levy totaled $10,758,206 at a rate of $.33 per $1,000 AV. Approximately 90 percent of the levy pays for Advanced Life Support and Basic Life Support, and about 5 percent is used for medic unit repair and replacement (units are owned by Medic One). The remainder covers administrative overhead, medical direction, financial, and technical support to the County's 14 fire agencies.

Advanced Life Support (ALS) response and transportation services are provided via contracts with the Olympia Fire Department (OFD); Tumwater Fire Department (TFD); and Lacey Fire District 3 (LFD3). The ALS funding from Medic One is intended to cover 100 percent of ALS costs including salaries, equipment, and supplies for a 7-medic unit. Funding is provided at 90 percent should an agency decide to staff its medic units with 8 medics, or 80 percent when staffed at 9 medics. Currently staffing is at 9 paramedics across the three contracted departments, and is expected to remain the same with the exception of Medic 14 which is located at the WTRFA Rochester Station. Medic 14 is staffed by 8 Tumwater paramedics and is funded at 100 percent. Medic One funding totaled $9,194,602 in 2017, or about 17 percent of the total budgets of $52,771,580 across all departments.

Basic Life Support (BLS) first response service, EMS training, and supplies are supported at each fire agency in the county with a $27,025 pass-through from the levy (this amount falls short of actual BLS supply costs). Additional funding totaling $719,459 in 2018 is divided among the 12 BLS agencies by call volume.

Beyond Medic One funding, agencies may charge a transportation fee for BLS. Currently MBLFD and WTRFA charge BLS transportation fees. WTRFA charges a single fee to all customers while MBLFD charges a separate, higher fee for nonresidents. WTRFA enjoyed $339,780 in revenues in 2017 (6% of total revenues), while MBLFD brought in $84,443 (about 1% of total revenue). They compete against private ambulance companies, AMR, and Olympic Ambulance, who charge higher rates for this service.

ESCI notes that largely because property tax increases in Washington State are limited to 1 percent growth, the Medic One levy rate has decreased from its original $0.50 millage to its present $0.32 millage. As in other agencies, this growth limitation leads to a structural deficit—with inflation growing at an average of about 2.5 percent, the revenue cannot keep pace. As noted above, the Medic One levy grew by 8 percent in the four-year period from 2015 to 2018, largely thanks to new construction (which is not limited by the 1% growth cap).

The structural deficit was made apparent in a 2013 study by the Thurston Regional Planning Council which found that expenditures were exceeding revenues as of 2011. The authors of the study recommended asking voters for a levy lid lift in 2017 to support Medic One programs. This project has not yet been attempted, however, and the current planning window for doing so is circa 2020. If/when they successfully complete this project, the levy rate would go from its current $0.33 millage to $0.50, or an annual increase of about $5,350,000.

Regionalization will likely have modest impacts on the BLS side of the Medic One system. Without a change to the funding model, a newly formed fire authority would lose the $27,025 pass-through for each consolidated fire department. The remainder of the BLS funding would remain the same since it is apportioned according to call volume. If all six agencies were to consolidate the loss would be $135,125, about 0.35 percent of the consolidated revenues of $38,365,672. There would be no financial impact to the ALS services or funding.

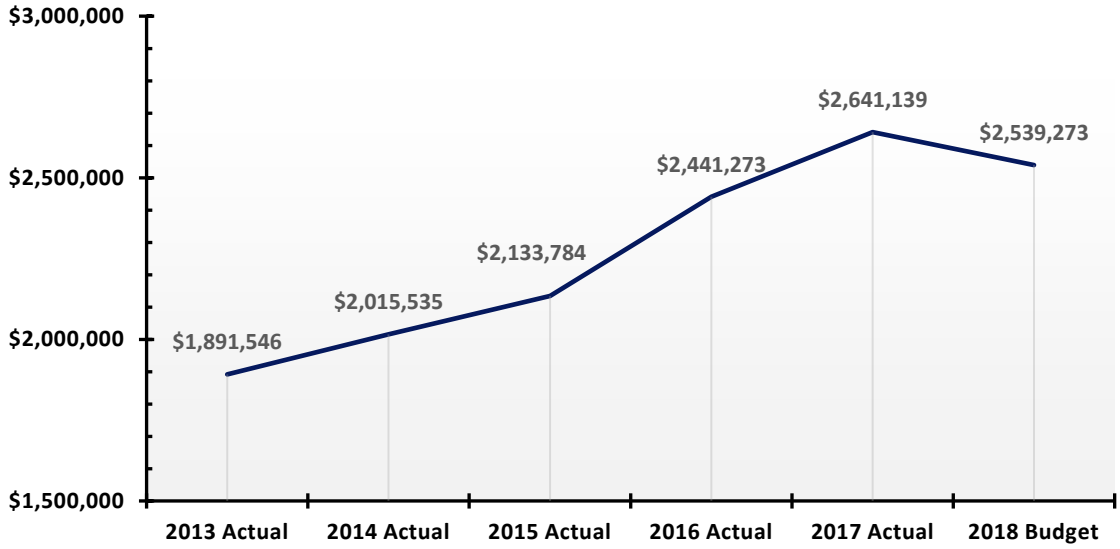
East Olympia Fire District

East Olympia Fire District is the smallest of the six studied agencies, with a 2018 operating budget of just over $2 million, a population of about 12,000 and a geographic area of 30 square miles (larger than the two cities, but smaller than the other three departments). Currently, the district is staffed by 20 career and 30 volunteer firefighters.

Like all of the agencies under study, EOFD is taking full advantage of its taxing authority, with a levy rate of $1.50 per millage. It does not have an M&O levy. It has one outstanding voter-approved bond.

As a good initial assessment of the district's health, we note a growing End-of-Year General Fund balance (see Figure 1335). Fund Balances can vary day-by-day, but End-of-Year balances, which coincide with most budgets, provide a common measuring stick of financial health. While it may be acceptable to see an occasional decline in General Fund balance, a healthy financial situation will generally only show such drops due to one-time issues, such as a major capital expenditure or a temporary funding issue.

Figure 133: EOFD General Fund Balances



EOFD also maintains a healthy reserve account that totaled $1,368,290 at the end of 2017—this represents over half a year's operating expenses. As a rule, agencies need to maintain fund balances of at least three or four months of operating expenses. EOFD's financial policy #86-04 requires a three-month financial reserve, as well as a two-month rainy-day reserve.

Interlocal Agreements

EOFD contracts with Southeast Thurston Fire Authority to share costs of a Training Officer, a Mechanic, and a Facilities Maintenance employee. They have an additional agreement with OFD to provide vehicle maintenance beyond that provided by their in-house staff.

Capital Improvements and Debt

As can be noted by the non-operating expenditure line in the following figure, EOFD is actively maintaining its capital assets, with $351,007 in upgrades to its training facilities planned for 2019, and $998,500 in purchases of two new engines, a command vehicle, and SCBA equipment planned for 2018. These and other current improvements are financed by a 2016 bond issuance of $2 million. Bond payments are covered by a $0.26 voter-approved levy, and the bond will be retired in 2022.

In addition to the bond, we note pension fund liabilities totaling $249,913 (10.3% of 2018 budget) and compensated absences totaling $76,235. Neither of these liabilities present a significant risk to the department.

Budgetary Review

EOFD maintains three budgetary funds—General, Capital Project, and Debt Service. The General Fund is used for regular operating activities, the Capital Project Fund is used for the acquisition or construction of capital assets, and the Debt Service Fund accounts for resources and expenditures related to long-term debt (which is used to finance the Capital Project Fund).

While all of the studied agencies are heavily dependent on property tax revenues, EOFD is the most reliant with property taxes covering 92 percent of operating expenses in 2017. Though property tax revenues are generally stable and reliable, there are a couple of consequences to be aware of. First, fire districts are secondary taxing authorities. This means that if the total property tax rate for an area exceeds the statutory maximum, as happened in 2008, fire district's levies may be reduced to bring levy rates down. Second, the majority of property tax revenues are received in May and November. If an agency has a low general fund cash balance, this can lead to difficulty making payments in the early spring and late summer. Through prudent financial stewardship, EOFD has an adequate cash balance.

While EOFD's fund balance trends (Figure 133) are positive, it is important to also make sure that operating (or recurring) revenues are regularly greater than operating expenditures, that capital expenditures are well planned and covered, and that debt payments have an adequate and consistent funding source. One should not over-focus on any single data point, but should instead take in the totality of the various aspects of an agency's financial condition.

Operating revenues and expenses are those that are generated through the agency's regular activities. Revenue examples include taxes, fees and charges, and interest, while example expenditures include debt payments, personnel costs, and equipment repair. Non-operating (or one-time) revenues and expenses are those that happen irregularly or are not guaranteed. Revenue examples include grants, property sales, donations, and fund balances, while expenditure examples include major capital purchases. Generally, operating revenues should not be used for non-operating expenses and non-operating revenues should not be used for operating expenses. For example, funding from bonds should be used for new apparatus rather than supporting on-going pay increases.

As seen in the next figure, EOFD's operating revenues generally line up with the operating expenditures as do its nonoperating revenues/expenditures (net over time).

Figure 134: EOFD Net Revenues (Deficits)

Net Revenues (Deficits)	2013 Actual	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Budget
Operating Revenues	$1,879,981	$2,009,808	$2,180,778	$2,173,624	$2,101,513	$2,216,066
Operating Expenditures	$1,749,853	$1,885,134	$1,863,799	$1,922,414	$1,971,475	$2,234,806
Net Revenue (deficit)	$130,128	$124,674	$316,979	$251,210	$130,038	$(18,740)
Non-Operating Revenues	$7,744	$1,124	$447	$2,000,251	$379,225	$390,494
Non-Operating Expenditures	$32,839	$15,150	$109,824	$76,417	$542,313	$1,701,212
Net Revenue (deficit)	$(25,095)	$(14,026)	$(109,377)	$1,923,834	$(163,088)	$(1,310,718)

Forecast

ESCI forecasted EOFD's expenditures using a linear formula based on the last four years, and its property tax revenues based on average increases over six years. Its property tax revenue forecast assumes 1 percent annual growth plus $1.5 per $1,000 AV on new construction (except 2020, where construction is held to $0 in anticipation of a mild recession). Contract revenue was forecast on a simple 2.5 percent inflationary increase. Based on this fairly simple model, EOFD could see increasing deficits in the coming years.

Of course, with controls over EOFD's expenditure increases there is no reason why our forecasts will necessarily come to fruition. The forecasts do, however, point to a need for inflationary controls. They also reflect the continued problem of a structural imbalance in Washington State where revenue growth is more tightly controlled than inflationary pressures on expenses. The district intends to submit a levy lid lift to help alleviate inflationary pressures.

Figure 135: EOFD Financial Forecast

	2019 Forecast	2020 Forecast	2021 Forecast	2022 Forecast	2023 Forecast	2024 Forecast
Operating Revenues	$2,286,127	$2,310,327	$2,377,677	$2,449,944	$2,527,178	$2,609,429
Operating Expenditures	$2,288,644	$2,404,852	$2,521,060	$2,637,269	$2,753,477	$2,869,685
Net Revenue (deficit)	$(2,517)	$(94,525)	$(143,383)	$(187,325)	$(226,299)	$(260,256)
Beginning Fund Balance	$2,520,533	$2,401,808	$2,191,074	$1,931,483	$1,627,950	$1,285,442

City of Tumwater Fire Department

The City of Tumwater's Fire Department has an operating budget of $6.7 million and serves a population of almost 24,000 people in an area of about 18 square miles. This makes TFD the smallest of the studied agencies in terms of land area, but mid-sized in terms of budget and population. Currently, the department is staffed by 49 career and 12 volunteers, including four new positions added in 2017 due to the east annexation of approximately 15 percent of EOFD and FD 15 in 2016.

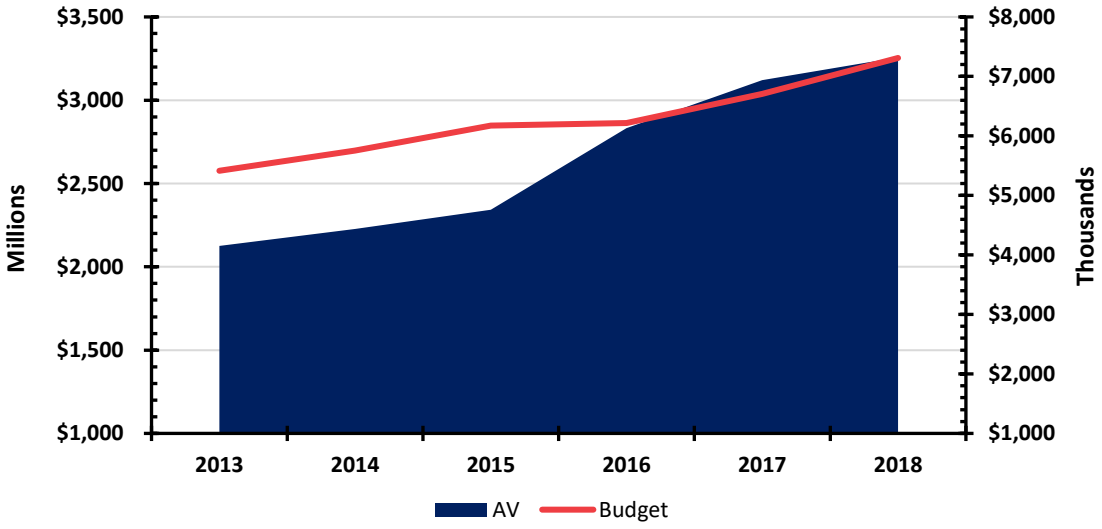
TFD provided fire and medic services through an intergovernmental contract with the Munn Lake Fire District 15 (FD15) until it was annexed into City boundaries in 2016 as previously mentioned. In addition to fire suppression and basic life support services, TFD is a contract provider within the Thurston County Medic One System through which it provides advanced life support services within the city and to the Rochester/Grand Mound areas. While the contract would pay 100 percent of costs for 7 paramedics per station, all 3 agencies have elected to staff their stations with 9 paramedics and receive 80 percent cost recovery from Medic One with the exception of Medic 14 located in Rochester. Medic 14 staffs 8 paramedics per contract at 100 percent. The remaining expenses are absorbed by the agencies. The department also provides fire suppression services to the Port of Olympia Regional Airport.

Since it is a city department, there is no direct connection between the property tax levy or other tax revenues and the fire department's services. That said, if a $1.50 levy rate were applied to the City's assessed value, it would accrue $4.886 million. With the additional $2.372 million Medic One payments the department receives and $17,000 in fire inspection fees, it would conceivably have a total revenue of about $7.275 million.

The City does not allocate overhead expenses within its general fund, so the department's 2018 budgeted operating costs of $7.310 million appear lower than they would if it were a separate agency, making it more difficult to compare. There are a variety of valid ways to estimate how much of the overhead costs are attributable to the fire department, and each would likely produce a different result. A simple way is to simply take the total General Fund costs for the City that are administrative in nature (Legislative, Executive, Finance, HR, IT, Attorney) as a percent of the total General Fund expenses (about 10.45%) and apply that percentage to the fire department. This would add an estimated $764,000 to the figure, for a total of $8.074 million, resulting in an operating deficit of $799,000. Even though the 2018 estimated expenses were somewhat less at $7.134 million and the overhead figure is a very rough estimate, it is unlikely that a stand-alone agency would break even without changes to one or both sides of the revenue-expenditure equation.

Over the past 5 years, the department's budget has increased on average 7 percent per year, and 35 percent overall (see Figure 136). Much of this growth can likely be attributed in part to the annexation of FD15 in 2016, and an average population growth of 6 percent per year (30% overall). The growth was at least partly enabled by the levy lid lift and by property taxes on new construction (which are not included in the 1% property tax limitation).

Figure 136: Tumwater Budget Compared to AV Growth



Capital Improvements and Debt

TFD is actively maintaining its capital assets via debt issuances. Having paid off a bond in 2018, the department is left with $188,656 in debt on an engine that will be paid off in 2021 (payments are roughly $67,700 per year). They plan to issue an additional $750,000 in debt over the next 8 years for a new fire engine through the Washington Treasurer's LOCAL program (essentially piggy-backing on state-issued bonds), paying for it with money provided by the levy lid lift (see below). Debt service is anticipated to be about $109,740 for eight years beginning in 2019. The City has also recently completed facility improvement on its Fire Station T2 and Headquarters Fire Station, and continues to make repairs and improvements.

Additionally, the City has liabilities for compensated leave, pension liability, and other post-employment benefits—the amounts attributable to the fire department are unknown. Pension liability has increased on average 23 percent ($306,489) each year over the past 9 years (2009–2017). While the rate of increase seems to be tapering off (22% over the last 5 years, and 15% in 2017), the numerical increase remains high ($383,831 5-year average, and $391,618 in 2017). Pension liabilities are a common issue among Washington State government agencies, though the Law Enforcement Officers' and Fire Fighters' pensions are adequately funded.

Budgetary Review

The City of Tumwater operates under GAAP accounting rules (accrual versus cash) and budgets on a 2-year cycle, while the stand-alone districts are all operated on a cash basis and use one-year budget cycles. TFD is operated primarily as a department within the City's General Fund. Repair and replacement for all vehicles except fire engines are handled in a separate Equipment Rental and Reserve Fund. Debt repayments and capital projects are also handled under separate funds, as is typical.

The City passed a six-year permanent levy lid lift in 2011 for public safety purposes (fire and police) that expired in 2018. As a result, the City enjoyed more revenue growth between 2012 and 2018 than it would have under the I-747 1 percent property tax limitation. Since it was a "permanent" lift, the city will continue receiving the additional revenues in the future, thus protecting the FTEs that were enabled by this lift. Over time however, property tax increases will not keep up with inflationary pressures on salaries and expenses.

The money generated by the levy lid lift has been accounted for via a separate "Public Safety Reserve" fund, which receives the money and transfers it out to other fund departments (General Fund, Debt Service Fund, Capital Facilities Fund, and Equipment Rental and Replacement Fund) for expenditures. With this revenue, TFD has hired three firefighters, replaced SCBA gear, renovated two reserve engines, purchased small equipment, and purchased two new fire engines via the state LOCAL program.

The next figure shows a generally healthy operating surplus, though it must be noted again that overhead costs are not included in the operating expenditures.

Figure 137: TFD Net Revenues (Deficits)

Net Revenues (Deficits)	2013 Actual	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Budget
Operating Revenues	$5,629,004	$6,211,091	$6,096,905	$6,512,165	$7,090,866	$7,276,116
Operating Expenditures	$5,414,232	$5,755,213	$6,175,548	$6,214,465	$6,704,078	$7,273,251
Net Revenue (deficit)	$214,772	$455,878	$(78,643)	$297,700	$386,788	$2,865
Non-Operating Revenues	N/A	N/A	N/A	N/A	N/A	N/A
Non-Op. Expenditures	N/A	N/A	N/A	N/A	N/A	$37,000
Net Revenue (deficit)	N/A	N/A	N/A	N/A	N/A	N/A

Note that Operating Revenues in the above figure assume a $1.50 levy and include SAFER grants, since associated expenses are included in operating expenses. Non-Operating Expenditures are limited to Capital Project Fund expenditures. Non-Operating Expenditures for 2018 are estimated.

Forecast

ESCI forecasted TFD's wages, benefits, and professional services expenditures using a linear growth model, using six years of data on wages/benefits, and four years for professional services. Supplies, apparatus maintenance, and interfund expenses are forecast on simple 2.5 percent inflationary growth. Capital expenses are assumed to be zero, but we did include the $109,740 debt payments for a new engine. On the revenue side, Medic One revenue forecasts use a linear formula based off the last six years of growth, while fire inspection fees are assumed to be the average of the past four years. Property tax revenues assume $1.5 per $1,000 AV with 1 percent annual growth plus new construction (except 2020, where construction is held to $0 in anticipation of a mild recession). Based on this fairly simple model, TFD could see very moderate deficits in the coming years.

As mentioned, this forecast treats the department as if it were a stand-alone agency; we are making no forecasts about Tumwater's actual general fund. The forecast deficits are modest enough to be relatively easy to manage, and indicate a fairly healthy department going forward. Dangers include capital expenses that are not forecast in this model, and the potential for inflationary pressures on wage and benefit growth.

Figure 138: TFD Financial Forecast

	2019 Projected	2020 Projected	2021 Projected	2022 Projected	2023 Projected	2024 Projected
Operating Revenues	$7,623,546	$7,644,713	$7,994,771	$8,344,828	$8,694,886	$9,044,944
Operating Expenditures	$7,537,564	$7,865,066	$8,192,775	$8,520,698	$8,848,840	$9,177,205
Net Revenue (deficit)	$85,982	$(220,353)	$(198,005)	$(175,870)	$(153,953)	$(132,261)

City of Olympia

The City of Olympia's Fire Department is more than twice the size of TFD, the other city department in our study, in terms of budget ($16,945,712 in 2017), personnel (101 career), population served (52,170), and land area served (18.9 square miles). Like TFD, OFD provides fire inspection and ALS services in addition to those services provided by other agencies.

As indicated in the discussion about interconnections among the studied agencies, Olympia is perhaps the most connected with other agencies. It provides vehicle repair and maintenance services to all of the studied agencies via a facility it leases from LFD3, and provides training services to TFD and LFD3. It is additionally one of three agencies providing ALS via Medic One.

As a city department, OFD does not have a direct connection to its tax revenues. The agency is a department within the City's General Fund, as opposed to fire districts wherein the entire General Fund is devoted to the fire department. Nevertheless, if a $1.50 levy rate were applied to the City's assessed value, it would accrue $10.036 million. With the additional $2.709 million Medic One payments the department receives and $2.009 million in other revenues (mostly contract fees), it would conceivably have a total revenue of about $14.754 million.

The City does not allocate overhead expenses within its General Fund, so the department's operating costs appear lower than they would if it were a separate agency, making it more difficult to compare. There are a variety of valid ways to estimate how much of the overhead costs are attributable to the fire department, and each would likely produce a different result. A simple way is to simply take the total General Fund costs for the City that are administrative in nature (Legislative, Executive, Finance, HR, IT, Attorney) as a percent of the total General Fund expenses (about 13.86%) and apply that percentage to the fire department actuals of $16,945,712 in 2017. This would add an estimated $2,348,000 to the figure, for a total of $19.295 million, resulting in an operating deficit of $4.5 million. While these are only very rough estimates, the numbers indicate that changes would need to be made in order for the department to break even as a stand-alone agency.

It is worth noting that while the overhead estimate is substantial, the amount and quality of financial planning in OFD is admirable. Also, OFD's benefits package is more generous than some other fire departments, including an education benefit (4% additional pay for Bachelor's degree), longevity (6% for over 25 years), uniform allowance, deferred compensation (3%), medical, vision, dental, EAP, VEBA, and life.

Over the past five years, the department's budget has increased on average 5.8 percent per year (32.6% overall). Some of this growth can be attributed to an average population growth of 1.4 percent per year (7% overall). The remainder of this growth can be attributed to normal inflationary pressures, particularly in compensation and benefits.

The City's fund balances have been growing over the past five years, from $16.8 million in 2013, to $21.1 million in 2017. The City also has a policy to maintain a 10 percent expenditure reserve. In all, the City seems to be in a robust financial position.

Capital Improvements and Debt

The citizens of Olympia authorized the City to issue general obligation bonds in 2008, which were used to construct a fourth fire station, a fire training center, and the acquisition of two fully equipped fire engines and a ladder truck. Annual principal and interest payments are funded by voter approved property tax collections equal to the current year debt service obligation. Those bonds will expire in 2029, and the outstanding principal at the end of 2017 came to $10,400,000. Other debt includes $6,372,971 in other post-employment benefits, and $2,061,048 in pension fund liabilities.

Budgetary Review

The City of Olympia uses GAAP accounting procedures rather than cash-basis accounting like the fire districts. OFD is operated primarily as a department within the City's General Fund, but the City has a separate Fire Equipment Replacement Fund for its apparatuses. Debt repayments and capital projects are also handled under separate funds, as is typical. Insurance is also handled through a separate fund.

OFD covers about 28 percent of its expenses through contract revenue and other non-tax sources including grants and fire inspection fees. This is close to the average of all the studied departments (27%), despite its many interlocal contracts. This may indicate that the interlocal contracts are structured to cover expenses without generating significant additional revenue.

As noted previously, the next figure shows that as a stand-alone agency, OFD would need to make changes to operate within its probable resources.

Figure 139: OFD Net Revenues (Deficits)

Net Revenues (Deficits)	2013 Actual	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Budget
Operating Revenues	$10,755,165	$11,482,646	$12,293,803	$12,693,304	$14,261,152	$14,891,359
Operating Expenditures	$13,358,669	$14,191,563	$14,566,263	$15,582,752	$16,940,712	$17,291,120
Net Revenue (deficit)	$(2,603,504)	$(2,708,917)	$(2,272,460)	$(2,889,448)	$(2,679,560)	$(2,399,761)
Non-Operating Revenues	N/A	N/A	N/A	N/A	N/A	N/A
Non-Op. Expenditures	$126,040	$74,508	$689,166	$162,502	$5,000	$590,016
Net Revenue (deficit)	N/A	N/A	N/A	N/A	N/A	N/A

Note that Operating Revenues in the figure assume a $1.50 levy, and include grants since the bulk consists of SAFER grants, which are used for operating expenses. Non-Operating Expenditures are limited to General Fund expenditures.

Forecast

ESCI forecasted OFD's compensation and benefits using a linear growth model, using six years of data. Supplies and professional services forecasts are based on six-year's average growth, while fleet costs and interfund services plus use simple inflation factors. Capital expenditures are maintained at the six-year average with no growth. On the revenue side, its Medic One forecast uses a linear forecast model while inspection fee revenue forecasts use six-year average growth (2.3%). Its property tax revenues assume $1.5 per $1,000 AV with 1 percent annual growth plus new construction (except 2020, where construction is held to $0 in anticipation of a mild recession). Based on this fairly simple model, OFD could see large, but fairly stable deficits (as a percentage of expenses) in the coming years.

As mentioned, this forecast treats the department as if it were a stand-alone agency; we are making no forecasts about Olympia's actual General Fund. The forecasts highlight OFD's relatively high fire expenses compared to potential revenues, while also highlighting the fact that the effective deficit is not growing significantly as a percentage of the operating budget.

Figure 140: OFD Financial Forecast

	2019 Projected	2020 Projected	2021 Projected	2022 Projected	2023 Projected	2024 Projected
Operating Revenues	$14,776,512	$14,942,455	$15,520,511	$16,211,140	$16,909,119	$17,614,758
Operating Expenditures	$18,068,810	$18,932,244	$19,853,745	$20,619,413	$21,423,529	$22,193,196
Net Revenue (deficit)	$(3,292,298)	$(3,989,789)	$(4,333,234)	$(4,408,273)	$(4,514,410)	$(4,578,438)

Lacey Fire District 3

LFD3 is the largest of the studied agencies in terms of population (98,040), assessed value ($10 billion), and budget ($17.7 million in 2017 actual expenditures), though WTRFA and MBLFD both serve larger geographic areas. As stated, LFD3 is also slated to see the greatest population growth. Currently, the department is staffed by 115 career and 28 volunteer firefighters, making it the largest department in terms of staffing as well.

The district's $1.50 regular levy provides 77 percent of its revenue ($14 million in 2017), with the bulk of the remaining revenue coming from its Medic One contract. It does not have an M&O levy. A 2014 six-year permanent levy lid lift will allow the district to maintain its $1.50 levy through 2021. After this time, we expect to see the levy rate slowly erode due to the state's 1 percent maximum levy growth rate. With on-going expected growth and construction, however, we can expect the district's property tax revenue to remain robust for the foreseeable future.

As a basic assessment of the department's health (see Figure 141), ESCI notes an increasing General Fund balance that keeps pace as a percent of operating expenses. While it may be acceptable to see an occasional decline in General Fund balance, a healthy financial situation will generally only show such drops due to one-time issues such as a major capital expenditure or a temporary funding issue. In this case, fund balance has generally been increasing. While the 2018 and 2019 budgets show a decrease as a percent of the operating budget, the level is nevertheless adequate and meets the department's policy goal to establish and maintain an adequate Fund Balance of at least 12 percent of the General Fund and supported operating funds.

Figure 141: LFD3 General Fund Balances

	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Budget	2019 Budget
Fund Balance	$ 2,494,771	$ 2,580,776	$ 3,607,360	$ 3,992,055	$ 3,333,325	$ 3,485,743
Balance as % of Expenses	16%	17%	22%	23%	17%	16%

The department has a history of taking advantage of a variety of grant opportunities, notably staffing for adequate fire and emergency response (SAFER) grants in past years, though it has no significant grant sources currently.

As seen in the following figure, the LFD3's general fund costs have remained consistent over the past seven years, with the bulk of costs going toward operations.

Figure 142: LFD3 Budget Ratios

	2013 Actual	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Budget	2019 Budget
Support Services	9%	8%	8%	8%	8%	10%	10%
Operations	86%	85%	85%	86%	86%	84%	85%
Facilities and Equipment	4%	3%	3%	3%	3%	3%	3%
Executive	1%	2%	1%	2%	2%	1%	2%

Capital Improvements and Debt

LFD3 had four outstanding bonds totaling $11,390,000 at the end of 2017. A $0.119 bond levy supports about 92 percent of the principal and interest payments on this debt; the remainder must be transferred from General Fund sources. The district carried an additional $1,314,805 in compensated absences (accumulated sick and vacation leave) and $551,133 in pension liabilities at the end of 2017, with a total debt of $13,255,938. At the end of 2017, the district's voters approved an additional $19,115,000 bond for capital equipment and facilities.

While LFD3's debt is substantial, the majority is supported by dedicated property tax levies and therefore does not present a concern. Rather, the district's voters' willingness to pay for capital improvements is encouraging, as is the fact that the district is able to pursue its capital facilities plans.

Budgetary Review

LFD3 operates primarily out of a general fund, but also maintains two bond funds, a donations fund, a reserve fund, and an equipment repair and replacement fund. The additional funds, while good accounting and budgeting practice, are inconsequential for our review.

As previously mentioned, the bulk of LFD3's non-tax revenue comes through its Medic One contract—in 2017, this amounted to $3.7 million which was 20 percent of total revenues and 88 percent of non-tax revenues. While the trend line for this revenue source is distinctly positive (up 34% from 2013–2017), it is highly variable with 2015 and 2017 revenues lower than previous that of 2014 and 2016, respectively.

In reviewing the budget history, we noted no peculiarities or ballooning costs that would attract special attention. While most expense categories show significant increases, we recognize that the department has also grown.

The next figure indicates the district is budgeting within its means on both an operating and capital level.

Figure 143: LFD3 Net Revenues (Deficits)

Net Revenues (Deficits)	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Budget	2019 Budget
Operating Revenues	$15,651,437	$16,522,807	$17,185,948	$18,184,725	$20,328,408	$22,056,821
Op. Expenditures	$15,114,849	$15,503,767	$16,490,151	$ 7,655,453	$20,062,762	$22,002,695
Net Revenue (deficit)	$ 536,587	$ 1,019,040	$ 695,797	$ 529,273	$ 265,646	$54,126
Non-Operating Sources	$ 1,394,884	$ 1,421,756	$ 1,297,516	$ 916,481	$11,434,928	$ 8,804,781
Non-Operating Uses	$ 1,076,255	$ 1,035,520	$ 1,165,525	$ 779,452	$ 4,136,913	$ 8,169,898
Net Revenue (deficit)	$ 318,629	$ 386,236	$ 131,991	$ 137,029	$ 7,298,015	$ 634,883

Note that Operating Revenues in the above figure include grants since the bulk consists of SAFER grants, which are used for operating expenses.

Forecast

ESCI forecasted LFD3's compensation, benefits, professional services, and fleet costs using a linear growth model, using seven years of data. Supplies were forecast using a three-year average in 2020, then a linear model. Capital and interfund transfers were forecast using a five-year average without growth. On the revenue side, its Medic One and other contract revenue forecasts use a linear growth formula based on five-years data (2013–2017). Its property tax revenues assume $1.5 per $1,000 AV with 1 percent annual growth plus new construction (except 2020, where construction is held to $0 in anticipation of a mild recession). Based on this fairly simple model, LFD3 could see increasing and substantial deficits in the coming years.

It is important to note that the manner of the property tax forecasts is a key component, and that a linear growth model results in substantially higher tax revenues and much more moderate deficits in 2022, 2023, and 2024 ($91,000, $345,000, and $445,000). ESCI chose the lower forecast to be conservative and consistent with other forecasts. The results highlight LFD3's dependence on property tax revenues and also reflect the continued problem of a structural imbalance in Washington State where revenue growth is more tightly controlled than inflationary pressures on expenses. They also point to a potential need to curtail the growth of expenditures.

Figure 144: LFD3 Expenditure Forecast

Net Revenues (Deficits)	2019 Budget	2020 Projected	2021 Projected	2022 Projected	2023 Projected	2024 Projected
Operating Revenues	$22,056,821	$22,389,847	$23,244,371	$24,153,464	$25,118,572	$26,141,403
Operating Expenditures	$22,002,695	$22,419,591	$23,976,985	$25,675,109	$27,270,080	$28,716,756
Net Revenue (deficit)	$54,126	$(29,745)	$(732,614)	$(1,521,645)	$(2,151,508)	$(2,575,354)
Beginning Fund Balance	$4,069,618	$3,768,744	$3,423,400	$2,375,187	$537,944	($1,929,163)

West Thurston Regional Fire Authority

Incorporated in 2010 as a combination of two rural districts (#1 and #11), WTRFA is by far the largest of the studied agencies in terms of size—at 168 square miles it is twice the size of the next largest, MBLFD. At the same time, it is the second smallest in terms of population. Like MBLFD, the other regional agency in this study, WTRFA is dependent on volunteer firefighters to provide its services. Currently, the department is staffed by 42 career and 57 volunteer firefighters.

WTRFA suffered the Great Recession perhaps more than some of its fellow agencies in that its property tax revenues did not recover to their 2009 numerical levels until the voters approved a one-year M&O levy in 2015. As pointed out by the authority, during the 2013–2017 period the cost of goods and services rose sharply and the demand for services increased 16 percent.

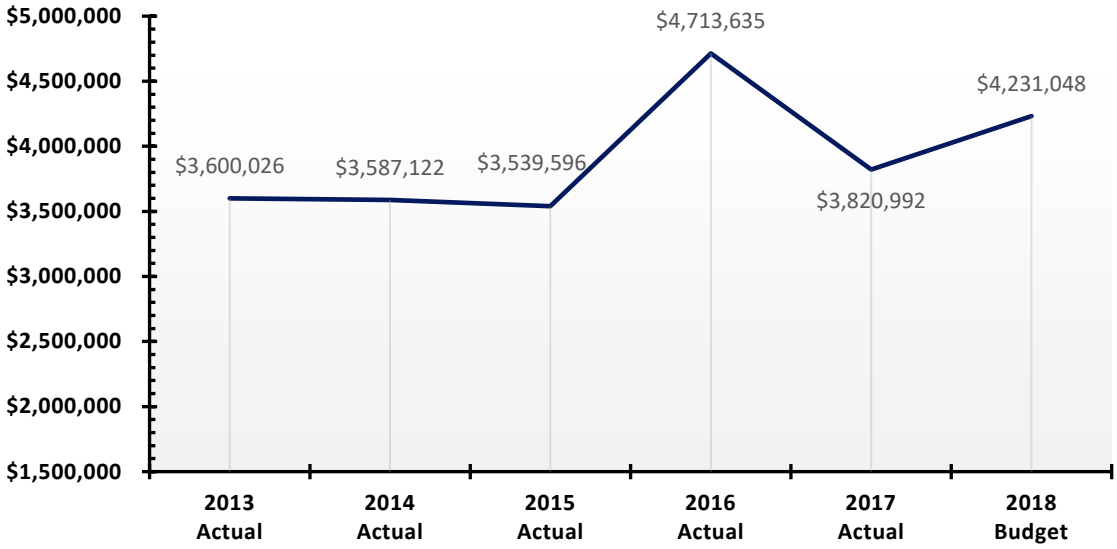
Like other agencies, WTRFA operates primarily off property taxes, which totaled $3.9 million and made up 73 percent of its 2017 revenues. The downturn in tax revenues was therefore particularly difficult for the authority. In 2016, the authority again asked for M&O levies, only this time for three years (2017–2019). This additional revenue has helped to bolster their finances, and has enabled them to hire additional firefighters. Still, if they are not able to renew their levies in 2020 as planned they will again face budget shortfalls. Alternatively, it is possible that they may succeed in passing a levy in one district, but not the other. This would also result in budget shortfalls, and most likely would result in lop-sided service. WTRFA has the ability to run three-year levies under the old districts, but only a one-year levy as a regional fire authority.

