Cooperative Services Feasibility Study

Clackamas Fire District #1

Estacada Rural Fire District #69

June 2019

ESCI Emergency Services Consulting International

CLACKAMAS COUNTY
Oregon

CONTENTS

ACKNOWLEDGMENTS

Emergency Services Consulting International wishes to extend its sincere appreciation to the elected officials; to the fire chiefs, officers, and representatives of Clackamas Fire District #1 and Estacada Rural Fire District #69; and to the many other individuals who contributed to this project.

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…and to all the firefighters, officers, civilian paramedics, volunteers, and administrative support staff who daily serve the citizens and visitors of Clackamas County with honor and distinction!

INTRODUCTION

In February 2019, Emergency Services Consulting International (ESCI) was retained by the Boards of Directors of Clackamas Fire District #1 (CFD1) and Estacada Rural Fire District #69 (ERFD69) to conduct a cooperative services feasibility study.

Prior to 2019, Clackamas Fire District #1 provided a broad range of fire prevention services (e.g., administration, investigations, data collection, public education, etc.); training services (e.g., webinars, company performance evaluations, skills training, volunteer firefighter academy, etc.); operational command and control; operational resources; and logistical support to Estacada Rural Fire District #69 in accordance with an Intergovernmental Agreement (IGA).

In February 2019, an amended IGA was signed by the respective fire district Boards. The new IGA continued most of the fire prevention and training services previously provided to Estacada, but modified and reduced the command and control, operations, and logistics services.

The following report contains the results of ESCI's analysis and recommendations for future service-delivery. In conducting this study, ESCI's approach was from an unbiased, objective perspective, and based on national standards, industry best practices, and the substantial experience and education of the ESCI Project Team. The primary goal of this study was to provide the elected officials and policymakers with realistic strategies that would ultimately produce the best options for their respective communities, organizations, and personnel.

Scope of Work

The following is a description of the Scope of Work that was included in the original proposal from ESCI.

Phase I—Project Initiation & Information Acquisition

Task I-A: Project Initiation

ESCI will work with the Interagency Committee and leadership of Clackamas Fire District #1 and Estacada Fire District #69 to gain a comprehensive understanding of the backgrounds, goals, and expectations for the project. ESCI's project manager will develop and refine a proposed work plan that will guide the project team. This work plan will be developed identifying:

- Primary tasks to be performed
- Person(s) responsible for each task
- Method of evaluating results
- Resources to be utilized
- Possible obstacles or problem areas associated with the accomplishment of each task

This conversation will also help to establish working relationships, make logistical arrangements, determine an appropriate line of communications, and finalize contractual arrangements.

Task I-B: Acquisition & Review of Background Information

The Districts will provide ESCI with pertinent information and data from each organization's assigned project manager or liaison. This data will be used extensively in the analysis and development of the report document. The documents and information relevant to this project will include, but not be limited to, the following from each fire district:

- Current IGA between CFD and EFD
- Local census and demographic data from Clackamas County and the incorporated jurisdictions
- Past or current studies or research from each fire district
- Historical financial data, budgets, including debt information, long-range financial plans and projections from each fire district (2016–2018)
- Current assessed values of each District and the most current property tax rates for each
- Standard Operating Guidelines (SOGs) and service-delivery and deployment practices
- Current service-delivery objectives and targets (if applicable) for each District
- List of each District's fire stations and training center facilities; including their physical locations
- Each District's apparatus inventory and assigned fire station
- Local collective bargaining agreements
- Organizational charts from each district
- Automatic and mutual aid agreements
- Records management data, including National Fire Incident Reporting System (NFIRS) incident data exported to an Excel® format (2016–2018)
- Computer-Aided Dispatch (CAD) incident records exported to an Excel® format (2016–2018)
- Local Geographic Information Systems (GIS) data and shapefiles of each district; fire stations; and fire management zones
- Other information and data as may be necessary for the successful completion of this project

Task I-C: Stakeholder Input & Field Work

The ESCI project team will conduct on-site interviews and gather information from key personnel and stakeholders from each of the Districts. Some information may be acquired through use of electronic forms and/or telephone interviews. Individuals will include, but not be limited to:

- Interagency Committee members and any other elected members of the respective fire district Boards.
- Each District's Fire Chief and representatives of their respective command staffs
- Individuals responsible for finance and human resources at each District
- Representative(s) of IAFF Local 1159 (Professional Firefighters of Clackamas County)
- Select group of firefighters and company officers from each District (may be completed through an online survey)
- Any other individuals as may be necessary for the successful completion of this study

Phase II—Baseline Assessment of the Fire Districts

Task II-A: Organizations & System Overview

ESCI will provide a basic description of the various services and components of Clackamas County Fire District #1 and Estacada Rural Fire District #69. This will include, but not be limited to:

- Service areas populations and demographics
- General description of the fire districts and their contractual arrangement
- Description of the current service-delivery infrastructure
- Governance and lines of authority
- Organizational design

Task II-B: Staffing & Personnel

ESCI will review each District's staffing levels. Areas to be considered include:

- Administration and support staffing levels
- Operational staffing levels
- Staff allocation to various functions and divisions
- Staff scheduling methodology
- Current standard of coverage and staffing performance for incidents
- Operations staff distribution
- Comparison between the Districts of current wages and benefits of career personnel
- Review and comparison of current labor agreements
- Utilization of career and volunteer companies
- Responsibilities and activity levels of personnel
- Review and comparison of job descriptions and current ranks at both Districts
- Emergency callback procedures

Task II-C: Financial Review of the Districts

ESCI will review the existing financial status of each fire district to include, but not limited to:

- Sources of recurring and non-recurring revenue, including property taxes
- Existing revenue and projections for the next three to five years
- Cost for existing levels of service and projections for the next three to five years
- Contractual services provided by each agency
- Indirect costs, cost allocations, and contractual obligations
- Review of each District's capital facilities and apparatus replacement and improvement plans

Task II-D: Capital Facilities & Apparatus

ESCI will review the status of current major capital assets (facilities, apparatus, and vehicles) and analyze needs relative to the existing condition of those assets. Observations will include:

Facilities—Tour and make observations of each District's fire station efficiency and functionality. This will be a cursory evaluation, and will not involve an engineering or highly technical inspection of the facilities. Fire station locations will be reviewed in more detail in the section on "Service-Delivery & Performance."

- Design
- Construction
- Safety
- Code compliance
- Staff facilities
- Efficiency

District Apparatus—Review and make observations regarding the condition and inventory of each District's fire apparatus and other relevant vehicles. Items to be reviewed include:

- Age, condition, and serviceability
- Distribution and deployment
- Safety features
- Maintenance

Task II-E: Service-Delivery & Performance

ESCI will review and make observations in areas specifically involved in, or affecting, service levels and performance of the Districts, either individually or when operating in concert with one another in the study area (the collective jurisdictions of the Districts). Areas to be reviewed shall include, but not necessarily be limited to:

- **Demand Study**—
  - Analysis of current service-demand by incident type and temporal variation for each individual organization
  - Analysis and geographic display of current service demand density within the overall study area
- **Distribution Study**—
  - Overview of the current facility and apparatus deployment strategy, analyzed through Geographical Information Systems software, with identification of service gaps and redundancies. This distribution study will be conducted for the study area as a whole, with all existing facilities included in the analysis.
- **Concentration Study**—
  - Analysis of geographic display of the response time necessary to achieve full effective response force arrival in the study area using existing distribution of all organizational resources
  - Analysis of company and staff distribution as related to effective response force assembly in the study area

- **Reliability Study**—
  - Analysis of current workload, including unit hour utilization of individual companies (to the extent data is complete)
  - Review of actual or estimated failure rates of individual companies (to the extent data is complete)
  - Analysis of call concurrency and impact on effective response force assembly
- **Performance Summary**—
  - Analysis of actual system response time performance, analyzed by individual companies (to the extent data is available). Performance analysis will be conducted for each jurisdiction individually along with the study area.
- Review of Command and Control policies and procedures used by each of the Districts; including operational services
- Mutual and automatic aid systems

Task II-F: Support Programs

ESCI will review the current collaborative processes and methods of the Districts with the various support programs, to include but not be limited to:

- Fire prevention
- Training
- Any other relevant areas identified during the project

Phase III—Future Opportunities for Cooperative Efforts

ESCI will use the completed baseline assessment of the Districts to identify the feasibility of various options for maintaining or expanding the current IGA; contract for services; legal unifications or other potential alternatives. The project team will identify areas of duplication that could be reduced through integration efforts, as well as potential service improvements that could be accomplished. Items in this section of the report include but will not be limited to:

Task III-A: Options for Cooperative Services

ESCI will review the various options for cooperative services, including the advantages and disadvantages of each. The following options will be evaluated and discussed:

- Each district remains autonomous
- Functioning within the current or amended IGA
- Contract for service
- Legal integration/annexation options
- Any other valid options identified during the study

Task III-B: Recommended Options for Cooperative Services

The study takes into account the many shared issues that face each District, and how such matters affect the effort to construct a regional organization for efficient service. Following the comprehensive analysis and review of the options described in Task III-A above, ESCI will provide the following:

- Recommended option(s)
- Organizational structure, if applicable
- Operations and deployment
- Staffing and personnel methods and scheduling
- Any impact on fire station facility locations and staffing capacity
- Any other issues related to the recommended option(s)

Task III-C: Financial Impact

ESCI will identify and evaluate the financial impact of each of the recommended options for each of the Districts, to include, but not limited to:

- Short-term, mid-term and long-term financial projections of the recommended option(s)
- Funding and cost-sharing between the Districts

Task III-D: General Issues & Recommendations

During the study, ESCI may identify other areas or issues that warrant evaluation and recommendations for improvement. If so, they will be addressed in this section or other areas of the report.