Together, the regular levy ($1.50), M&O levies (combined about $0.67), and bond levies (combined about $0.39) made a total levy rate of about $2.56 in 2017. This is a relatively high tax burden for a fire agency; it was 28 percent higher than that of MBLFD, which had the next highest rate among the studied agencies at $2.00. While we focus on 2017 for the purposes of this study, it is worth noting that the 2018 combined levy rates have decreased to $2.41 due to increasing property values.

These property tax challenges, especially the fact that they had no M&O levy in 2016, help explain the performance of the WTRFA's fund balances (see Figure 145). This figure shows large changes in fund balance—usually indicators of an institution facing serious financial challenges. In this case these concerns are resolved by the fact that the M&O levy will continue through 2019, likely continuing the positive trend in the fund balance. Given past voter support and continued operational successes, it seems likely that WTRFA will maintain a healthy financial situation for the foreseeable future.

In 2004, Fire Districts #1 and #11 (which today comprise WTRFA) and Fire Districts #5 and #9 (which today comprise MBLFD) formed the West Thurston Fire & Life Safety Consortium to "improve service, efficiency and economy by cooperating in the provision of emergency services in western Thurston County." The consortium is an independent agency and charges WTRFA and MBLFD fees to cover its costs.

Figure 145: WTRFA General Fund Balances



Capital Improvements and Debt

The authority has two outstanding bonds (one each for Districts #1 and #11) totaling $3,725,000. Both are supported by levies, which together support about 85 percent of the debt payments. The remainder of the payments (about $128,000 in 2017) must be supported by the General Fund. The District #1 bond liability was $1,450,000 at the end of 2017 and will expire at the end of 2020. The District #11 bond liability was $2,275,000 at the end of 2017 and will expire at the end of 2025. Additionally, WTRFA had a pension fund liability of $86,892 and compensated absences totaling $122,513 (2016 figure). These debts are well within norms and do not present a concern. In 2016, the authority purchased capital equipment totaling $348,078 using General Fund sources (this also helps explain the decrease in fund balance that year), and in 2017, WTFRA purchased an additional $225,672 through the General Fund.

Budgetary Review

WTRFA maintains a General Fund, Bond Debt Service Fund, and a Capital Projects fund. Additionally, they have two management funds subsidiary to the General Fund: A Volunteer Recruitment and Retention Fund used to track FEMA grants, and an Emergency Reserve Fund. The Capital Projects fund has recently been dormant as they have made their capital purchases through the General Fund. The existence of the Emergency Reserve Fund is a particularly good financial strategy.

As previously discussed, the bulk of WTRFA's funding is based on property tax revenue. The authority actively seeks to bolster its tax revenue with grants, contracts, BLS transportation services, and facility leases. WTFRA brought in roughly $669,000 from tribal contracts for service and BLS transportation in 2017, or about 12 percent of their total revenue. They also recovered almost $162,000 in mobilization fees in 2017, and in 2018 they expected a $191,000 SAFER grant.

In reviewing the budget history, we noted no peculiarities or ballooning costs that would attract special attention. Aside from capital purchases, almost all of the expense growth can be attributed to compensation and benefits. This matches a planned increase in staffing that coincided with the passage of the O&M levies.

The next figure indicates the authority is budgeting within its means on both an operating and capital level.

Figure 146: WTRFA Net Revenues (Deficits)

Net Revenues (Deficits)	2013 Actual	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Budget
Operating Revenues	$3,221,953	$3,538,467	$4,250,493	$4,054,935	$5,532,020	$5,309,383
Operating Expenditures	$3,216,401	$3,509,297	$3,605,436	$3,883,340	$4,491,789	$5,609,918
Net Revenue (deficit)	$ 5,553	$ 29,170	$ 645,057	$ 171,595	$1,040,232	$(300,535)
Non-Operating Sources	$1,490,163	$5,517,605	$1,638,940	$1,115,446	$1,251,150	$1,348,476
Non-Operating Expenditures	$ 615,020	$4,656,091	$1,401,382	$1,171,521	$1,466,959	$1,073,028
Net Revenue (deficit)	$ 875,143	$ 861,514	$ 237,558	$ (56,074)	$(215,810)	$ 275,449

Note that Operating Revenues in the figure include grants since the bulk consists of SAFER grants, which are used for operating expenses.

Forecast

ESCI forecasted WTRFA's compensation, benefits, and supplies using six-year average growth, while professional services and fleet costs used a linear growth model on six years of data. Capital and interfund transfers were forecast using a six- and three-year averages, respectively, without growth. On the revenue side, its Medic One and other contract revenue forecasts use a linear growth formula based on six-years data. Its property tax revenues assume $2.51 per $1,000 AV (includes $0.0569 combined M&O levies) with 1 percent annual growth plus new construction (except 2020, where construction is held to $0 in anticipation of a mild recession). Based on this fairly simple model, WTRFA could see increasing and substantial deficits in the coming years.

It is important to note that the manner of the property tax forecasts is a key component, and that a linear growth model results substantially higher tax revenues and more moderate deficits (growing from $745,000 in 2019, to $2.6 million in 2024). ESCI chose the lower forecast to be conservative and consistent with other forecasts. The results highlight WTFRA's dependence on property tax revenues and also reflect the continued problem of a structural imbalance in Washington State where revenue growth is more tightly controlled than inflationary pressures on expenses. They also point to a potential need to curtail the growth of expenditures.

Figure 147: WTFRA Financial Forecast

	2019 Projected	2020 Projected	2021 Projected	2022 Projected	2023 Projected	2024 Projected
Operating Revenues	$5,235,828	$5,261,602	$5,369,702	$5,463,268	$5,597,793	$5,750,370
Operating Expenditures	$6,183,521	$6,834,850	$7,499,527	$8,189,089	$8,897,607	$9,808,403
Net Revenue (deficit)	$(947,693)	$(1,573,248)	$(2,129,825)	$(2,725,821)	$(3,299,815)	$(4,058,033)
Beginning Balance	$4,404,282	$3,837,728	$2,615,564	$826,894	$(1,537,679)	$(4,486,365)

McLane/Black Lake Fire District

In January 2008, McLane Fire and Life Safety (District #9) entered into a contractual consolidation with Black Lake Fire Department (District #5). The consolidation provided the opportunity to reduce administrative positions and enjoy economies of scale for purchasing.

While MBLFD covers about one-half the geographic area as WTRFA and has about 71 percent of the population (16,190 versus 22,710), the assessed value is slightly higher. This gives them more ability to raise funds if needed, though their total 2017 property tax was 12 percent less. Their 2017 General Fund budget of $4.9 million is about 18 percent less than that of WTRFA. Currently, the department is staffed by 15 career and 52 volunteer firefighters.

MBLFD is the most dependent on volunteer firefighters to provide service of the studied agencies; 78 percent of its firefighters are volunteer, while 58 percent of those in WTRFA are volunteer, and 60 percent of those in EOFD are volunteer.

MBLFD is also among the most dependent on property taxes, which support 82 percent of its expenditures; only EOFD is higher, with property taxes supporting 86 percent of expenditures. As discussed elsewhere, property taxes are generally stable and reliable except in extreme situations such as the Great Recession. One major down-side to this situation is that it can be difficult to raise additional funds if needed since anything beyond the 1 percent annual increase requires a public vote.

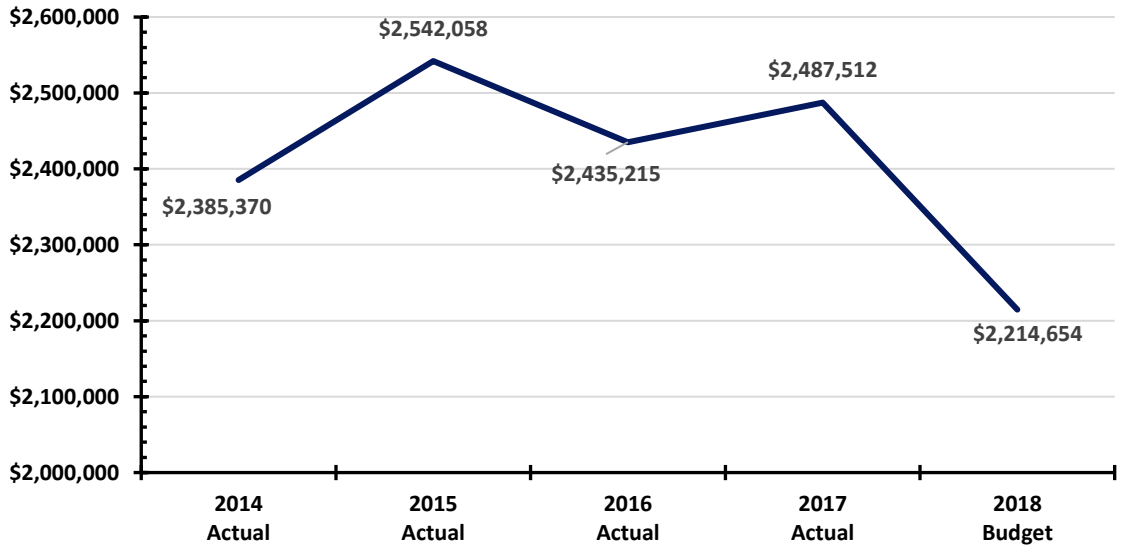
Perhaps to disprove the previous comment, in 2015 Fire Districts #5 and #9 each passed four-year M&O levies, effective from 2016 through 2019. The purpose of the levies is to "provide sufficient funds to maintain essential staffing from 2016–2019, to pay regular maintenance and operation costs and provide for future Capital equipment, maintenance, and operation needs." Together, in 2017, they added an additional $404,524 to the consolidated district's revenue stream.

Another way they supplement their property tax income is through BLS transportation revenue. Both MBLFD and WTRFA use the company "Systems Design" for their billing services. This costs MBLFD on average 6.5 percent of their gross revenue. While there is wide variation in revenues on a given year from this service, as low as $119,000 in 2016, and as high as $217,000 in 2014, the 10-year and 5-year average revenue is almost the same at about $183,000. This should hopefully increase in the future since the board raised the rate by 36 percent in 2018. These revenues are dedicated to the EMS and Apparatus Replacement Fund.

MBLFD also charges for public safety or emergency incidents via Resolution 16-492, defined as false alarms, hazmat incidents, illegal fires, rescue emergencies, utility line failures, motor vehicle accidents, and emergency medical responses. Billing via E&F Recovery, the district recovered $16,374 in 2017.

As a basic measure of financial health, MBLFD has a somewhat erratic combined general fund and reserve balance (see Figure 148). While mildly concerning, this is bolstered by a policy of maintaining a cash reserve equal to 75 percent of its potential annual revenue. As with WTRFA, failure to renew its M&O levy could cause significant strain on the District's budget.

Figure 148: MBLFD General Fund and Reserve Balances



The main concern for MBLFD is the loss of its South Puget Sound Community College Fire and Emergency Services Technology (FEST) program in late 2019. This program currently provides MBLFD with many of its volunteer staff, and its loss will result in staffing challenges. The district foresees the necessity of an increase in its M&O Levy to provide an additional eight career personnel. While there is room in their levy capacity (the current rate is $0.20), there is no guarantee that the voters will approve the increase.

Capital Improvements and Debt

The consolidated district has four outstanding bonds, two voted and two non-voted, as follows (Figure 149).

Figure 149: MBLFD Outstanding Bonds

2017 Outstanding Bonds	Remaining Principal		Bond Levy Rates		Expiration	
	Voted	Non-Voted	Voted	Non-Voted	Voted	Non-Voted
District 9	$3,745,000	$1,170,000	0.305	0.097	2024	2026
District 5	$1,000,000	$190,000	0.265	0.029	2022	2026

Payments on this debt totaled $914,151 in 2018, and the bond levies generated and general fund transfers totaled $913,375. Of this, bond levies totaled $728,141 and matched voted debt payments. In addition to the bonds, MBLFD has pension liabilities totaling $86,892 and compensated leave totaling $49,684.

The district's EMS and Apparatus Replacement Fund, which is supported primarily by BLS ambulance transport fees and General Fund contributions, used the bulk of its fund balance in 2018 to purchase new apparatuses.

Budgetary Review

MBLFD operates four funds: General, M&O, Debt Service, and EMS and Apparatus Replacement. Additionally, they have managerial funds subsidiary to the General Fund for debt service, rainy day reserve, and maintenance and operations. The existence of the rainy-day reserve fund is a particularly good financial strategy.

As previously discussed, the bulk of MBLFD's funding is property tax revenue, which they supplement primarily with ambulance transport fees, mobilization fees, and grant revenue. Given their concerns for volunteer staffing, it is particularly noteworthy that they have received SAFER grants each year from 2014 through 2017.

In reviewing the budget history, we noted no peculiarities or ballooning costs that would attract special attention. Aside from capital purchases, almost all of the expense growth can be attributed to new hires along with the passage of the M&O levy.

The next figure indicates the district is budgeting within its means on both an operating and capital level (the operating deficit in the 2018 budget is minor and covered by cash balances).

Figure 150: MBLFD Net Revenues (Deficits)

Net Revenues (Deficits)	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Budget
Operating Revenues	$4,080,499	$3,565,473	$3,752,577	$4,401,912	$3,857,731
Operating Expenditures	$3,442,705	$3,158,357	$3,250,258	$3,687,046	$3,867,225
Net Revenue (deficit)	$637,794	$407,116	$502,319	$714,866	($9,494)
Non-Operating Sources	$4,168,774	$4,127,761	$4,724,797	$4,489,455	$5,312,787
Non-Operating Expenditures	$1,719,000	$1,406,542	$2,042,635	$1,393,200	$3,157,723
Net Revenue (deficit)	$2,449,774	$2,721,219	$2,682,162	$3,096,255	$2,155,064

Note that Operating Revenues in the figure include grants since the bulk consists of SAFER and other grants that are used for operating expenses.

Forecast

We forecast MBLFD's expenditures and tax revenues with a linear forecast model. For non-tax revenue (grants, contracts and miscellaneous revenue) which are highly variable from year to year, we used averages from previous years with no growth. Based on this fairly simple model MBLFD could see healthy revenue surpluses in the coming years, though they decrease over time.

It is important to note that the forecast is based solely off historical financial data and does not take into account potential impacts from the loss of the community college program. MBLFD's response to this situation will likely impact their long-term financial situation. Nevertheless, the forecasts indicate that the district has some financial flexibility to work on these issues.

Figure 151: MBLFD Financial Forecast

	2019 Projected	2020 Projected	2021 Projected	2022 Projected	2023 Projected	2024 Projected
Operating Revenues	$4,048,505	$4,161,448	$4,274,474	$4,387,584	$4,500,779	$4,614,059
Operating Expenditures	$3,894,437	$4,032,210	$4,169,983	$4,307,756	$4,445,529	$4,583,301
Net revenue (deficit)	$154,069	$129,238	$104,491	$79,828	$55,250	$30,758
Beginning Fund Balance	$925,223	$1,054,461	$1,158,952	$1,238,781	$1,294,031	$1,324,789

Relative Strengths/Weaknesses

The six agencies are very diverse and difficult to compare: Two are city departments with no direct budgetary connection to their primary funding sources (sales, property, and utility taxes), two are consolidated agencies, one is a small rural district, and the last is a relatively large urban district. Their budgets range between almost $2 and almost $18 million, their populations range from 11,590 to 95,520, and their service areas range from 10 to 168 square miles. The rural agencies will see very modest growth in the foreseeable future while the urban agencies will see significant growth.

On the other hand, all of the agencies are taking full advantage of their regular levy authority, and all have shown the voter support to approve capital levies. The two cities operate similarly to each other, as do the two regional agencies. All agencies currently have acceptable funding levels and cash reserve balances, though there are future financial concerns for MBLFD, while WTRFA has had some recent instability.

Along with varied budgeting practices and the issues mentioned above, one of the difficulties in comparing agencies is that they do not all account for capital costs in the same way. To assist with this issue, we reviewed capital improvements and debt separately from operating expenses. In many cases this involved pulling capital-oriented account numbers (6X-series BARS object codes and 59X codes) out of operating expenses before analysis; in others the agency used separate funds (such as ER&R funds) or created divisions for capital endeavors. Note that we left equipment maintenance expenses in operating costs, as is common practice.

One of the more striking differences among the agencies is the prospect of growth (Figure 153). The Washington State Growth Management Act (GMA) works to concentrate development within urban areas – the Cities of Lacey, Olympia, and Tumwater. Of those cities, Lacey and Olympia have the most land capacity for residential growth and are projected to grow their employment base the most. Lacey in particular has seen significant residential growth over the past 30 years. Those two fire departments will likewise face the greatest growth pressures, with rising operational expenses and need for new capital facilities and equipment. Since property tax revenues generated by new construction generally keep pace with the associated increased operational expenses, this should not be a concern for combined departments. Conversely, capital costs usually exceed regular tax levy income and are instead normally funded through bonds. The issue with this is that bonds would be assessed across an enlarged agency and borne by all taxpayers, regardless of their proximity to the growth. The two figures which follow (Figure 152 and Figure 153) exemplify the commercial and population growth differences among the agencies.

Figure 152: Cost per Person and Firefighters/1,000 Population

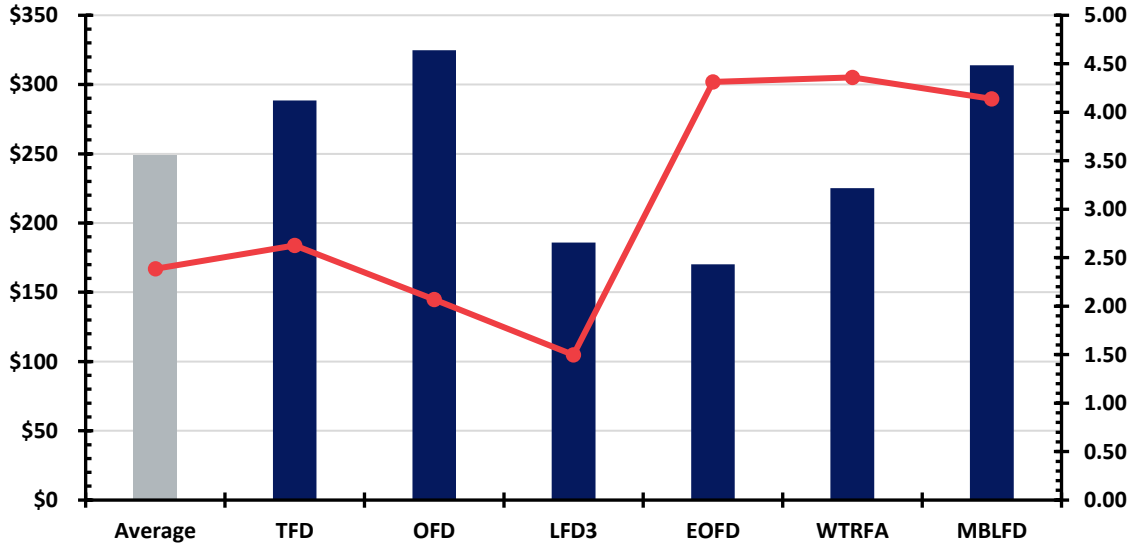


Figure 153: Fire Agency Population Projections

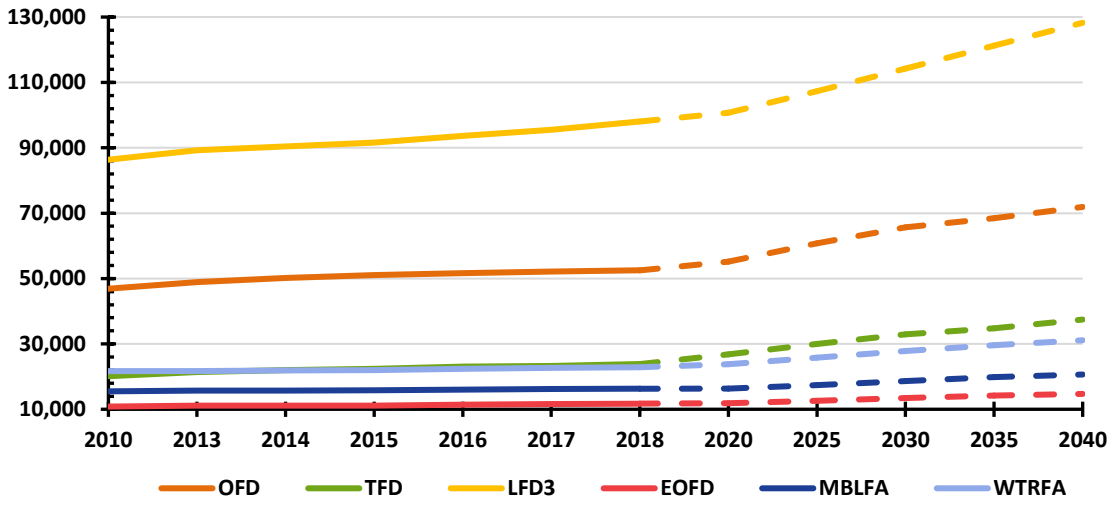
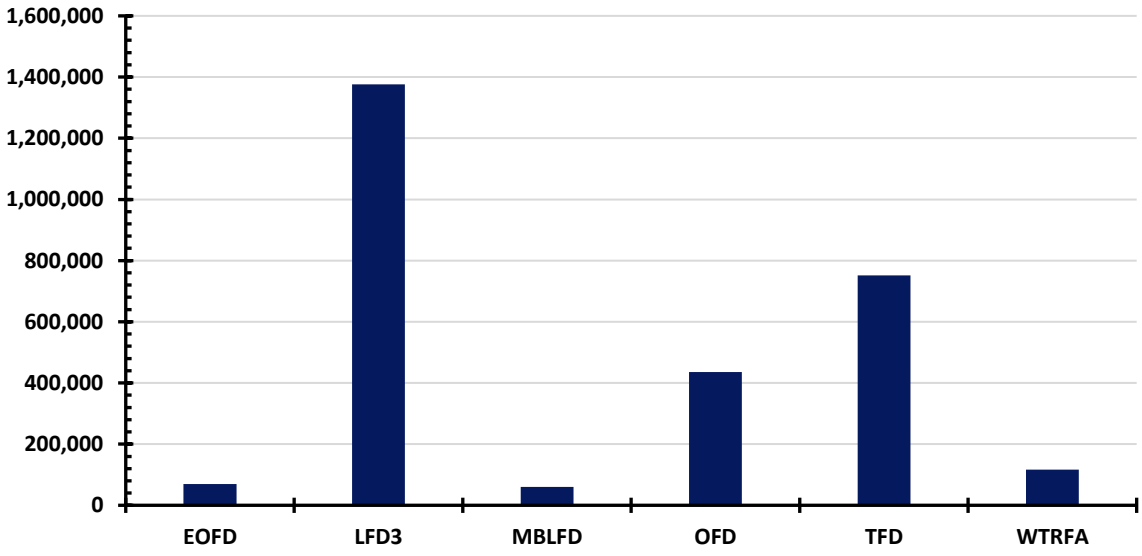


Figure 154: Commercial Permits (Net Sq. Ft.), 2013–2017

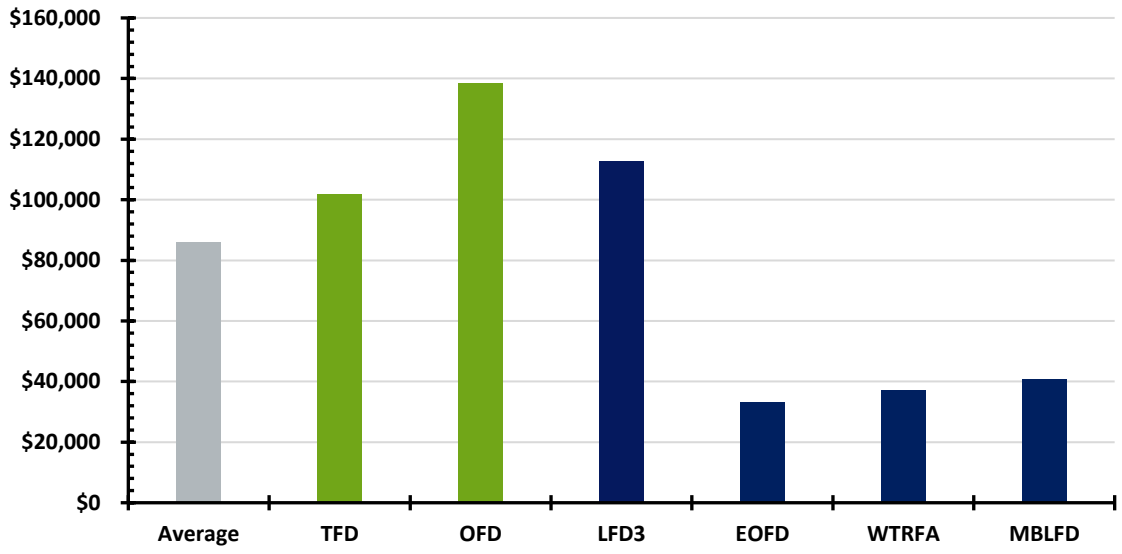


Another striking set of differences are cost comparisons against the size of populations (Figure 153). It is not surprising to see higher costs in the two cities, since cities are traditionally better funded. LFD3 has by far the lowest cost per person, but they also have by far the fewest firefighters per 1,000 residents. LFD3 is also more reliant on volunteers than the other two urban departments (TFD and OFD).

Average compensation and benefits (Figure 155) helps explain differences in the cost per person (Figure 152) and gives an indication of potential culture or budgets difficulties when agencies merge. For example, by looking at Figure 155, one might assume that firefighters in Olympia may be hesitant to transfer to another agency with lower compensation and benefit packages. The large differences among the agencies in average compensation and benefits is not surprising since half are staffed primarily by volunteers and half primarily by career firefighters. Note that this figure only shows gross averages and does not indicate whether the data swings on the pay and benefits of certain classes of employees.

A final figure that gives an indication of the department's relative ability to fund their services is tax revenue per person, since population has the greatest impact on a department's expenses. That said, other factors such as geographic size can have a significant impact as well, so this figure should not be over-emphasized. The two municipal departments are shaded green to highlight the fact that they are estimated as if they were independent districts levying a $1.50 assessment.

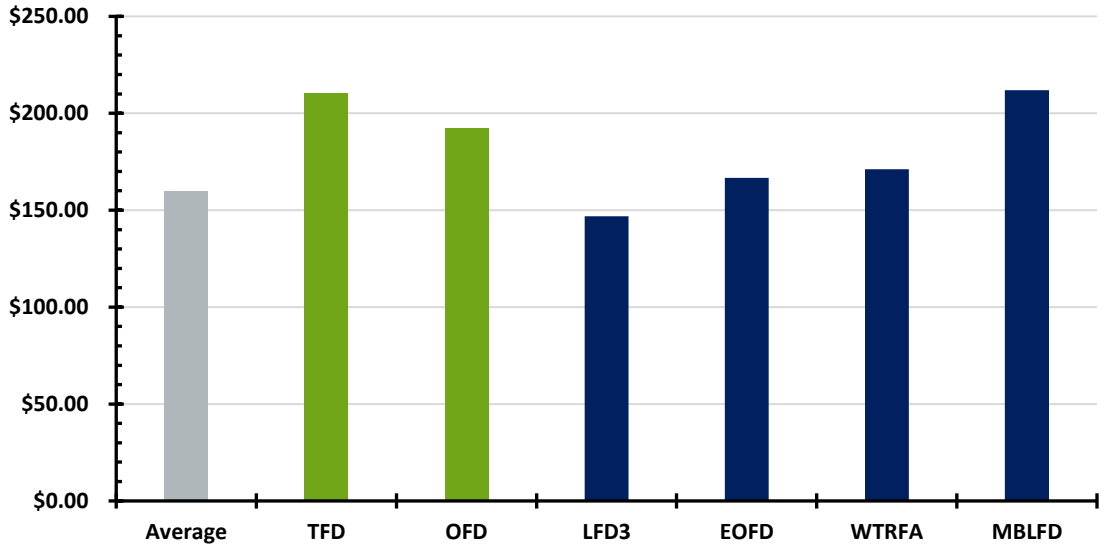
Figure 155: Average Compensation and Benefits



In recent years, each agency has successfully petitioned voters for several tax increases:

- WTRFA—Districts #1 and #11 passed a 3-year M&O levy in 2016.
- MBLFD—both Districts #5 and #9 passed 4-year M&O levies in 2015.
- LFD3—passed a $20 million bond in 2017, and a permanent levy lid lift in 2014.
- TFD—the City of Tumwater passed a permanent levy lid lift in 2011.
- EOFD—passed a $2 million bond in 2016.
- OFD—passed a $10.4 million bond in 2008.

Figure 156: Tax Revenue Per Person



These successful initiatives indicate a broad level of voter support for the needs of local fire/EMS agencies. Such good will should make consolidations easier and should hopefully even be strengthened by administrations' continued efforts to find efficiencies and opportunities for service improvement.

OVERVIEW OF COMMUNITY RISK FACTORS & DEMOGRAPHICS

Community Risk Factors

This section analyzes risks that are present within the study area that potentially threaten people and property. These risks are identified to assist the study area agencies in planning where to locate response resources in the types and numbers necessary to effectively respond to likely emergencies. While not all hazards of individual occupancies can be considered—that is beyond the scope of the study—there are risks that seem to be relevant to the area. It is recommended that the departments be aware of and rate the hazard and risks in terms of frequency and severity within the jurisdiction.

The following figure is one sample method of identifying and analyzing risks within a community.

Figure 157: Risk Identification and Analysis Process[1]

Step	Action
Hazard Identification	Identify hazards.
	What is the probability this hazard will occur?
	Is this hazard a significant threat to your jurisdiction?
	Approximately how often does this hazard occur in your jurisdiction?
Vulnerability Assessment	For each hazard identified in the hazard identification process, consider each of the five factors. Factor 1: Danger/Destruction/Personal harm Factor 2: Economic Impacts Factor 3: Environmental impacts Factor 4: Social Impacts Factor 5: Political considerations
	Score the vulnerability from this hazard.
	Reconsider priority of each hazard based on vulnerability.
Risk Rating Score	Risk Rating = Probability[2] X Vulnerability[2]

[1] Adapted from the Community Risk Reduction Model, United States Fire Administration, National Fire Academy
[2] Probability and Vulnerability are rated as 3 = High, 2 = Moderate, 1 = Low

The fire service assesses the relative risk of properties based on several factors: the service area population and population density, the demographics of the population, local land use and development, and the geography and natural risks present within the community. These factors affect the number and type of resources (both personnel and apparatus) necessary to mitigate an emergency. Properties with high fire and life risk often require greater numbers of personnel and apparatus. Therefore, staffing and deployment decisions should be made with consideration to the level of risk within geographic sub-areas of a community.

Overall Geospatial Characteristics

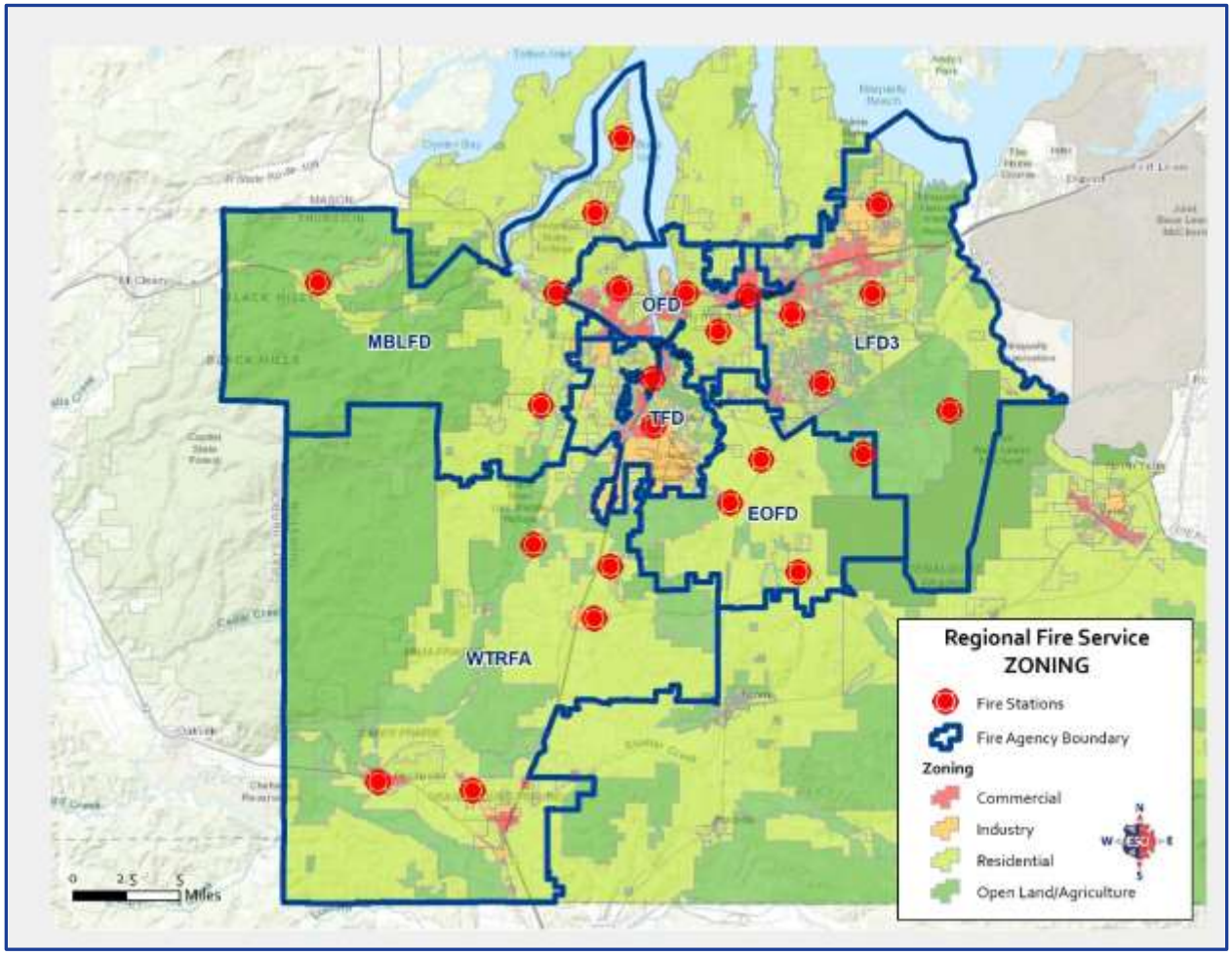
The following community risk assessment has been developed based on intended land uses as described in the zoning designations of the respective jurisdictions. The following figure translates zoning to categories of relative fire and life risk.

Figure 158: Translation of Zoning to Relative Risk Categories

Relative Risk Category	Zoning
Low Risk	Areas zoned and used for agricultural purposes, open space, and very low-density residential use.
Moderate Risk	Areas zoned for medium-density single family properties, small commercial and office uses, low-intensity retail sales, and equivalently sized business activities.
High Risk	Areas zoned for Higher-intensity business districts, mixed use areas, high-density residential, industrial, warehousing, and large mercantile centers.

The following figure illustrates the zoning for the departments in the study area.

Figure 159: Fire and Life Safety Risk Based on Zoning, Study Area



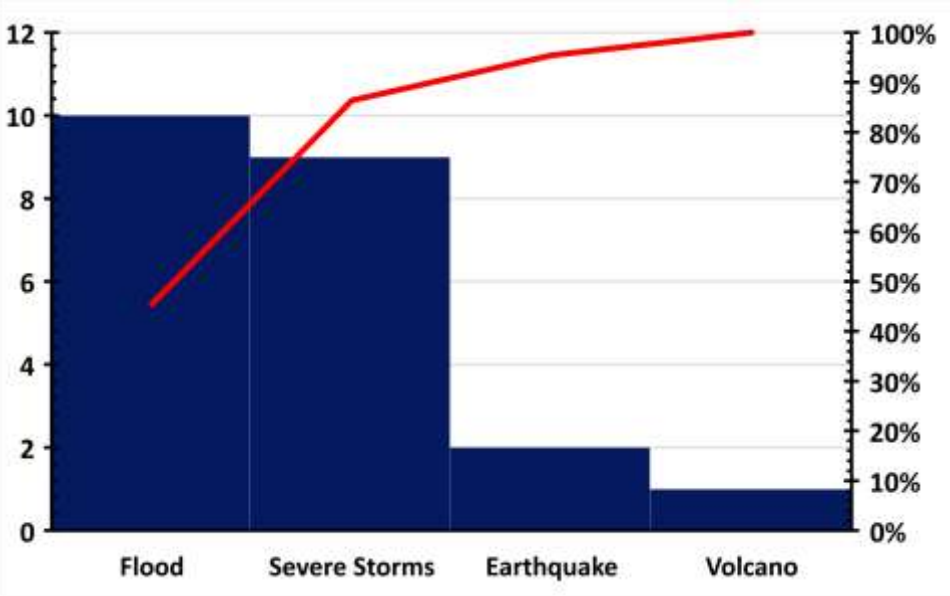
Geographic and Weather-Related Risks

The number and frequency of federal disaster declarations affecting Thurston County paints a picture of the risks that natural hazards pose to the region. The following statistics highlight the frequency of major natural disaster in Thurston County:[19]

- Between 1965 and 2016, Thurston County has received 22 federal disaster declarations.
- Only 147 counties or U.S. Census designated places have received 20 or more federal disaster declarations; only four percent of counties or U.S. places share this distinction.
- As of 2016, eight counties in Washington State have experienced 20 or more disaster declarations. Thurston County and Wahkiakum County are tied for having the 5th highest rate of declarations in the state.

The next figure is a summary of federal disaster declarations.

Figure 160: Summary of Federal Disaster Declarations in Thurston County by Type, 1965 to 2016



From a planning perspective, there are several weather-related risks of concern to the study area as noted in the previous figure. Severe storms can include lighting strikes and tornadoes.

[19] Retrieved from https://www.trpc.org/DocumentCenter/View/4170/HazMit_Ch-4_RiskAssessment?bidId=.

Weather Risks

The climate for Thurston County is like that found across the state of Washington. Thurston County gets 49 inches of rain, on average, per year. The U.S. average is 39 inches of rain per year. Thurston County averages 9 inches of snow per year—the U.S. average is 26 inches of snow per year. The average annual temperatures range from a high of 76°F in July to a low of 35°F in January—with the average temperature being 71°F.[20]

Flood Risk

There are various risks associated with flooding. It is essential therefore that the community in the area of flood zones and areas prone should be informed of the risks. Before the flood and as part of the planning process, the departments in the study area must consider station location and relocations as they relate to flood zones. Further this should be a part of the public education process to ensure that residents are aware of the risks associated with flooding and the actions they should take to ensure readiness.

During a flooding event, the fire department will be called upon to assist in evacuations and rescues. These evacuations may include facilities with large numbers of people requiring EMS resources. Rescue and emergency evacuations may involve moving water requiring the specialty trained technical rescue team to intervene.

After a flood as the residents begin recovery, EMS-related incidents will increase as injuries and medical conditions occur. Public education can help the community prepare for the recovery process.

The Thurston County hazards mitigation plan addresses four principal sources floods. These four sources are summarized and defined in the next figure.

[20] Retrieved from https://www.bestplaces.net/climate/county/washington/thurston

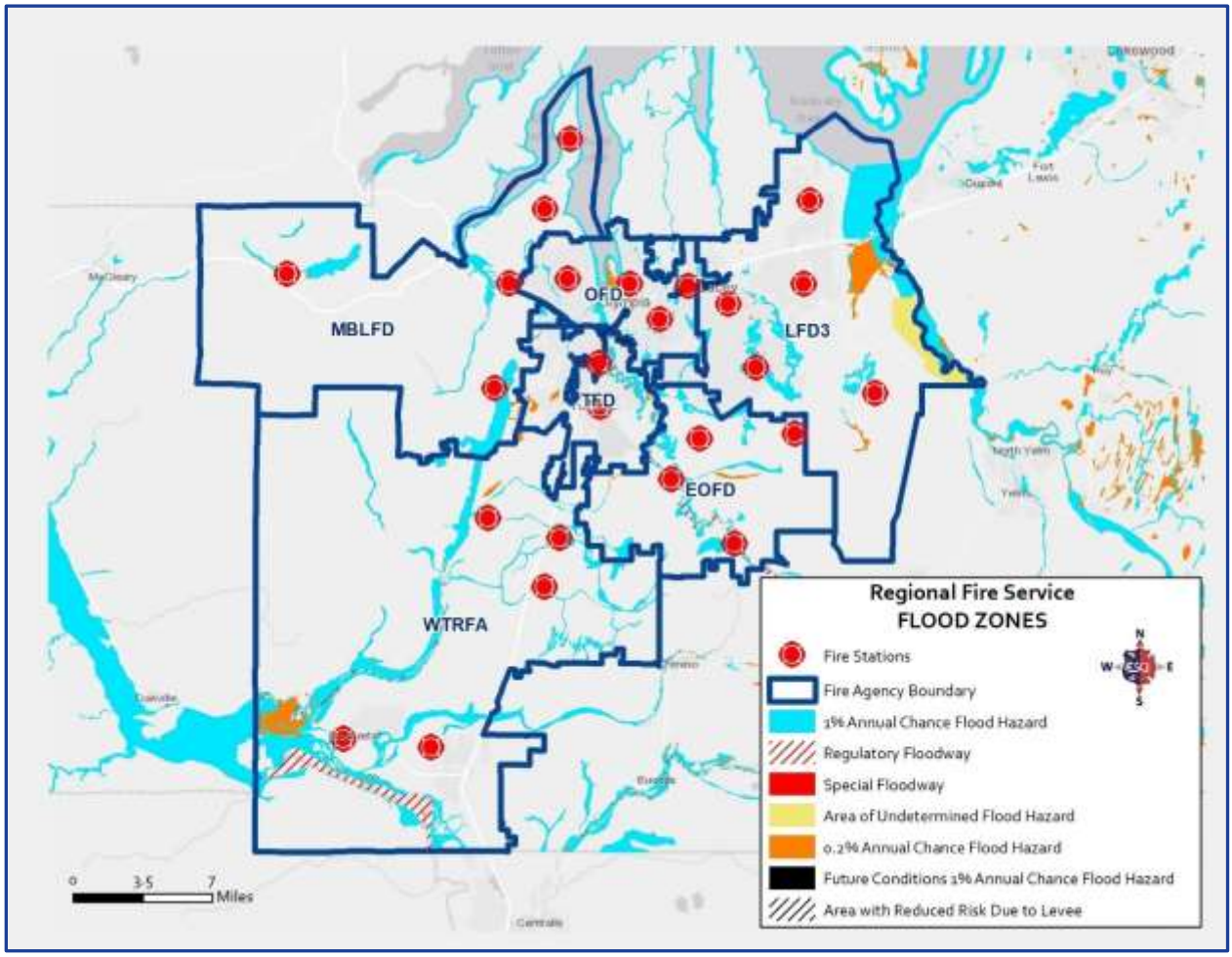
Figure 161: Sources of Flooding Thurston County[21]

Source of Flood	Description
Riverine (river and stream)	Riverine flooding occurs when excess flow and volume of water crests a river channel's normal capacity. Floodwaters consequently inundate areas within the river's floodway, flood plain, and other low-lying areas that may not be mapped as flood hazard areas.
Groundwater	Groundwater flooding occurs when there is a high-water table and persistent heavy rains in an area where an upper, thin layer of permeable soils overlays an impermeable layer of hard pan.
Tidal	Spring tides, the highest tides during any month, occur with each full and new moon. When these coincide with a northerly wind piling water in south Puget Sound, tidal flooding can occur. Tidal flooding can also occur without the effect of storm surge.
Urban	Urban flooding occurs when excess precipitation is not readily absorbed by the ground and stormwater runoff exceeds the ability of stormwater facilities' capacity to safely convey and divert water within suburban and urban environments. As a result, streets, parking lots, homes, and businesses may experience localized flooding.

The next figure illustrates the Flood Zones in Thurston County. There are areas with the risk of flooding in each district. For the most part, the areas that are flood prone have a one-percent increase of annual flooding. There are small portions of the study area that include a 0.2 percent annual chance of flooding.

[21] Retrieved from https://www.trpc.org/DocumentCenter/View/4170/HazMit_Ch-4_RiskAssessment?bidId=

Figure 162: Flood Zones in The Study Area



The next figure is a summary of potential flooding risk within the study area.

Figure 163: Flood Hazard Areas by Jurisdiction[22]

Fire Department/District	Total Acres	1% Flood Chance in Hazard Area	0.2% Flood Chance in Hazard Area	High Ground Water in Hazard Area	Any Flood Hazard in Hazard Area
Olympia Fire Department[1]	15,976	7.8%	0.1%	7.5%	13.4%
Tumwater Fire Department[1]	14,229	7.5%	2.3%	16.8%	23.5%
West Thurston Regional Fire Authority	100,131	11.5%	1.1%	9.6%	20.0%
Lacey Fire District	36,820	12.5%	3.0%	6.1%	19.7%
McLane/Black Lake District	51,828	5.3 %	0.2%	1.6%	6.8%
East Olympia District	19,677	12.3%	0.8%	11.1%	20.6%

[1] Includes Urban Growth Area

Tornados

Tornadoes can have winds of over 300 mph which—at the higher ranges—will cause a significant threat to life and damage to property. The intensity of tornados is measured on the Fujita Tornado Damage Scale. This scale has an intensity range for tornadoes from Fo to F5 including wind estimates. The next figure is a summary of the damage associated at the various levels.

[22] Retrieved from https://www.trpc.org/DocumentCenter/View/4170/HazMit_Ch-4_RiskAssessment?bidId=.

Figure 164: Tornado Intensity, Enhanced Fujita Scale

Designation	Wind Speed, mph	Typical Damage[23]
EF-0	65–85	**Minor or no damage.** Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over. Confirmed tornadoes with no reported damage (i.e., those that remain in open fields) are always rated EFo.
EF-1	86–110	**Moderate damage.** Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF-2	111–135	**Considerable damage.** Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF-3	136–165	**Severe damage.** Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations are badly damaged.
EF-4	166–200	**Devastating damage.** Well-constructed and whole frame houses completely leveled; cars and other large objects thrown and small missiles generated.
EF-5	> 200	**Extreme damage**. Strong-framed, well-built houses leveled off foundations are swept away; steel-reinforced concrete structures are critically damaged; tall buildings collapse or have severe structural deformations; some cars, trucks, and train cars can be thrown approximately 1 mile (1.6 km).

While ranges of winds are listed on the scale, the wind estimate is not exact—nor have they been verified in science or engineering. Different wind speeds may cause similar-looking damage from place to place—even from building to building.

While preventing tornadoes is not possible, being prepared for the potential of tornado should be considered as a high priority. Tornadoes can occur with little or no warning and can result in devastating damage, departments must consider that as part of their planning for disaster readiness.

Additional Weather-Related Hazards

Severe weather hazards also pose a threat to the study area departments and the County. Aside from the weather-related the hazards described in the preceding section several other weather-related events have been analyzed as part of the hazard mitigation plan. The next figure—while applicable to the whole County—is a summary of these events including the definitions, severities and impacts.

[23] Wikipedia. Retrieved from: https://en.wikipedia.org/wiki/Enhanced_Fujita_scale

Figure 165: Other Weather-Related Hazards in Thurston County[24]

Event Description	Definition	Severity	Impacts
High Winds	The National Weather Service defines high winds as "sustained wind speeds of 40 mph or greater lasting for one hour or longer, or winds of 58 mph or greater for any duration."	The entire county is directly or indirectly susceptible to the effects of high-speed winds. Trees are susceptible to blowing over and causing damage to surrounding property. All communities can suffer extended power outages.	Widespread power outages. Mass of downed debris on the transportation network impedes the response of emergency personnel and utility crews. Electrical blackouts force the closure of government offices, businesses, and schools. Power outages can disrupt transportation, generating traffic snarls resulting in thousands of motorists seeking few available alternate routes on local arterials and collectors, complicated by blocked roads. When power outages occur simultaneously with heavy stormwater flows, public works crews may struggle to provide auxiliary power to sewer lift stations to prevent backups or flooding in suburban and urbanized areas.
Heavy Rain	Heavy rainfall is any amount of rain produced in a relatively short time period that exceeds the capacity of natural systems' or stormwater infrastructures' ability to effectively and safely convey the flow of stormwater.	Prolonged heavy rains directly or indirectly affect the entire region and typically occur from November through February. Properties at greater risk include those in flood plains, with high ground water, with stormwater drainage problems, or those closely adjacent to steep slopes. The region overall is moderately vulnerable to flood.	Rivers to rise Flooding downstream Landslides Local rainfall also swells local creeks and streams, exacerbating local flood potential.

[24] Retrieved from https://www.trpc.org/DocumentCenter/View/4172/HazMit_Ch4-2_Storm?bidId=

Event Description	Definition	Severity	Impacts
Freezing Rain	Freezing rain occurs when rain descends through a cold air mass, cools, and then subsequently freezes on contact with cold surfaces.	Ice can accumulate on nearly every surface including tree branches, power lines, roof tops, motor vehicles, streets, sidewalks, and traffic signals and signs. Transportation networks are especially vulnerable to freezing rain as it coats nearly every exposed paved surface.	Thick ice accumulations can stress structures, causing trees tops and branches and power lines to snap. Downed live power lines.
Heavy Snow	The Washington State Hazard Mitigation Plan defines heavy snow as four inches of snowfall in 12 hours or six inches in 24 hours for non-mountainous areas.	Light snow, less than four inches deep, can temporarily disrupt normal traffic operations on roads and streets until public works departments clear priority routes. In general, snow hazards and road clearing abilities become more problematic with decreasing temperatures, increasing snow depth, and length of time that snow remains on the ground. Even when priority routes are clear, numerous neighborhood streets and local collectors can remain impassable for many motorists when snow depths exceed one foot.	Heavy snowfall and blizzard like conditions drastically reduce motorists' visibility, especially in the dark, increasing the risk for motor vehicle accidents Heavy snow affects all modes of transportation. Snow, even in windless conditions, presents serious hazards. Icy road conditions are a major cause of vehicle accidents resulting in property damage, traumatic injuries, and fatalities. Significant snowfall can disrupt surface transportation networks for several days and overwhelm the snow removal capabilities of public works departments, delay public transit services, as well as delay response times of emergency responders. Delayed freight distribution can also occur, with possible shortages of goods such as fuel. Deep snow and sustained freezing temperatures can force the suspension or closure of both public and private sector services for several days. Excessive snow loads on structures can cause roofs and utility lines to collapse. Structural collapses are more likely when snow loads gain additional weight.

Earthquakes

Areas of the Pacific Northwest can be impacted by earthquakes. Thurston County and the departments in the study area are no different. Thurston Regional Planning Council (TRPC) rates the hazard profile of earthquakes with a high probability, high vulnerability, and high risk. Earthquakes can cause widespread damage and disrupt many services across the area.

As described in the TRPC's hazard mitigation plan there are four effects of earthquakes.[25] These effects are described in the next figure.

Figure 166: Effects of Earthquakes

Effect	Description
Ground Motion	When a fault ruptures, seismic waves radiate, causing the ground to vibrate. This wave movement causes the ground to shake during an earthquake.
Ground Failures	Earthquakes can cause surface faulting, landslides, subsidence, and uplifting. Surface faulting is the differential movement of two sides of a fracture.
Liquefaction	Liquefaction is the phenomenon that occurs when ground shaking causes loose soils to lose strength and act like viscous fluid. Liquefaction causes two types of ground failure: lateral spread and loss of bearing strength.
Tsunamis	Tsunamis are large ocean waves generated by sudden changes in the sea floor elevation which displace a significant volume of water.

The next figure is a summary of the estimated population residing in the liquefaction hazard area in 2015.

Figure 167: Estimations in the Liquefaction Hazard Area by Jurisdiction, 2015

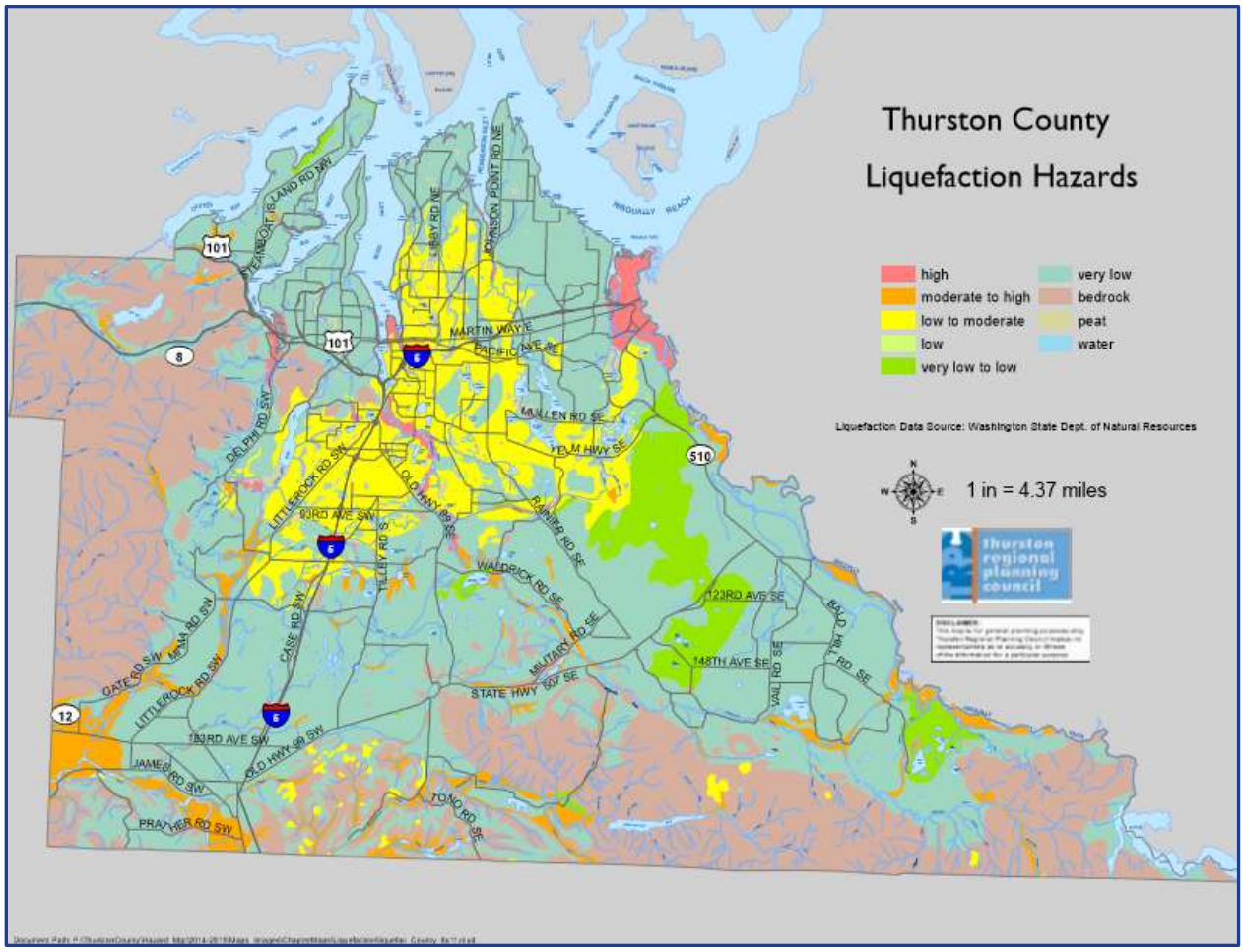
Fire Department/District	Land Area		Population		Residential Dwellings	
	Total Acres	Percent in the Hazard Area	Total	Percent in the Hazard Area	Total	Percent in the Hazard Area
Olympia Fire Department[1]	15,976	53.4%	62,940	53.7%	29,020	53.2%
Tumwater Fire Department[1]	14,229	74.6%	25,640	72.8%	11,390	71.8%
West Thurston Regional Fire Authority	100,131	19.6%	22,010	21.3%	8,480	22.3%
Lacey Fire District	36,820	42.7%	91,660	43.1%	38,120	44.3%
McLane/Black Lake District	51,828	5.2%	15,890	12.3%	6,490	13.1%
East Olympia District	19,677	44.2%	11,140	47.5%	4,510	46.8

[1] Includes Urban Growth Area

[25] Retrieved from https://www.trpc.org/DocumentCenter/View/4171/HazMit_Ch4-1_Earthquake?bidId=

The next figure is a map of the liquefaction hazards in Thurston County including the study area.

Figure 168: Liquefaction Hazards in Thurston County[26]



[26] https://www.trpc.org/DocumentCenter/View/4171/HazMit_Ch4-1_Earthquake?bidId=

Wildfire Risk

Like many areas of Thurston County there is a wildfire risk in the study area. The level of risk associated with wildfires in any given area of a community is dependent upon several factors including climate, vegetation, and topography. Also, a factor, the number of homes that are built within the Wildland Urban Interface.

According to Thurston County Hazards Mitigation Plan the summary assessment on wildfire reads:

> *Wildland fires have a high probability of occurrence. The vulnerability of the county to this hazard is also believed to be of a moderate level. Despite the relatively diminutive size of wildland fires in the county, they have great potential to destroy multiple homes or businesses. Past fires have threatened to damage or quite possibly destroy 10 to 20 or more homes in a single event. A moderate vulnerability rating is assigned because even small fires have the potential to impact multiple properties with devastating results in a very short time. Finally, the subjective estimate of the probability of occurrence and vulnerability threat are combined to classify the wildland fire hazard as a moderate risk.*[27]

In the next figure a summary of the historical wildfire occurrences and impacts is illustrated.

Figure 169: Study Area Historical Wildfire Occurrences and Impacts, 1972–2015[28]

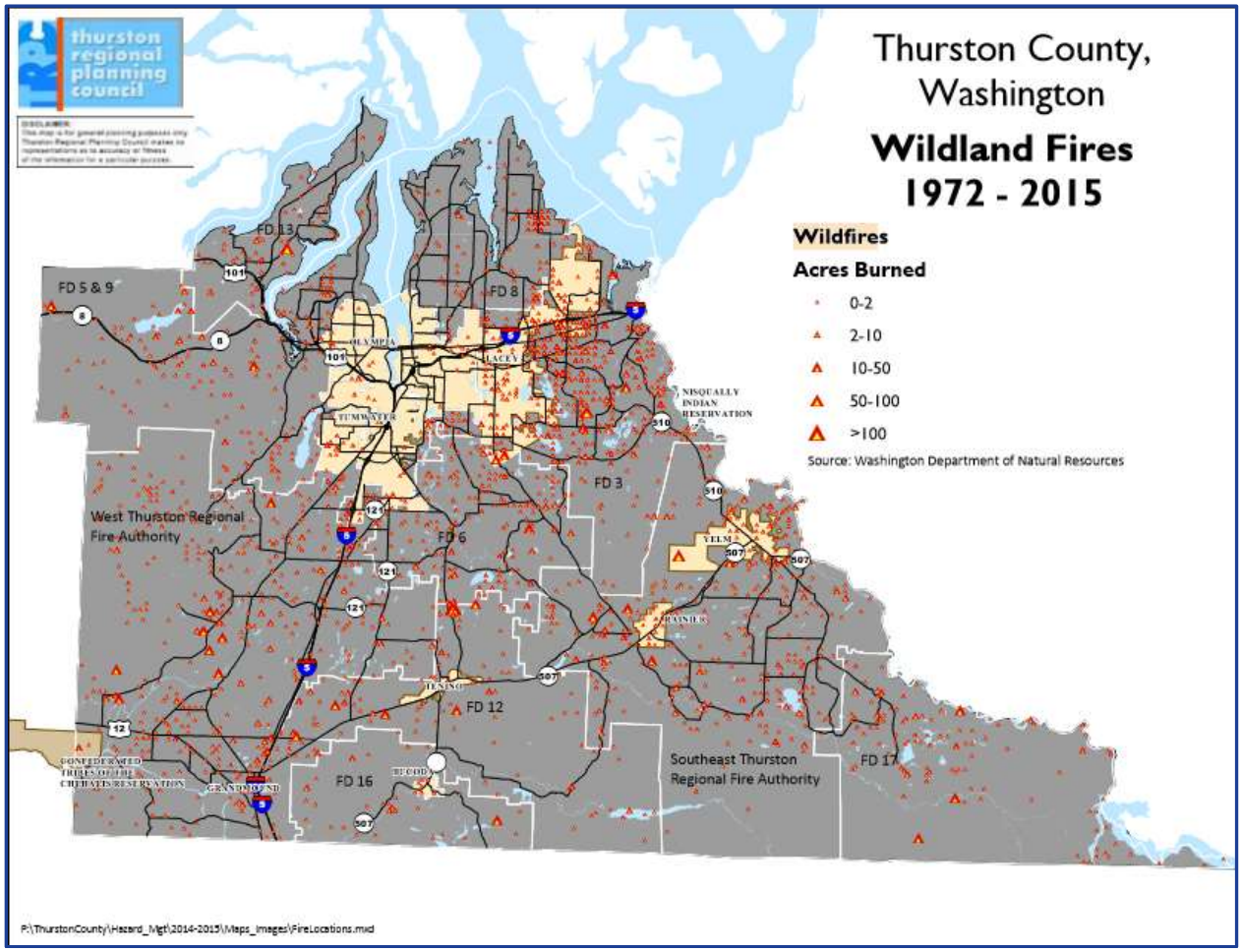
Fire Department/District	Total Fires	Fire/Year	Total Acres Burned	Max Size Acres	Average Acres
Tumwater Fire Department	54	1.3	35.5	4	0.7
Olympia Fire Department	26	0.6	8.3	0.5	0.3
Lacey Fire District 3	758	17.6 6	431.3	54	0.6
East Olympia District	209	4.9	147.1	13	0.7
West Thurston Regional Fire Authority	494	11.5	581.7	50	1.2
McLane/Black Lake District	204	4.7	128.3	14	0.6
Total	**1,745**	**23**	**1,332.2**	**135.5**	**4.1**

The next figure is a graphic representation of the historical wildfires in Thurston County.

[27] https://www.trpc.org/DocumentCenter/View/4180/WEB_DRAFT_HazardsMitigationPlan_March2017_v2?bidId=

[28] https://www.trpc.org/DocumentCenter/View/4180/WEB_DRAFT_HazardsMitigationPlan_March2017_v2?bidId=;

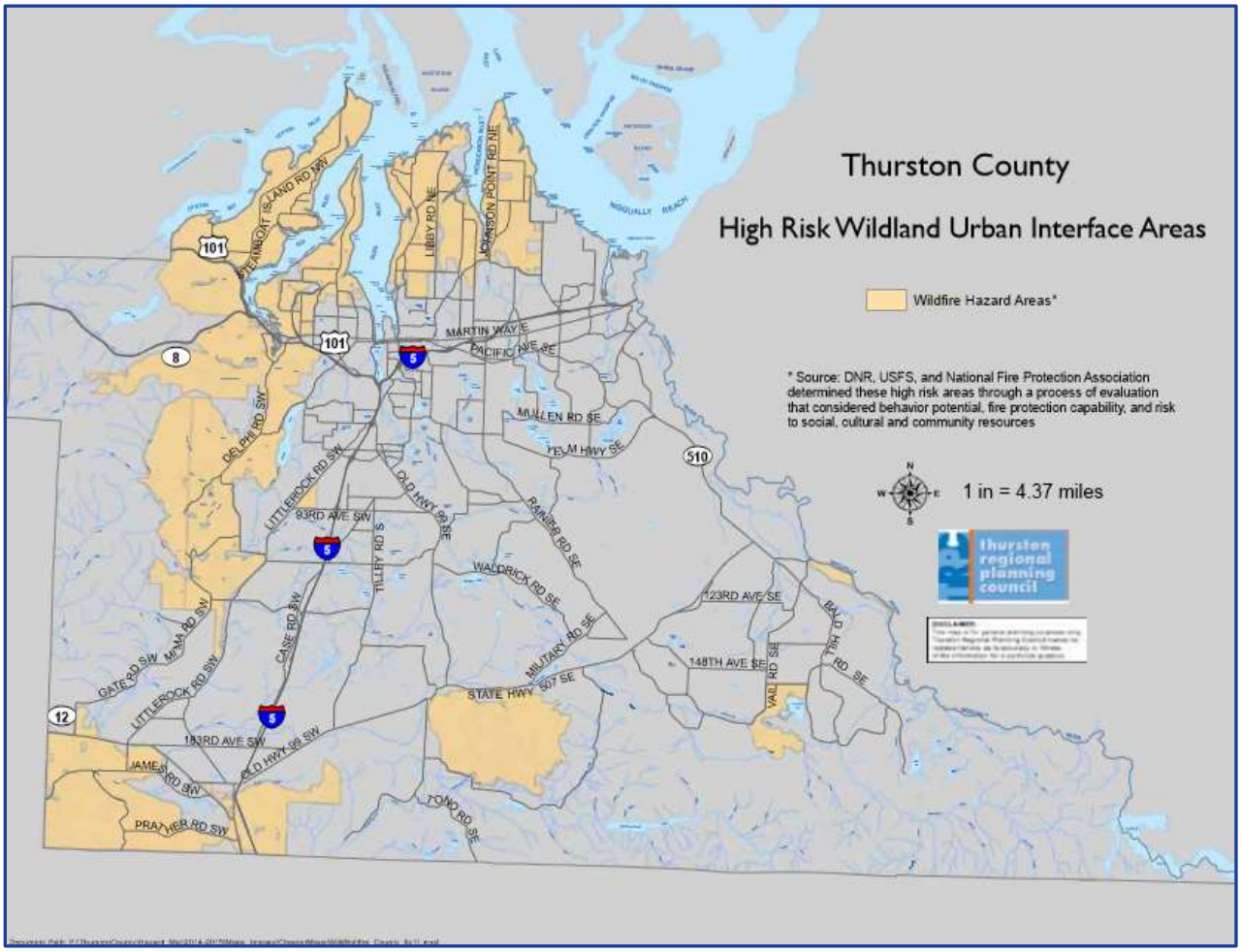
Figure 170: Wildfires in Thurston County, 1972–2015[29]



As noted, the number of homes in the Wildland Urban Interface is also a contributing factor in assessing the wildfire risk. The next figure illustrates the high-risk Wildland Urban Interface areas.

[29] https://www.trpc.org/DocumentCenter/View/4180/WEB_DRAFT_HazardsMitigationPlan_March2017_v2?bidId=; Retrieved 5-29-2019:

Figure 171: High-Risk Wildland Urban Interface Areas in Thurston County[30]



The next figure shows the estimated land area, population, and dwellings that are in the Wildland Urban Interface areas. These vary widely by fire district from a high for land area in the McLane/Black Lake District of over forty percent to a low of zero percent in the hazard area in East Olympia.

[30] https://www.trpc.org/DocumentCenter/View/4180/WEB_DRAFT_HazardsMitigationPlan_March2017_v2?bidId=; Retrieved 5-29-2019:

Figure 172: Study Area Current Estimates as they relate to the Urban Interface 2015

Fire Department/District	Land Area		Population		Residential Dwellings	
	Total Acres	Percent in the Hazard Area	Total	Percent in the Hazard Area	Total	Percent in the Hazard Area
Olympia Fire Department[1]	15,976	7.4%	52,490	4.9%	29,020	4.2%
Tumwater Fire Department[1]	14,229	0.2%	25,640	0.0%	11,390	0.0%
West Thurston Regional Fire Authority	100,131	26.2%	22,010	17.9%	8,480	18.0%
Lacey Fire District	36,820	0.0%	91,660	0.0%	38,120	0.0%
McLane/Black Lake District	51,828	41.2%	15,890	73.2%	6,490	71.8%
East Olympia District	19,677	0.0%	11,140	0.0%	4,510	0.0%

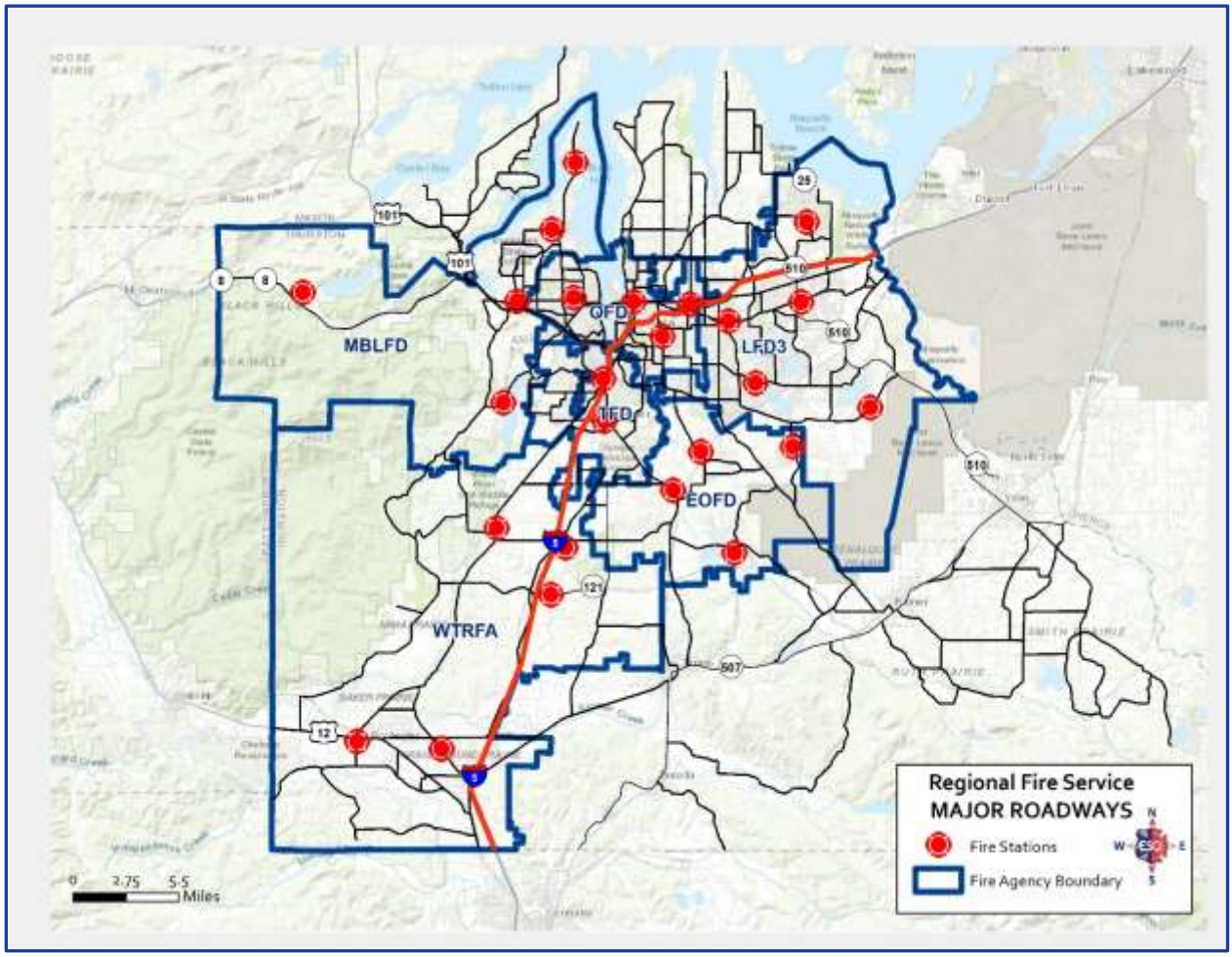
[1] Includes Urban Growth Area

Transportation Risks

Highways

There are several transportation corridors and various modes of transportation that fall within the study area for which the departments are responsible. Beginning with major roadways, Interstate 5 goes through the middle of Thurston County, including through four of the six districts in the study area. Additionally, there are several major local roads within the county. Regardless of the size of the roadway or the speed limit, any roadway has the potential for motor vehicle crashes, vehicle fires, medical emergencies, brush fires, or hazardous material spills/leaks. Each of these are not only a risk to the community but the responders are also at risk of being struck by vehicles while operating near moving traffic.