Phase IV—Delivery & Presentation of Final Report

Task IV-A: Development & Review of Draft Project Report

ESCI will develop and produce an electronic copy of the project report for review by CFD and EFD representatives, and the Interagency Committee if requested. Client feedback is a critical part of this project and adequate opportunity will be provided for review and discussion of the draft report prior to finalization. The report will include:

- Detailed narrative analysis of each report component structured in easy-to-read sections and accompanied by explanatory support to encourage understanding by both staff and civilian readers
- Clearly designated recommendations highlighted for easy reference and catalogued as necessary in a report appendix
- Supportive charts, graphs, and diagrams, where appropriate
- Supportive maps, utilizing GIS analysis as necessary

Task IV-B: Delivery & Presentation of Final Project Report

ESCI will complete any necessary revisions of the draft and produce fifteen (15) copies of the bound, final version of the written report, along with an electronic version in PDF file format.

A formal presentation of the project report will be made by ESCI Project Manager to the Interagency Committee and any other District members as requested. The presentation will include the following:

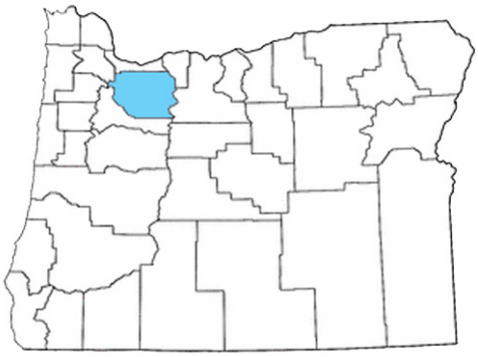
- A summary of the nature of the report, the methods of analysis, the primary findings, and critical recommendations
- Supportive audiovisual presentation
- Review and explanation of primary supportive charts, graphs, diagrams, and maps, where appropriate
- Opportunity for questions and answers, as needed
- All presentation materials, files, graphics, and written material will be provided to the client at the conclusion of the presentation(s)

Section I:
OVERVIEW OF THE COMMUNITIES

CLACKAMAS COUNTY

Both the Clackamas and Estacada fire districts lie within Clackamas County. Located in Northwest Oregon, the County encompasses 1,879 square miles, and is one of the four counties that comprise the Portland metropolitan area.[1] The most significant geographical feature is the 11,235-foot Mt. Hood, located in the northeast corner of Clackamas County. The total estimated population of the County for 2017 was 399,962 persons.[2]

Figure 1: Clackamas County



Within the County are heavily timbered areas, as well as rich farmland scattered throughout the region. The many rivers that run through the County include the Willamette, Sandy, Clackamas, Pudding, Molalla, and Salmon.

Several incorporated cities lie within Clackamas County, including four hamlets: Beavercreek, Molalla Prairie, Mulino, and Stafford. About 16 other populated communities in the District remain unincorporated. The incorporated cities within Clackamas Fire District #1 include:

- Oregon City (2017 estimated population: 36,360)
- Milwaukie (2017 estimated population: 20,627)
- Happy Valley (2017 estimated population: 18,477)
- Johnson City (2017 estimated population: 508)

The City of Estacada is the most populated community within Estacada Rural Fire District #69, with an estimated 2017 population of 3,155 persons.[3]

Clackamas County Demographics

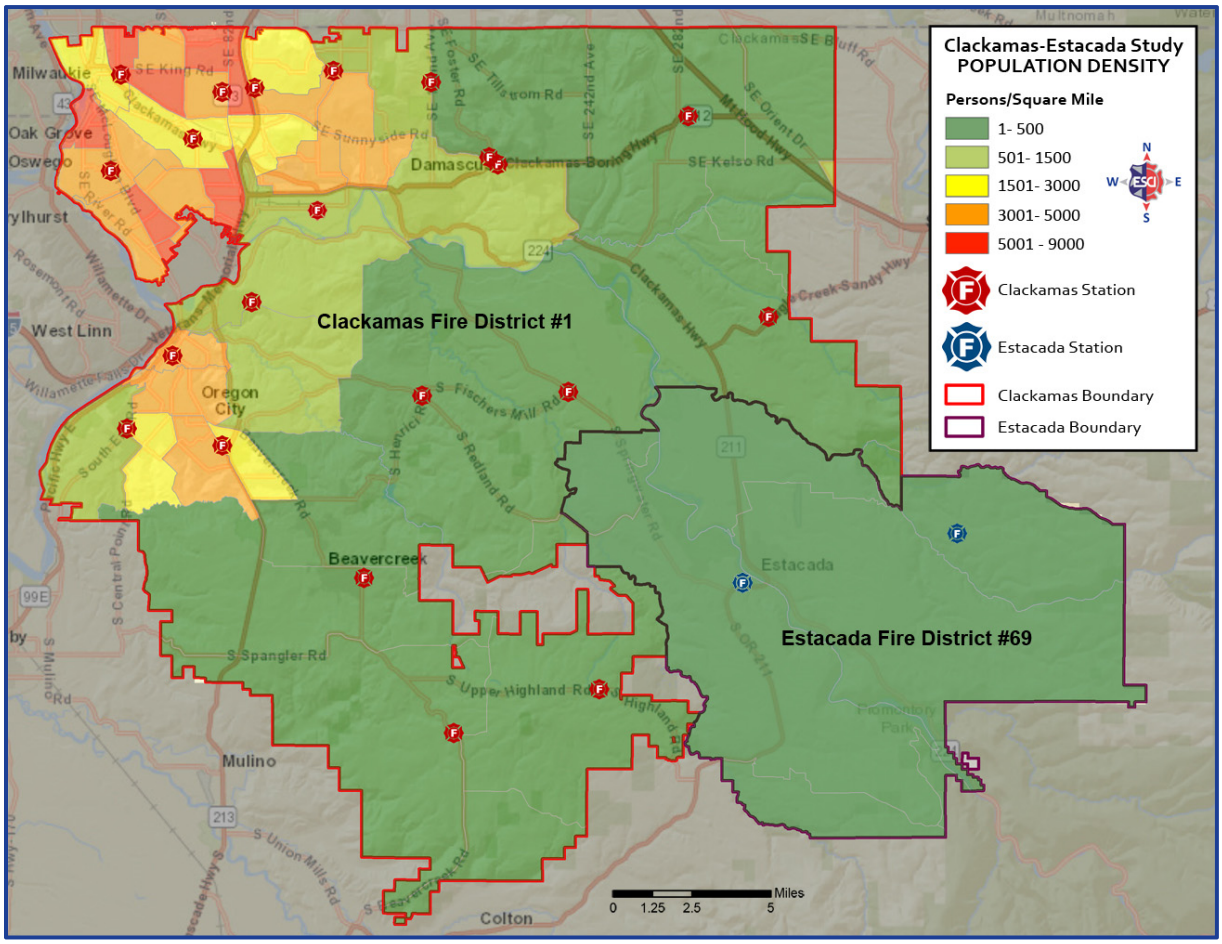
The estimated 2017 mean income in the County was $95,811, with approximately 9% of the population below the poverty level.[4] The median age was 41.4 years, with 5.5% of the population below the age of 5 years, and nearly 17% of the population 65 years of age or older.

In 2017, there were 153,822 occupied residential units within Clackamas County, with a median value of $341,600. The top five businesses were professional, scientific, and technical services; retail trade; healthcare and social assistance; and accommodation and food services.[5]

The following figure shows the population densities of Clackamas Fire District #1 and Estacada Rural Fire District #69.