Figure 173: Major Highways in the Study Area



RECOMMENDATION:

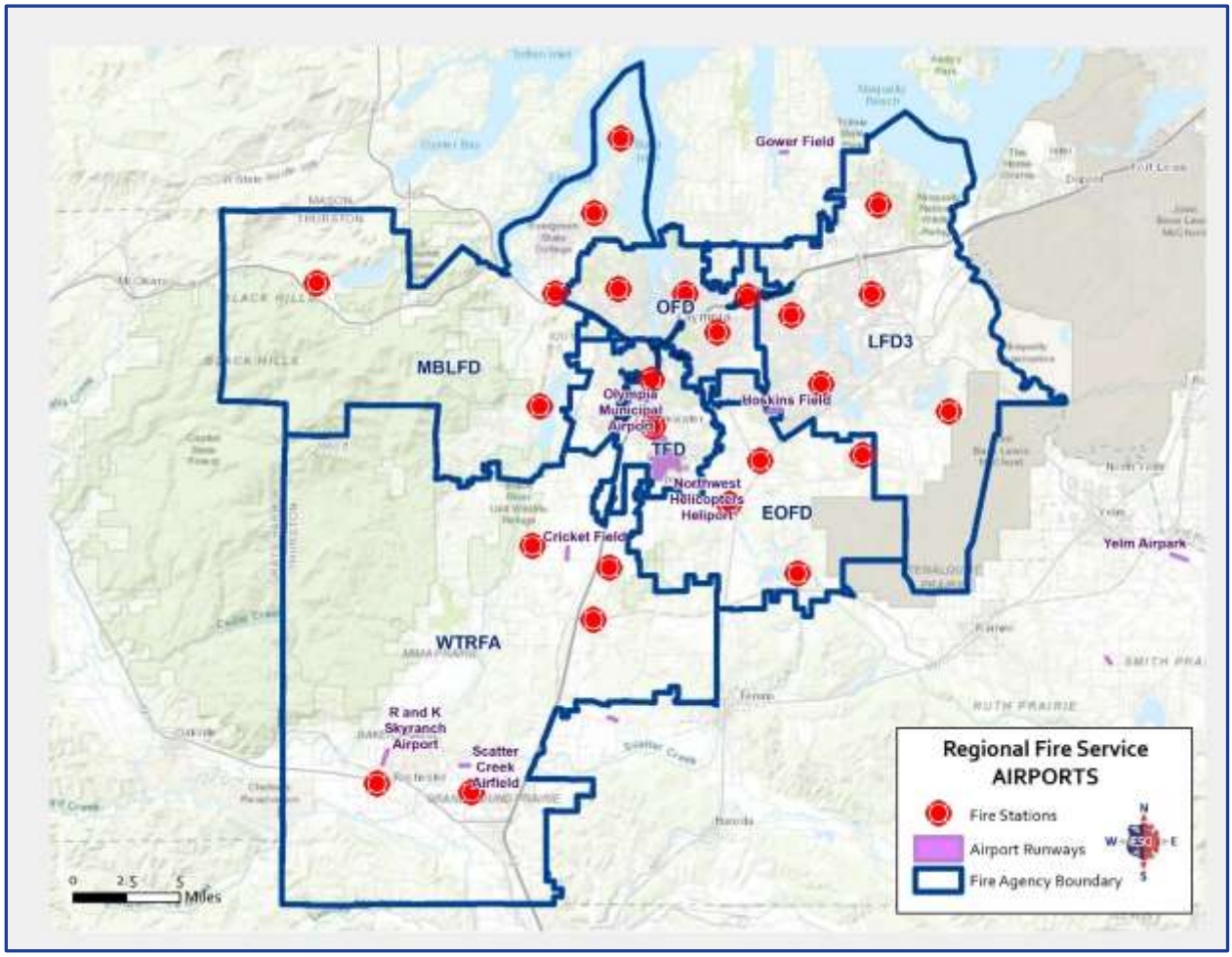
- Ensure that when fire and EMS units respond to incidents along highways that an SOP is in place to protect scene from traffic flow.

Airports

Olympia Regional Airport is a public use airport located four nautical miles south of the central business district of Olympia. It is owned by the Port of Olympia but is in the Tumwater Fire Department area. Additionally, there are smaller airfields and heliports in the study area. Regardless of type of airport, each pose the risks associated with aircraft landing and departing, as well as, aircraft and fuel storage at the airport itself.

The next figure shows the location of airports and heliports in the study area.

Figure 174: Airports and Heliport Locations in the Study Area

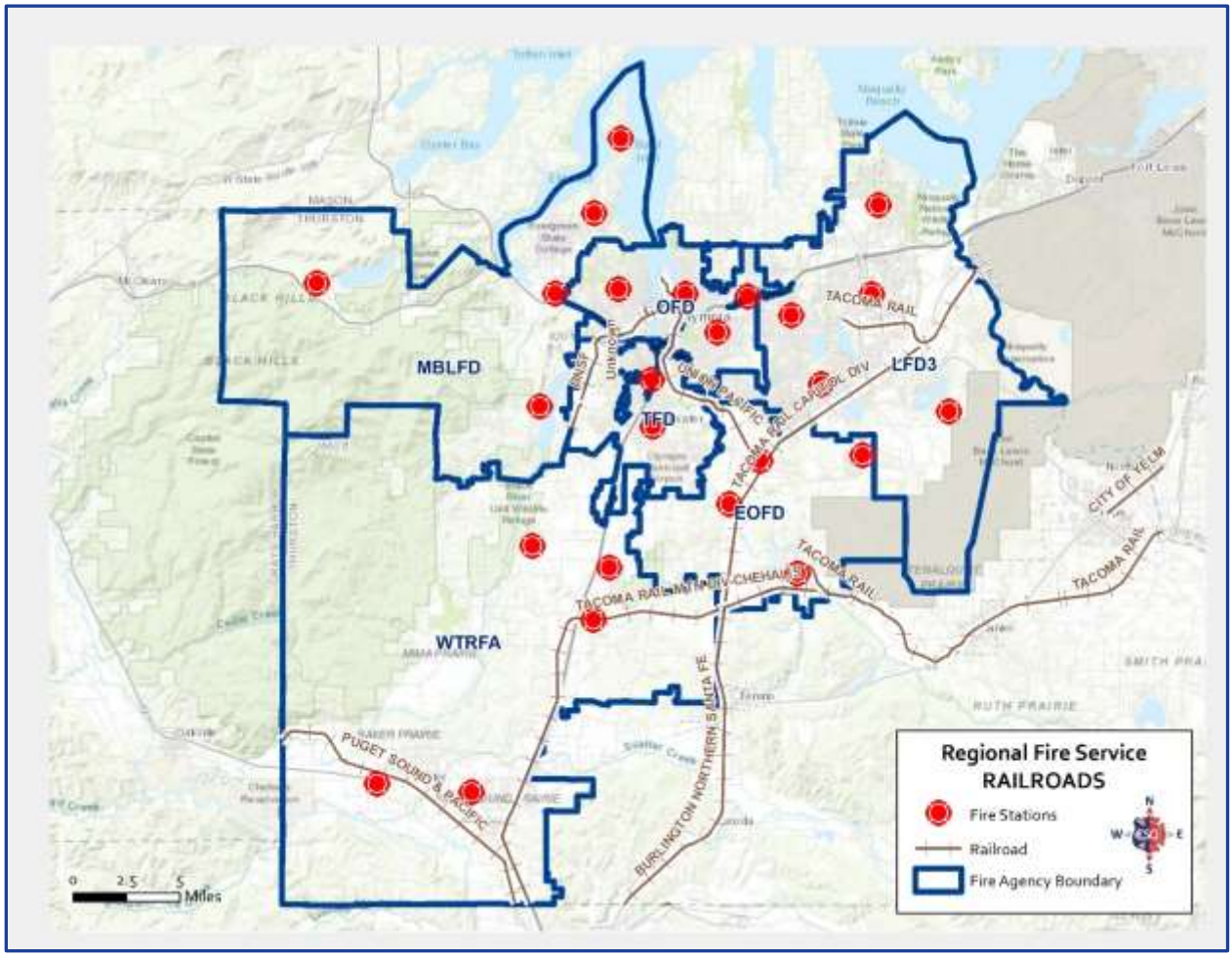


Railroads

The following figure shows several operating railway lines through the study area. Apart from the McLane/Black Lake Fire District, each of the study area departments have some railway tracks in their district. McLane/Black Lake has tracks just outside their eastern district line as well.

In EOFD, the Burlington Northern-Santa Fe (BNSF) north south mainline bisects the district with two at-grade crossings of major arterials necessitating staffing at Stations 61 and 64.

Figure 175: Railway Tracks in the Study Area



Although a comparatively safe mode of transport, railway operations do come with hazards. Some of the hazards associated with railway operations are described in the next figure.

Figure 176: Potential Rail Incident Types and Effect

Type of Incident	Description/Hazard
Train Collisions	Collisions can be between two or more trains or between trains and infrastructure.
Derailments	Derailments occur when one or more cars of a train leaves the tracks; generally involves just one train.
Grade Crossings Crashes	There are various scenarios in which accidents occur at railroad crossings.
Railroad Staff Injuries	Railroad staff may get injured while working on or near the tracks. In some cases, accessibility will be a problem.
Dangerous Goods Release	As the railroads carry dangerous goods, there is always the potential for product release.

The effects from these incidents can require large numbers of fire and EMS resources. In review of the previous figure, several of these incidents could require the response of a Haz-Mat team, Technical Rescue, and EMS. Many times, the complexity of the incidents will require multiple operational periods. Risk analysis and planning for these types of incidents must consider the need for higher than usual personnel and equipment resources. When incidents occur at grade crossing, fire and EMS personnel will have to operate near the tracks. Training in the proper precautions is essential.

Buildings

Many buildings in the county are used for purposes that create more significant risk than others during an emergency. High occupancy buildings, facilities providing care to vulnerable populations, and others may require greater numbers of emergency response and resources during an emergency.

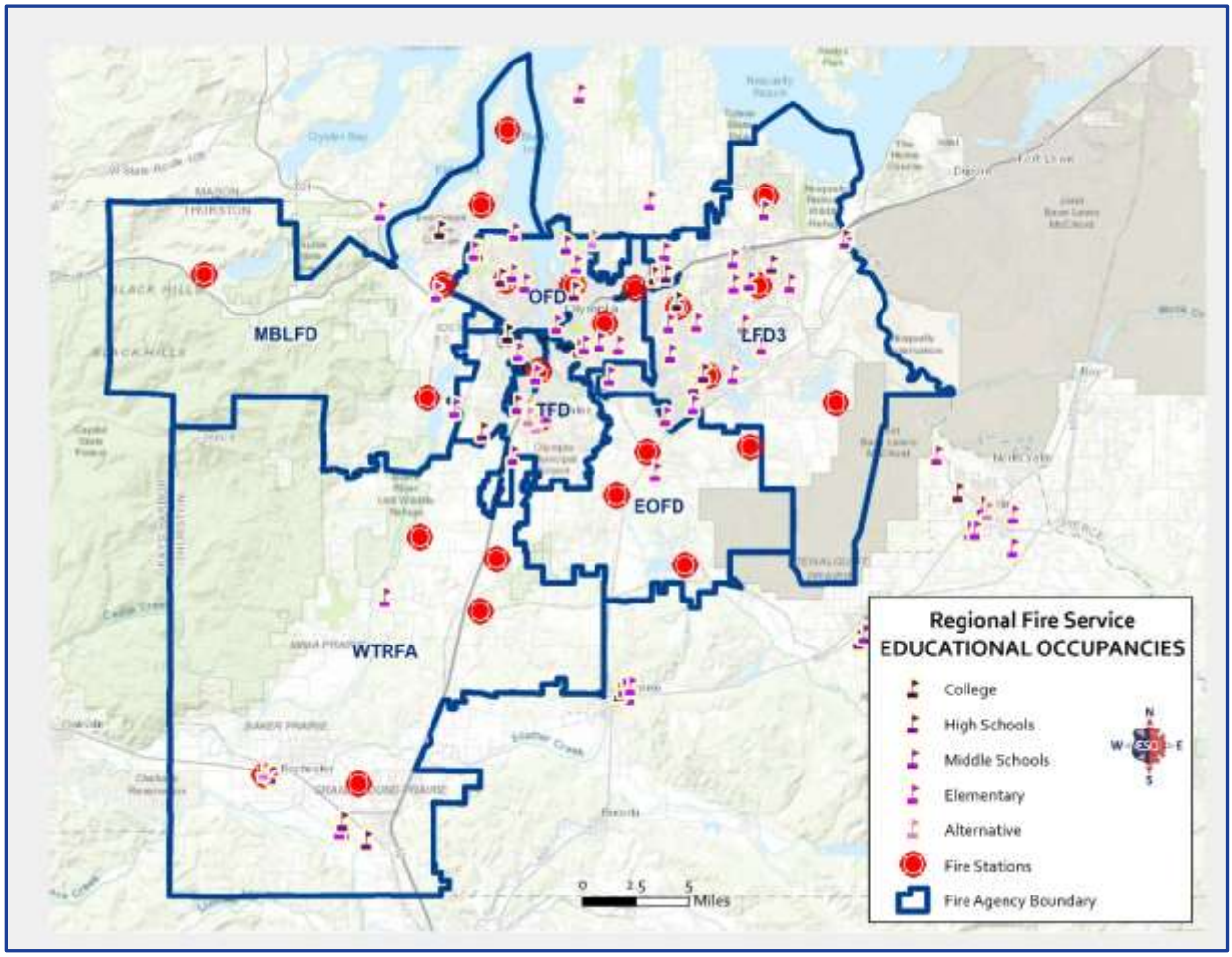
Numerous buildings lie within the study area in which large numbers of people gather for entertainment, worship, and other similar events. A variety of nightclubs, theaters, and other entertainment venues also exist.

Of course, as the capital city, Olympia is home to the State Capitol. These very large buildings drive a significant need for resources due to the special nature of the facilities, such as historical, political, and large areas of assembly.

Colleges and Schools

The next figure shows the locations of the educational facilities within the study area. These facilities present additional risk, primarily for mass casualty incidents. Fire, criminal mischief, and potentially terrorism could cause a major medical emergency requiring significant emergency service resources.

Figure 177: Colleges and Schools in the Study Area



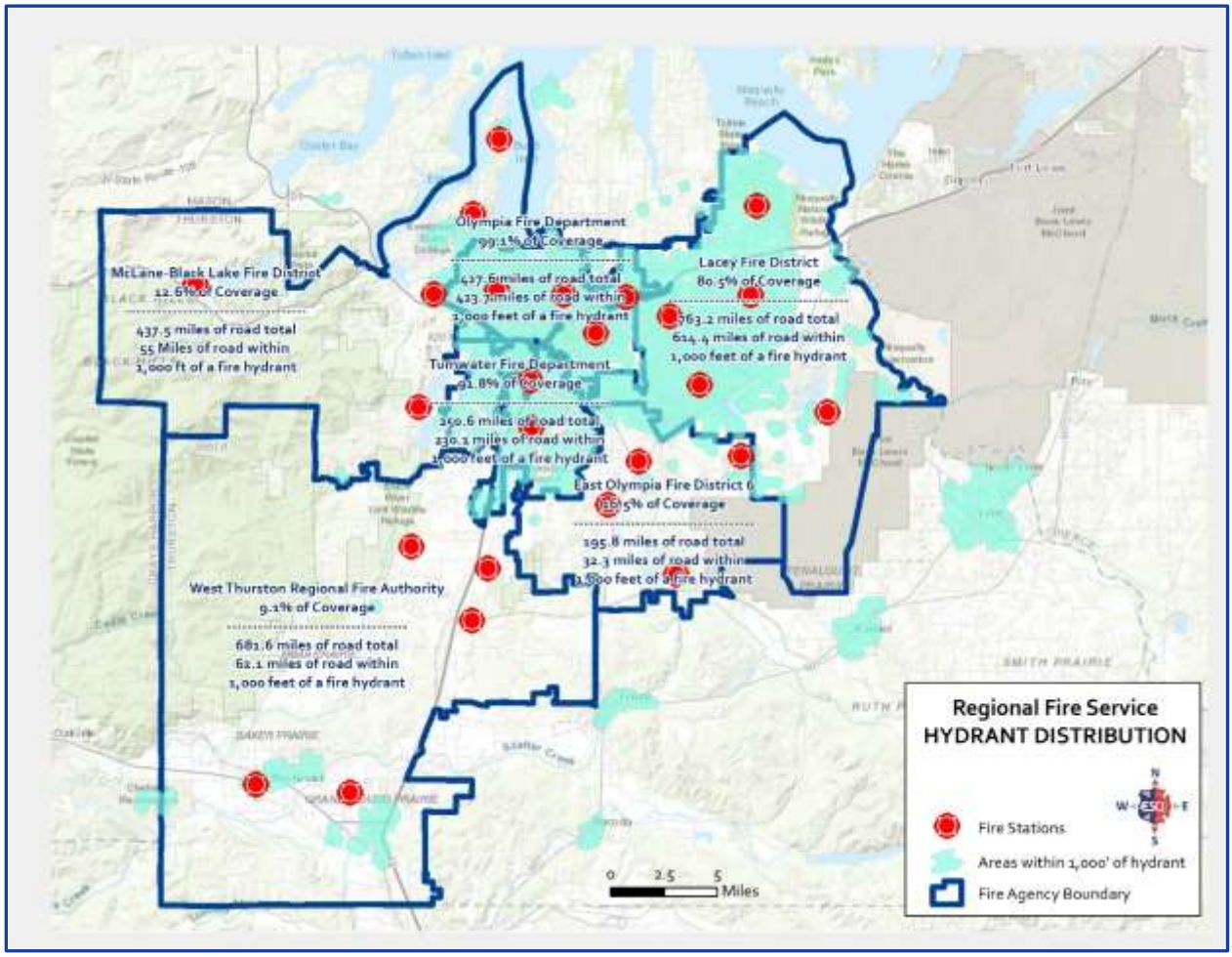
Medical and Congregate Care Facilities

Medical and congregate care facilities, particularly hospitals and nursing homes, house vulnerable occupants. Although these facilities have regular fire safety inspections and are generally built of fire resistive construction with built-in fire suppression, emergencies still can occur that require the quick movement of patients away from the hazard. Incidents at these facilities will require high resources levels.

Other Critical Infrastructure

One concern to fire departments is the water and fire hydrant system. Providing enough storage, distribution, and access to this valuable firefighting resource is very important. The next figure illustrates the hydrant system in the study area. As expected, in the more populated urbanized areas, fire hydrants coverage is very good. The rural areas of the county depend on water delivered by tenders. From a risk assessment standpoint, planning consideration must be given to situations when the water system could fail.

Figure 178: Fire Hydrant Distribution in the Study Area



Emergency communication centers and the associated transmitting and receiving equipment are essential facilities for emergency response. The TCOMM dispatch center provides call receipt (PSAP) and dispatch service not only to the departments in the study area but to all fire, EMS, and law enforcement agencies in Thurston County. This center provides for the answering of 911 calls, dispatching of fire and other emergency responders, and important support to the on-scene incident management function. Back-up center or other process should be considered in case of a system failure or other emergency at TCOMM the could interrupt services.

There are other communication facilities and equipment that are equally important to the community and government operations within the study area. These are the telephone company central offices and the transmission lines of local telephone service providers. Internet service providers, along with wireless cellular communication providers, provide essential communication capabilities for the community as well as emergency personnel through their facilities and equipment. Failures in any of these systems can influence emergency services.

Energy

The loss of electrical power is also a risk to the community. Community services, from communications to traffic signals to normal operation of supermarkets, require the use of energy. Whether it is electricity generation and transmission systems, fuel distribution and storage tanks, or natural gas pipelines and regulator stations, the community is dependent upon energy sources. The loss of energy is a planning consideration for response and readiness.

Structural Risks

Certain buildings, contents, functions, and size present a greater firefighting challenge and require special equipment, operations, and training.

The Insurance Services Office calls for a ladder truck within 2.5 miles of developed areas containing buildings three or more stories in height. Accessing the upper floors and roofs of buildings this tall, typically requires ladder truck capability as ground ladders may not provide access.

Large buildings such as warehouses, malls, and large "box" stores require greater volumes of water for firefighting and require more firefighters to advance hose lines long distances into the building.

Terrorism

Thurston County—as is anywhere—a potential target for terrorism. Most of the previous categorized risks in the community are targets for such activity. The State Capital is located within the study area. In addition, the public gathering events during the year can also be targets. The fire rescue departments need to be vigilant in their training and preparedness in the event one or more coordinated acts of terror occur in the region. Coordination and unified command with law enforcement partners is critical.

Demographics

Current Population Information

The study area includes six departments across central Thurston County. The next figure is a summary of service area and population according to information provided by the fire departments and retrieved from the Thurston Regional Planning Council (TRPC).[31]

Figure 179: Study Area Size and Population Estimates

Fire Department/District	2018 Population Estimate	Area in Sq. Miles	Population Density
Tumwater Fire Department	23,830	18	1,324/mi^2
Olympia Fire Department	52,490	20	2,625/mi^2
Lacey Fire District 3	97,990	70	1,400/mi^2
East Olympia District	11,750	30	392/mi^2
West Thurston Regional Fire Authority	22,850	162	141/mi^2
McLane/Black Lake District	16,280	84	194/mi^2
Total	225,190	384	586/mi^2

An NFPA report has identified the groups that face a higher risk of being injured or killed in a fire as:[32]

- Children under 5 years of age;
- Older adults over 65 years of age;
- People with disabilities;
- Those with a language barrier; and
- People in low-income communities.

The following charts were created to provide an overview of the demographics related to these identified groups. Age and sex demographics are provided in the following figure to the extent that the data was available.

[31] Retrieved from https://www.trpc.org/480/Population-Housing-Employment-Data

[32] National Fire Protection Association, 2007; Urban Fire Safety Project, Emmitsburg, MD; retrieved from http://www.nfpa.org/public-education/by-topic/people-at-risk/urban-fire-safety/reports-and-presentations

Figure 180: Age and Sex Percentage Comparisons[1]

Age/Sex	Tumwater	Olympia	Lacey	East Olympia	West Thurston	McLane-Black Lake
Persons under 5 years	5.3%	4.9%	—	—	—	—
Persons under 18 years	21.6%	18.1%	—	—	—	—
Persons 65 years and over	14.3%	15.8%	—	—	—	—
Female persons	52.2%	52.3%	—	—	—	—

[1] U.S. Census Bureau

Based on the preceding figure, the percent of the population over 65 years of age ranges from just over 14 percent in Tumwater to nearly 16 percent in Olympia. Approximately five percent of the population is under five years of age. This place a total of approximately 20 percent of the populations in the two cities within the age groups that are at highest risk in residential fire incidents and account for some of the highest use of emergency medical services. Senior citizens can have difficulty escaping from fire due to physical limitations. Seniors also tend to use emergency medical services more frequently than younger persons. As the population ages, this will create an increase in service demand for emergency medical services.

As noted, the very young also represent a vulnerable population, both regarding their ability to escape a structure fire as well as their susceptibility to serious medical ailments such as asthma, traumatic events, choking, or injury from vehicular accidents.

Figure 181: Other Demographic Comparisons[1]

Subject	Tumwater	Olympia	Lacey	East Olympia	West Thurston	McLane-Black Lake
Persons without health insurance, under age 65 years	5.9%	9.5%	—	—	—	—
Person with a disability, under age 65 years	7.6%	9.3%	—	—	—	—
Owner Occupied Housing Rate, 2012–2016	55.2%	45.2%	—	—	—	—
Median household income (in 2017 dollars), 2012–2017	$64,786	$55,539	—	—	—	—
Persons in Poverty	9.7%	18.4%	—	—	—	—

[1] U.S. Census Bureau

The demographics displayed in Figure 181 are factors which indicate a population that is more likely to use fire department services than other populations. Individuals with no health insurance are more likely to use local EMS resources compared to individuals with health insurance and a personal physician. The percentage of people where data was available—Tumwater and Olympia—without health insurance is 5.9 percent and 9.5 percent respectively. The percentage of owner-occupied houses is 55 percent in Tumwater and 45 percent in Olympia. A high percentage of owner-occupied homes may indicate a more stable community and residents willing to invest in their community and community services.

Population Density

Most communities contain areas with different population densities and property risk allowing the community's policy makers to specify different response performance objectives by geographic area. The classifications that are identified by the National Fire Protection Association (NFPA) in Standard 1720 and the percentage of the county in the classification is provided in the following figure.[33]

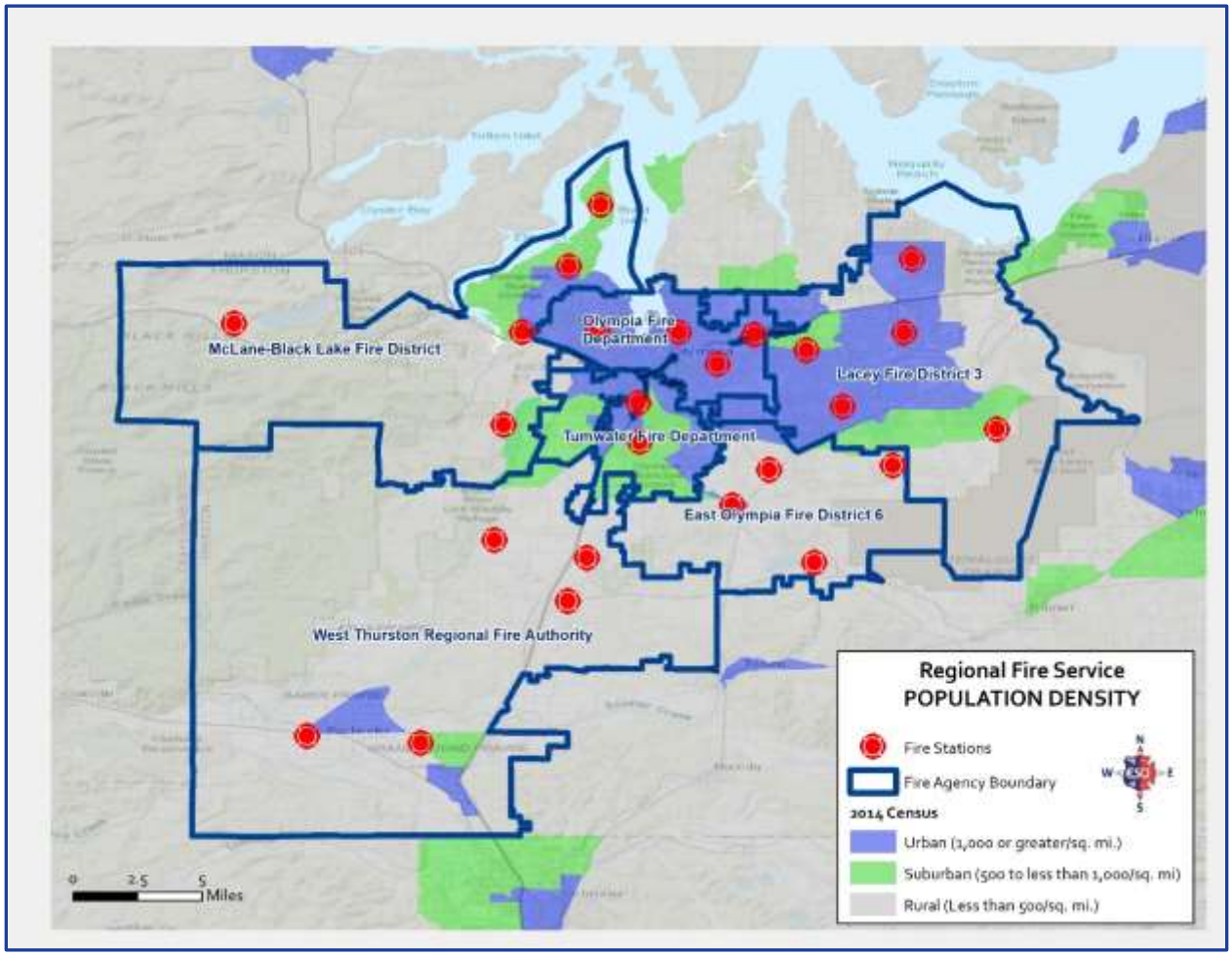
Figure 182: Population Classifications

Classification	Criteria
Urban	> 1,000 people/square mile
Suburban	500–1,000 people/square mile
Rural	< 500 people/square mile
Remote Area	Travel Distance ≥ 8 miles

The next figure illustrates population density. Higher densities are generally found closer to the city limits of Olympia and Tumwater as well as in the Lacey Fire District.

[33] NFPA 1720: *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments*, 2014 Edition.

Figure 183: Study Area Population Density



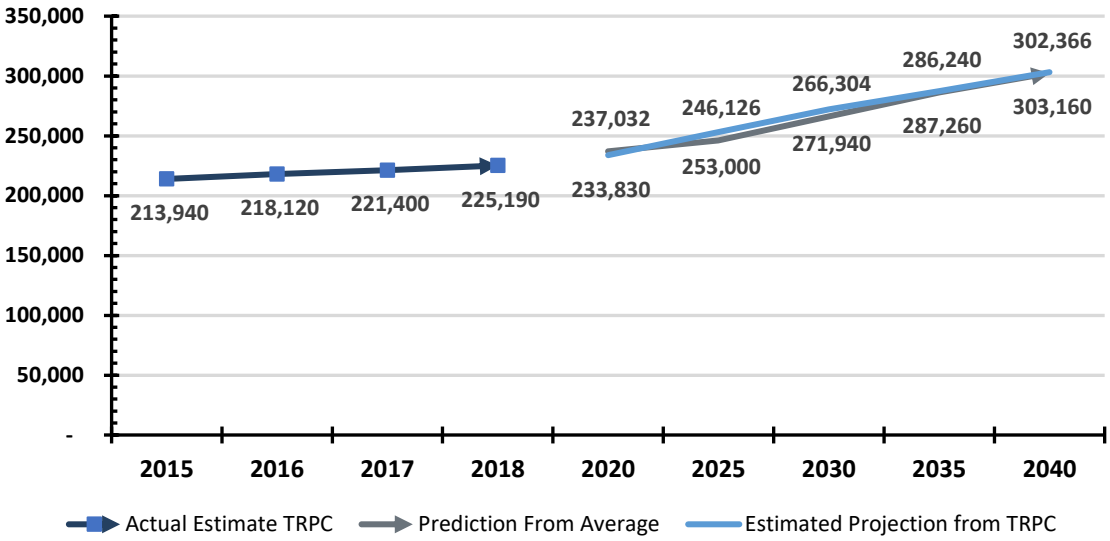
Population Growth Projections

The population in Thurston County has grown over the last 35 years. The population countywide in 1980 was 124,264—in 2015, the population had grown to 267,410.[34] This is an overall increase of 115 percent. For the fire departments in the study area, in 2015 the population was 213,940. The 2018 estimated total is 225,190—an increase of just over five percent.

The following figure illustrates the estimated population from the 2015 base year to 2018 as estimated by the TPRC. The figure also shows population projections through 2040—one using the TRPC estimates and a second an average based on the past values.

[34] Retrieved from https://www.trpc.org/480/Population-Housing-Employment-Data

Figure 184: Population Growth Projections in the Study Area



These results estimated by the TRPC predicts a population of 303,160 in the year 2040. Using the average based on past growth 302,366 persons is predicted.

With population growth there comes increases in service demand. More people mean not only more incidents generated it also means a need for expanded geographical coverage. Resource additions will need to be planned to provide service delivery and performance at acceptable levels.

Expansion and growth will not only effect delivery of fire rescue service but also other fire department functions, such as code enforcement and community risk reduction. The department must maintain awareness and be involved in monitoring the relationship between population and demand.

FUTURE OPPORTUNITIES FOR COLLABORATION

Having completed the evaluation of current conditions process, ESCI is now armed with the information necessary to effectively evaluate the opportunities that exist in the region for shared service delivery opportunities between the study agencies. There are many ways that fire departments can work together, ranging from very fundamental sharing of resources and programs, up to and including legal assimilation of multiple agencies into one in the form of a merger or consolidation, where feasible.

ESCI identified the following alternatives as those that are most feasible for application to these study agencies:

- Maintain Status Quo
- Contract for Services
  - Administrative
  - Functional
  - Operational (Full Service)
- Merger
- Annexation
- Regional Fire Authority
- Formation of a Municipal Fire District

The balance of this report examines the multiple options that are available to the study agencies and provides insight and guidance where appropriate.

General Partnering Options

It is often assumed that legal merger of agencies is the only alternative that is available. However, in general terms, a number of different strategies are available to the client agencies when considering consolidation of services. This begins with a do-nothing approach and ends with complete unification of the organizations into what is, essentially, a new emergency service provider. A summary of the available methodologies is found below, followed by identification of specific options that are considered feasible in these study agencies.

Status Quo

In some instances, changing nothing, or little, compared to current practice is the most desirable approach. The client fire organizations can decide to continue as separate entities and not undertake any further partnering opportunities. Remaining separate may be advantageous in that it provides each agency with the most organizational control because, under this strategy, the agencies continue to make decisions considering only unilateral issues. The strategy represents a perpetuation of the status quo, and it is useful as a comparison by which to measure the other strategies.

The disadvantages of this approach are that the current challenges facing the agencies are not changed, the opportunities for efficiency (either financial or service level) through greater collaboration are not realized, and some duplication and overlap continue. In today's environment, taxpayers typically hold their elected officials accountable for delivering a quality level of service at an affordable rate, and expect creative thinking to solve problems or achieve those ends. While "maintaining the status quo" is easy and involves the least amount of impact to the agencies, it may well be one of the riskier decisions to make politically.

Contract for Services

There are three main types of contracts for service; administrative, functional, or operational consolidation. Each of these is discussed in greater detail in the following sections.

Administrative Consolidation

An administrative consolidation occurs when two or more agencies maintain their separate legal status and separate operational elements, but combine some or all of their administrative functions. Examples include combining clerical, HR, IT, and/or financial functions while maintaining separate operational activities, or even combining agency administration and management under one Fire Chief. An administrative consolidation is accomplished legally through an Interlocal Cooperation Agreement between the agencies.[35] There are no limitations regarding crossing city or county boundaries.

The advantages of such a model include reduced overhead costs by eliminating administrative duplication; a gradual alignment of otherwise separate operations under a single administrative head; less resistance to change by the rank and file in the operational elements than other consolidation options; and singularity of purpose, focus, and direction at the top of the participating organizations. This option lends itself well to a gradual move toward a single, consolidated agency where differences in attitude, culture, and/or operation are otherwise too great to overcome in a single move to combine.

The disadvantages include potential conflicts in policy direction from the various boards and councils; potentially untenable working conditions for the Fire Chief ("one person, multiple bosses"); and increased potential for personnel conflict as separate employee groups vie for dominance/supremacy.

Functional Consolidation

Functional consolidation, as the term is used here, would enable the client agencies to work together while remaining as separate organizations. Under the Washington statutes, governmental entities may elect to cooperate or contract for any lawful purpose, allowing individual organizations to share resources, improve service, and save money at the program level. Most commonly, fire departments enter partnering agreements for programs such as firefighter training, fire prevention, closest force response, and administrative/support services. As has been recommended throughout this report, ESCI has identified a number of program level activities that can, and should, be undertaken collaboratively between the client agencies, regardless of future decisions surrounding a higher level of integration.

[35] RCW 39.34.030.

In many cases, functional consolidation is sufficient to accomplish the cooperative goals of the agencies without considering operational agreements or mergers. It is common in the industry to functionally join such activities as purchasing, firefighter training, fire prevention, public education, apparatus maintenance, and command response assistance. The keys to success of a functional consolidation strategy lie in a trusting relationship between partner agencies, the completeness of the agreement that sets up the program, and a cooperative approach to the management of the program.

For a functional consolidation, the advantages are greater opportunities for efficiency; an opportunity to reinvest redundant resources into those areas lacking in resources and a closer working relationship between members of the agencies in the consolidated function(s) that can spill over to other unrelated activities in the otherwise separate agencies. This type of collaboration may segue to greater levels of cooperation. Barriers can be broken down as members of each agency realize that the other agencies' members "aren't so different after all."

A disadvantage is that interaction by and between line personnel of different agencies increases the potential for friction. Numerous details must be worked out in advance of such a contract, including but not limited to: work rules, employee assignments, volunteer opportunities, office location, logos, asset allocation, authority, and even the name of the consolidated function. Further, independence and autonomy are lost in the consolidated areas, spilling into other seemingly unaffected areas.

Operational (Full Service) Consolidation

This partnering option takes the next step in the continuum of closer collaboration. In this case, all operations are consolidated under a single organization that serves all participating agencies. The agencies remain independent organizations from a legal/political/taxing standpoint; but from a service level standpoint, the organization operates as one agency. Like other strategies listed, an operational consolidation is accomplished legally through an Interlocal Cooperation Agreement.[36]

Under an operational consolidation, governance of the client agencies would remain as it is at the City Council and Board level. However, this strategy largely joins the entities, operationally, through the execution of a more comprehensive interlocal cooperation agreement. The resulting organization features a single organizational structure and chain of command.

Depending on the form of the agreement(s) establishing the organization, employees and members of each organization may remain with the original agency or, alternatively, they may be transferred to one of the other agencies.

[36] *Ibid.*

Operational consolidation means that, regardless of their overarching governance structure, the agencies become one in terms of how day to day operations are performed. One Fire Chief oversees a blended organization. This option requires a significant commitment toward a full consolidation and is usually done as a last sequential step toward full consolidation as the administrations and policy-making bodies work out the last details.

For an operational consolidation, the advantages are that the greatest opportunity for efficiency (not necessarily cost reduction) is typically in the operational element where service is delivered to the communities; and the level of trust and cooperation required to make implementation of this option successful implies a near-readiness to take the next step to full integration.

The disadvantage is that administrators and policymakers must share power and gain consensus where they once had unilateral authority to control and implement. If there are multiple bargaining unit agreements, they would have to be aligned. Further, it becomes difficult to determine which agency would be the contractor.

In all three versions of the foregoing types of interlocal agreement, the participating agencies can establish an oversight board made up of appointees of the governing bodies involved in the interlocal agreement. The joint board can be established with their scope of authority granted to them by the separate governing bodies involved in the interlocal agreement.[37]

Merger

A merger is a complete combining of the participating fire districts (cities are not able to merge with districts) agencies into one agency. A city can be brought into a fire district through annexation or can form a fire district "with boundaries that are the same as the corporate boundaries of the city," which is described following the discussion of this option.[38] There are no limitations regarding crossing county lines. One or more fire districts may be absorbed into and become part of the surviving district. Fire districts merging into a surviving district are referred to as the merging agency(s) and the surviving district is referred to as the merger agency. The employees of the merging agency(s) are transferred to the merger agency, and the elected officials are brought into the merger district and are reduced over the next three regular elections until the board of fire commissioners is down to three or five depending on the structure of the merger district board. If a fire district has a $10 million budget or more, a seven-member board can be created.[39] The merging fire districts must be located within a reasonable proximity to each other.

A merger would require a decision on which agency will be the merger district and which agency(s) will be the merging district(s). The merger is subject to review by the Boundary Review Board if jurisdiction is invoked by an affected governmental agency, if a petition is submitted by five percent of the affected population requesting review, or if three members of the Boundary Review Board request review.[40]

[37] RCW 39.34
[38] RCW 52.02.160
[39] RCW 52.14.020
[40] RCW 36.93.100

Once a decision to merge is made by the merging district board(s), a merging district(s) must submit a petition to merge to the merger district. If the merger district accepts the petition and terms of the proposed merger, it adopts a resolution accordingly and sends the resolution, along with the original petition, back to the merging district board(s). The merging district board(s) then adopts a resolution requesting the county auditor to call a special election in the merging district(s). A simple majority determines the outcome of the election. If the majority vote yes, the respective district boards adopt concurrent resolutions declaring the districts merged under the name of the merger district.

The board of fire commissioners of the merged district shall consist of all of the fire commissioners of the merging district(s). The combined board will then be reduced by one whenever a fire commissioner resigns from office or a vacancy otherwise occurs on the board, or during regular elections until the board reaches three or five (or seven) members, whichever structure the merger district has. The election for merger may also establish commissioner districts if unanimously approved by the boards prior to the merger vote and is included in the ballot language for merger. In this case, the same process of board member reductions occurs as if no commissioner districts were formed until the merged board is reduced to the three or five members.[41] At that point, the commissioner districts shall be drawn and used for the election of the successor fire commissioners.

Annexation

A city may be annexed into a fire district for the purposes of receiving fire protection services. An annexation into a fire district expands the boundaries of the fire district to include the current and future boundaries of the city. The city boundaries do not change as a result of annexation into a fire district. There is no reserved authority for a city to be represented on the governing board absent the formation of commissioner districts. However, once annexation occurs, city residents are eligible to run for office as a fire commissioner at large. Commissioner districts can also be created, guaranteeing representation from within the city if the district were created accordingly, as long as each commissioner district was approximately equal in population.

Annexation does not affect any other authority of the city. The city simply transfers its responsibility for fire protection and EMS services to the fire district. The city's maximum allowed tax levy rate is reduced by the actual tax levy rate of the fire district. Although the city's tax capacity may be reduced by the amount of the district's tax levy, depending on the city's tax rate, this may or may not decrease the city's actual tax levy. See the following generic example:

Current Property Tax Levy Rates (Example):

City $1.89	Maximum allowed	$3.60
Fire District $1.00	Maximum allowed	$1.50

City Annexes into District (Example):

Fire District Levy	$1.00
City Tax Capacity	$2.60 ($3.60 - $1.00)

[41] RCW 52.14.017

There are no statutory requirements that a city being annexed by a fire district must transfer its fire department assets. The city may retain its fire stations, for example, and lease them to the district at a nominal rate. RCW 52.04.111 through .131 provide for the transfer of city firefighters to the district in the event of the annexation of the city by the district. The district is not obligated to transfer all employees, therefore, these statutory provisions should be reviewed in detail prior to the initiation of annexation proceedings to ensure that the interests of all parties will be addressed and ensure statutory compliance.

Regional Fire Authority

Unique to Washington and only a few other states, an alternative to a merger is the formation of a Regional Fire Authority (RFA). An RFA is a new entity whereby fire agencies, whether districts, cities or a combination, fall under this new structure with a new tax base, a new operational plan, and a new legal framework.

If agencies contemplate forming an RFA, it is usually wise to begin meeting informally to discuss and address issues in advance of initiating the first formal step in the process. Most successful efforts start with establishing exploratory or steering committees composed of a wide variety of stakeholders to determine the feasibility of creating an RFA far in advance of forming the actual Planning Committee. This study may also serve that purpose. Should the decision be made to move forward with RFA formation, the first legal step is the formation of a Planning Committee, considered to be the most important component of the process. The Planning Committee is charged with establishing the RFA plan, which specifies how the RFA will be funded, operated, and governed. The RFA plan should be considered the "charter" or "constitution" of the new agency.

The Planning Committee is comprised of three elected officials appointed from each of the participating agencies, assuring an equal voice in the decision-making process for everyone involved. Moving forward with the formation of an RFA also requires approval by all of the affected governing bodies prior to the initiative being put before the voters.

Funding Mechanisms

A key consideration of the RFA formation decision is funding. The RFA plan will identify funding sources that may include some or all of the following:

- Fire levies
- EMS levies
- Excess levies
- Benefit charges
- Bonds for capital purchases

Facilities and Equipment

The ownership or transfer of ownership of capital assets is not prescribed by law and will be determined by the Planning Committee. Although ownership of facilities and equipment will most likely be transferred to the newly formed RFA, the responsibility for bonded indebtedness for capital assets will remain with the originating agency until the debt is satisfied.

Staffing and Personnel

Under an RFA configuration, employees and members of the agencies joining forces in the RFA become employees and members of the new organization, including career and volunteer personnel. Unless an agreement for different terms of transfer is reached between the collective bargaining representatives of the transferring employees and the participating fire protection jurisdictions, employees will retain the rights, benefits, and privileges that they had under their pre-existing collective bargaining agreements.[42]

Roles and responsibilities assigned to agency personnel may change in a newly formed RFA when modifications are necessary in the interest of service delivery requirements. For this reason, involvement of labor and volunteer organization representatives from the onset of the process is essential.

Governance and Administration

A Regional Fire Authority is governed by a single governance board. The number of board members and the length of their service terms are determined by the Planning Committee consistent with applicable statutes. The statute authorizing the formation of an RFA does not place limitations on the number of members serving on the board, leaving that decision to the Planning Committee and, ultimately, the voters. ESCI is familiar with one RFA in Washington State that initially had nine board members.

Administration of the new RFA, once established, becomes the responsibility of the newly established governing board. The Planning Committee, however, will include in its body of work identification of the composition of the RFA's administrative staff. The Fire Chief and his/her command staff, as agreed to by the Planning Committee, will subsequently report to the governing board.

[42] RCW 52.26.100 (6)

Legal Considerations

A number of important legal considerations must be taken into account in the formation of a Regional Fire Authority. They are summarized below:

- *Regional Fire Protection Service Authority Plan*—Planning committees are tasked with forming the RFA plan. The RFA plan outlines the plan for governance, financing, operations, asset transfers, and other considerations and is the plan that the voters are asked to approve when voting on the formation of the RFA.
- *Formation Procedures*—Like any other type of significant consolidation, the formation of RFA requires careful planning. Because the RFA creates a new entity, there is an added layer of complexity to the planning. The new entity will need to register with the Internal Revenue Service (IRS), establish new accounts with the County and vendors, contracts will need to be assigned and negotiated, labor agreements need to be negotiated, payroll systems may need to be established, and so on. In other words the formation of a new entity can be incredibly time intensive and attention to detail is critical. The formation of an RFA is not subject to review by a Boundary Review Board or a county legislative authority. The formation of an RFA is, however, likely subject to compliance with the State Environmental Policy Act (SEPA). Legal counsel familiar with RFAs should be obtained to guide policymakers in the process.

The advantages of this option are that it allows agencies to retain the strengths they bring to the new agency, minimizes the weaknesses of each agency, and may allow for establishing new "best practices" not currently provided by any of the participating agencies alone. It facilitates a contemporary look at services, resources, and costs, finding the right balance for the community. It retains (or has the potential to retain) the policymakers of the participating agencies in a governing board (including participating cities), thus utilizing the vision and commitment that initiated the implementation of this option. Finally, it creates an opportunity to "right-size" the revenue with the cost of operation, and it provides an active role for the citizens being served in setting their service level and costs.

The disadvantages of pursuing this option are the loss of autonomy for each participating agency; the loss of a familiar structure (although RFAs operate almost identically to a fire district); the investment of time and effort to develop an RFA plan can be rendered moot by the voters; and funding options are not significantly better for RFAs than they are for fire districts.

Formation of a Municipal Fire District

Municipalities can form an independent fire district with the same boundaries as the city that initiated the formation. The process requires introducing a resolution by the City Council establishing the ballot measure proposing formation of the fire district and any other provisions determined by the council as authorized by the statute. The formation is voted upon by city voters and a simple majority authorizes the creation (unless the funding mechanism includes a benefit charge, in which case, a sixty percent favorable vote is required).

The City Council acts as ex officio board members until or unless the fire district elects its own, which can be provided for by City Council action in the formation of the initial resolution, or at any time after formation, by action of a majority of the City Council. In the latter case, the City Council can relinquish governance authority to an appointed board until such time as independently elected board members can be voted into office.

The amount of property tax levy rate to fund the fire district is intended to be deducted from the city's maximum statutory property tax levy rate. The assets of the municipality dedicated to provide fire and EMS services to the city must be transferred or credited to the fire district, including all employees. The intent of the statutory provisions is to provide transparency, prevent double taxation, avoid duplication of investment (i.e., asset transfers), and provide for a governance structure that focuses exclusively upon fire and EMS service delivery within the city separate and distinct from other municipal services.

The advantages of pursuing this option are that fire and EMS service delivery becomes a separate, independent governing structure with a separate, dedicated funding stream. It maximizes the use of already spent infrastructure in the city for this service by transferring those assets to the district. Employees are not put at risk and are kept whole in the transition.

The disadvantage of pursuing this option is that it is a brand-new statute and there is no track record of any community implementing it. In this case, the city pursuing this will find any flaws in the statute, which may not be beneficial to either entity. If the fire district does not levy its full statutorily authorized property tax levy rate initially, but does so at a later date, the city will be required to reduce its maximum authority for property taxes at that time, which may preclude planning for the economic impact.

Strategies for Shared Services

In the following section, the strategies for shared services identified previously are further detailed and their feasibility is evaluated.

The decision to establish a single regional agency can be a daunting task. When those agencies include fire districts, cities, and a regional fire authority, the process becomes even more complex and challenging to accomplish. The following regional strategies presented are analyzed for their impact on sustainability and/or service delivery while identifying opportunities for increased efficiency wherever possible. ESCI recognizes that service delivery and its future sustainability must be viewed with equal importance.

Strategy A: Status Quo

As described previously, this is essentially a do-nothing option. However, all participating agencies have likely made temporary decisions or deferred decisions awaiting the result of this study, such as delaying the filling of vacant administrative and support positions. If the agencies ultimately decide to maintain a status-quo approach, there will be future decisions that will have to be made to position the agencies to move forward effectively.

Given the amount of interaction and inter-agency collaboration that is already in place between the client organizations, a status-quo approach would most likely be configured in a manner that would continue that level of cooperation. However, the organizations could decide to lessen or withdraw from current shared practices. Doing so is viewed as a step backwards and would waste the valuable efforts that have been undertaken in recent years between the agencies.

Each agency will need to take a careful look at their future and where their organizations are headed if they continue operations as currently in place. In some cases, aspects of their operations may not be sustainable in the near future; therefore, the organizations are encouraged to closely scrutinize and evaluate current conditions in this context. Particular focus on financial projections, referencing the fiscal analysis in this report along with other sources, is recommended.

Level of Cooperation

The level of cooperation currently in place is expected to continue, such as mutual and automatic aid agreements, as well as any current sharing of training and other resources.

Estimated Timeline for Completion

Implementation is immediate, once the decision is made, since this is a status quo strategy. The issues identified in the introduction of this strategy will need to be addressed, but should not hinder maintenance of the status quo.

Affected Stakeholders

All client agencies' members and their constituents will retain their current services at their current costs.

Summary/Objective of Strategy

With a decision to maintain status quo, the agencies will have made a decision to maintain the value derived from existing shared services. There may be small, specific enhancements to existing collaboration, but no major new shared services are anticipated under this approach.

ESCI Guidance

Elected officials and administrative staffs should ensure that discussions and decisions related to this strategy focus on the desired outcomes and best interests of the communities served. A decision to maintain status quo does not necessarily mean future collaborative efforts are off the table. Efficiency and enhancement of services should continue to drive decision-making.

Special Considerations

This strategy continues to afford the elected officials with a high level of control. However, as described in the previous section, key decisions must be made by each of the agencies if this strategy is adopted.

Needs identified in the current conditions section of this report list areas in which the study agencies can, and should, make improvements. Those areas should be carefully evaluated as a part of the process of determining future needs under a status-quo approach.

Policy Actions

Other than the issues identified previously under special considerations, no other policy decisions must be made related to implementation of this strategy.

Fiscal Analysis

The status quo represents no shift in cost or change in efficiency.

Issues & Impacts

The implementation of this strategy creates no additional issues or impacts other than those listed in special considerations.

Strategy B: Contract for Services

Level of Cooperation

A contracted services approach is most often applicable when agencies want to work more closely together but are either not ready, or are unable to unify or merge entirely. This strategy may be applied to administrative functions as listed earlier and/or to exercise a functional consolidation for identified support services, while the participating agencies maintain autonomy with separate governance and separate taxing authority. Finally, it may be applied to a contract for full services. Depending on the selected application, a single fire chief may provide the administrative services for the contractually combined agencies as an example.

The district boards and city councils continue to govern the separate agencies independently, levying their own taxes at their own levy rates. This integration may be limited to the Fire Chief, or may include all administrative functions (and the personnel serving those functions) as well as support functions, such as facilities/fleet maintenance, fire prevention, and/or training.

At its highest level, contracted service approaches may be expanded to include operational service delivery. That is, one entity contracts for the entirety of its fire protection, EMS, and related services, delivered exclusively by the provider agency. The contracting agency places full responsibility for all services, based on identified performance measures, on the provider and retains no service delivery function of its own.

Success of an administrative, functional, or operational contract for services (interlocal cooperation agreement) strategy is built upon 1) an essential trust relationship between the partner agencies; 2) the thoroughness of the program agreement; 3) a collaborative approach to the management of the program(s); and 4) community understanding and support. Since the agencies already have a great deal of collaborative history, the foundation to build from has been created.

The approach requires in-depth, multi-level, and multi-functional planning, review, external and internal discussions, collaboration, and agreement among the city council, district boards, and the administrative staff members of all participating agencies. This strategy does not require public approval at the ballot box, but is negotiated between the agencies.

ESCI notes that existing governing bodies are preserved, although the level of unilateral control is decreased. Also, the management team of the contractually unified sections should report to the individual board and councils on the performance of these new agreements.

Estimated Timeline for Completion

This timeline can take six months to negotiate and be prepared to execute, or can take as long as a year, depending on the number of agencies participating, the level of complexity of the contract for services, and bargaining unit implications that require separate negotiation. New issues may arise from the planning process, so the planning should not be short-cut due to presumed familiarity with the other party(s).

Affected Sections

Depending on the type of contract for services, the affected sections may include administration, training, and operations.

Affected Stakeholders

While all agency members and the citizens served are affected in some manner, the commissioners, council members, and agency staff members within the affected sections will realize the most significant impacts.

Summary/Objective of Strategy

The objective should be seamless integration of the identified functions across the jurisdictions by means of an Interlocal Cooperation Agreement, as provided for under RCW 39.34.

ESCI Guidance

The client organizations face similar financial challenges given current conditions, some more severe than others, depending on tax base. While the listed areas for partnering are found to be duplicative in many instances, how those areas operate in each agency may vary significantly with the other agencies due to differing demographics, geography, and community culture.

In preparation for such a direction, the fire chiefs must establish and conduct regular joint meetings for the purpose of establishing the parameters of an administrative, functional, or full service contract. This includes workload analysis to ensure greatest effectiveness while maintaining proper balance. If this option is pursued, ESCI recommends that the fire chiefs convene an ad hoc steering committee for the purpose of developing proposed common policies, performance standards, and functional plans.

Should the concept of contracted services be expanded into operational areas, the degree of collaboration between the chiefs is escalated substantially. Operational guidelines, response procedures, and many additional factors will need to be compared and brought under a single, fully integrated operational strategy.

Special Considerations

Commissioners and council members should understand that pursuing any of the contractual options is complex, labor-intensive, and challenging; as such, it is often a precursor to a more formal consolidation.

The process of developing an administrative or functional contract can expose administrative rigidity resulting from political complexities of the arrangement. Given accountability to multiple political bodies, administrative leaders can be pulled in multiple directions; they may also be limited by contractual requirements in their ability to adjust to environmental changes. Consequently, conflicting policy directives may sometimes be troublesome. These challenges underscore the importance of the foundational political relationships, the contractual agreement and the skills of management to ensure success.

Internal staff in the affected sections will likely require some time to adjust to new processes and reporting relationships. The community may notice changes in who they deal with and different processes likely employed from this strategy.

Policy Actions

The boards of fire commissioners and city councils will need to develop, approve, and implement an interlocal cooperation agreement.

Fiscal Analysis

Depending on the selected approaches, the initiatives described above may result in actual cost reduction (economies of scale with volume purchasing, for example) or cost avoidance at the very least (eliminating the need to purchase what another participating agency already has, for example), allowing those funds to be redirected toward other agency needs. The same may apply if the needed number of support staff positions decreases.

The costs for the combined functions, to the extent they are equal across all agencies, should be split equally between the agencies. This includes any fiscal windfall and any net new costs. To the extent there are weighted distribution of costs (and benefits) due to disproportionate cost or benefit, such distribution should be based on weight factors directly tied to the function shared and should follow guidance provided in the cost allocation discussion, which follows.

Cost Allocation Options

What follows is a listing of system variables that can be used (singly or in combination) to allocate cost between allied fire departments. Each option is summarized by the concept, its advantages and disadvantages, and other factors that should be considered. Regardless of the option(s) chosen to share the cost of service, the resulting interlocal cooperation agreement needs to address the formula chosen and the rationale behind it, as well as any exclusion, such as grant funded expenditures. In addition, service contracts often must reconcile the exchange of in-kind services between the participating agencies.

Area

The cost of emergency service can be apportioned based on the geographic area served relative to the whole. For instance, the jurisdictional boundaries of the agencies represent about 384 square miles. The following figure displays the service areas in square miles and the percentage for each jurisdiction, which represents the percentage of total cost share.

Figure 185: Cost Allocation by Service Area (2017)

Jurisdiction	Service Area in Square Miles	% of Total
Olympia FD	20	5.2%
Tumwater FD	18	4.7%
West Thurston RFA	162	42.2%
Lacey Fire District 3	70	18.2%
McLane/Black Lake Fire District	84	21.9%
East Olympia Fire District	30	7.8%
Total	**384**	**100.00%**

Apportionment founded on service area alone may work best in areas that are geographically and developmentally homogeneous. The client agencies in this case are not considered homogenous.

Pro: Service area is easily calculable from a variety of sources. Size of service area generally remains constant with few if any changes.

Con: Service area does not necessarily equate to greater risk or to greater workload. Indeed, density is the greater driver of workload.

Consider: Service area may be combined with other variables (such as resources, assessed value, and number of emergencies) to express a compound variable.

Assessed Value

The assessed value (AV) of agencies is established by tax assessors under laws of the state. Usually, higher-valued structures and complexes carry a greater risk to the community from loss by fire; consequently, assessed value also tends to approximate the property at risk within an area. Fire departments are charged with being sufficiently prepared to prevent property loss by fire. Therefore, the cost of contracted fire protection may be apportioned relative to the assessed value of the allied jurisdictions. In this case, high valued buildings may pose a low risk to the community or to the fire department due to built-in fire protection features. Typically, AV is used to apportion cost of shared service by applying the percentage of each partner's AV to the whole.[43] The following table illustrates the allocation of cost by the assessed value of the agencies, which represents the percentage of total cost share.

Figure 186: Cost Allocation by Assessed Value (2017)

Jurisdiction	Assessed Value	% of Total
Olympia FD	$6,690,364,182	26%
Tumwater FD	$3,257,477,653	13%
West Thurston RFA	$1,993,328765	8%
Lacey Fire District 3	$10,200,777,243	40%
McLane/Black Lake Fire District	$2,158,317,423	8%
East Olympia Fire District	$1,396,487,595	5%
Total	**$25,696,752,861.00**	**100.0%**

Pro: AV is updated regularly, helping to assure that adjustments for changes relative to new construction, annexation, and inflation are included. Because a third party (the assessor) establishes AV in accordance with state law, it is generally viewed as an impartial and fair measurement for cost apportionment. Fire protection is typically considered a property-related service; thus, allocation tied to property value has merit.

[43] AV used is the total assessed value of the service area.

Con: AV may not reflect the risk associated with certain properties. Some high value properties present low risk. Some comparatively lower value properties may not fully represent the life risk, such as nursing homes or places of assembly, which might dictate more significant use of resources. In addition, some large facilities may seek economic development incentives through AV exemptions or reductions. Adjustments may need to be made to AV if such large tracts of exempt property in one jurisdiction cause an imbalance in the calculation. Last, AV typically includes the value of land, which is not usually at risk of loss by fire.

Consider: Discount AV by factoring it into a multi-variable allocation formula. As an additional consideration, assessors usually establish the AV in accord with the property tax cycle, which can lag somewhat behind the budget cycle of local agencies and the time when service contracts are reviewed or negotiated.

Deployment

The cost for service is based on the cost of meeting specific deployment goals. Deployment goals may be tied to the physical location of fire stations, equipment, and personnel (strategic deployment) or by stating the desired outcome of deployment (such as is contained in a standards of cover). A strategic (input) goal could specify the location of stations, engines, ladder trucks, and number of active volunteer firefighters on the roster, for example. A standards of cover might state the desired outcome (output) as three engine companies, one ladder company, a battalion chief, an aid unit, and fifteen emergency workers on the scene of all structure fire emergencies within 8 minutes, 90 percent of the time. While both strategic and outcome goals can be used effectively to assist in allocating cost, ESCI views outcome goals to be more specifically linked to the quality of service. This alternative however, is highly variable due to the independent desires of each community in regard to outcome goals.

This type of scoring system for each agency allows the ranking of each area based on the assigned apparatus and facilities required to deliver the staffing and required fire flow. The following illustrates the allocation of cost by the number of resources deployed to serve each jurisdiction, including fire stations, frontline engines, and ladder trucks (not including reserve apparatus).

Figure 187: Cost Allocation by Resource Deployment (2017)

Jurisdiction	Facilities	Engines & Aerials	Total	% of Total
Olympia FD	4	5	9	17.6%
Tumwater FD	2	2	4	7.8%
West Thurston RFA	5	6	11	21.6%
Lacey Fire District 3	5	6	11	21.6%
McLane/Black Lake Fire District	5	5	10	19.6%
East Olympia Fire District	4	2	6	11.8%
Total	**25**	**26**	**51**	**100.00%**

Pro: Deployment is intuitively linked to the level of service. The outcome of deployment based on a standards of cover can be monitored continuously to assure compliance. Such deployment can be adjusted if standards are not met. This assures the continuous quality of emergency response throughout the life of a service contract.

Con: Deployment may not equate to better service because such goals are prone to be used for political reasons and may not be used for quality of service reasons. Outcome goals require common reporting points and the automatic time capture of dispatch and response activities to assure accuracy. Record keeping needs to be meticulous to assure the accurate interpretation of emergency response outcomes.

Consider: Contracts for deployment-based fire protection should recognize that there is required infrastructure, such as administrative or overhead costs, as well as capital asset cost, depreciation, rent, and liability insurance. Thus, this allocation strategy is best used as part of a multi-variable allocation formula.

Service Demand

Service demand may be used as an expression of the workload of a fire department or geographical area. Cost allocation based on emergencies would consider the total emergency response of the service area and apportion system cost relative to the percentage of emergencies occurring in the jurisdictions.

Figure 188: Cost Allocation by Service Demand (2017)

Jurisdiction	Service Demand	% of Total
Olympia FD	11,293	34.2%
Tumwater FD	4,259	12.8%
West Thurston RFA	2,900	8.8%
Lacey Fire District 3	12,249	37.1%
McLane/Black Lake Fire District	1,417	4.3%
East Olympia Fire District	939	2.8%
Total	**33,057**	**100.00%**

Pro: Easily expressed and understood. Changes in the workload over the long term tend to mirror the amount of human activity (such as commerce, transportation, and recreation) in the corresponding area.

Con: Emergency response fluctuates from year to year depending on environmental and other factors not directly related to risk, which can cause dependent allocation to fluctuate as well. Further, the number of alarms may not be representative of actual workload; for example, one large emergency event requiring many emergency workers and lasting many hours or days versus another response lasting only minutes and resulting in no actual work. Finally, emergency response is open to (intentional and/or unintentional) manipulation by selectively downgrading minor responses, by responding off the air, or by the use of mutual aid. Unintentional skewing of response is most often found in fire systems where dispatch and radio procedures are imprecisely followed.

Consider: Using a rolling average of alarms over several years can help to suppress the normal tendency for the year-to-year fluctuation of emergencies. Combining the number of emergencies with the number of emergency units and/or personnel required may help to align alarms with actual workload more closely; however, doing so adds to the complexity of documentation. In a similar manner (and if accurate documentation is maintained), the agencies could consider using the total time required on emergencies as an aid to establish the comparative workload represented by each jurisdictional area.

Fixed Rate

The use of fixed fees or rates (such as a percentage) to calculate allocation of shared cost is more common between municipalities and independent fire districts. Occasionally, fixed-rate contracts involve the exchange of in-kind services.

Pro: The concept is simple and straightforward. A menu of service options and the fees corresponding to those alternatives can be developed by the contractor agency. The contracting agencies can tailor a desired level of service based on risk and community expectation by choosing from the various menu items.

Con: Partnering communities may change (i.e., population, jobs, commerce, structures, and risk) at divergent rates, causing a disconnect between the rationales used to establish the fee and the benefit received. A fixed-rate contract may be difficult to coherently link to the services provided and/or received, which can lead to a lack of support by officials and the community.

Consider: Partnering agencies need to assure that provision for rate adjustment is included in the agreement, including inflation. The inclusion of administrative and/or overhead cost also requires statement, as does the reconciliation of in-kind service exchange. The ownership and/or depreciation of capital assets should be addressed, as should rent, utilities, and liability insurance. In the case of a fixed fee, the agreement should establish how the participation of other public agencies in the partnership would affect cost.

Population

Payment for service can be based on the proportion of residential population to a given service area. The following figure lists the population by jurisdiction and the percentage of the total number of individuals living in each service area.

Figure 189: Cost Allocation by Population, (2018-TRPC)

Jurisdiction	Population	% of Total
Olympia FD	52,000	23.2%
Tumwater FD	23,210	10.4%
West Thurston RFA	22,980	10.2%
Lacey Fire District 3	98,000	43.7%
McLane/Black Lake Fire District	16,280	7.3%
East Olympia Fire District	11,750	5.2%
Total	**224,220**	**100.00%**

Pro: Residential population is frequently used by governmental agencies to measure and evaluate programs. The U.S. Census Bureau maintains an easily accessible database of the population and demographics of cities, counties, and states. The Thurston Regional Planning Council provides annually updated population numbers by jurisdiction and population projections.

Con: Residential population does not include the daily and seasonal movement of a transient population caused by commerce, industry, transport, and recreation. Depending on the local situation, the transient populations coming in (or going out) of an area can vary significantly, which can tend to skew community risk. Residential population does not statistically link with emergency workload; rather, human activities tend to be the linchpin that connects people to requests for emergency assistance.

For example, if residential population actually determined emergency workload, emergencies would peak when population was highest within a geographic area. However, in many communities where the residential population is highest from about midnight to about 6:00 am (bedroom communities), that time is exactly when the demand for emergency response is lowest. It turns out that emergency demand is highest when people are involved in the activities of daily life—traveling, working, shopping, and recreating. Often, the persons involved in such activities do not reside in the same area. Additionally, simply relying on population will not account for the effects that socio-economic conditions have on emergency service response activity.

Consider: Transient populations can be estimated by referring to traffic counts, jobs data, hotel/motel occupancy rates, and, in some cases, park visitor statistics. Residential population plus transient population is referred to as functional population. Service agreements based on population should be adjusted to account for instances when functional population is significantly different from residential population.

Multiple-Variable Allocation

Frequently, even though everyone may agree on the benefit of allied fire protection, officials find it difficult to reach an accord on the cost. The differences between community demographics and/or development, along with changes that occur within the system over the long term, can cause the perception of winners and losers. This can be especially prevalent when a single variable is used to apportion cost. A service contract based on more than one allocation determinate may help solve these problems.

For example, ESCI is familiar with a 911 dispatch center that serves more than 20 fire agencies of all sizes and types—large, small, metropolitan, and rural; on-duty career and on-call volunteer. Here, the service contract includes three determinates applied to each agency.

Base charge—10 percent of the dispatch center's budget is divided equally between all agencies. This charge is based on the acknowledgement that each agency is equally responsible to maintain the dispatch center on continuous stand-by, irrespective of size of the agency or its use of the dispatch services.

Usage charge—45 percent of the dispatch center's budget is divided between the agencies in accordance with the number of emergency dispatches made for each during the preceding year. The member agencies determined that this charge fairly assesses the overall use of the 911 dispatch system by each.

Risk charge—45 percent of the dispatch center's budget is divided between the agencies in accordance with the relative percentage of each department's AV. The member agencies determined that this charge is relational to each department's community risk and that it is closely associated with the overall ability to pay.

By apportioning the dispatch center cost over three variables, the members of this alliance have been able to reach a long-term agreement that fits the diversity of the partnering agencies. Other partnerships in other geographical areas may require a different solution involving different combinations of variables. In summary, when choosing a cost-sharing strategy for partnered fire protection, it is important to keep any apportionment formula fair, simple, and intuitively logical to assure that the public accepts and supports the endeavor.

Allocation Summary

The information provided previously serves as a detail of cost allocation factors. Given the lengthy discussion provided with each option, ESCI has compiled the information into a summary table illustrating the distribution of factors between the agencies. These examples are for illustrative purposes and may be used as part of a check for fairness of assigning the cost for service.

Figure 190: Summary of Cost Allocation Factors by Percentage (2017)

Jurisdiction	Area	Assessed Value	Resources	Service Demand	Population
Olympia FD	5.2%	26%	17.6%	34.2%	23.2%
Tumwater FD	4.7%	12.7%	7.8%	12.8%	10.4%
West Thurston RFA	42.2%	7.8%	21.6%	8.8%	10.2%
Lacey Fire District 3	18.2%	39.7%	21.6%	37.1%	43.7%
McLane/Black Lake Fire District	21.9%	8.4%	19.6%	4.3%	7.3%
East Olympia Fire District	7.8%	5.4%	11.8%	2.8%	5.2%
Total	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

ESCI extrapolated the cost of emergency services using the most recent fiscal year budgeted amounts for fire and EMS using a multiple variable formula. In addition to the individual funding alternatives, multiple-variable scenarios are also provided as examples of how this type of methodology can be modified and applied. The following figures show three multiple cost allocations by variable and the weighted apportionment by percentage. The first allocates costs on the basis of assessed value (50 percent) and service demand (50 percent).

Figure 191: 50% Assessed Value and 50% Service Demand (2017)

Jurisdiction	Assessed Value	Service Demand	Allocation
Olympia FD	26%	34.2%	30.1%
Tumwater FD	12.7%	12.8%	12.8%
West Thurston RFA	7.8%	8.8%	8.3%
Lacey Fire District 3	39.7%	37.1%	38.4%
McLane/Black Lake Fire District	8.4%	4.3%	6.4%
East Olympia Fire District	5.4%	2.8%	4.1%
Total	**100.00%**	**100.00%**	**100.00%**

The second example allocates the cost based on service demand (50 percent), resources (25 percent), and assessed value (25 percent).

Figure 192: 50% Service Demand, 25% Resources, 25% Assessed Value (2017)

Jurisdiction	Service Demand	Resources	Assessed Value	Allocation
Olympia FD	34.2%	17.6%	26%	28.0%
Tumwater FD	12.8%	7.8%	12.7%	11.5%
West Thurston RFA	8.8%	21.6%	7.8%	11.7%
Lacey Fire District 3	37.1%	21.6%	39.7%	33.9%
McLane/Black Lake Fire District	4.3%	19.6%	8.4%	9.2%
East Olympia Fire District	2.8%	11.8%	5.4%	5.7%
Total	**100.00%**	**100.00%**	**100.00%**	**100.00%**

Any or all of the variables can be used to develop the cost allocation formula, and the weights can be adjusted to emphasize or de-emphasize each variable. Figure 193 lists all of the variables as equally weighted and results in the following multiple variable formulas:

Figure 193: All Variables at Equal Weights of 20% Each (2017)

Jurisdiction	Area	Assessed Value	Resources	Service Demand	Population	Allocation
Olympia FD	5.2%	26%	17.6%	34.2%	23.2%	21.2%
Tumwater FD	4.7%	12.7%	7.8%	12.8%	10.4%	9.6%
West Thurston RFA	42.2%	7.8%	21.6%	8.8%	10.2%	18.0%
Lacey Fire District 3	18.2%	39.7%	21.6%	37.1%	43.7%	32.0%
McLane/Black Lake Fire District	21.9%	8.4%	19.6%	4.3%	7.3%	12.2%
East Olympia Fire District	7.8%	5.4%	11.8%	2.8%	5.2%	6.9%
Total	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

Whatever formula is used, care should be taken to avoid identifying a cost and then developing a formula to achieve the desired cost. While affordability is an important factor, the developed formula should reflect an appropriately balanced approach to addressing the service needs of participating agencies and allocating costs based on the factors driving service decisions.

Issues & Impacts

- No permanent organizational commitment is made since this is a contract.
- All final decision-making power remains with individual organizations.
- Requires a collaborative approach to the management of the program(s) between the participating administrations.
- Does not require public approval at the ballot box.
- Existing governing boards and council are preserved.
- Administrative leaders can be pulled in multiple directions serving multiple masters.
  - A joint powers board may be formed to minimize this effect
- Requires blending rules, regulations, and operating procedures.
- Efficiency in administration by eliminating duplication or reassigning duplicate resources.
- Efficiencies may be gained in fleet maintenance and training.

Strategy C: Annexation

A city cannot merge with a fire district. It can, however, be annexed by a fire district. Thus, this option is aimed at absorbing a city for fire protection purposes through an annexation. Annexation must come from an adjacent fire district.

Level of Cooperation

Annexation of a city by a fire district is essentially an integration between those agencies. However, a city annexed into a fire district may, after three years from the date of annexation, submit to their voters the option to withdraw from the fire district. From the time an annexation is approved, the fire district will have responsibility for the provision of fire and EMS services to the city. Annexation of the city requires separate but concurrent special elections in each jurisdiction with a simple majority required in each jurisdiction for approval.

By contrast, contractual consolidations, while providing a great deal of flexibility, can be terminated or reversed by the joint action of the parties, by the expiration of the term of the contract or by the unilateral action of one of the parties to the contract if the contract so provides.[44]

Annexation must be coordinated between the agencies and requires and begins with city council approval of an ordinance indicating the intent of the city to join the district. The issue then goes to the district board of fire commissioners for their concurrence. Upon approval by the board of fire commissioners, the issue is submitted to the boundary review board for approval.