Figure 2: Population Densities of the Clackamas & Estacada Fire Districts

Source: U.S. Census Bureau (2010)



Not unexpectedly, most of the geographic portions of both Districts have lower population densities (1–500 persons per square mile), while the west and northwest areas of Clackamas Fire District #1 have the highest population densities at 1,501–5,000 persons per square mile.

Section II:
EVALUATION OF CURRENT CONDITIONS

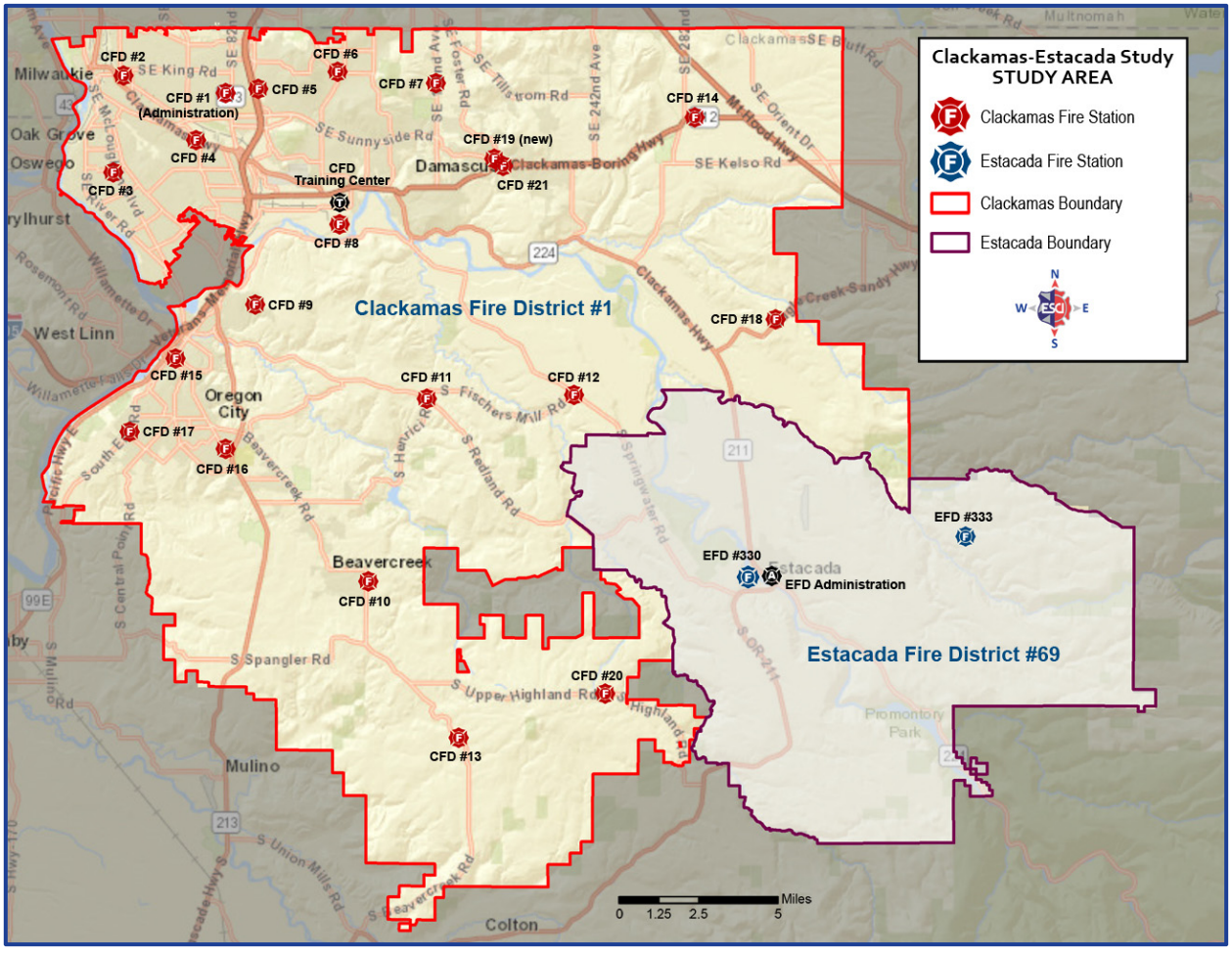
ORGANIZATIONS & SYSTEMS OVERVIEW

In this section of the report, ESCI provides a general overview of the current conditions found with CFD1 and ERFD69. A summary of each District's organizational structure; management; staffing and personnel; service-delivery and performance; and various support programs are included.

Study Area

When evaluating the current conditions, this study will focus on the operational aspects in each of the two fire districts. The following image outlines the overall study area that will be utilized.

Figure 3: Clackamas Fire District #1 & Estacada Rural Fire District #69 Study Area



General Overview of the Fire Districts

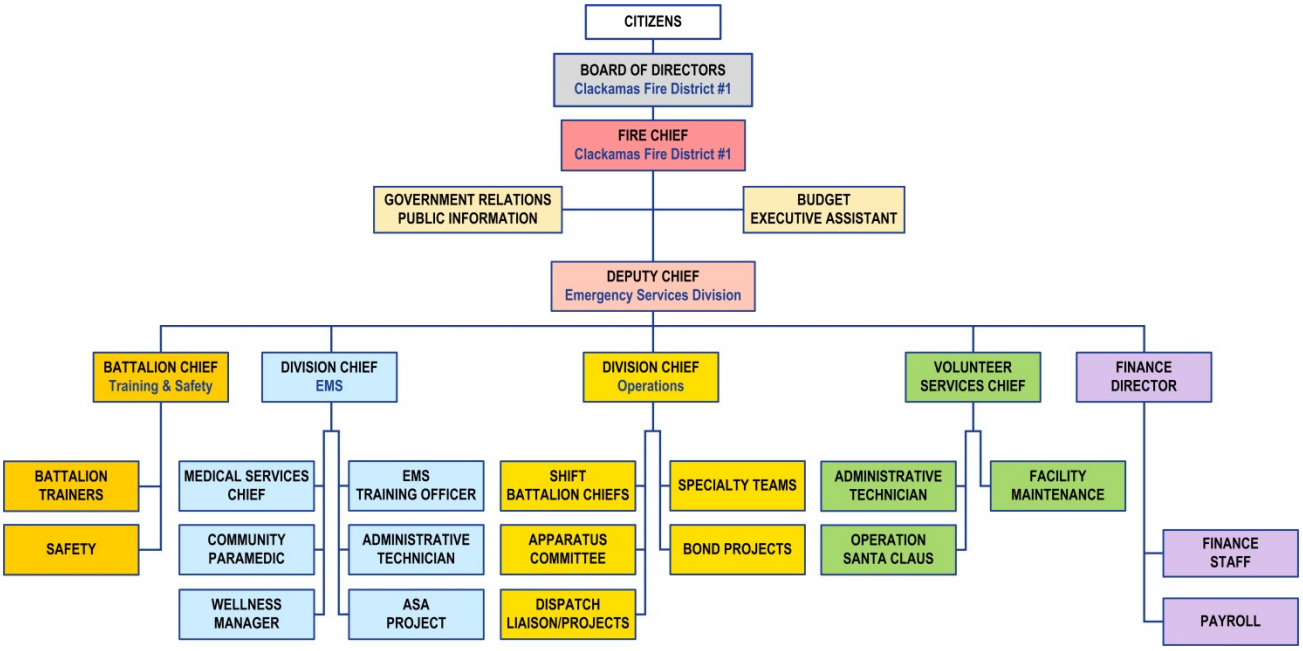
The following includes a basic description of each of the two fire districts involved in this study.

Clackamas Fire District #1

The Clackamas Fire District primary service-area is comprised of approximately 235 square miles within Clackamas County, serving an estimated population of 220,000 persons.

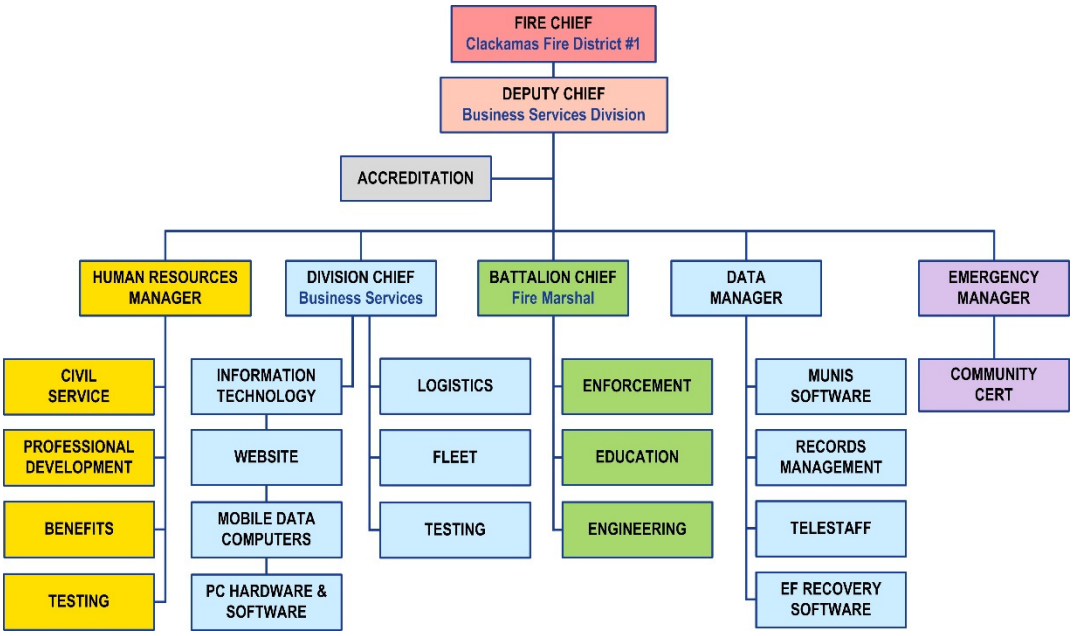
The Fire District is governed by a five-member Board of Directors who oversees the Fire Chief. CFD1 is comprised of two primary divisions: Emergency Services Division and Business Services Division. Each is managed by a Deputy Chief. A combination of Division Chiefs, Directors, and Battalion Chiefs supervise the various sections and programs. The following figure shows the current organizational structure of the Emergency Services Division.

Figure 4: Clackamas Emergency Services Division Organizational Structure (2019)



As shown, the Deputy Chief of the Emergency Services Division supervises five major sections and programs that include Training & Safety; Emergency Medical Services; Operations; Volunteers; and Finance. The next figure shows the organizational structure of the Business Services Division.

Figure 5: Clackamas Business Services Division Organizational Structure (2019)



The Deputy Chief of the Business Services Division is responsible for five sections and programs that include: Human Resources; Business Services; Fire Prevention/Life Safety; Data Management; and Emergency Management.

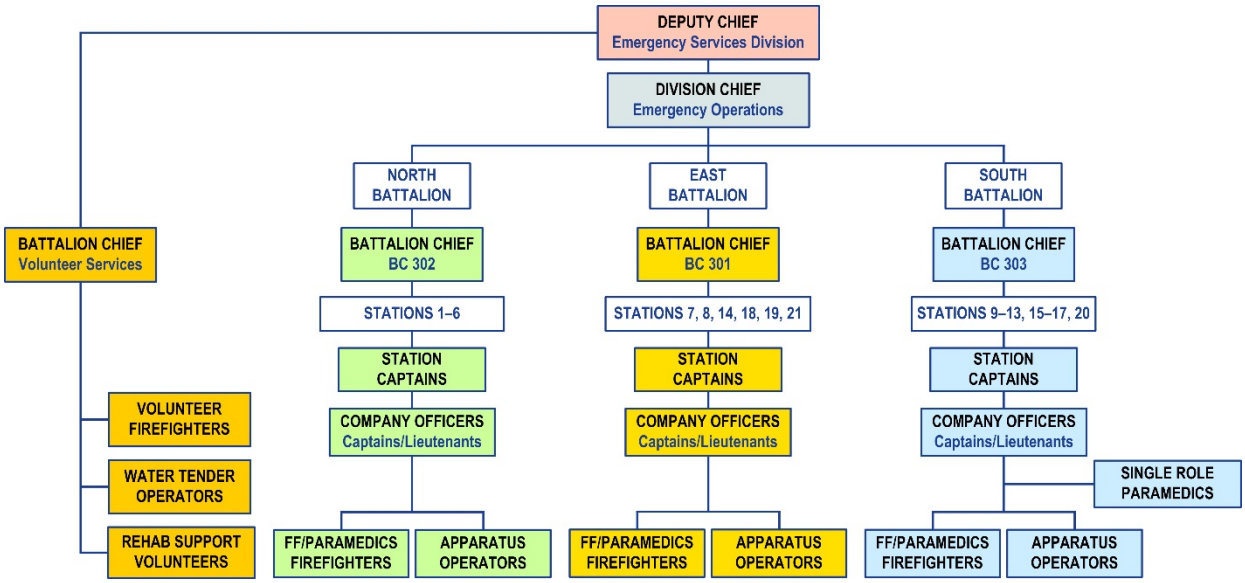
General Operations

Clackamas Fire District #1 is an all-hazards fire department providing traditional fire protection; medical first-response (MFR) at the advanced life support (ALS) level (as well as occasional patient transport); hazardous materials response; water rescue; a variety of technical rescue services; fire and injury prevention; occupancy inspections; and fire and arson investigation. CFD1 has an Insurance Services Office (ISO) Public Protection Classification (PPC) rating of 2.

Emergency Operations is comprised of three Battalions: North, South, and East; each of which is supervised by a shift Battalion Chief. The North Battalion consists of six fire stations; East Battalion includes six stations; and the South Battalion involves nine stations. One Medic Unit staffed with single-role, non-firefighter Paramedics is assigned to the South Battalion. The Battalion Chief of Volunteer Services (not a shift position) oversees the Suppression Volunteer Firefighters, Water Tender Operators, and Rehabilitation Volunteers.

The next figure is an illustration of the organizational structure of Emergency Operations, which includes career staff and volunteer staff, as well as the stations assigned to each Battalion and the single-role Paramedics.

Figure 6: Clackamas Emergency Operations Organizational Structure (2019)



Clackamas Apparatus & Staffing Assignments

The following figure lists the apparatus types and minimum staffing assigned to the North Battalion. In each of the Battalions, specialty apparatus (e.g., heavy rescues, watercraft, etc.) are cross-staffed by the engine or truck crews assigned to that fire station. In some cases, volunteers who serve in a combat role staff other apparatus as well.

Figure 7: Clackamas North Battalion (Battalion 2) Apparatus & Staffing

Battalion/Station	Engines	Trucks	Wildland	Other	Reserve	Staffing
Station 1	1	0	0	0	3	4
Station 2	1	0	0	1	1	3 (v)
Station 3	1	0	0	2	1	6
Station 4 (HQ)[1]	0	1	0	1	1	5
Station 5	0	0	0	2	0	4
Station 6	1	0	0	0	1	3
Totals:	**4**	**1**	**0**	**6**	**7**	**25**

(v) = Volunteer response in addition to career staff. [1]Battalion Chief quarters.

The next figure lists the apparatus and staffing of the Clackamas fire stations in the East Battalion.

Figure 8: Clackamas East Battalion (Battalion 1) Apparatus & Staffing

Battalion/Station	Engines	Trucks	Wildland	Other	Reserve	Staffing
Station 7	1	0	0	1	0	3
Station 8	1	0	0	0	2	3
Station 14 (HQ)[A]	1	0	2	2	0	5 (v)
Station 18[C]	1	0	2	0	0	3 (v)
Station 19 (new)[B]	0	1	0	4	0	4
Station 21	0	0	0	2	0	(v)
Totals:	**4**	**1**	**4**	**9**	**2**	**18**

[A]Battalion Chief quarters [B]Multiple watercraft are cross-staffed from this station when necessary.
[C]40-hour career engine crew. (v) = Volunteer response in addition to career staff

The following figure lists the apparatus types and minimum staffing assigned to the South Battalion. The "Wildland" column includes both brush trucks and water tenders.