Prior to annexation being submitted to the voters for approval, a contract may need to be negotiated between the fire district and the city that addresses payment to the district from the city for fire and EMS services until such time as the district is collecting taxes for fire protection in the city. The contract is intended to address the revenue gap, since immediately upon annexation approval by the voters, the district is obligated to provide services, but would not otherwise receive payment for those services from the city until the tax rolls are updated in the next revenue cycle. Once the tax rolls are changed, the fire district would receive taxes from within the city as it does for all other district taxpayers and the city has no further obligation for fire and EMS services or for financing these services.

Estimated Timeline for Completion

The timeline for this process varies depending upon the initiation of the process in relation to special election cycles. However, this process can be completed in six months without difficulty. A contract to address the revenue gap can be accomplished in a very short period of time if the parties are motivated to execute said contract.

[44] Snure, Brian K. *Fire Service Consolidations*. Snure Law Office: Des Moines, WA, 2011.

Affected Stakeholders

The citizens of each agency are affected by this strategy. City councils are impacted in that they no longer have direct control over their fire and EMS services, deferring to the elected board of fire commissioners of the merger district. Employees of the city fire department (used in this report to describe all personnel, whether compensated or volunteer) are impacted as their employer changes and their employment status may change depending on agreements between the city, the fire district, and employee representatives.

Summary/Objective of Strategy

This strategy combines a city and a fire district under fire district control and taxation. From an operational standpoint, the entire jurisdiction would be served by the merger district with all transferred resources from the city brought to bear on providing services to the expanded fire district. From a governance standpoint, the board make-up remains the same unless, concurrently, the ballot measure provides for expansion of its board membership to five members (or seven if the district budget is $10 million or higher). The district may also decide to create commissioner districts as part of the annexation issue to provide the annexed city to have elected representation on the board.

ESCI Guidance

Informal discussion between the participating agencies is necessary to determine the level of willingness to consider implementation of this strategy. Assuming the parties agree to pursue this strategy, it would be wise to obtain legal counsel to develop an annexation checklist of actions and activities needed to bring the issue of annexation before the voters. It will also be necessary to communicate with existing constituencies, both internal and external, on the value and benefits of pursuing this option.

Transfer of personnel from a city to an annexing district is outlined in statute.[45] These statutory provisions should be reviewed in detail by the district prior to the initiation of annexation proceedings to ensure that the rights of all parties will be protected. Buy-off by employees (whether compensated or volunteer) regarding the transfers, wages, benefits, and working conditions are critical to a successful integration, whether statutorily required or not. This can be a key element to obtaining support by the larger communities in the case of annexation.

Special Considerations

RCW 52.04.101 allows a city, having been annexed into a fire district, to call for an election to withdraw from the fire district at least three years after annexation. This requires the city council to pass a resolution calling for a vote by the city voters on annexation withdrawal. If the voters of the city approve the withdrawal, the city will have withdrawn from the fire district without the consent or approval of the district. To date, no city in Washington State has withdrawn from a fire district it annexed into.

[45] RCW 52.04.111 through .131

Issues of reconciling district investment into the city service area during the intervening period, as well as remedies for other unforeseen and perhaps unintended consequences of annexation withdrawal, are silent in the statute. It is also silent regarding the changing boundaries of the district and whether a special review committee appointed by the county commissioners must review such withdrawal. Legal counsel is recommended in these cases.

Policy Actions

Annexation of a city into a fire district is subject to limited State Environmental Policy Act (SEPA) compliance. This requires that either party designate itself as lead agency, prepare an environmental checklist, and issue a Determination of Non-significance (DNS). The Environmental Checklist form is provided in WAC 197-11-960.

ESCI's review and discussion of Washington State Law on this topic has been necessarily brief; only sufficient to ensure that basic provisions for annexation exist. As always, we emphasize that we are not qualified to give legal advice. We recommend that all of the participating agencies consult with legal counsel experienced in such matters before undertaking this strategy.

Fiscal Analysis

The purpose of this fiscal analysis is to provide a high-level assessment of the financial feasibility of Strategy C: Annexation. The estimates and analysis presented are dependent on the outlined assumptions and subject to change depending on actual factors that influence revenues and expenses. Key assumptions used in the assessment are followed by high level estimates of revenues over five years. Specific implications of the annexation strategy on the City of Tumwater's property tax levy and the tax rates in all jurisdictions are presented next. This section concludes with a summary of financial considerations associated with the annexation strategy.

Key Assumptions

Revenues

Key assumptions used in developing the revenue estimates under the annexation are the same as the assumptions used in the *Fiscal Analysis* section presented earlier in the report. Property taxes represent the largest source of revenue for the combined operations. Property tax revenue assumptions specific to the annexation strategy include:

- An effective date of the annexation prior to August 1, 2019. Note that property annexed prior to August 1 is included in the property taxes levied for collection in the following year. Property annexed after August 1 is included in the property taxes levied in the second year following the year of the annexation. Note also that while the most recent reports of actual financial results for all agencies date to 2017, we made forecasts for each agency to 2020 to concur with the assumed annexation date.

- The county-wide EMS levy remains as it is. The current 2019 rate is $0.32 and in 2017 it was $0.35. While it is possible to put an additional EMS levy before voters up to the maximum of $0.50 per $1,000 AV, we do not recommend this approach. Such an additional levy would be at risk to any increases in the county levy, and in any case would not suffice to balance the budget.
- A levy lid lift to the statutory maximum levy rate of $1.50 per $1,000 assessed value is collected in all annexed areas beginning in 2020.
- Continuation of the existing bond levies collected from property owners in the appropriate areas where the bond levies were approved.
- Voter approval of a six-year excess levy in August 2019 for collection beginning in 2020 with amounts equal to the estimated amount needed to balance projected revenue with projected expenses.
    - The new excess levy overrides the existent excess levies in McLane Black Lake and West Thurston Regional Fire Authorities.

Expenses

Expenses under the annexation strategy are assumed to be the same as the combined expenses of the predecessor organizations. Note that this assumes the fire district also provides the ambulance services currently provided by Tumwater. Actual expenses under an annexation approach are likely to be different than these combined expenses. However, in ESCI's evaluation of existing staffing, equipment, facility, and operational conditions, we did not find excess capacity that would suggest significant cost savings. While some expenses are likely to be higher others are likely to be lower. Using the combined expense projection is considered reasonable for purposes of this analysis.

Forecast Results

The revenue forecast under the annexation strategy, using the assumptions identified above, results in annual revenue that is approximately equal to the consolidated revenue forecast presented earlier in this report. The forecasts are the same because both forecasts use the excess levy to balance revenues with expenses. A summary of the annexation strategy revenue projection is shown in the following figures (shown for annexations of Tumwater separately by EOFD, MLBFD, WTRFA, and LFD3).

Figure 194: Annexation of Tumwater by East Olympia Fire District

Assumed Revenue Sources	2020	2021	2022	2023	2024	2020–24 % Chg
Regular Property Tax Levy	$ 7,356,971	$ 7,559,270	$ 7,772,948	$ 7,998,120	$ 8,234,900	11.9%
EMS Property Tax Levy	$ -	$ -	$ -	$ -	$ -	N/A
Other Taxes (M&O Levy)	$ 374,758	$ 385,063	$ 395,948	$ 407,418	$ 419,479	11.9%
Ambulance Fees	$ 2,428,654	$ 2,449,821	$ 2,470,988	$ 2,492,155	$ 2,513,323	3.5%
Other Revenue	$ 952	$ 952	$ 952	$ 952	$ 952	0.0%
Subtotal Operations	$ 10,161,335	$ 10,395,106	$ 10,640,836	$ 10,898,645	$ 11,168,653	9.9%
Annual Percent Increase		2.3%	2.4%	2.4%	2.5%	
Bond Levy	$ 354,252	$ 350,224	$ 346,196	$ -	$ -	
Total Revenue	$ 10,515,587	$10,745,330	$10,987,032	$10,898,645	$ 11,168,653	

The regular and excess levies decrease 7.1 percent over the five-year forecast period (and the total operating levies decrease 8.6 percent) due to the 1 percent cap on increases during a time when assessed values are forecast to increase more quickly (20.4%). The resulting levy rates are shown in the following figure.

Figure 195: Levy Rates for Annexation by East Olympia Fire District

Assumed Levy Rates	2020	2021	2022	2023	2024
Total Assessed Value	$4,904,647,089	$5,155,328,930	$5,406,010,771	$5,656,692,612	$5,907,374,453
Total Regular Levy	$ 1.5000	$ 1.4571	$ 1.4207	$ 1.3887	$ 1.3604
Total EMS Levy	$ 0.3105	$ 0.2978	$ 0.2850	$ 0.2722	$ 0.2594
Total Excess Levy	$ 0.0764	$ 0.0747	$ 0.0732	$ 0.0720	$ 0.0710
Total Operating Levy Rate	$ 1.9533	$ 1.8935	$ 1.8409	$ 1.7930	$ 1.7493

Figure 196: Annexation of Tumwater by McLane Black Lake Fire Department

Assumed Revenue Sources	2020	2021	2022	2023	2024	2020–24 % Chg
Regular Property Tax Levy	$ 8,212,480	$ 8,392,723	$ 8,579,064	$ 8,772,899	$ 8,973,663	9.3%
EMS Property Tax Levy	$ -	$ -	$ -	$ -	$ -	N/A
Other Taxes (M&O Levy)	$ 1,336,088	$ 1,365,412	$ 1,395,728	$ 1,427,263	$ 1,459,925	9.3%
Ambulance Fees	$ 2,552,868	$ 2,574,035	$ 2,595,202	$ 2,616,369	$ 2,637,536	3.3%
Other Revenue	$ 528,910	$ 528,910	$ 528,910	$ 528,910	$ 528,910	0.0%
Subtotal Operations	$ 12,630,347	$ 12,861,080	$ 13,098,904	$ 13,345,440	$ 13,600,034	7.7%
Annual Percent Increase		1.8%	1.8%	1.9%	1.9%	
Bond Levy	$ 936,185	$ 953,433	$ 970,681	$ 774,005	$ 791,741	
Total Revenue	$13,566,531	$13,814,513	$14,069,584	$14,119,446	$14,391,775	

The regular and excess levies decrease 10.9 percent over the five-year forecast period (and the total operating levies decrease 11.8 percent) due to the 1 percent cap on increases during a time when assessed values are forecast to increase more quickly (22.6%). The resulting levy rates are shown in the following figure.

Figure 197: Levy Rates for Annexation by McLane-Black Lake Fire District

Assumed Levy Rates	2020	2021	2022	2023	2024
Total Assessed Value	$5,739,679,255	$6,063,563,435	$6,387,447,614	$6,711,331,793	$7,035,215,972
Total Regular Levy	$1.4308	$1.3841	$1.3431	$1.3072	$1.2755
Total EMS Levy	$0.3105	$0.2978	$0.2850	$0.2722	$0.2594
Total Excess Levy	$0.1630	$0.1577	$0.1530	$0.1489	$0.1453
Total Operating Levy Rate	$1.9044	$1.8396	$1.7811	$1.7283	$1.6802

Figure 198: Annexation of Tumwater by West Thurston Regional Fire Authority

Assumed Revenue Sources	2020	2021	2022	2023	2024	2020–24 % Chg
Regular Property Tax Levy	$7,618,899	$7,812,457	$8,015,860	$8,229,206	$8,452,595	10.9%
EMS Property Tax Levy	$-	$-	$-	$-	$-	N/A
Other Taxes (M&O Levy)	$3,432,565	$3,517,510	$3,606,716	$3,700,226	$3,798,082	10.6%
Ambulance Fees	$2,742,095	$2,769,971	$2,797,981	$2,826,128	$2,854,414	4.1%
Other Revenue	$483,729	$511,451	$539,172	$566,894	$594,615	22.9%
Subtotal Operations	$14,277,287	$14,611,388	$14,959,729	$15,322,453	$15,699,705	10.0%
Annual Percent Increase		2.3%	2.4%	2.4%	2.5%	
Bond Levy	$831,658	$300,807	$307,147	$313,487	$319,826	
Total Revenue	$15,108,945	$14,912,196	$15,266,876	$15,635,939	$16,019,531	

The regular and excess levies decrease 9.4 and 9.6 percent respectively over the five-year forecast period (and the total operating levies decrease 10.4 percent) due to the 1 percent cap on increases during a time when assessed values are forecast to increase more quickly (22.4%). The resulting levy rates are shown in the following figure.

Figure 199: Levy Rates for Annexation by West Thurston Regional Fire Authority

Assumed Levy Rates	2020	2021	2022	2023	2024
Total Assessed Value	$5,562,430,813	$5,874,055,209	$6,185,679,604	$6,497,303,999	$6,808,928,394
Total Regular Levy	$1.3697	$1.3300	$1.2959	$1.2666	$1.2414
Total EMS Levy	$0.3105	$0.2978	$0.2850	$0.2722	$0.2594
Total Excess Levy	$0.6171	$0.5988	$0.5831	$0.5695	$0.5578
Total Operating Levy Rate	$2.2973	$2.2266	$2.1639	$2.1082	$2.0586

Figure 200: Annexation of Tumwater by Lacey Fire District 3

Assumed Revenue Sources	2020	2021	2022	2023	2024	2020–24 % Chg
Regular Property Tax Levy	$ 21,433,887	$ 22,168,982	$ 22,962,120	$ 23,813,881	$ 24,724,852	15.4%
EMS Property Tax Levy	$ -	$ -	$ -	$ -	$ -	N/A
Other Taxes (M&O Levy)	$2,193,431	$2,268,657	$2,349,823	$2,436,988	$2,530,212	15.4%
Ambulance Fees	$ 6,572,942	$ 6,744,903	$ 6,916,863	$ 7,088,824	$ 7,260,784	10.5%
Other Revenue	$ 399,995	$ 410,008	$ 423,470	$ 441,318	$ 464,742	16.2%
Subtotal Operations	$30,600,256	$31,592,550	$32,652,277	$33,781,011	$34,980,590	14.3%
Annual Percent Increase		3.2%	3.4%	3.5%	3.6%	
Bond Levy	$832,796	$841,192	$849,623	$858,090	$866,592	
Total Revenue	$31,433,052	$32,433,742	$33,501,900	$34,639,100	$35,847,182	

The regular and excess levies decrease 6.4 percent over the five-year forecast period (and the total operating levies decrease 8 percent) due to the 1 percent cap on increases during a time when assessed values are forecast to increase more quickly (23.3%). The resulting levy rates are shown in the following figure.

Figure 201: Levy Rates for Annexation by Lacey Fire District 3

Assumed Levy Rates	2020	2021	2022	2023	2024
Total Assessed Value	$14,289,257,991	$15,120,261,085	$15,951,264,180	$16,782,267,274	$17,613,270,369
Total Regular Levy	$ 1.5000	$ 1.4662	$ 1.4395	$ 1.4190	$ 1.4038
Total EMS Levy	$ 0.3105	$ 0.2978	$ 0.2850	$ 0.2722	$ 0.2594
Total Excess Levy	$ 0.1535	$ 0.1500	$ 0.1473	$ 0.1452	$ 0.1437
Total Operating Levy Rate	$ 1.9640	$ 1.9140	$ 1.8718	$ 1.8364	$ 1.8068

Impact on City of Tumwater Regular Property Tax Levy

Annexation of the City of Tumwater Fire Department by a fire district will impact the City's property tax levy by resulting in a net reduction in effective property tax.

- **Statutory Maximum Property Tax Levy Rate.** If the city is annexed by a fire district its statutory maximum property tax levy rate will decrease from $3.10 per $1,000 of assessed value to $1.60 per $1,000 of assessed value. The decrease is due to subtracting the annexing fire district's statutory maximum levy rate of $1.50 from the City's statutory maximum levy rate. The City's 2020 regular levy rate is estimated to be $2.8917. After subtracting the general fund tax revenue allocated to fund the fire department ($1.6806)—revenue that would no longer be needed to pay for fire department expenses—the City's 2020 levy rate would be $1.2111 or $0.3889 below the statutory maximum rate under the annexation strategy. Without any changes the City's 2020 estimated levy rate will be $0.2083 below the City's current statutory maximum levy rate.

Figure 202: Impact on City of Tumwater Regular Property Tax Levy

Levy Rate: Annexation Strategy	Levy Rate
City Statutory Maximum Levy Rate	$ 3.60
Less: Timberland Library District Levy*	$ (0.50)
Adjusted Maximum Levy Rate—Current	**$ 3.10**
Less: Municipal Fire District Levy*	$ (1.50)
Maximum Levy Rate—With Annexation	**$ 1.60**

*Actual levy rate is less - maximum levy rate shown.

Impact on Levy Rates in All Jurisdictions

Under the annexation strategy the same regular, EMS, and excess levy rates will apply to all jurisdictions. The net impact on the tax rates—and taxes paid—in the predecessor jurisdictions will depend on the excess levy rates needed to fund services under the current structure. A comparison of the forecasted 2020 status quo levy rates and the 2020 levy rates under the various annexation scenarios are provided in the following figures.

Figure 203: Tax Rate Changes Under East Olympia Fire District Annexation of Tumwater

	2020 Levy Rate			Taxes Paid	
	Status Quo	Annexation	Difference	Difference	% of Total Taxes Paid
Tumwater FD					
Regular (2.8917 estimated)	$1.5700	$1.5000	$(0.0700)		
EMS	$0.3501	$0.3501	$ -		
Excess	$ -	$0.0764	$0.0764		
Total	**$1.9201**	**$1.9265**	**$0.0064**	**$22,349**	**0.33%**
East Olympia Fire District					
Regular	$1.5000	$1.5000	$ -		
EMS	$0.3501	$0.3501	$ -		
Excess	$ -	$0.0764	$0.0764		
Total	**$1.8501**	**$1.9265**	**$0.0764**	**$109,105**	**4.1%**

Figure 204: Tax Rate Changes Under McLane-Black Lake Fire District Annexation of Tumwater

	2020 Levy Rate			Taxes Paid	
	Status Quo	Annexation	Difference	Difference	% of Total Taxes Paid
Tumwater FD					
Regular (2.8917 estimated)	$1.5700	$1.5000	$(0.0700)		
EMS	$0.3501	$0.3501	$ -		
Excess	$ -	$0.1630	$0.1630		
Total	**$1.9201**	**$2.0131**	**$0.0930**	**$323,436**	**4.8%**
McLane/Black Lake Fire District					
Regular (Dist. 5 & 9 combined)	$1.4308	$1.5000	$0.0692		
EMS	$0.3501	$0.3501	$ -		
Excess (Dist. 5 & 9 combined)	$0.2089	$0.1630	$(0.0459)		
Total	**$1.9898**	**$2.0131**	**$0.0233**	**$52,657**	**1.2%**

Figure 205: Tax Rate Changes Under West Thurston Regional Fire Authority Annexation of Tumwater

	2020 Levy Rate			Taxes Paid	
	Status Quo	Annexation	Difference	Difference	% of Total Taxes Paid
Tumwater FD					
Regular (2.8917 estimated)	$1.5700	$1.5000	$(0.0700)		
EMS	$0.3501	$0.3501	$ -		
Excess	$ -	$0.6171	$0.6171		
Total	**$1.9201**	**$2.4672**	**$0.5471**	**$1,902,184**	**28.5%**
West Thurston RFA					
Regular	$1.3209	$1.5000	$0.1791		
EMS	$0.3501	$0.3501	$ -		
Excess (Dist. 1 & 11 combined)	$0.5069	$0.6171	$0.1102		
Total	**$2.1779**	**$2.4672**	**$0.2893**	**$603,320**	**13.3%**

Figure 206: Tax Changes Under Lacey Fire District 3 Annexation of Tumwater

	2020 Levy Rate			Taxes Paid	
	Status Quo	Annexation	Difference	Difference	% of Total Taxes Paid
Tumwater FD					
Regular (2.8917 estimated)	$1.5700	$1.5000	$(0.0700)		
EMS	$0.3501	$0.3501	$ -		
Excess	$ -	$0.1535	$0.1535		
Total	**$1.9201**	**$2.0036**	**$0.0835**	**$290,382**	**4.3%**
Lacey Fire District 3					
Regular	$1.5000	$1.5000	$ -		
EMS	$0.3501	$0.3501	$ -		
Excess	$ -	$0.1535	$0.1535		
Total	**$1.8501**	**$2.0036**	**$0.1535**	**$1,659,745**	**8.3%**

As shown, levy rates and property taxes are projected to increase for both Tumwater and the annexing district under each scenario. The net change for the entire area would be an increase in each scenario as well. An annexation of Tumwater by the East Olympia Fire District would come the closest to a cost-neutral scenario.

The expense forecast under the annexation strategy is the same expense forecast presented previously in the report for the consolidated operation of all six jurisdictions.

Summary of Financial Considerations

Implementation of the annexation strategy will have financial implications that the agencies will need to consider and potentially address. Those implications are summarized in the following:

- **Reserve Funding Requirement.** A newly constituted fire district would need to have adequate reserves to fund ongoing operations and support equipment replacement. The next figure shows that any annexation of Tumwater would likely require a transfer of some reserves from the City to the fire district. Further, additional reserves may be required for the replacement of apparatus or other equipment. To the extent additional reserves are needed, they will need to be factored into the excess levy rate submitted to voters for approval.

Figure 207: Reserve Needs by Annexation Scenario

	City Reserves	District Reserves	Joint Expenses	Needed Reserves
Annexation by EOFD	$6,864,000	$2,539,000	$10,270,000	$5,135,000
Annexation by WTRFA	$6,864,000	$4,231,000	$15,002,000	$7,501,000
Annexation by MBLFD	$6,864,000	$3,061,000	$12,630,000	$6,315,000
Annexation by LFD3	$6,864,000	$3,452,680	$30,600,000	$15,300,000

- **City of Tumwater Revenue Capacity/Surplus.** Upon annexation the City of Tumwater will no longer be responsible for directly funding fire and EMS services. Using 2020 forecasted amounts, the City will allocate approximately $7,865,000 in City General Fund revenue to pay for these services. These funds could be available for other City purposes. The City's plan for any surplus— reduction in taxes, expansion of other services, investment in capital projects, etc.—is likely to be an important consideration when the City's voters assess the merits of the ballot measure to approve the annexation. ESCI recommends that any savings from annexation be used to reduce taxes. Otherwise the change would increase total taxes to the residents of Tumwater.
- **Levy Lid Lift Vote/Excess Levy Vote Amount and Timing.** This analysis assumes a regular property tax levy of $1.50 per $1,000 assessed value, a continuing EMS levy of $0.3501 per $1,000 of assessed value, and an additional excess levy in each scenario for the fully annexed and merged service area. These will require that voters approve a levy lid lift (50 percent approval required) and the imposition of a new excess levy, either in conjunction with an annexation vote or after the annexation and merger are finalized. Any delay or failure of the lid lift or excess levy by voters would result in a need for supplemental revenue or decreased expenditures. Having more revenue included in a regular levy is desired since voter approval is not required to continue the levy from year to year and a regular levy lid lift requires 50 percent approval.
- **Tax Burden Shifts.** As outlined above, the annexation strategy shifts some of the tax burden for funding fire, EMS, and ambulance services away from the City and to the fire district. The City will need to consider whether this impact needs to be mitigated and, if so, the strategies to deal with it prior to the annexation. As stated above, ESCI recommends using City savings to reduce the tax burden as one strategy.
- **Funding for Additional Expenses.** Elsewhere in this report ESCI identifies potential investments in personnel, equipment, and information systems. If the collective agencies desire to make those investments, any additional expenses will need to be factored into the revenue required from the excess levy.

Issues & Impacts

- The City of Tumwater will have no direct control over fire services.
- The expanded district's tax levy would extend over Tumwater, reducing the City tax capacity (though actually increasing the capacity for a levy lid lift—see Figure 208).

Figure 208: Tumwater Lid Lift Potential—Annexation Scenario

City Levy Reduction Scenario	Levy Rate
City Projected 2020 Rate	$ 2.8917
City Maximum Rate	$ 3.1000
Lid Lift Potential	**$ 0.2083**
City Projected Rate After Annexation	$ 1.3217
City Maximum Rate After Annexation	$ 1.6000
Lid Lift Potential	**$ 0.2783**

- Outstanding bonds remain with originating properties.
- All personnel are transferred to the fire district.
- TFD asset transfers are not required by statute, but is usually negotiated and agreed upon prior to submission of the annexation initiative to the voters.
- Unresolved claims, litigation, or threatened actions in each separate agency must be identified and coordinated to safeguard against any gaps in insurance coverage inadvertently created.
- Debt capacity will expand for the fire district after annexing the City.
- Expansion of the board from three to five is a consideration, as is formation of commissioner districts to ensure city elected representation.
- Legal analysis and review prior to implementation are highly advised.

Strategy D: Regional Fire Authority

As stated previously in this report, a city cannot merge with a fire district. Regional Fire Authorities (RFAs) are authorized by statute to create a relatively new governance model for the fire services of both cities and fire districts.[46] Essentially, an RFA operates in a very similar manner as a contract for services, but with shared governance, voter approval, and the creation of an independent municipal corporation with its own taxing authority and statutory framework.[47] All of the participating agencies to this study are eligible to be included in an RFA as they are all within "reasonable proximity" of each other.[48]

Level of Cooperation

This strategy requires the highest degree of cooperation between agencies of any of the integration options. Statutorily, it starts with the formation of a Planning Committee.[49] The Planning Committee is required to have three elected representatives from each participating agency. The RFA plan serves as the charter for the newly formed entity and outlines the services, service level standards, budget, funding mechanism(s), governance, and any other considerations deemed appropriate by the committee. It becomes the plan voters are asked to approve when voting on the formation of the RFA.

Estimated Timeline for Completion

While RFAs could technically be formed in as little as ninety days, it is more likely that the forming of an RFA Planning Committee, the forming of an RFA plan, educating the constituents of the affected agencies, holding an election, and transitioning from the current governance structure to the new governance structure can take up to two years or longer.

Affected Sections

All sections of each fire department or fire district are affected in this strategy. Implementation of this strategy creates a single fire agency.

Affected Stakeholders

Citizens currently served by the separate agencies will see their service provided by a new agency, and may see their services change as a result. Employees of currently separate agencies will have their employer change, and will need to engage in discussions with their current employers and the RFA planning committee to establish provisional employment agreements in the event an RFA is formed.

[46] RCW 52.26
[47] Snure, Brian K. *Fire Service Consolidations*. Snure Law Office: Des Moines, WA, 2011.
[48] RCW 52.26.020 (5)
[49] RCW 52.26.030

The elected officials from participating cities, existing RFAs, and fire districts are also affected. Since the governing statutes do not require a specific number of governing board members to serve on an RFA, the RFA plan can call for as many or as few as the Planning Committee deems appropriate. The RFA can either select from their existing elected membership, or they can call for RFA commissioner districts, who will be elected from their respective districts by the RFA voters. This may impact the existing elected officials of each agency.

While conventional wisdom calls for an uneven number of governing board members to make up the governing board to avoid tie votes, ESCI is aware of two RFAs that were formed with an even number of members; one with six and one with twelve members.

Personnel from all participating agencies are likely impacted since the fire agency will be redesigned to take advantage of efficiencies, develop a more effective deployment model, and the pooled resources are likely to modify the dynamics of each of the separate agencies.

Summary/Objective of Strategy

As in the annexation and merger strategy, this strategy combines all participating agencies into one. The objectives should be the same:

- A smooth transition from multiple organizations into a single, cohesive organization;
- Obtaining balanced representation from the currently separate agencies; and
- To provide depth of resources, strength of service, financial sustainability, and resiliency.

This strategy combines all participating agencies into a single regional fire authority. Services would be provided by the existing resources of all participating agencies, pooled and reconfigured to provide optimum services, and governed by policymakers representing each participating agency. Once the RFA is formed, the policymakers come together from the currently separate agencies as determined by the RFA plan, or from commissioner districts to ensure balanced representation, again as determined by the RFA plan.

ESCI Guidance

If the parties agree to pursue this strategy, it requires the Planning Committee to form and adopt an RFA plan for action first by the elected officials of each participating agency, then by the voters served by those agencies as a homogenous group. It would also be prudent to obtain legal counsel as the Planning Committee formulates the RFA plan before submitting the finished product to the voters. It will also be necessary to communicate with existing constituencies, both internal and external, to educate them on the value and benefits of pursuing this option.

Transfer of personnel from a city to an RFA is outlined in RCW 52.26. Under an RFA configuration, personnel from the agencies joining forces become employees and members of the new organization (again, the term "employees" is used here to identify both compensated and volunteer personnel). Unless an agreement for different terms of transfer is reached between the collective bargaining representatives of the transferring employees and the participating fire protection jurisdictions, employees will retain the rights, benefits, and privileges that they had under their pre-existing collective bargaining agreements.[50] While silent in the same statute, this requirement likely also pertains to non-represented employees.

Special Considerations

It is a requirement of the statute to establish an RFA plan which addresses all of the various services, service levels, governance, funding mechanisms, asset transfers, debt liabilities, and structure. The RFA Planning Committee must determine whether all future changes to the plan are required to be submitted to the voters for approval, no changes require voter approval, or some sections require voter approval and some only require majority vote by the governing board. The difficulty is adopting a plan which makes clear the intent of the parties without tying the hands of future elected officials if circumstances change which necessitate modification. If those modifications are regarding the substance of the plan, it will require voter approval to make the changes. In no circumstance can the plan exceed statutory authority.

ESCI recommends that dynamic components of the plan, such as service levels and performance, be addressed in detail in a separate document by referral. In this way, the RFA plan addresses the specifics of service level by reference to the separate document, noting that it is periodically reviewed and modified as necessary by the governing board. Alternatively, the plan should state that these service levels and performance elements are able to be modified by majority vote of the then existing governing board.

Policy Actions

RFAs do not change the boundaries of the participating jurisdictions. The participating jurisdictions may continue to exist after the formation of the RFA (in the case of Tumwater and Olympia, they certainly continue to exist as cities, but without their own fire departments). The fire districts would continue to exist for the sole purpose of providing elected officials for the governing board. RCW 52.26.120 provides a mechanism for dissolving the fire districts if RFA commissioner districts are created to serve on the governing board. In the latter case, commissioners are directly elected by the voters within the RFA and may be one or all of the governing board positions.[51]

ESCI's review and discussion of Washington State Law on this topic has been necessarily brief; only sufficient to ensure that basic provisions for RFA formation exist. As always, we emphasize that we are not qualified to give legal advice. We recommend the participating agencies consult with legal counsel experienced in such matters before undertaking this strategy.

[50] RCW 52.26.100 (6)
[51] RCW 52.26.080 (3)

Fiscal Analysis

The purpose of this fiscal analysis is to provide a high-level assessment of the financial feasibility of the formation of an RFA. The estimates and analysis presented are dependent on the outlined assumptions and subject to change depending on actual factors that influence revenues and expenses. Key assumptions used in the assessment are followed by high level estimates of revenues over five years. Specific implications of the RFA strategy on the property tax levies for the Cities of Tumwater and Olympia, as well as the tax rates for each fire district and RFA are presented next. This section concludes with a summary of financial considerations associated with the RFA strategy.

Key Assumptions

Revenues

The revenue assumptions used in the analysis of *Strategy D: RFA* for each potential participating agency follow. Property taxes represent the largest source of revenue for the combined operations. Property tax revenue assumptions specific to the RFA strategy include:

- An effective date of the RFA formation prior to August 1, 2019. Note that property tax collections are fixed after August 1 each year. If the RFA is formed after August 1, property taxes would be allocated to the RFA in its second year, and arrangements would need to be made with prior jurisdictions to obtain revenues in the first year. Note also that while the most recent reports of actual financial results for all agencies date to 2017, we made forecasts for each agency to 2020 to concur with the assumed effective date.
- The county-wide EMS levy remains as it is. The current 2019 rate is $0.32 and in 2017 it was $0.35. While it is possible to put an additional EMS levy before voters up to the maximum of $0.50 per $1,000 AV, we do not recommend this approach. Such an additional levy would be at risk to any increases in the county levy, and in any case would not suffice to balance the budget.
- A levy lid lift to the statutory maximum levy rate of $1.50 per $1,000 assessed value is collected in all integrated areas beginning in 2020.
- Continuation of the existing bond levies collected from property owners in the appropriate areas where the bond levies were approved.
- Voter approval of a six-year excess levy in August 2019 for collection beginning in 2020 with amounts equal to the estimated amount needed to balance projected revenue with projected expenses.
    - The new excess levy overrides the existing excess levies in McLane Black Lake and Western Thurston Regional Fire Authorities if these agencies are included.

Expenses

Expenses under the RFA strategy are assumed to be the same as the combined expenses of the predecessor organizations. Actual expenses under an RFA approach are likely to be different than these combined expenses. However, in ESCI's evaluation of existing staffing, equipment, facility and operational conditions, we did not find substantial excess capacity that would suggest significant cost savings. While some expenses are likely to be higher others are likely to be lower. Using the combined expense projection is considered reasonable for purposes of this analysis.

Forecast Results

The revenue forecast under the RFA strategy, using the assumptions identified above, results in annual revenue that is approximately $68,358,000 in 2020 if all agencies are included, or about $52,429,000 if WTRFA and MBLFD are not included. A summary of the RFA strategy revenue projections is shown in the following figure.

Figure 209: RFA Revenue Projections, All Agencies

RFA Assumed Revenue Sources, All Agencies	2020	2021	2022	2023	2024	2020–24 % Chg
Regular Property Tax Levy	$40,650,631	$41,478,070	$42,383,929	$43,323,400	$44,298,048	9.0%
EMS Property Tax Levy	$ -	$ -	$ -	$ -	$ -	N/A
Other Taxes (M&O Levy)	$12,305,353	$12,555,827	$12,830,040	$13,114,428	$13,409,463	9.0%
Ambulance Fees	$9,850,902	$10,085,602	$10,318,751	$10,551,901	$10,785,050	9.5%
Other Revenue	$1,405,618	$1,423,029	$1,468,229	$1,513,499	$1,558,841	10.9%
Subtotal Operations	$64,212,504	$65,542,528	$67,000,950	$68,503,228	$70,051,402	9.1%
Annual Percent Increase		2.1%	2.2%	2.2%	2.3%	
Bond Levy	$4,145,310	$3,622,809	$3,655,599	$3,117,845	$3,151,643	
Total Revenue	**$68,357,814**	**$69,165,337**	**$70,656,548**	**$71,621,073**	**$73,203,045**	

Figure 210: RFA Revenue Projections, OFD, TFD, LFD3, & EOFD

RFA Assumed Revenue Sources without WTRFA and MBLFD	2020	2021	2022	2023	2024	2020–24 % Chg
Regular Property Tax Levy	$34,127,680	$ 35,176,106	$36,296,712	$37,490,221	$ 38,757,361	13.6%
EMS Property Tax Levy	$ -	$ -	$ -	$ -	$ -	N/A
Other Taxes (M&O Levy)	$ 6,138,175	$ 6,326,744	$ 6,528,295	$ 6,742,958	$ 6,970,865	13.6%
Ambulance Fees	$ 9,370,799	$ 9,605,499	$ 9,840,199	$10,074,900	$ 10,309,600	10.0%
Other Revenue	$ 407,568	$ 424,938	$ 442,377	$ 459,885	$ 477,464	17.1%
Subtotal Operations	$ 50,044,221	$ 51,533,287	$ 53,107,583	$54,767,964	$56,515,291	12.9%
Annual Percent Increase		3.0%	3.1%	3.1%	3.2%	
Bond Levy	$2,384,700	$2,402,237	$2,401,457	$2,419,064	$2,056,046	
Total Revenue	**$ 52,428,921**	**$ 53,935,524**	**$ 55,509,040**	**$ 57,187,027**	**$ 58,571,337**	

When all agencies are included, the regular and excess levies decrease 6.7 percent over the five-year forecast period (and the total operating levies decrease 8%) due to the 1 percent cap on increases during a time when assessed values are forecast to increase more quickly (20.7%). The resulting levy rates are shown in the following figure.

Figure 211: RFA Levy Rate Projections, All Agencies

RFA Assumed Levy Rates All Agencies	2020	2021	2022	2023	2024
Total Assessed Value	$27,100,420,800	$28,504,088,739	$29,907,756,677	$31,311,424,616	$32,715,092,555
Total Regular Levy	$1.5000	$1.4671	$1.4398	$1.4175	$1.3995
Total EMS Levy	$0.3105	$0.2978	$0.2850	$0.2722	$0.2594
Total Excess Levy	$0.4504	$0.4406	$0.4324	$0.4257	$0.4203
Total Operating Levy Rate	$2.2610	$2.2054	$2.1572	$2.1153	$2.0791

When WTRFA and MBLFD are not included, the regular and excess levies decrease 6.3 percent over the five-year forecast period (and the total operating levies decrease 7.8%) due to the 1 percent cap on increases during a time when assessed values are forecast to increase more quickly (21.2%). The resulting levy rates are shown in the following figure.