Figure 9: Clackamas South Battalion (Battalion 3) Apparatus & Staffing

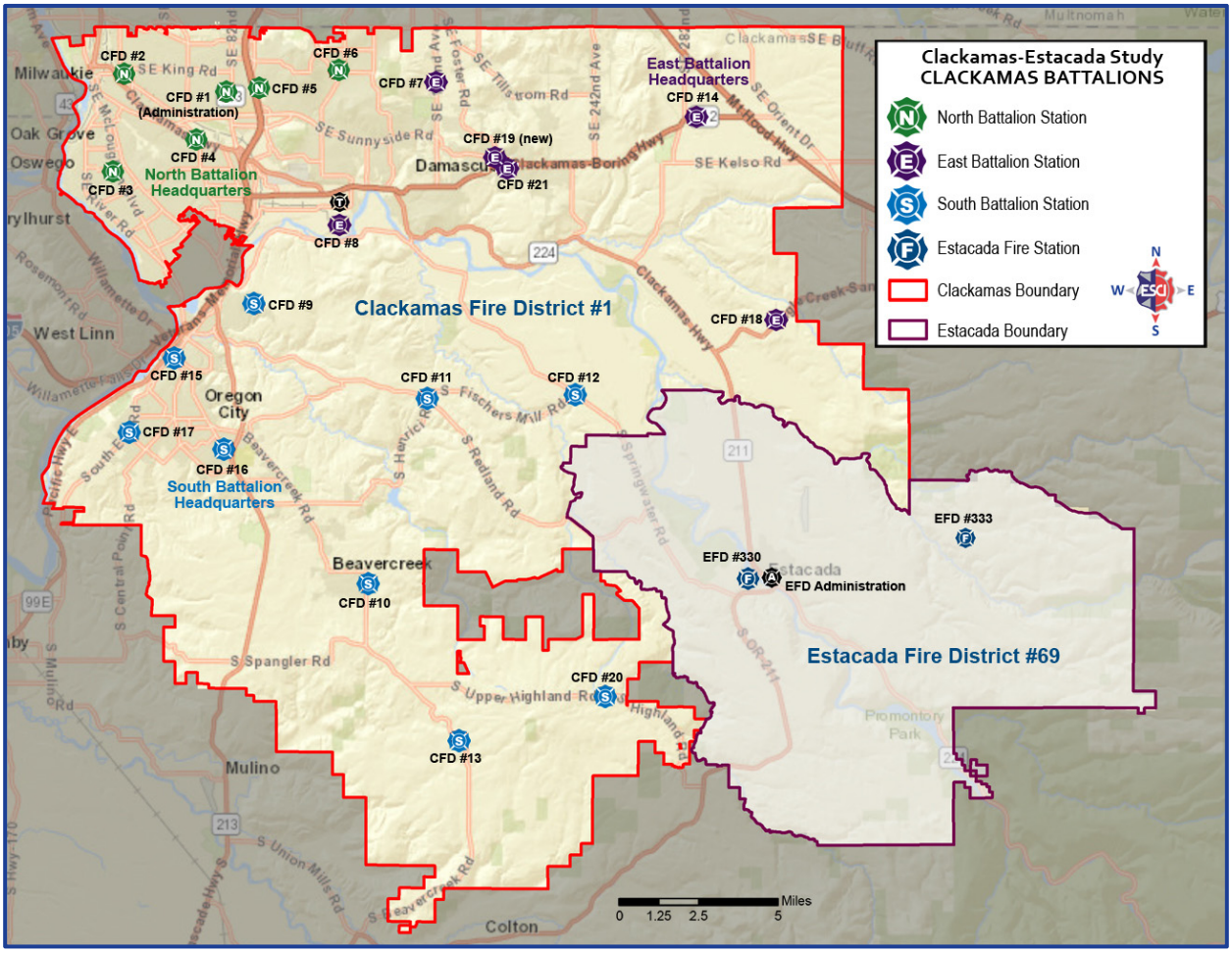
Battalion/Station	Engines	Trucks	Wildland	Other	Reserve	Staffing
Station 9	1	0	1	0	0	3
Station 10[A]	1	0	3	0	0	4
Station 11[A]	1	0	2	0	0	3
Station 12[B]	1	0	2	0	0	(v)
Station 13	1	0	1	0	0	(v)
Station 15	1	0	0	1	0	3
Station 16 (HQ)[C]	0	1	0	3	0	7
Station 17	1	0	0	1[D]	0	3
Station 20[B]	0	0	1	0	0	(v)
Totals:	**7**	**1**	**10**	**5**	**0**	**23**

[A]Water tenders & brush trucks are cross-staffed when necessary. [B]Volunteer staffed only.
[C]Battalion Chief quarters. [D]Mobile Command Unit.

Clackamas Fire Station 16 has seven career staff during the day, and five personnel from 2000–0800 hours. This includes single-role Paramedics who are located there and scheduled 0800–2000 hours.

The following figure is a GIS map that illustrates to which Battalions each of the Clackamas Fire District #1 fire stations are assigned. It includes the location of the headquarters of Battalion Chiefs 1, 2, and 3.

Figure 10: Clackamas Fire District #1 Station Assignments to Battalions

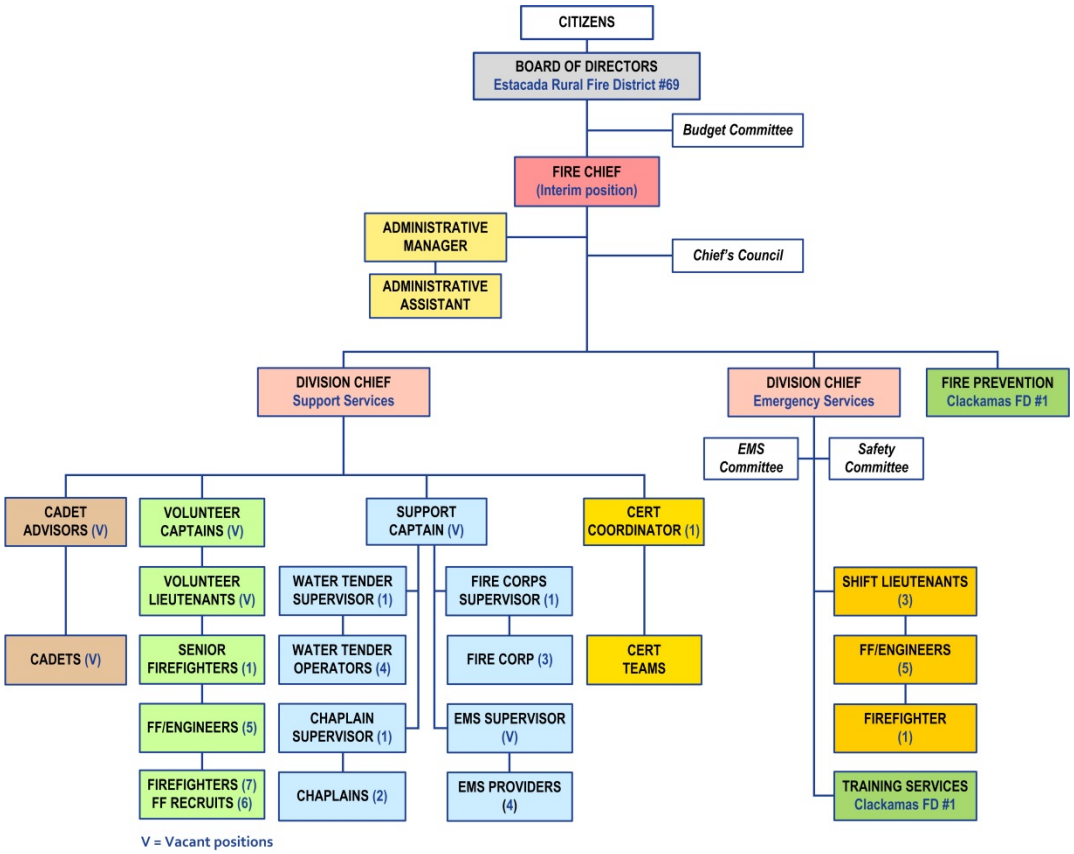


Estacada Rural Fire District #69

Estacada Rural Fire District #69 is governed by an elected five-member Board of Directors that oversees the District's Fire Chief (currently an interim position). The District's service-area is comprised of approximately 88 square miles within Clackamas County.

Currently, five full-time positions are assigned to management and administrative support. Nine career firefighters; 14 volunteer firefighters; and six firefighter recruits comprise the staffing for emergency operations. As shown in the next figure, several key positions within the District are currently vacant. This is addressed in more detail later in this report. The following figure shows the most current 2019 organizational structure of Estacada Rural Fire District #69.

Figure 11: Estacada Rural Fire District #69 Organizational Structure



General Operations

ERFD69 operates from two fire stations, including Station #330 which is staffed 24-hours daily. Minimum staffing at that station is two firefighters, who cross-staff Engine 330 (pumper/tender) and Brush 330 (wildland unit). The District also maintains a headquarters facility adjacent to Station #330, which is used to accommodate administrative and support staff. No fire apparatus are housed in this facility. Station #333 is unstaffed, and utilized primarily by volunteer personnel.

The District provides traditional fire service that includes fire protection; medical first-response at the ALS level; rope rescue; vehicle extrication; and an awareness and operations level of hazardous materials response. In February 2017, the District received an ISO PPC rating of 3/10W/10. Fire inspections; public education and prevention; and fire and arson investigations are completed through an agreement with Clackamas Fire District #1.