Figure 212: RFA Levy Rate Projections, OFD, TFD, LFD3, & EOFD

RFA Assumed Levy Rates without WTRFA and MBLFD	2020	2021	2022	2023	2024
Total Assessed Value	$22,751,786,910	$23,958,467,147	$25,165,147,383	$26,371,827,620	$27,578,507,857
Total Regular Levy	$ 1.5000	$ 1.4682	$ 1.4423	$ 1.4216	$ 1.4053
Total EMS Levy	$ 0.3105	$ 0.2978	$ 0.2850	$ 0.2722	$ 0.2594
Total Excess Levy	$ 0.2698	$ 0.2641	$ 0.2594	$ 0.2557	$ 0.2528
Total Operating Levy Rate	$ 2.0803	$ 2.0300	$ 1.9867	$ 1.9495	$ 1.9175

Impact on City of Tumwater Regular Property Tax Levy

Formation of an RFA will impact the City's property tax levy by resulting in a net reduction in effective property tax.

- **Statutory Maximum Property Tax Levy Rate.** If the City joins in the formation of an RFA its statutory maximum property tax levy rate will decrease from $3.10 per $1,000 of assessed value (after accounting for the library district) to $1.60 per $1,000 of assessed value (see following figure). The decrease is due to subtracting the annexing fire district's statutory maximum levy rate of $1.50 from the City's statutory maximum levy rate. The City's 2020 regular levy rate is estimated to be $2.8917. After subtracting the General Fund tax revenue allocated to fund the fire department ($1.6806)—revenue that would no longer be needed to pay for fire department expenses—the City's 2020 levy rate would be $1.2111 or $0.3889 below the statutory maximum rate under the annexation strategy. Without any changes the City's 2020 estimated levy rate will be $0.2083 below the City's current statutory maximum levy rate.

Impact on Levy Rates in All Jurisdictions

Under the RFA strategy the same regular, EMS, and excess levy rates will apply to all jurisdictions. The net impact on the tax rates—and taxes paid—in the predecessor jurisdictions will depend on the excess levy rates needed to fund services under the current structure. A comparison of the forecasted 2020 status quo levy rates and the 2020 levy rates under the various RFA scenarios are provided in the following figures.

Figure 213: Status Quo vs. RFA Levy Rates, All Agencies

All Agencies Included	2020 Levy Rate			Taxes Paid	
	Status Quo	RFA	Difference	Difference	% of Total Taxes Paid
Olympia FD					
Regular – 2.5353 estimated*	$2.1669	$1.5000	$(0.6669)		
EMS	$0.3105	$0.3105	$ -		
Excess	$ -	$0.4504	$0.4504		
Total	**$2.4775**	**$2.2610**	**$(0.2165)**	**$(1,522,888)**	**-8.7%**
Tumwater FD					
Regular – 2.8917 estimated*	$1.5700	$1.5000	$(0.0700)		
EMS	$0.3105	$0.3105	$ -		
Excess	$ -	$0.4504	$0.4504		
Total	**$1.8805**	**$2.2610**	**$0.3805**	**$1,322,763**	**20.2%**
West Thurston RFA					
Regular	$1.3209	$1.5000	$0.1791		
EMS	$0.3105	$0.3105	$ -		
Excess (Dist. 1 & 11 combined)	$0.5069	$0.4504	$(0.0565)		
Total	**$2.1384**	**$2.2610**	**$0.1226**	**$255,726**	**5.7%**
Lacey Fire District 3					
Regular	$1.5000	$1.5000	$ -		
EMS	$0.3105	$0.3105	$ -		
Excess	$ -	$0.4504	$0.4504		
Total	**$1.8105**	**$2.2610**	**$0.4504**	**$4,870,408**	**24.9%**
McLane/Black Lake Fire District					
Regular (Dist. 5 & 9 combined)	$1.4308	$1.5000	$0.0692		
EMS	$0.3105	$0.3105	$ -		
Excess (Dist. 5 & 9 combined)	$0.2089	$0.4504	$0.2415		
Total	**$1.9503**	**$2.2610**	**$0.3107**	**$703,099**	**15.9%**
East Olympia Fire District					
Regular	$1.5000	$1.5000	$ -		
EMS	$0.3105	$0.3105	$ -		
Excess	$ -	$0.4504	$0.4504		
Total	**$1.8105**	**$2.2610**	**$0.4504**	**$643,189**	**24.9%**

* These figures denote the total forecasted regular levy rate for the two cities. The figures used in the chart represents the effective levy rate of the forecasted cities' fire expenses.

As shown in the previous figure, when all agencies are included levy rates and property taxes are projected to decrease over all for Olympia, but increase for all the other jurisdictions. The net change for the entire area would be an increase in each scenario as well. The expense forecast under the RFA strategy is the same expense forecast presented earlier in the report for the consolidated operation of all six jurisdictions.

When WTRFA and MBLFD are not included (next figure), levy rates and property taxes are projected to act similarly to the above scenario, but the over-all increase is significantly smaller. The net change for the entire area would be an increase in each scenario as well.

Figure 214: Status Quo vs. RFA Levy Rates, OFD, TFD, LFD3, & EOFD

	2020 Levy Rate			Taxes Paid	
	Status Quo	RFA	Difference	Difference	% of Total Taxes Paid
Olympia FD					
Regular – 2.5353 estimated*	$ 2.1669	$ 1.5000	$ (0.6669)		
EMS	$ 0.3105	$ 0.3105	$ -		
Excess	$ -	$ 0.2698	$ 0.2698		
Total	**$ 2.4775**	**$ 2.0803**	**$ (0.3971)**	**$ (2,793,711)**	**-16.0%**
Tumwater FD					
Regular – 2.8917 estimated*	$ 1.5700	$ 1.5000	$ (0.0700)		
EMS	$ 0.3105	$ 0.3105	$ -		
Excess	$ -	$ 0.2698	$ 0.2698		
Total	**$ 1.8805**	**$ 2.0803**	**$ 0.1998**	**$ 694,680**	**10.6%**
Lacey Fire District 3					
Regular	$ 1.5000	$ 1.5000	$ -		
EMS	$ 0.3105	$ 0.3105	$ -		
Excess	$ -	$ 0.2698	$ 0.2698		
Total	**$ 1.8105**	**$ 2.0803**	**$ 0.2698**	**$ 2,917,096**	**14.9%**
East Olympia Fire District					
Regular	$ 1.5000	$ 1.5000	$ -		
EMS	$ 0.3105	$ 0.3105	$ -		
Excess	$ -	$ 0.2698	$ 0.2698		
Total	**$ 1.8105**	**$ 2.0803**	**$ 0.2698**	**$ 385,234**	**14.9%**

Summary of Financial Considerations

Implementation of the RFA strategy will have financial implications that the agencies will need to consider and potentially address. Those implications are summarized as follows:

- **Reserve Funding Requirement.** The newly formed RFA will need to have adequate reserves to fund ongoing operations and support equipment replacement. The total unrestricted reserves of the agencies as of the end of 2017 was an estimated $26,143,000 (the two cities account for $15,645,000 of this—not earmarked specifically for fire). The amount of reserves transferred from each city to an RFA (if any) would need to be negotiated. The reserves of the fire districts would provide 35% of the 2017 consolidated operating costs—enough for a 4-month reserve fund, which could be minimally adequate (6 months would be preferable). In addition, further reserves may be required for the replacement of apparatus or other equipment. To the extent additional reserves are needed they will need to be factored into the excess levy rate developed in the RFA plan and submitted to voters for approval.
- **Revenue Capacity/Surplus for Cities.** Upon formation of an RFA the two Cities would no longer be responsible for directly funding fire and EMS services. Using 2020 forecasted amounts, the cities allocated approximately $16,523,000 in city general tax fund revenue to pay for these services. ESCI recommends that savings from the formation of an RFA be used to reduce taxes. Otherwise the change would increase total taxes to the taxpayers in the cities.
- **Tax Burden Shifts.** As outlined above, the RFA strategy shifts some of the tax burden for funding fire, EMS, and ambulance services away from the cities and to the RFA.
- **Funding for Additional Expenses.** Elsewhere in this report ESCI identifies potential investments in personnel, equipment, and information systems. If the collective agencies desire to make those investments any additional expenses will need to be factored into the revenue required from the excess levy.

Issues & Impacts

- The cities will share in the governance of fire services by the city councils appointing representatives to the RFA Governing Board as identified in the RFA plan, unless commissioner districts are formed. If districts are formed, council members would likely still be appointed until commission seats are elected and seated on the RFA Governing Board.
- The RFA's tax levy would extend over Tumwater, reducing the city tax capacity (though actually increasing the capacity for a levy lid lift—see following figure).

Figure 215: Tumwater Lid Lift Potential, RFA Scenario

City Levy Reduction Scenario	Levy Rate
City Projected 2020 Rate	$ 2.8917
City Maximum Rate	$ 3.1000
Lid Lift Potential	**$ 0.2083**
City Projected Rate After RFA Formation	$ 1.3217
City Maximum Rate After RFA Formation	$ 1.6000
Lid Lift Potential	**$ 0.2783**

- Outstanding voted bonds will continue to be paid from taxes on the original properties unless restructured as per the RFA plan.
- All personnel are transferred to the RFA.
- City asset transfers are not required by statute, but are usually addressed in the RFA plan.
- District assets are transferred to the RFA since there is no need for the assets to be retained by the district.
- Unresolved claims, litigation, or threatened actions in each separate agency must be identified and coordinated to safeguard against any inadvertently created gaps in insurance coverage.
- Make-up of the governing board should represent interests of the parties and ensure balance, such as formation of commissioner districts to ensure balanced representation.
- Legal analysis and review prior to implementation are highly advised.

Strategy E: Formation of a Municipal Fire District

New (2017) enabling legislation has created the opportunity for a city to form a new fire district that is identical to the existing boundaries of the city.[52] The city council may take action to establish a fire district by passing a resolution, which must at least contain the following:

- A financing plan for the fire district, including the imposition of revenue sources, such as property taxes or benefit charges, and
  - the dollar amount the fire protection district will levy in the first year in which the fire protection district imposes any regular property taxes;
  - the city's highest lawful levy, reduced by the fire district's levy amount, which is the city's new lawful levy limit since 1986;
  - the estimated aggregate net dollar amount impact on property owners within the city based on the changes;
- Set a date for a public hearing on the resolution.

[52] RCW 52.02.160

The plan must be approved by the voters of the city at a general election by simple majority, unless a benefit charge is imposed, which requires sixty percent approval by voters.

If a resolution forming a fire district provides that the Municipal Fire District will be governed by a board of fire commissioners, then the initial fire commissioners must be elected at the same election where the resolution is submitted to the voters authorizing the creation of the fire district.

Level of Cooperation

This strategy requires no cooperation with any neighboring agencies or other parties to this study. It does, however, require coordination with the county elections office and county assessor's office. The process ultimately requires assent by the voters for formation.

Estimated Timeline for Completion

ESCI predicts that the process could take less than one year from creation of the resolution, development of the financing plan, conducting of a public hearing, submission to the electorate, and effective date of formation.

Affected Sections

All sections of the fire department are affected in this strategy, but only marginally in that only the employer and form of government changes. Implementation of this strategy simply transfers the fire department to a new fire district with the same service area, same resources, same personnel, and a different governance structure (fire district commissioners instead of a city council).

Affected Stakeholders

Citizens currently served by the city fire department will see their service provided by a new agency. Employees of the city fire department will have their employer change, but are to be kept whole by statute unless a different negotiated agreement is made between the employer and the collective bargaining representatives currently in place.[53]

The elected officials from the city may also be affected. Since the governing statutes do not require a separate board of fire commissioners to be created, the current elected city council (or an appointed subset) serves in that capacity ex officio, or may relinquish governance authority of the fire district to an independently elected board of commissioners that is established within the resolution and election forming the fire district, or may relinquish governance authority of the fire district to an appointed board of three fire commissioners at any time after formation. Each appointed commissioner serves until successors are elected at the next qualified election.

[53] RCW 52.02.180 (6)(a)

Summary/Objective of Strategy

The formation of a fire district with boundaries identical to the current boundaries of the city provides autonomy within the city while also detaching the fire protection services from the municipal government. The city lowers its maximum property taxing authority by the amount of property taxation the fire district assesses, making the tax implications potentially neutral to the taxpayers.

All resources and personnel currently employed by the city for the delivery of fire and emergency medical services are transferred or credited to the fire district. All funds, credits or other assets held by the city for fire and EMS services are transferred to the fire district.

ESCI Guidance

As a new statute, ESCI is unaware of any agencies in the State of Washington to implement this statute. New territory is being explored. Thus, it would be prudent to acquire legal counsel guidance as the resolution is drafted and the financing plan crafted. While this would be a first, the process is entirely within the control of the city forming the fire district. ESCI advises proceeding slowly and thoroughly if this option is pursued.

Special Considerations

Careful analysis of comingled equipment reserve funds set aside for fire apparatus replacement, along with other municipal equipment unrelated to fire apparatus will be an important consideration. So too are legacy costs, such as pension liabilities or other post-employment benefits (OPEB) provided for in statute or in current collective bargaining agreements, for example.

Policy Actions

A city contemplating the establishment of a municipal fire district must ensure the fire district starts off on the right foot. Establishing a weak fire district may ultimately cause a drain on municipal finances if, for example, the fire district starts off with a property tax levy below its maximum authority and insufficient to provide similar services to what the city fire department had provided historically. In this case, the fire district would have to levy its maximum property tax levy, requiring the city to reduce its maximum lawful tax rate to compensate.

In ESCI's opinion, establishing an independent board of fire commissioners, whether initially or not long after the district is formed, is key to the fire district's success. It avoids the appearance of conflicts of interest or the very real dilemma that may be faced by a city council member acting as an ex officio board member and having to decide between what is best for the city and what is best for the fire district if the issue is mutually exclusive.

ESCI's review and discussion of Washington State Law on this topic has been necessarily brief; only sufficient to ensure that basic provisions for RFA formation exist. As always, we emphasize that we are not qualified to give legal advice. We recommend the participating agencies consult with legal counsel experienced in such matters before undertaking this strategy.

Fiscal Analysis

When forming a municipal fire district, a city must reduce its general fund regular property tax levy by the total combined levy of the fire protection district as proposed by the district. The reduced levy amount of the city must occur in the first year in which the fire district imposes any of the property taxes authorized in RCW 52.16.130, 52.16.140, or 52.16.160. If the fire district does not impose all three levies under RCW 52.16.130, 52.16.140, and 52.16.160 when it begins operations, the city must further reduce its general fund regular property tax levy if the district initially imposes any of the levies in subsequent years, by the amount of such levy or levies initially imposed in a subsequent year.

Key Assumptions

Revenues

The following revenue assumptions used in the analysis of Strategy E: Formation of a Municipal Fire District are the same in as previous scenarios. Property taxes represent the largest source of revenue for the combined operations.

- An effective date of district formation prior to August 1, 2019. Note that this allows for properties to be included in the property taxes levied for collection in the following year. Formation after August 1 would result in property taxes levied in the second year following the year of district formation. Note also that while the most recent reports of actual financial results for all agencies date to 2017, we made forecasts for each agency to 2020 to concur with the assumed annexation date.
- The county-wide EMS levy remains as it is. In 2017 the rate was $0.35 and the current 2019 rate is $0.32—our forecast for 2020 is $0.3105. While it is possible to put an additional EMS levy before voters up to the maximum of $0.50 per $1,000 AV, we do not recommend this approach. Such an additional levy would be at risk to any increases in the county levy.
- A levy of the statutory maximum levy rate of $1.50 per $1,000 assessed value is collected for the municipal district beginning in 2020.
- Assumption of all debt attributable to the Fire Department by the Municipal Fire District.
- Fire inspections and permitting (and associated revenues) remain within the city. These services could be performed via contract with the new Municipal Fire District, but they would nevertheless likely be contracted in a cost-neutral manner.
- Voter approval of a six-year excess levy in August 2019 for collection beginning in 2020 with amounts equal to the estimated amount needed to balance projected revenue with projected expenses.

Expenses

Expenses under the Municipal District strategy are assumed to be the same as those of the city's department. Actual expenses under a Municipal District approach are likely to be different than these combined expenses. However, in ESCI's evaluation of existing staffing, equipment, facility and operational conditions, we did not find significant excess capacity that would suggest significant cost savings. While some expenses are likely to be higher others are likely to be lower. Using the combined expense projection is considered reasonable for purposes of this analysis.

Forecast Results

The revenue forecast under the Municipal District strategy, using the assumptions identified above, results in annual revenue of $8,171,670 in 2020. A summary of the Municipal District strategy revenue/expense projection is shown in the following figure. Since expenses are projected to grow more quickly than revenues, the excess levy is initially set to create a surplus. The sum of the resulting surpluses and deficits is set to equal out over the five-year forecast period.

Figure 216: Tumwater Fire Department Revenue Sources, Municipal Fire District Scenario

Municipal District Assumed Revenue Sources, TFD	2020	2021	2022	2023	2024	2020–24 % Chg
Regular Property Tax Levy	$5,215,107	$5,347,966	$5,487,307	$5,633,195	$5,785,696	10.9%
EMS Property Tax Levy	$ -	$ -	$ -	$ -	$ -	N/A
Other Taxes (M&O Levy)	$526,957	$540,381	$554,461	$569,202	$584,611	10.9%
Ambulance Fees	$2,406,654	$2,427,821	$2,448,988	$2,470,155	$2,491,323	3.5%
Other Revenue	$22,952	$22,952	$22,952	$22,952	$22,952	0.0%
Subtotal Operations	$8,171,670	$8,339,120	$8,513,708	$8,695,504	$8,884,582	8.7%
Annual Percent Increase		2.0%	2.1%	2.1%	2.2%	
Bond Levy	$ -	$ -	$ -	$ -	$ -	
Total Revenue	$8,171,670	$8,339,120	$8,513,708	$8,695,504	$8,884,582	
Total Expenses	$7,865,066	$8,192,775	$8,520,698	$8,848,840	$9,177,205	
Net Revenue (Deficit)	$306,604	$146,345	$(6,990)	$(153,335)	$(292,623)	

The excess levy increases 8.7 percent over the five-year forecast period with annual increases of about 2 percent from 2020 through 2024. The resulting levy rates are shown in the following figure.

Figure 217: Tumwater Fire Department Levy Rate, Municipal Fire District Scenario

Assumed Levy Rates TFD Municipal District	2020	2021	2022	2023	2024
Total Assessed Value	$3,476,738,089	$3,695,998,526	$3,915,258,962	$4,134,519,398	$4,353,779,834
Total Regular Levy	$ 1.5000	$ 1.4470	$ 1.4015	$ 1.3625	$ 1.3289
Total EMS Levy	$ 0.3105	$ 0.2978	$ 0.2850	$ 0.2722	$ 0.2594
Total Excess Levy	$ 0.1516	$ 0.1462	$ 0.1416	$ 0.1377	$ 0.1343
Total Operating Levy Rate	**$ 1.9621**	**$ 1.8909**	**$ 1.8281**	**$ 1.7723**	**$ 1.7226**

With new construction and property valuations increasing faster than the 1 percent cap on levy growth, all levy rates are assumed to decrease over time. This may help enable levy lid lifts in the future, which will be necessary to help revenues keep pace with inflation.

Impact on City of Tumwater Regular Property Tax Levy

Formation of a Municipal Fire District will impact the City of Tumwater's property tax levy in two ways. First, it will reduce the City's statutory maximum levy rate. Second, it will create "banked" levy capacity that the City can access to fund other services.

- **Statutory Maximum Property Tax Levy Rate.** If the City forms a Municipal District, its statutory maximum property tax levy rate will decrease from $3.10 per $1,000 of assessed value (after accounting for the library district) to $1.60 per $1,000 of assessed value. The decrease is due to subtracting the District's statutory maximum levy rate of $1.50 from the City's statutory maximum levy rate. The City's 2020 estimated regular levy rate is $2.8917, which is $0.2083 below the statutory maximum rate. After subtracting the general fund tax revenue allocated to fund the fire department —revenue that would no longer be needed to pay for department expenses—the City's 2020 levy rate would be $1.3217 or $0.2783 below the statutory maximum rate under the Municipal District strategy. Thus, the City's levy lid lift capacity would grow $0.07 from $0.2083 to $0.2783.
- **Banked Levy Capacity.** As indicated above, under the Municipal Fire District strategy the City of Tumwater's property tax levy would be limited to $1.60 per $1,000 assessed value. This would normally leave the City with a high banked capacity, however, the enabling legislation includes specific language that calls for a city to reduce its highest lawful levy—which is the basis for the 1 percent maximum annual increase.[54] The legislature took away the potential for a windfall and made a city exercising this option reduce its levy by the full amount of the fire district levy and made that new city levy its new cap or "highest lawful levy since 1986."

Impact on Levy Rates in All Jurisdictions

Under the Municipal Fire District strategy the same regular, EMS, and excess levy rates will apply to all jurisdictions. The net impact on the tax rates—and taxes paid—in the predecessor jurisdictions will depend on the tax rates needed to fund services under the current structure. A comparison of the forecasted 2020 status quo levy rates and the 2020 levy rates under the Municipal Fire District strategy are provided in the following figure.

Figure 218: Tumwater Fire Department, Status Quo vs. Municipal Fire District

TFD Municipal Fire District Impact on Levies	2020 Levy Rate			Taxes Paid	
	Status Quo	Fire District Formed	Difference	Difference	% of Total Taxes Paid
Tumwater FD					
Regular (2.8917 estimated)	$ 1.5700	$ 1.5000	$ (0.0700)		
EMS	$ 0.3501	$ 0.3501	$ -		
Excess	$ -	$ 0.1516	$ 0.1516		
Total	**$ 1.9201**	**$ 2.0016**	**$ 0.0816**	**$ 283,652**	**4.25%**

As shown, levy rates and property taxes are projected to increase modestly with a Municipal Fire District. This is due to the assumption that the excess levy rate would be set to provide sufficient revenues for the first 5 years. If it were set simply to cover 2020 expenses, there would be no difference in total levies. The expense forecast under the RFA strategy is the same expense forecast presented previously in this report for the consolidated operation of all six jurisdictions.

[54] RCW 52.02.160(1)(ii)

Summary of Financial Considerations

Implementation of the Municipal Fire District strategy will have financial implications that the agencies will need to consider and potentially address. Those implications are summarized as follows:

- **Reserve Funding Requirement.** The newly formed Municipal Fire District will need to have adequate reserves to fund ongoing operations and support equipment replacement. The total unrestricted reserves of the City as of the end of 2017 was $6,864,000. A three-month minimal operating reserve would be $1,676,020—this is considered minimally sufficient for an agency dependent on property tax revenue that it receives twice per year. Additional reserves may be required for the replacement of apparatus or other equipment. To the extent additional reserves are needed they will need to be factored into the excess levy rate developed in the District plan and submitted to voters for approval.
- **Tumwater Revenue Capacity/Surplus.** Upon formation of a Municipal Fire District the City of Tumwater will no longer be responsible for funding fire and EMS services. Using 2017 figures, the City allocated approximately $4,296,000 in City General Fund tax revenue to pay for these services. ESCI recommends that savings from the formation of an RFA be used to reduce taxes. Otherwise the change would increase total taxes to the residents of Tumwater.
- **Tax Burden Shifts.** As outlined above, the formation of a Municipal Fire District shifts the tax burden for funding fire, EMS, and ambulance services away from the City to the new district.
- **Funding for Additional Expenses.** Elsewhere in this report ESCI identified potential investments in personnel, equipment, and information systems. If the collective agencies desire to make those investments any additional expenses will need to be factored into the revenue required from the excess levy.

Issues & Impacts

- The City of Tumwater will have no direct control over fire services.
- The new district's tax levy would reduce the City's tax capacity from $3.10/$1,000 to $1.60/$1,000 while simultaneously increasing the City's capacity for a levy lid lift (see next figure).

Figure 219: Tumwater Lid Lift Potential, Municipal Fire District Scenario

City Levy Reduction Scenario	Levy Rate
City Projected 2020 Rate	$ 2.8917
City Maximum Rate	$ 3.1000
Lid Lift Potential	**$ 0.2083**
City Projected Rate After District Formation	$ 1.3217
City Maximum Rate After District Formation	$ 1.6000
Lid Lift Potential	**$ 0.2783**

- Outstanding bonds remain with originating properties.
- All personnel are transferred to the fire district.
- TFD asset transfers would need to be negotiated and agreed upon prior to submission of the district formation initiative to the voters.
- Unresolved claims, litigation, or threatened actions in each separate agency must be identified and coordinated to safeguard against any gaps in insurance coverage inadvertently created.
- Legal analysis and review prior to implementation are highly advised.

Findings

ESCI found the six study agencies to be fully engaged and willing participants in this study. The amount of data requested by ESCI from the agencies was daunting, but all provided the data and made themselves available for interviews, draft reviews, and remained dedicated to the quality and accuracy of this report.

The six fire agencies participating in this study are of various sizes, complexities, and structures. However, they broadly fit into two general groups: Predominantly Urban—Olympia, Tumwater and Lacey Fire District 3; and Predominantly Rural—East Olympia, West Thurston and McLane-Black Lake.

Thurston County Medic One is not a party to this study, but plays a significant role in the service level and financial viability of the advanced life support transport services offered to the entire county. Whatever results from the agencies' deliberations of the integration options included in this report, Thurston County Medic One will be an important consideration.

Numerous strategic partnerships already exist between the agencies. These include:

- OFD—Vehicle Repair and Maintenance Services (serving all agencies)
- OFD—Training Services (serving TFD and LFD3)
- LFD3—Vehicle Repair Facility (leased to OFD)
- West Thurston Regional Fire Consortium (WTRFA, MBLFD, and EOFD)
- Special Operations Rescue Team (all agencies)
- Medic One (all agencies)
- Mutual Aid (all agencies)

Regardless of the path(s) chosen by the agencies as it pertains to this report, the participants should continue these and other regional efforts for cost effectiveness, efficiency, and for the benefit of their respective citizens. Other potential regional efforts could include:

- Regional Fire Investigation Team (FIT)
- Regional Recruit Academy
- Regional Volunteer Recruitment & Retention Program
- Regional Training Division
- Regional Dedicated Training Relief Engine Company
- Regional Peak Demand Response Unit (Dropped Boundary)
- Regional Logistics Division
  - Joint Purchasing & Supply Standardization
  - Warehousing of Replenishable Supplies
  - Just-in-Time Inventory Management & Delivery
- Regional Command Officer Response (Dropped Boundary)

Generally, integration between agencies should be between similarly situated agencies to avoid the expense and challenges associated with providing service to two different community characteristics and risk profiles (e.g., urban versus rural). Specific circumstances may make inclusion of some predominantly rural agencies into the urban grouping more advantageous. An example of this is East Olympia, which provides some benefit to Tumwater with its station in close proximity to Tumwater's southern border. EOFD also provides some benefit to Lacey Fire District 3 with its station in close proximity to Lacey Fire District 3's southwestern boundary.

Recommendations

Strategy A (Status Quo) provides no net improvement as it represents no change over the current conditions, but it is always an option. It is not recommended. ***Strategy B (Contract for Services)*** may provide for streamlining organizations, but only in certain circumstances, such as administrative services or some support services. It also adds a level of complexity in that each organization retains its individual taxing authority but most often operates as a single entity as it relates to those service areas being contracted. Cost allocation becomes a complex challenge. Following the cost allocation formulas included in this report or using a variation of the approach can assist the agencies in determining the best option for each of the participants if this option is chosen. ESCI considers this a potential intermediate step toward a more permanent integration, but not the preferred strategy.

Strategy C (Annexation) is a simple process that allows for a city to be annexed into an existing fire district, reducing its taxing authority by the same amount as the fire district charges in taxes. This process does not automatically provide for direct representation from the city being annexed, and does allow for the city to withdraw from the annexation after three years; two distinct disadvantages. ESCI does not recommend this strategy.

Strategy D (Regional Fire Authority) provides the greatest flexibility among the so-called "permanent" integration strategies, and has the potential to control costs and enhance service to the participants. ***Strategy E (Municipal Fire District)*** is simply converting a city fire department into a fire district, transferring the fiscal burden from the city to the fire district. The city council can act as the board of fire commissioners (not recommended) or can temporarily fill those positions until fire commissioners are elected to fill the seats (preferred). While a relatively straightforward process, this is a new concept with new enabling legislation. It hasn't been tried in Washington State and therefore has the inherent risks associated with "going first." It also has the net effect of swapping governance structure with little else changed.

ESCI does not recommend that all six agencies fully integrate at this time. The agencies collectively have widely disparate financial circumstances, dissimilar community risk profiles, different approaches to staffing configurations, and different infrastructures. However, there are groupings that ESCI does recommend pursuing.

Recommendation 1

ESCI recommends that TFD, OFD, LFD3, and EOFD pursue ***Strategy D – RFA***. The first step is for the four agencies to read and understand this report, understand what an RFA is and does, and engage in initial joint discussions. If the parties agree to further consider formation of an RFA, ESCI recommends establishing an RFA Planning Committee. The makeup and purpose of the RFA Planning Committee is outlined in this report and is spelled out in statute. It is imperative that the elected officials have a deeper understanding of an RFA. Only then can they fully engage in possibilities thinking and develop what is effectively a new charter for fire services within the RFA service area.

Actual legwork occurs between RFA Planning Committee meetings, usually delegated to the staff of the participating agencies. Additional consideration should be given as follows:

- An ongoing, meaningful role for labor should be woven into the process.
- An ongoing, meaningful role for volunteer associations should be woven into the process.
- Thurston County Medic One should be brought into the process and discussion to examine overall operational efficiencies and funding options.
- Cultural differences between existing agencies should be addressed in a meaningful way. Outside expertise may be brought in to identify cultural distinctions and develop strategies to bridge any gaps or form a new, healthy and inclusive culture.

If any initially participating agency in the RFA Planning Committee ultimately decides to withdraw from the pursuit of an RFA, an intermediate step should be considered for that agency instead of complete withdrawal. This may include contracting or otherwise partnering with the eventual RFA until such time as circumstances evolve to the point where joining the RFA becomes a serious consideration.

Recommendation 2

A second-tier regionalization option is consideration of WTRFA and MBLFD integrating, but only after financial circumstances make it beneficial and balanced to do so. That process could start as a contract for service, finding the efficiencies through that process while jointly planning for a glide path financially that makes full integration more feasible.

If an integration strategy is chosen between WTRFA and MBLFD, it should be done as the result of a joint planning process, addressing the restructuring of the agencies as they integrate at the policy level, as well as at the operational, administrative, and support levels. Greater efficiency can be achieved if the collaboration is permanent, with one methodology, one set of work rules, one standardized level of service to the community, and one organizational structure to administer it.

The process of considering and implementing any of these recommendations starts first with a shared vision by the policymakers of the participating agencies. From the vision, goals and objectives can be identified which, if accomplished, propel the agencies toward the vision. This process, in essence, is the framework of a strategic plan for integration.

APPENDIX A: TABLE OF FIGURES

APPENDIX B: FIRE STATIONS

Tumwater Fire Stations

Figure 220: Tumwater Headquarters Station (T-1)

Address/Physical Location:	311 Israel Road SW Tumwater, WA 98501					
	**General Description:** Built in 2000, this station serves as the Tumwater Fire Department's headquarters. It also functions as the Emergency Operations Center (EOC).					
Structure						
Construction Type	Type 5					
Date of Construction	2000					
Seismic Protection	No known seismic upgrades					
Auxiliary Power	Yes; automatic					
General Condition	Good					
Apparatus Bays	0	Drive-through bays	5	back-in bays (4 are 2 deep)		
Special considerations (ADA, etc.)	None					
Square Footage	19,135					
Facilities Available						
Separate Rooms/Dormitory/Other	9	Bedrooms	9	Beds	N/A	Beds in dormitory
Maximum Station Staffing Capability	9					
Exercise/Workout Facilities	Yes					
Kitchen/Dormitory	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Yes					
Training/Meeting Rooms	Yes					
Washer/Dryer	Yes (commercial for turnout gear)					
Safety & Security						
Sprinklers and/or Smoke Detection	Yes/Yes					
Decontamination/Biohazard Disposal	Yes					
Security	Electronic locks on some exterior doors					
Apparatus Exhaust System	Negative pressure system (scheduled to be replaced)					

Figure 221: Tumwater North End Station (T-2)

Address/Physical Location:	405 Linwood Avenue SW, Tumwater, WA 98502
	**General Description:** Tumwater's other station, which is somewhat smaller than its other station. It has two apparatus bays that are two-deep. Exercise equipment located in one of the apparatus bays.

Structure						
Construction Type	V-N					
Date of Construction	1993					
Seismic Protection	No					
Auxiliary Power	Yes					
General Condition	Good					
Apparatus Bays	0	Drive-through bays	2	back-in bays (2 deep)		
Special considerations (ADA, etc.)	None					
Square Footage	4,000					
Facilities Available						
Separate Rooms/Dormitory/Other	2	Bedrooms	2	Beds	2	Beds in dormitory
Maximum Station Staffing Capability	5					
Exercise/Workout Facilities	Yes					
Kitchen/Dormitory	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	2 male showers and 1 female shower					
Training/Meeting Rooms	No					
Washer/Dryer	Standard (not usable for turnout gear)					
Safety & Security						
Sprinklers and/or Smoke Detection	Yes					
Decontamination/Biohazard Disposal	Yes					
Security	No					
Apparatus Exhaust System	Pending upgrade					

East Olympia Fire Stations

Figure 222: East Olympia Station 61 (Headquarters)

Address/Physical Location:	8047 Normandy St SE, Olympia, WA 98501					
	**General Description:** Headquarters campus; administration offices, crew quarters, separate two-bay mechanic shop, separate three-bay storage annex.					
Structure						
Construction Type	Wood Frame Type V					
Date of Construction	1996					
Seismic Protection	Met seismic standards at time of construction; not upgraded					
Auxiliary Power	Yes					
General Condition	Excellent					
Apparatus Bays	0	Drive-through bays	4	back-in bays		
Special considerations (ADA, etc.)	None					
Square Footage	9,668					
Facilities Available						
Separate Rooms/Dormitory/Other	5	Bedrooms	6	Beds	N/A	Beds in dormitory
Maximum Station Staffing Capability	6					
Exercise/Workout Facilities	Yes					
Kitchen/Dormitory	Yes (two)					
Individual Lockers/Storage Assigned	Three locations					
Shower Facilities	Yes					
Training/Meeting Rooms	Large meeting room					
Washer/Dryer	Regular & large commercial extractor					
Safety & Security						
Sprinklers and/or Smoke Detection	Yes					
Decontamination/Biohazard Disposal	Yes, deep sink, floor drain, diked area in truck bay					
Security	No					
Apparatus Exhaust System	Yes					

Figure 223: East Olympia Station 62

Address/Physical Location:	5944 Offut Lake Rd SE, Tenino, WA 98589					
	**General Description:** Unstaffed station. Just truck bays, office, and bathroom. Very old facility built in 1954.					
Structure						
Construction Type	Wood Frame Type V					
Date of Construction	1954					
Seismic Protection	No					
Auxiliary Power	No					
General Condition	Fair					
Apparatus Bays	0	Drive-through bays	4	back-in bays		
Special considerations (ADA, etc.)	None; Property not owned by District					
Square Footage	2,340					
Facilities Available						
Separate Rooms/Dormitory/Other	0	Bedrooms	0	Beds	0	Beds in dormitory
Maximum Station Staffing Capability	Unstaffed (no facilities)					
Exercise/Workout Facilities	No					
Kitchen/Dormitory	No					
Individual Lockers/Storage Assigned	No					
Shower Facilities	No					
Training/Meeting Rooms	No					
Washer/Dryer	No					
Safety & Security						
Sprinklers and/or Smoke Detection	No/No					
Decontamination/Biohazard Disposal	No					
Security	Yes					
Apparatus Exhaust System	No					

Figure 224: East Olympia Station 64

Address/Physical Location:	9530 Old Highway 99 SE, Olympia, WA 98501
	**General Description:** Fire department training site. Approved, funded, and permitted to expand training area to include a Connex Class A combustible training prop on a large concrete pad.