Emergency Services System Overview in Clackamas County

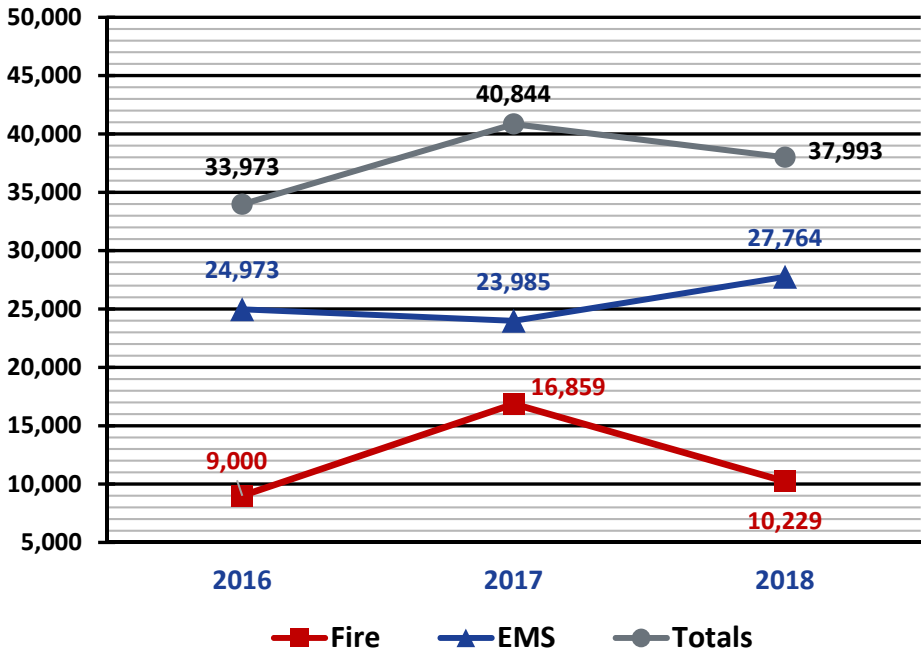
Communications & Dispatch Services

The *Clackamas County Department of Communications* (C-COM) is the primary Public Safety Answering Point (PSAP) in the County. C-COM provides dispatch and communication services to six law enforcement agencies and eight fire departments in Clackamas County—including CFD1 and ERFD69. Funding comes from the Oregon State 911 Excise Tax and agency user-fees.

Call-taker/Dispatchers are certified by the *Oregon Department of Public Safety Standards & Training* (DPSST) in the *Basic Telecommunications* course. C-COM uses the *ProQA Dispatch Software* to provide criteria-based dispatch; Emergency Medical Dispatch (EMD); and pre-arrival instructions for medical emergencies.

The following figure shows the 911 calls for *all* fire and EMS incidents received by C-COM during 2016–2018. As shown, calls for fire-related incidents declined substantially between 2017 and 2018. However, EMS incidents increased significantly between 2017 and 2018.

Figure 12: 911 Fire & EMS Calls Received by C-COM (2016–2018)
Source: Clackamas County Department of Communications



C-COM reports that their average speed of answering calls is just over 15 seconds, with a combined average call-processing time of nearly 110 seconds over the period of 2016–2018.

For Clackamas County residents in Lake Oswego, West Linn, and Milwaukie, 911 calls are answered and dispatched by the *Lake Oswego Communications Center* (LOCOM). Neighboring PSAPs include the *Bureau of Emergency Communications* (BOEC) in Multnomah County; the *Washington County Consolidated Communications Agency* (WCCCA) to the west; and *Marion Area Multi Agency Emergency Telecommunications* (METCOM) to the south.

Mobile Communications

Mobile Data Computers (MDC) are interfaced with C-COM's Computer-Aided Dispatch (CAD) software and are utilized in nearly all Clackamas and Estacada frontline apparatus and command units. The MDCs can receive CAD data; provide incident location maps; have messaging capability; and provide access to pre-fire plans. *Automatic Vehicle Location* (AVL) technology is also used with most of the fire apparatus in both fire districts.

Clackamas County Emergency Medical Services

Emergency Medical Services (EMS) in Clackamas County includes medical first-response (MFR) and patient-transport service. MFR is provided by eight fire agencies. Each individual agency manages their response to EMS incidents, as well as the associated administration and quality assurance (QA) and quality improvement (QI).

Emergency Medical Transport in Clackamas County

The Director (or designee) of the *Clackamas County Department of Health, Housing, & Human Services* (H3S) is responsible for regulatory oversight, ongoing quality improvement initiatives, and administration of the County's Ambulance Service Plan which describes the key components of the EMS transport system, including the number of *Ambulance Service Areas* (ASA) in the County and which provides emergency transport services in each ASA.

Clackamas County has three geographic *Ambulance Service Areas* (ASA): the Canby ASA, Molalla ASA, and Clackamas ASA—which covers Clackamas Fire District #1 and Estacada Rural Fire District #69. Small portions of the Clackamas ASA are outside the boundaries of Clackamas County.

Emergency medical transport services in the Clackamas ASA are provided by *American Medical Response* (AMR) through an exclusive contract with the County. The contract with AMR is managed by Clackamas County H3S. Beginning May 1, 2019, the County extended its contract with AMR for five additional years. The extended contract included improvements through an ASA Strategic Plan. The Clackamas County Board of Commissioners assigned this plan to the EMS Council. The Council is an advisory group to the Board on EMS-related matters, with the expectation that all areas identified in the plan will be implemented within three years. Under certain conditions, Clackamas Fire District #1 provides ambulance transport services in the Clackamas ASA as a subcontractor to AMR.

Medical Control & Supervision

Medical Supervision for transport services is addressed in the Clackamas County Ambulance Service Plan and describes the responsibilities of the County EMS Medical Director (EMSMD). First-response agencies contract medical supervision individually with physicians of their choice, independent of the Ambulance Service Plan.

Air Medical Transport

The Life Flight Network provides helicopter scene-response from multiple locations throughout the Pacific Northwest. The nearest rotor-wing base to Clackamas County is in Aurora, Oregon, with a range of 150 nautical miles. Life Flight's helicopters are staffed with Critical Care Registered Nurses and certified EMT-Paramedics.

Mutual/Automatic Aid Resources

The Clackamas and Estacada fire districts provide reciprocal mutual aid to each other. The following figure lists other fire departments and districts in the region, with which the two Districts have mutual aid agreements.

Figure 13: Regional Fire Departments with Mutual & Automatic Aid Agreements

Fire Department	Location	Mutual or Automatic Aid
Canby Fire District #62	Canby	Mutual & Automatic Aid
Colton Fire District #70	Colton	Mutual & Automatic Aid
Gladstone Fire Department	Gladstone	Mutual & Automatic Aid
Hoodland Fire District #74	Welches	Mutual & Automatic Aid
Lake Oswego Fire Department	Lake Oswego	Mutual & Automatic Aid
Molalla Fire District #73	Molalla	Mutual & Automatic Aid
Sandy Fire District #72	Sandy	Mutual & Automatic Aid
Tualatin Valley Fire & Rescue	Multiple cities	Mutual & Automatic Aid
Portland Fire & Rescue	Portland	Mutual & Automatic Aid
Gresham Fire & Emergency Services	Gresham	Mutual & Automatic Aid

When necessary, Molalla Fire District #73 also provides mutual aid emergency medical transport. In accordance with AMR's contract with Clackamas County, the company must also maintain mutual aid agreements for emergency medical transport services.

STAFFING & PERSONNEL

Many emergency services organizations consider their employees as their most valuable asset. Managing personnel to achieve maximum efficiency, professionalism, and personal satisfaction is 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 do not 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.[6,7,8] In addition, the *Center for Public Safety Excellence* (CPSE) publishes benchmarks for the number of personnel recommended on an 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 district. With that said, comparing these positions between the two fire districts may reveal opportunities for sharing and/or combining positions to improve overall efficiency.

Personnel Policies & Processes

The fire districts were surveyed to determine the administrative components used in managing their employees. CFD1 maintains a personnel policy manual, archives old policies, and provides an employee handbook to all new employees upon hire. These policies are updated annually. ERFD69 does not maintain a contemporary personnel policy manual, provide orientation training on these policies to new employees, or archive copies of outdated policies. Each fire district maintains and securely archives personnel records, including injury and accident reports and medical and exposure records. Personnel records, including discipline, medical, and fire district administrative records are maintained within their respective administrative divisions.

Ensuring the health and safety of employees should be a high priority in any business or government organization. Many fire service organizations offer proactive wellness programs designed to promote and support healthy lifestyles, in order 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 the survey results.

Figure 14: Health, Safety & Counseling Services

Standard	Clackamas	Estacada
Medical standards established	Yes	Yes
Medical exam frequency	Annual	Ages 18–30, every 3 years; ages 30–40, every 2 years; over 40, annually[A]
Safety Committee established	Yes	Yes
Critical Incident Stress Debriefing	Peer Support Team	In-house Chaplain
Employee Assistance Program	Yes	Yes (Cascade Centers)

[A]Beginning in 2019, medical exams were performed annually for all ages.

Medical Assessment Discussion

Both Districts have established medical standards and require a comprehensive medical examination after being conditionally hired. The frequency of medical examinations at ERFD69 previously depended on the age of the firefighter. Starting in 2019, all Estacada uniformed personnel will undergo annual physicals. CFD1 requires annual physicals as well, which are consistent with *NFPA 1582: Standard on Comprehensive Occupational Medical Program for Fire Departments*. ERFD69 is in the process of updating their medical screening protocols to be compliant with NFPA 1582.

Confirming that firefighters are medically fit to meet the strenuous duties associated with emergency response and fireground tasks proves paramount, regardless of age. 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 that employees obtain a medical clearance from a physician or other licensed healthcare professional before they can wear a respirator (including N95, N100, P100, and HEPA respirators), and must be annually fit-tested.

Clackamas has a Wellness Division, responsible for overseeing, coordinating, and delivering a wide range of medical, physical fitness, and behavioral health programs and initiatives. The Division is comprised of 3.5 FTE's, including a full-time Health and Wellness Manager, a full-time Wellness Technician, a full-time Medical Assistant, and one half-time Fitness Trainer. The Division delivers a wide range of wellness/health services to employees, and some of these services are also available to immediate family members of employees as well. A general description of services provided—or in coordination with the District's designated occupational health physician— includes, but is not limited to:

- Recruit medical evaluations.
- Hearing testing and administration of the Hearing Conservation Program.
- Annual firefighter physicals, annual fitness assessments, and DOT physicals for fleet services.
- Employees, consistent with NFPA 1582 and DOT requirements.
- Blood draws and blood borne pathogen exposure records management.
- Nutrition education.

- Fitness assessments, training education, and coaching.
- Flu shot administration.
- Health screenings.
- Spirometry/respiratory assessment and management of Respiratory Compliance Program.
- Post-injury rehab, including administration of ultra-sound and electric stimulation therapy.
- OSHA occupational injury/illness reporting and records management.
- Behavioral Health and Employee Assistance Program coordination and education.
- Management and archiving of employee medical records.

All Wellness Division employees have four-year college degrees and/or specialized certifications related to their assigned areas of expertise. The Division will soon be transitioning to an electronic medical records management system, implementing a functional movement screening program, and will engage a third-party provider to expedite injured employee medical assessment and treatment with preferred local medical providers.

The Clackamas Wellness Division's services and programs are very robust and should be considered as a model for other fire departments to consider for improving their wellness and fitness programs.

Firefighter Hiring & Selection Processes

Recruiting, selecting, and retaining firefighters takes a considerable investment of time, effort, and money to ensure high-quality individuals are employed with 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 fire district and its culture requires deliberate and comprehensive evaluation. The following figure summarizes the hiring process components used by each District.

Figure 15: Hiring Process Components

Hiring Process Components	Clackamas	Estacada
Recruitment Program	Yes	For volunteers
Qualifications check	Yes	Yes
Reference check	No	Yes
Background check	Yes	Yes
Physical agility standards	CPAT	CPAT (June 2019)
Knowledge testing	Depends on position	Yes
Interview	Yes	Yes
Medical exam required	Yes	Yes
Psychological exam required	Yes	Career only

Clackamas Hiring Process

Career and volunteer firefighter candidates apply electronically through the Clackamas Fire *NEOGOV®* on-line portal. Applicants for career positions must have a current (within one year) *Candidate Physical Agility Test* (CPAT) card, EMT certification, and Firefighter 1 certification to be eligible to participate in the on-line written testing process conducted through *National Testing Network.®* The top 50 scored candidate names are then forwarded to CFD1 to participate in a panel interview and resumé review, comprised of CFD1 firefighters and officers. Additionally, veterans and current volunteers who pass the written test are automatically eligible for the panel interview. This results in approximately 80–90 candidates being interviewed. The written test, interview panel, and resumé scores are then compiled and ranked. The ranked list is then forwarded to the *Civil Service Commission* for approval. Depending on the District's needs, the list will be active for no less than one year, and no more than three years. When the District needs to fill a vacancy, the Civil Service list is requested, and the top 10 candidates are invited to a Chief's Interview. One additional name is added to the pool for each additional vacancy.

Upon offer of conditional employment, the candidate(s) must successfully pass a background check, psychological assessment, and a comprehensive medical examination based on the *NFPA 1582*: *Standard on Comprehensive Occupational Medical Program for Fire Departments.*

Candidates applying for volunteer firefighter positions undergo a slightly different selection process. A written test, comprised of 100 general-knowledge questions, is administered by the District. All candidates who pass the written test participate in a panel interview. The top 40 candidates from the panel interviews then move on to the physical agility test and final panel interview with the Battalion Chief of Volunteer Services, Assistant Training Officer, and Suppression Volunteer, after which a ranked list is created. The volunteers that are chosen must undergo the same medical examination, criminal background check, Department of Motor Vehicles (DMV) check, and psychological assessment.

Estacada Hiring Process

Career-firefighter candidates submit their applications through a paper application, and complete a District-administered written test. They must be currently certified as an EMT-Paramedic and have earned their Firefighter 1 certification. Candidates who pass the exam participate in a panel interview, comprised of a bargaining unit member, a volunteer firefighter, and a member of the community. The written and interview scores are then combined. The written score is typically weighed at 40% of the total score, and the panel interview score is weighed at 60% of the total score.

Once the ranked list is created, it is forwarded to the Civil Service Commission for approval. When an opening occurs, the top three names are forwarded to the District for consideration. If more than one opening, an additional name is added for each additional position. The candidates are then interviewed by chief officers, and a conditional employment offer is made. The conditionally hired employee must successfully pass a District-administered physical agility test, medical examination, and psychological assessment before entering the District's recruit training program.

The in-house administered physical agility test consists of the following components, which must be completed within six minutes:

- Hose-shoulder carry up a stairway (55 lbs.)
- Climb up and down 35-foot extension ladder, twice
- Raise and lower a hose roll with rope (55 lbs.)
- Tire drag for 75 feet
- 28-foot walk on ladder rungs while carrying 20-pound saw
- Hang and lower a smoke ejector at a height of 72 inches
- Carry 2 ½" hose up and down two flights of stairs

Candidates applying for volunteer positions also undergo a different hiring process. Prospective volunteers must have a high school equivalency education and apply for the position through the ERFD69 office. They are required to perform a 12-hour "ride-along" shift to ensure they understand the nature and scope of the firefighter job. If they choose to continue in the process, they undergo a written examination delivered by third-party vendor *Aptitude Test Pro.com*® to assess basic high school education knowledge and mechanical aptitude (candidates with a two-year college degree are exempt from this examination). Following successful completion of the written exam, the candidate interviews with a panel comprised of District personnel. Once selected, the candidate must undergo the same physical and medical assessments, except for the psychological assessment.

Hiring Process Discussion

Although Clackamas and Estacada utilize Civil Service Commissions to oversee impartial application of their respective hiring practices, the processes they use are significantly different. Perhaps one of the biggest differences lies in the physical agility assessment conducted in each District. CFD1's CPAT pre-requisite ensures applicants have passed a validated physical assessment screening, without having to worry about liability or expending significant time and resources in conducting their own testing process.

In contrast, Estacada conducts their own physical assessment screening process *after* a candidate has been conditionally offered a position. ESCI understands this is done primarily for liability protection reasons, in the event a candidate becomes ill or injured during the assessment. However, beginning in June 2019, ERFD69 will move to CPAT.

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 Fire Department's and Los Angeles Fire Department's 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 and existing hiring administrative procedures, and to subsequently make recommendations for improvement.[9] As a result, significant changes were made, at great expense, to ensure a fair and impartial hiring process.

Regarding physical agility testing for entry-level firefighters, past legal challenges alleging discrimination and unfair administration in testing led to the creation of the Candidate Physical Agility Test (CPAT). The City of Chicago faced this reality in 2011, when several female firefighter and paramedic candidates filed a federal lawsuit, claiming the department's in-house created physical agility testing process was discriminatory against women.[10] The lawsuits were settled after the City spent millions in settlements and legal fees, and the City now requires a current CPAT card to apply for the department.

The CPAT program, created jointly by the *IAFF* and *IAFC* in the late 1990s, has been scientifically and legally vetted, and is now considered the standard in fairly assessing a candidate's physical abilities to perform basic fireground tasks.