Structure						
Construction Type	Wood Frame Type V					
Date of Construction	1986					
Seismic Protection	Yes					
Auxiliary Power	Yes					
General Condition	Excellent					
Apparatus Bays	0	Drive-through bays	4	back-in bays		
Special considerations (ADA, etc.)	None					
Square Footage	6,894					
Facilities Available						
Separate Rooms/Dormitory/Other	7	Bedrooms	8	Beds	N/A	Beds in dormitory
Maximum Station Staffing Capability	8 (1 bedroom has double-bunks; 3 are for residents)					
Exercise/Workout Facilities	Limited					
Kitchen/Dormitory	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Yes					
Training/Meeting Rooms	Yes					
Washer/Dryer	Yes					
Safety & Security						
Sprinklers and/or Smoke Detection	No/Yes					
Decontamination/Biohazard Disposal	Deep sink					
Security	No					
Apparatus Exhaust System	Yes					

Figure 225: East Olympia Station 65

Address/Physical Location:	8212 80th Ave SE, Olympia, WA 98513
	**General Description:** Unstaffed fire station. Property size is very limited. Apparatus stored here, but no personnel assigned.

Structure						
Construction Type	Wood Frame Type V					
Date of Construction	1997					
Seismic Protection	Possibly					
Auxiliary Power	No					
General Condition	Excellent					
Apparatus Bays	0	Drive-through bays	3	back-in bays		
Special considerations (ADA, etc.)	None					
Square Footage	2,300					
Facilities Available						
Separate Rooms/Dormitory/Other	0	Bedrooms	0	Beds	0	Beds in dormitory
Maximum Station Staffing Capability	None					
Exercise/Workout Facilities	No					
Kitchen/Dormitory	No					
Individual Lockers/Storage Assigned	Gear Lockers					
Shower Facilities	No					
Training/Meeting Rooms	No					
Washer/Dryer	No					
Safety & Security						
Sprinklers and/or Smoke Detection	No/No					
Decontamination/Biohazard Disposal	No					
Security	Yes					
Apparatus Exhaust System	No					

Lacey Fire District 3 Stations

Figure 226: Lacey Station 31 (Headquarters)

Address/Physical Location:	1231 Franz Street SE, Lacey, WA 98503-2412					
	**General Description:** Large, modern fire station containing both administration and operations personnel. Substantial office facilities on first and second floors of the administration area. Significant capacity for apparatus and operations personnel. There are eight bays varying in size and depth.					
Structure						
Construction Type	Type 5					
Date of Construction	2004					
Seismic Protection	None; Building code					
Auxiliary Power	Yes					
General Condition	Good					
Apparatus Bays	0	Drive-through bays	8	back-in bays		
Special considerations (ADA, etc.)	Accessible including elevator & mixed gender appropriate					
Square Footage	32,000					
Facilities Available						
Separate Rooms/Dormitory/Other	14	Bedrooms	14	Beds	0	Beds in dormitory
Maximum Station Staffing Capability	14					
Exercise/Workout Facilities	Yes					
Kitchen/Dormitory	Yes (14 separate bedrooms)					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Six private shower & bath combinations					
Training/Meeting Rooms	Large training room (40); 3 conference rooms for 6–8					
Washer/Dryer	2 each & 1 commercial extractor & dryer					
Safety & Security						
Sprinklers and/or Smoke Detection	Yes/Yes (central alarm)					
Decontamination/Biohazard Disposal	Yes					
Security	Perimeter Pass access control system					
Apparatus Exhaust System	Air turnover system					

Figure 227: Lacey Station 32

Address/Physical Location:	10910 Yelm Hwy SE, Olympia, WA 98513
	**General Description:** Rural fire station that is staffed with resident volunteers. Crew quarters are relatively new, and were added in 2012. The apparatus bays were built in the late 1970s. Little room available for expansion. Currently houses a Type 1 engine and a reserve engine.

Structure						
Construction Type	Type 5 (crew quarters) & Type 3 block (apparatus bays)					
Date of Construction	Crew quarters 2012; apparatus bay late 1970s					
Seismic Protection	High-efficiency rated manufactured for quarters					
Auxiliary Power	Crew quarters; None for apparatus bay					
General Condition	Good					
Apparatus Bays	0	Drive-through bays	2	back-in bays		
Special considerations (ADA, etc.)	One accessible restroom					
Square Footage	1,800 (quarters); 1,000 (apparatus bay)					
Facilities Available						
Separate Rooms/Dormitory/Other	4	Bedrooms	5	Beds	N/A	Beds in dormitory
Maximum Station Staffing Capability	5					
Exercise/Workout Facilities	Limited					
Kitchen/Dormitory	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Two					
Training/Meeting Rooms	None					
Washer/Dryer	One each					
Safety & Security						
Sprinklers and/or Smoke Detection	No sprinkler system/smoke alarms present in resident areas					
Decontamination/Biohazard Disposal	No					
Security	Punch keypad into bay and residence					
Apparatus Exhaust System	None					

Figure 228: Lacey Station 33

Address/Physical Location:	6500 Mullen Road SE, Olympia, WA 98513
	**General Description:** Station is located on a large lot with room for expansion. Substantial office space and computer resources. Houses an engine and BLS aid unit. Moderate supply & equipment storage capacity.

Structure						
Construction Type	Type 5					
Date of Construction	2003					
Seismic Protection	None; building code					
Auxiliary Power	Yes					
General Condition	Good					
Apparatus Bays	0	Drive-through bays	2	back-in bays		
Special considerations (ADA, etc.)	Fully accessible; mixed-gender appropriate					
Square Footage	8,100					
Facilities Available						
Separate Rooms/Dormitory/Other	6	Bedrooms	6	Beds	N/A	Beds in dormitory
Maximum Station Staffing Capability	6					
Exercise/Workout Facilities	Yes					
Kitchen/Dormitory	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Shower & bathroom combinations (4)					
Training/Meeting Rooms	Training room for up to 30 persons					
Washer/Dryer	One each					
Safety & Security						
Sprinklers and/or Smoke Detection	Yes/Yes; central alarm					
Decontamination/Biohazard Disposal	Yes					
Security	Perimeter Pass access control system					
Apparatus Exhaust System	Air turnover system					

Figure 229: Lacey Station 34

Address/Physical Location:	8407 Steilacoom Road SE, Olympia, WA 98513
	**General Description:** Large office space. Small kitchen. Locker room. Moderate supply and equipment storage. Dormitory at opposite end of apparatus bays. This station houses an engine, ALS medic unit, a brush unit, and a tender. Station is located adjacent to Medic One maintenance facility. Due to be replaced and renovated as a training facility in 2019–2020.

Structure						
Construction Type	Type 2					
Date of Construction	1990					
Seismic Protection	Building Code/None					
Auxiliary Power	Yes					
General Condition	Average (planned for replacement as training facility)					
Apparatus Bays	4	Drive-through bays	0	back-in bays		
Special considerations (ADA, etc.)	None					
Square Footage	11,300					
Facilities Available						
Separate Rooms/Dormitory/Other	2	Bedrooms	2	Beds	6	Beds in dormitory
Maximum Station Staffing Capability	8–10					
Exercise/Workout Facilities	Yes					
Kitchen/Dormitory	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	One bathroom/shower combination; two separate showers					
Training/Meeting Rooms	One for up to 30 persons					
Washer/Dryer	Two each					
Safety & Security						
Sprinklers and/or Smoke Detection	Yes/Yes; central alarm					
Decontamination/Biohazard Disposal	Yes					
Security	Perimeter Pass access control system					
Apparatus Exhaust System	No					

Figure 230: Lacey Station 35

Address/Physical Location:	3701 Willamette Drive, Lacey, WA 98516
	**General Description:** Relatively new station in good condition, located in a suburban area. The station is designed for the addition of one apparatus bay and two dorms if needed. Also have adjacent 5 acre parcel that could be used for expansion if needed although no current plans exist. Substantial office space and computer access.

Structure						
Construction Type	Type 5					
Date of Construction	2005					
Seismic Protection	Building Code					
Auxiliary Power	Yes					
General Condition	Good					
Apparatus Bays	0	Drive-through bays	2	back-in bays		
Special considerations (ADA, etc.)	Fully accessible; mixed-gender appropriate					
Square Footage	8,100					
Facilities Available						
Separate Rooms/Dormitory/Other	6	Bedrooms	6	Beds	N/A	Beds in dormitory
Maximum Station Staffing Capability	6					
Exercise/Workout Facilities	Yes					
Kitchen/Dormitory	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Four shower & bathroom combinations					
Training/Meeting Rooms	Small classroom					
Washer/Dryer	One each					
Safety & Security						
Sprinklers and/or Smoke Detection	Central alarm					
Decontamination/Biohazard Disposal	Yes					
Security	Perimeter Pass access control system					
Apparatus Exhaust System	Air turnover system					

McLane-Black Lake Fire District Stations

Figure 231: McLane-Black Lake Station 91 (Headquarters)

Address/Physical Location:	125 Delphi Rd., NW, Olympia, WA 98502					
	**General Description:** A large, modern, well-designed facility capable of housing ten personnel. The external design of the fire station presents a positive image to the community. The four drive-through bays are each two-deep. The department's regional training center is adjacent to this station.					
Structure						
Construction Type	Wood Frame					
Date of Construction	2008					
Seismic Protection	Yes					
Auxiliary Power	Yes					
General Condition	Excellent					
Apparatus Bays	4	Drive-through bays (double-deep bays)				
Special considerations (ADA, etc.)	ADA compliant					
Square Footage	17,800					
Facilities Available						
Separate Rooms/Dormitory/Other	8	Bedrooms	8	Beds	N/A	Beds in dormitory
Maximum Station Staffing Capability	10					
Exercise/Workout Facilities	Yes					
Kitchen/Dormitory	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Yes					
Training/Meeting Rooms	Yes					
Washer/Dryer	Yes					
Safety & Security						
Sprinklers and/or Smoke Detection	Yes/Yes					
Decontamination/Biohazard Disposal	Yes					
Security	No					
Apparatus Exhaust System	Whole house system; pressurized louvered bay doors					

Figure 232: McLane-Black Lake Station 92

Address/Physical Location:	3204 36th Ave. NW, Olympia, WA 98502
	**General Description:** Old station originally built in 1964 and remodeled in 1977. Station is in fair condition, and likely should be replaced in the near future. Staffed with residents. Small kitchen. Houses a single engine and BLS aid unit.

Structure						
Construction Type	Non-combustible; Metal building on slab					
Date of Construction	1964; Remodeled in 1977					
Seismic Protection	No					
Auxiliary Power	Yes					
General Condition	Fair					
Apparatus Bays	0	Drive-through bays	2	back-in bays		
Special considerations (ADA, etc.)	None					
Square Footage	2,396					
Facilities Available						
Separate Rooms/Dormitory/Other	3	Bedrooms	3	Beds	N/A	Beds in dormitory
Maximum Station Staffing Capability	3					
Exercise/Workout Facilities	No					
Kitchen/Dormitory	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Two full-baths with a shower in each					
Training/Meeting Rooms	No					
Washer/Dryer	Yes					
Safety & Security						
Sprinklers and/or Smoke Detection	No/Yes					
Decontamination/Biohazard Disposal	No (done at headquarters station)					
Security	No					
Apparatus Exhaust System	Yes					

Figure 233: McLane-Black Lake Station 93

Address/Physical Location:	2815 Summit Lake Shore Rd, Olympia, WA 98502
	**General Description:** Modern, well-designed fire station staffed with residents only. Includes a watch office, and weight room and storage on the second floor. Contains an engine, BLS aid unit, and reserve engine.

Structure						
Construction Type	Wood Frame					
Date of Construction	2012					
Seismic Protection	Yes					
Auxiliary Power	Yes					
General Condition	Excellent					
Apparatus Bays	0	Drive-through bays	4	back-in bays (1 deep)		
Special considerations (ADA, etc.)	Yes					
Square Footage	6,800					
Facilities Available						
Separate Rooms/Dormitory/Other	6	Bedrooms	6	Beds	N/A	Beds in dormitory
Maximum Station Staffing Capability	6					
Exercise/Workout Facilities	Yes					
Kitchen/Dormitory	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Yes					
Training/Meeting Rooms	No					
Washer/Dryer	Commercial washer & dryer					
Safety & Security						
Sprinklers and/or Smoke Detection	Yes/Yes					
Decontamination/Biohazard Disposal	Yes					
Security	No					
Apparatus Exhaust System	Yes					

Figure 234: McLane-Black Lake Station 94

Address/Physical Location:	6005 Cooper Point Rd. NW, Olympia, WA 98502
	**General Description:** An older station built in 1974 and remodeled in 1986. This station is very small and unstaffed. The single bay has room for only one engine.

Structure						
Construction Type	Masonry					
Date of Construction	1974; remodeled in 1986					
Seismic Protection	No					
Auxiliary Power	Yes					
General Condition	Good					
Apparatus Bays	0	Drive-through bays	1	back-in bays		
Special considerations (ADA, etc.)	None					
Square Footage	2,132					
Facilities Available						
Separate Rooms/Dormitory/Other	2	Bedrooms	2	Beds	N/A	Beds in dormitory
Maximum Station Staffing Capability	2–4					
Exercise/Workout Facilities	No					
Kitchen/Dormitory	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Yes. Half-bath behind bay; one full-bath with shower					
Training/Meeting Rooms	No					
Washer/Dryer	Yes					
Safety & Security						
Sprinklers and/or Smoke Detection	No/Yes					
Decontamination/Biohazard Disposal	Yes					
Security	No					
Apparatus Exhaust System	Yes					

Figure 235: McLane-Black Lake Station 95

Address/Physical Location:	5911 Black Lake Blvd SW, Olympia, WA 98512
	**General Description:** This is a very large and modern fire station. There is substantial capacity for apparatus, personnel, and office/computer facilities. Station has a conference room and very large classroom. McLane-Black Lake provides office space for the Western Regional EMS & Trauma Care Council.

Structure						
Construction Type	Wood Frame					
Date of Construction	2005					
Seismic Protection	Yes					
Auxiliary Power	Yes					
General Condition	Very good					
Apparatus Bays	3	Drive-through bays	0	back-in bays		
Special considerations (ADA, etc.)	ADA Compliant					
Square Footage	15,983					
Facilities Available						
Separate Rooms/Dormitory/Other	7	Bedrooms	10	Beds	6	Beds in dormitory
Maximum Station Staffing Capability	14					
Exercise/Workout Facilities	Yes					
Kitchen/Dormitory	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Yes					
Training/Meeting Rooms	Yes					
Washer/Dryer	Yes					
Safety & Security						
Sprinklers and/or Smoke Detection	Yes/Yes					
Decontamination/Biohazard Disposal	Yes					
Security	No					
Apparatus Exhaust System	Yes					

West Thurston Fire Stations

Figure 236: West Thurston RFA Station 1-1

Address/Physical Location:	10828 Littlerock Rd. SW, Olympia, WA 98512					
	**General Description:** This is relatively large and modern fire station capable of housing up to 14 personnel. There are five drive-through bays capable of housing a number of apparatus. Storage is limited. Mixed gender facilities.					
Structure						
Construction Type	Type 3					
Date of Construction	1997					
Seismic Protection	Yes (per code)					
Auxiliary Power	Yes					
General Condition	Good					
Apparatus Bays	5	Drive-through bays	0	back-in bays		
Special considerations (ADA, etc.)	ADA compliant; mixed-gender appropriate					
Square Footage	11,995					
Facilities Available						
Separate Rooms/Dormitory/Other	12	Bedrooms	14	Beds	N/A	Beds in dormitory
Maximum Station Staffing Capability	14					
Exercise/Workout Facilities	Yes					
Kitchen/Dormitory	Yes					
Individual Lockers/Storage Assigned	One male & one female locker rooms					
Shower Facilities	Two male & two female showers					
Training/Meeting Rooms	One large; one small					
Washer/Dryer	One commercial washer/extractor; one standard washer					
Safety & Security						
Sprinklers and/or Smoke Detection	Yes/Yes					
Decontamination/Biohazard Disposal	Yes					
Security	Yes (limited access; video surveillance)					
Apparatus Exhaust System	Plymovent system					

Figure 237: West Thurston RFA Station 1-2

Address/Physical Location:	18720 Sargent Rd. SW Rochester, WA 98579
	**General Description:** Another relatively large and modern fire station with three drive-through bays capable of housing a number of apparatus. The station has ample room to house at least 12 personnel, and has ample mixed-gender facilities.

Structure					
Construction Type	Type 5				
Date of Construction	2007				
Seismic Protection	Yes (per code)				
Auxiliary Power	Yes				
General Condition	Good				
Apparatus Bays	3	Drive-through bays	0	back-in bays	
Special considerations (ADA, etc.)	ADA compliant; mixed-gender appropriate				
Square Footage	15,000				
Facilities Available					
Separate Rooms/Dormitory/Other	7	Bedrooms	9	Beds	Bunks in two rooms
Maximum Station Staffing Capability	12				
Exercise/Workout Facilities	Yes				
Kitchen/Dormitory	Two kitchens				
Individual Lockers/Storage Assigned	One male & one female locker rooms				
Shower Facilities	Two male & two female showers				
Training/Meeting Rooms	One large; one small				
Washer/Dryer	One commercial washer/extractor; one standard washer				
Safety & Security					
Sprinklers and/or Smoke Detection	Yes/Yes				
Decontamination/Biohazard Disposal	Yes; includes shower				
Security	Video surveillance				
Apparatus Exhaust System	Yes				

Figure 238: West Thurston RFA Station 1-3

Address/Physical Location:	18346 Albany SW, Rochester, WA 98579
	**General Description:** This is an older station built in 1976, but remodeled in 2012. It is located in a relatively rural area in Rochester. It has the capacity to house at least four personnel.

Structure						
Construction Type	Type 3					
Date of Construction	1976 (remodeled 2012)					
Seismic Protection	Per code/Yes					
Auxiliary Power	Yes					
General Condition	Good					
Apparatus Bays	0	Drive-through bays	4	back-in bays		
Special considerations (ADA, etc.)	ADA compliant; mixed-gender appropriate					
Square Footage	5,060					
Facilities Available						
Separate Rooms/Dormitory/Other	4	Bedrooms	4	Beds	N/A	Beds in dormitory
Maximum Station Staffing Capability	4					
Exercise/Workout Facilities	Yes					
Kitchen/Dormitory	Yes					
Individual Lockers/Storage Assigned	None					
Shower Facilities	Two bathroom/shower combinations					
Training/Meeting Rooms	No					
Washer/Dryer	Standard type					
Safety & Security						
Sprinklers and/or Smoke Detection	Yes/Yes					
Decontamination/Biohazard Disposal	Sink only					
Security	Video surveillance					
Apparatus Exhaust System	Yes					

Figure 239: West Thurston RFA Station 1-4

Address/Physical Location:	3131 Maytown Rd. SW, Olympia, WA 98512
	**General Description:** This is a smaller station capable of housing a maximum of two personnel. The on-duty Battalion Chief is deployed from this location.

Structure						
Construction Type	5					
Date of Construction	2009					
Seismic Protection	No					
Auxiliary Power	Yes					
General Condition	Good					
Apparatus Bays	0	Drive-through bays	2	back-in bays		
Special considerations (ADA, etc.)	ADA compliant; mixed-gender appropriate					
Square Footage	8,747					
Facilities Available						
Separate Rooms/Dormitory/Other	2	Bedrooms	2	Beds	0	Beds in dormitory
Maximum Station Staffing Capability	2					
Exercise/Workout Facilities	Yes					
Kitchen/Dormitory	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Three bathroom/shower combinations; one bathroom-only					
Training/Meeting Rooms	One training & one watch office meeting space					
Washer/Dryer	Standard type					
Safety & Security						
Sprinklers and/or Smoke Detection	Yes/Yes					
Decontamination/Biohazard Disposal	Yes					
Security	Video surveillance					
Apparatus Exhaust System	Yes					

Figure 240: West Thurston RFA Station 1-6 (Scott Lake)

Address/Physical Location:	2640 Trevue Ave. SW, Olympia, WA 98512
	**General Description:** A small, modern fire station capable of housing two personnel. The station has two back-in bays. The engine and aid unit are cross-staffed as necessary.

Structure						
Construction Type	Type 1					
Date of Construction	2015					
Seismic Protection	Per code					
Auxiliary Power	Yes					
General Condition	Good					
Apparatus Bays	0	Drive-through bays	2	back-in bays		
Special considerations (ADA, etc.)	ADA compliant; mixed-gender appropriate					
Square Footage	2,300					
Facilities Available						
Separate Rooms/Dormitory/Other	2	Bedrooms	2	Beds	N/A	Beds in dormitory
Maximum Station Staffing Capability	2					
Exercise/Workout Facilities	No					
Kitchen/Dormitory	Yes					
Individual Lockers/Storage Assigned	No					
Shower Facilities	Two showers					
Training/Meeting Rooms	None					
Washer/Dryer	Standard type					
Safety & Security						
Sprinklers and/or Smoke Detection	Yes/Yes					
Decontamination/Biohazard Disposal	Yes					
Security	Video surveillance					
Apparatus Exhaust System	Yes					

Olympia Fire Stations

Figure 241: Olympia Station 1 (Headquarters)

Address/Physical Location:	100 Eastside Street NE, Olympia, WA 98506					
	**General Description:** Large-capacity facility housing the fire department administration along with multiple apparatus and fire crews. Ample room for personnel with excellent kitchen facility and dayroom. All bays are back-in and two-deep, depending on the apparatus.					
Structure						
Construction Type	Ordinary, brick facade, steel studs					
Date of Construction	1992					
Seismic Protection	Energy audits by City of Olympia					
Auxiliary Power	Yes					
General Condition	Good					
Apparatus Bays	0	Drive-through bays	6	back-in bays		
Special considerations (ADA, etc.)	Mixed-gender appropriate; male & female restrooms					
Square Footage	22,525					
Facilities Available						
Separate Rooms/Dormitory/Other	10	Bedrooms	10	Beds	N/A	Beds in dormitory
Maximum Station Staffing Capability	10					
Exercise/Workout Facilities	Yes					
Kitchen/Dormitory	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Two					
Training/Meeting Rooms	Three rooms					
Washer/Dryer	Standard and commercial for turnout gear					
Safety & Security						
Sprinklers and/or Smoke Detection	Yes/Yes (fire alarm)					
Decontamination/Biohazard Disposal	Yes					
Security	Video cameras					
Apparatus Exhaust System	Nederman exhaust system					

Figure 242: Olympia Station 2

Address/Physical Location:	330 Kenyon Street NW, Olympia, WA 98502
	**General Description:** Olympia Fire Station 2 houses the busiest engine company in the City. It has double back-in bays that are two-deep. An ALS medic unit is deployed from this station.

Structure						
Construction Type	Brick					
Date of Construction	1992					
Seismic Protection	Energy audits by City hall					
Auxiliary Power	Yes					
General Condition	Fair					
Apparatus Bays	0	Drive-through bays	2	back-in bays (2 deep)		
Special considerations (ADA, etc.)	Mixed-gender appropriate; male & female restrooms					
Square Footage	6,070					
Facilities Available						
Separate Rooms/Dormitory/Other	5	Bedrooms	5	Beds	N/A	Beds in dormitory
Maximum Station Staffing Capability	6					
Exercise/Workout Facilities	Yes					
Kitchen/Dormitory	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Two					
Training/Meeting Rooms	One					
Washer/Dryer	Standard and commercial for turnout gear					
Safety & Security						
Sprinklers and/or Smoke Detection	Yes/Yes (fire alarm)					
Decontamination/Biohazard Disposal	Yes					
Security	Video cameras					
Apparatus Exhaust System	Nederman exhaust system					

Figure 243: Olympia Station 3

Address/Physical Location:	2525 22nd Avenue SE, Olympia, WA 98501
	**General Description:** Olympia Station 3 is a two-story facility located in a predominantly residential area. The crew quarters are located on second floor, making access to the apparatus bays down a stairway.

Structure						
Construction Type	Ordinary/residential wood					
Date of Construction	1993 with later add-on exercise room					
Seismic Protection	Energy by City hall					
Auxiliary Power	Yes					
General Condition	Good					
Apparatus Bays	0	Drive-through bays	2	back-in bays		
Special considerations (ADA, etc.)	Mixed-gender appropriate					
Square Footage	4,750					
Facilities Available						
Separate Rooms/Dormitory/Other	4	Bedrooms	4	Beds	0	Beds in dormitory
Maximum Station Staffing Capability	5 (if fifth bed added)					
Exercise/Workout Facilities	Yes					
Kitchen/Dormitory	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Yes					
Training/Meeting Rooms	Yes					
Washer/Dryer	Standard and commercial for turnout gear					
Safety & Security						
Sprinklers and/or Smoke Detection	No/Yes (fire alarm)					
Decontamination/Biohazard Disposal	Yes					
Security	No					
Apparatus Exhaust System	Nederman exhaust system					

Figure 244: Olympia Station 4

Address/Physical Location:	3525 Stoll Rd SE, Olympia, WA 98501
	**General Description:** Station 4 is a large, modern and well-designed and equipped station. Substantial capacity for apparatus and personnel. Attractive exterior that presents a positive community image.

Structure						
Construction Type	Ordinary, wood stud, metal siding and roof					
Date of Construction	2010					
Seismic Protection	Yes and audits by City					
Auxiliary Power	Yes					
General Condition	Excellent					
Apparatus Bays	0	Drive-through bays	3	back-in bays (1-2 deep)		
Special considerations (ADA, etc.)	Separate dorms & individual restrooms					
Square Footage	13,000					
Facilities Available						
Separate Rooms/Dormitory/Other	6	Bedrooms	6	Beds	N/A	Beds in dormitory
Maximum Station Staffing Capability	8					
Exercise/Workout Facilities	Yes					
Kitchen/Dormitory	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Yes					
Training/Meeting Rooms	Yes, and small library room					
Washer/Dryer	Standard and commercial for turnout gear					
Safety & Security						
Sprinklers and/or Smoke Detection	Yes/Yes (fire alarm)					
Decontamination/Biohazard Disposal	Yes; extractor					
Security	No					
Apparatus Exhaust System	Nederman exhaust system					

Apparatus Maintenance Facilities

Several of the fire departments in this study maintain their own apparatus and equipment maintenance facilities. The East Olympia Fire Department maintains a storage and maintenance facility adjacent to Station 61, as shown in the following figure.

Figure 245: East Olympia Storage & Maintenance Facility (adjacent to Station 61)

Lacey Fire District 3 has an apparatus maintenance facility adjacent to its Station 34, which is shared by the Olympia Fire Department and other agencies, including Thurston County Medic One.

Figure 246: Lacey Fire District 3 Shared Maintenance Facility

Figure 247: Details of Lacey District #3 Shared Apparatus Maintenance Facility

Address/Physical Location:	8407 Steilacoom Rd SE, Lacey, WA (leased)
Structure	
Construction Type	Metal frame
Date of Construction	2004
Seismic Protection	Unknown
Auxiliary Power	No
General Condition	Good
Special considerations (ADA, etc.)	N/A
Square Footage	7,676
Facilities Available	
Exercise/Workout Facilities	No
Kitchen/Dormitory	Refrigerator and sink
Shower Facilities	No
Safety & Security	
Sprinklers and/or Smoke Detection	Yes/Yes
Security	Yes
Apparatus Exhaust System	Yes

APPENDIX C: NFPA 1720 RESPONSE PERFORMANCE ELEMENTS

Term	Ref. #	Definition	Performance Standard
Alarm Answering Time	4.1.2.3.1	9-1-1 call time from first ring to answer.	Not defined or measured in this standard
Alarm Transfer Time	4.1.2.3.2	Time from receipt of emergency alarm at PSAP until alarm receipt at communication center.	Not defined or measured in this standard
Alarm Processing Time	4.1.2.3.3	Call process time from acknowledged at the dispatch center until notification of response units.	Not defined or measured in this standard
Alarm Processing Time – Exceptions	4.1.2.3.3.1	1. Calls requiring EMD questioning & pre-arrival medical instructions 2. Calls requiring language translation 3. Calls requiring the use of a TTY/TDD device or audio/video relay services 4. Calls of criminal activity that require information vital to emergency responder safety prior to dispatching units 5. Hazardous material incidents 6. Technical rescue 7. Calls that require determining the location of the alarm due to insufficient information 8. Calls received by text message	Not defined or measured in this standard
Turnout Time	4.1.2.1(2) 4.1.2.4	Time from notification of response personnel until the initiation of movement towards the incident.	Where staffed stations are provided as defined by the AHJ: Within 90 seconds for fire & special operations, 90% of the time Within 60 seconds for EMS, 90% of the time
Travel Time – Fire	4.1.2.1(3) 4.1.2.4	Time that begins when an engine company is en route to the emergency incident and ends when the unit arrives at the scene.	Not defined or measured in this standard
Travel Time – EMS	4.1.2.1(6) 4.1.2.4	Time that begins when unit with 1st responder AED or higher level capability at an EMS Incident and ends when the unit arrives at the scene.	Not defined or measured in this standard
Travel Time – ALS (when FD based)	4.1.2.1(7) 4.1.2.4	Time that begins when unit with advanced life support capability at an EMS Incident and ends when the unit arrives at the scene.	Not defined or measured in this standard
Travel Time – Full Alarm Assignment (Residential Fire)	4.1.2.1(4) 4.1.2.4 5.2.4.1	The initial full alarm assignment to a structure fire in a typical 2000 ft^2 (186 m^2), two-story single-family dwelling without basement and with no exposures	Not defined or measured in this standard

Term	Ref. #	Definition	Performance Standard
Travel Time – Full Alarm Assignment (Open Air Strip Mall Fire)	4.1.2.1(4) 4.1.2.4 5.2.4.2	The initial full alarm assignment to a structure fire in an Open-Air Strip Shopping Center ranging from 13,000 ft^2 to 196,000 ft^2 (1,203 m^2 to 18,209 m^2) in size	Not defined or measured in this standard
Travel Time – Full Alarm Assignment (Apartment Fire)	4.1.2.1(4) 4.1.2.4 5.2.4.3	The initial full alarm assignment to a structure fire in a typical 1,200 ft^2 (111 m^2) apartment within a three-story, garden style apartment building	Not defined or measured in this standard
Travel Time – Full Alarm Assignment (High-rise Fire)	4.1.2.1(4) 4.1.2.4 5.2.4.4	The Initial full alarm assignment to a fire in a building with the highest floor greater than 75 ft (23 m) above the lowest level of fire department vehicle access	Not defined or measured in this standard
Response Time – Fire & Special Operations (Effective Response Force)	Table 4.3.2 (footnote c) Accumulation of Turnout Time and Travel Time	Fire and special operations incidents	Urban area > 1,000 people/mi^2 15 FFs are delivered within 9 minutes, 90% of the time
			Suburban area 500–1,000 people/mi^2 10 FFs are delivered within 10 minutes, 80% of the time
			Rural area < 500 people/mi^2 6 FFs within 14 minutes, 80% of the time
			Remote area Travel distance ≥ 8 miles, 4 FFs within timeframe dependent on travel distance, 90% of the time
			Special risks determined by AHJ, Minimum FFs determined by AHJ based on risk, Response time determined by AHJ, 90% of the time
Response Time – EMS	Accumulation of Turnout Time and Travel Time	Emergency medical incidents	EMS operations shall be organized to ensure the fire department's emergency medical capability includes personnel, equipment, and resources to deploy the initial arriving company and additional alarm assignments. (no specific standard)
Initiation of Fire Attack	4.3.4	Upon assembling the necessary resources at the emergency scene, the fire department shall have the capability to safely commence an initial attack (determined by population density, or AHJ for special risks)	Within 2 minutes, 90% of the time.

APPENDIX D: NFPA 1710 RESPONSE PERFORMANCE ELEMENTS

Term	Ref. #	Definition	Performance Standard	Min Staff
Alarm Answering Time	4.1.2.3.1	9-1-1 call time from first ring to answer.	Within 15 seconds, 95% of the time Within 40 seconds, 99% of the time	N/A
Alarm Transfer Time	4.1.2.3.2	Time from receipt of emergency alarm at PSAP until alarm receipt at communication center.	Within 30 seconds, 95% of the time	N/A
Alarm Processing Time	4.1.2.3.3	Call process time from acknowledged at the dispatch center until notification of response units.	Within 64 seconds, 90% of the alarms and within 106 seconds, 95% of the alarms	N/A
Alarm Processing Time – Exceptions	4.1.2.3.3.1	1. Calls requiring EMD questioning & pre-arrival medical instructions 2. Calls requiring language translation 3. Calls requiring use of a TTY/TDD device or audio/video relay services 4. Calls of criminal activity that require information vital to emergency responder safety prior to dispatching units 5. Hazardous material incidents 6. Technical rescue 7. Calls that require determining location of alarm due to insufficient information 8. Calls received by text message	Within 90 seconds, 90% of the time Within 120 seconds 99% of the time	N/A
Turnout Time	4.1.2.1(2) 4.1.2.4	Time from notification of response personnel until the initiation of movement towards the incident.	Within 80 seconds for fire & special operations response, 90% of the time Within 60 seconds for EMS response, 90% of the time	N/A
Travel Time – Fire	4.1.2.1(3) 4.1.2.4	Time that begins when an engine company is en route to the emergency incident and ends when the unit arrives at the scene.	Within 4 minutes travel time for the arrival of the first arriving engine company, 90% of the time	N/A

Term	Ref. #	Definition	Performance Standard	Min Staff
Travel Time – EMS	4.1.2.1(6) 4.1.2.4	Time that begins when unit with 1st responder with AED or higher level capability at an EMS Incident and ends when the unit arrives at the scene.	Within 4 minutes travel time for arrival of a unit with 1st responder with AED or higher level capability at an EMS Incident, 90% of the time	N/A
Travel Time – ALS (when FD based)	4.1.2.1(7) 4.1.2.4	Time that begins when unit with advanced life support capability at an emergency medical Incident and ends when the unit arrives at the scene.	Within 8 minutes travel time for arrival of an advanced life support (ALS) unit at an EMS incident, provided a first responder with AED or basic life support (BLS) unit arrived in 4 minutes or less travel time, 90% of the time	N/A
Travel Time – Full Alarm Assignment (Residential Fire)	4.1.2.1(4) 4.1.2.4 5.2.4.1	The initial full alarm assignment to a structure fire in a typical 2,000 ft^2 (186 m^2), two-story single-family dwelling without basement and with no exposures	Within 8 minutes travel time for the deployment of an initial full alarm assignment at a fire suppression incident, 90% of the time	14 FFs, or 15 w/aerial (5.2.4.1.1)
Travel Time – Full Alarm Assignment (Open Air Strip Mall Fire)	4.1.2.1(4) 4.1.2.4 5.2.4.2	The initial full alarm assignment to a structure fire in an Open-Air Strip Shopping Center ranging from 13,000 ft^2 to 196,000 ft^2 (1203 m^2 to 18,209 m^2) in size	Within 8 minutes travel time for the deployment of an initial full alarm assignment at a fire suppression incident, 90% of the time	27 FFs, or 28 w/aerial (5.2.4.2.1)
Travel Time – Full Alarm Assignment (Apartment Fire)	4.1.2.1(4) 4.1.2.4 5.2.4.3	The initial full alarm assignment to a structure fire in a typical 1,200 ft^2 (111 m^2) apartment within a three-story, garden style apartment building	Within 8 minutes travel time for the deployment of an initial full alarm assignment at a fire suppression incident, 90% of the time	27 FFs, or 28 w/aerial (5.2.4.3.1)
Travel Time – Full Alarm Assignment (High-rise Fire)	4.1.2.1(4) 4.1.2.4 5.2.4.4	The Initial full alarm assignment to a fire in a building with the highest floor greater than 75 ft (23 m) above the lowest level of fire department vehicle access	Within 8 minutes travel time for the deployment of an initial full alarm assignment at a fire suppression incident, 90% of the time	46 FFs (5.2.4.4.1)
Total Response Time	3.3.53.6	Time from receipt of alarm at the primary PSAP to first emergency response unit is initiating action or intervening to control incident.	Too many variables—depends on call type—no standard for initiation action or intervening to control incident	Depends on call type
Response Time – Fire & Special Operations (Effective Response Force)	Accumulation of Turnout Time and Travel Time	The initial full alarm assignment arrives	Within 9 minutes, 20 seconds, 90% of the time	Depends on call type
1st Unit Response Time – Fire & Special Operations	Accumulation of Turnout Time and Travel Time	Fire and special operations incidents	Within 5 minutes, 20 seconds, 90% of the time	4 FFs (5.2.3.1.1)

Term	Ref. #	Definition	Performance Standard	Min Staff
1st Unit Response Time – BLS EMS	Accumulation of Turnout Time and Travel Time	Emergency medical incidents	Within 5 minutes, 90% of the time	Typically 2 BLS certified personnel 5.3.3.2.1
ALS Unit Response Time – ALS EMS	Accumulation of Turnout Time and Travel Time	Advanced life support emergency medical incidents where FD provides BLS 1st response	Within 9 minutes, 90% of the time (provided a first responder with AED or basic life support unit arrived in 4 minutes or less travel time)	Typically 2 5.3.3.2.1