Many jurisdictions find the CPAT program difficult to adopt and administer due to the extensive and often expensive, requirements for licensing. As a result, and depending on location, CPAT-licensed departments or educational institutions that conduct the test may not be readily available. However, in the Portland Metropolitan area, CPAT programs are available for prospective applicants who wish to secure a CPAT card.

Union Agreements

Operations personnel from each District are represented by *International Association of Firefighters* (IAFF) Local 1159, although they have separate bargaining units. The local is within the jurisdiction of IAFF District 9. The ERFD69 collective bargaining agreement (CBA) expires in June 2020, and CFD1's agreement expires at the end of June 2021. Non-uniformed full-time administrative employees in each District are not represented by a labor union.

Union Agreement Discussion

The success of any type of integration of the Districts will hinge, in large part, on the union member's participation, compromise, and agreement. The variation in work schedules, benefits and other conditions currently outlined in both bargaining-unit agreements will need to be carefully addressed and homogenized for an effective and efficient integration. 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."

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

Given the number of significant labor implications related to a potential integrated 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 national organization. Also, because of the complexity and variation of wages and benefits between the affiliates, if integration is actively pursued, they should engage in internal union planning as soon as practical, in order to reach agreement on how the affiliates would be organized within the new structure.

Administrative Support Staffing

No progressive fire department can operate without strong and expert administrative support. Efficient management and administration require personnel with specific administrative and technical skills to effectively support the organization's core mission. The following figure and descriptions summarize the various uniformed administrative and support positions between the two fire districts.

Figure 16: Administrative & Support Staff—Uniformed Positions

Staff Positions	Clackamas	Estacada
Fire Chief	1	1 (Interim/half-time)
Deputy Chiefs	2	N/A
Assistant Chiefs	N/A	0 (vacant)
Division Chiefs	3	1
Administrative Battalion Chiefs	4	N/A
Administrative Lieutenant	0	N/A
Fire Inspectors	5	N/A
Public Educators/Public Information Officers	3	N/A
Other–Deputy Fire Marshal	3	N/A
Other–EM/Training Officers/Community Paramedic	6	N/A
Total Uniformed Administrative/Staff:	**27**	**1.5**
Percent of Admin/Support Staff to Total Staff:	**12%**	**14%**

Because of its smaller size, ERFD69 has two civilian administrative support personnel. Conversely, CFD1 has a wide-range of civilian administrative support positions (43) providing administrative, finance, human resources, fleet, health and wellness, facilities, and information technology support services.

Administrative Staffing Discussion

Analyzing the ratio of administrative and support positions to the total operational positions of a fire district facilitates an understanding of the relative number of resources committed to this important function. The level of administrative uniformed and civilian support staff in ERFD69 is very low. ESCI recognizes and understands the decision not to fill the vacant Fire Chief position, pending the recommendations and outcomes of this study, and also recognizes that this may not be sustainable in the long term, due to the lack of "bench depth"—an absence of functional redundancies that can result in the crippling of normal operations if an administrative employee becomes unavailable for work for an extended period of time.

On the contrary, given the size of its organization, CFD1 has significant uniformed and civilian administrative resources dedicated to fulfilling the wide range of emergency operations and support services necessary for the efficiency and success of the organization.

Emergency Operations Staffing

ESCI evaluated the type and number of career and volunteer operations staff positions. The following figure summarizes the number of career operations positions in each fire district.

Figure 17: Career Operations Staff Positions

Operations Positions	Clackamas	Estacada
Battalion Chief	9	N/A
Captain	17	N/A
Division Chief	N/A	1[A]
Lieutenant (EMT or Paramedic)	40	3
Apparatus Operator/EMT	10	0
Apparatus Operator/Paramedic	47	4
Firefighter/EMT	29	0
Firefighter/Paramedic	55	2
Total Operations Positions:	**207**	**10**
Percent Officers to Firefighters:	**32%**	**33%**

[A]Division Chief serves in both an operational and administrative role.

ESCI also calculated the theoretical total number of full-time employees required to meet the various average leave hours used by employees in 2018 in each District and compared the results to the current number of operations employees assigned to 24-hour staffed units. This calculation was done only for CFD1, as ERFD69's staffing levels and use of volunteers to occasionally backfill for career personnel vacancies would be a non-relevant exercise.

The analysis compared the average available scheduled weekly work hours per employee, subtracted the average various leave types—based on 2018 historical leave-use data—and calculated sick and vacation relief factors. ESCI then multiplied the relief factor with the number of personnel needed to cover a single position at 24-hours daily to determine the total number of employees required to meet daily minimum staffing. This did not consider personnel working less than a 24-hour shift schedule (e.g., peak-demand staffed units). The following figure summarizes the results of these calculations.

Figure 18: Theoretical Relief Factor Calculation (2018)

Relief Factor	Clackamas
Sick Leave	1.14
Vacation Leave	1.14
Total Relief Factor:	**1.17**

Simply stated, the *Total Relief Factor* was multiplied by the minimum number of personnel needed to cover one 24-hour position seven days a week, and then multiplied by the minimum number of positions required on a 24-hour basis. The following figure compares the theoretical number of employees needed with the current number of employees assigned to the work schedules.

Figure 19: Clackamas Calculated Operational Staff Shortage/Overage

No. Positions Required 24/7	Total No. Operations FTE's	Theoretical No. FTE's	Shortage/Overage
61	193	237	**-44**

It is important to note that this theoretical model does not necessarily mean that Clackamas Fire District #1 is short-staffed, as they utilize other practices to ensure adequate operations staffing (discussed in more detail later in this report).

Volunteer Operations Staffing

Each fire district incorporates a volunteer firefighter program to augment response capabilities—especially in the outlying rural response area. Furthermore, volunteers are used to provide specialized emergency scene support services that include firefighter rehabilitation as well as family and emotional support services. The following figure summarizes the volunteer response force in each district.

Figure 20: Volunteer Positions at Both Fire Districts

Volunteer Positions	Clackamas	Estacada
Firefighters	53	11
Recruit Firefighters	N/A	2
Senior Firefighters	7	1
EMS only responders	N/A	4
Water tender Operators	7	2
Chaplains	2	3
Rehab Responders	11	N/A
Fire Corps Volunteers	N/A	4
Total Volunteer Positions:	**80**	**33**

The combat firefighter and support volunteer program at CFD1 is robust, with strong engagement and support from the administration. The ERFD69 combat firefighter and support volunteer program—while strongly supported by the administration—has fewer active firefighter volunteers, resulting in sporadic staffing of the District beyond the two-person minimum. Each volunteer group appears to have a strong identity, pride, and a commitment to serve their respective communities.

Emergency Operations Staffing Discussion

Estacada Rural Fire District #69 experienced very high overtime expenses in the last year due to retirements and long-term injuries. Given the small pool of employees, this resulted in a disproportionate overtime expense compared to previous years. This, coupled with the discontinuation of restrictions on how vacation shifts are scheduled, resulted in the planned addition of two firefighter positions to provide relief coverage and reduce unplanned overtime expense. Anecdotal information shared by Estacada's staff revealed a strong reliance on volunteers to augment minimum staffing on the staffed engine company. However, the current number of active volunteers (4–5) limits the number of instances where the engine company can respond with three or more personnel.

As shown previously, Clackamas Fire District #1 is theoretically and significantly "short-staffed" as it relates to the total number of personnel needed to cover scheduled and unscheduled leaves. ESCI understands there are 18 "floater" positions currently assigned to cover vacancies. These positions are assigned throughout the District, and spread out across the three shifts. Additionally, the District has a long-standing practice of recalling off-duty employees back on overtime to cover scheduled and unscheduled leaves, which produces a significant amount of annual overtime expenses.

Reconciling the results of this staffing resource analysis with current staffing levels and resource allocation strategies, Clackamas should be approached carefully. In ESCI's experience, the theoretical analysis does not necessarily account for an organization's inherent flexibility and resources, which potentially can be leveraged to reduce workload and personnel costs.

Neither does it take into consideration 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.

Clackamas District #1's current collective bargaining agreement memorializes an agreement to incrementally add "floater" positions over the next three years to provide more relief-coverage for additional Kelly Days, which are being added on an incremental basis.[11] The agreement identifies a total of up to 27 positions that could be added by the end of 2021 to provide additional relief coverage. CFD1 is not bound by the CBA to add these positions by the end of 2021. Rather, the District will evaluate the financial and organizational impact of the 10 positions recently added, and will determine if additional positions are necessary.

Wages & Benefits

Depending on the details of future integration efforts, the wages and benefits paid to the employees of the two fire districts will need to be taken into consideration. ESCI analyzed the average wages of the various administrative and operational positions between the Districts, as well as the various benefit packages, to identify significant similarities and differences that would need to be incorporated into future integration planning efforts.

In evaluating the salary tables provided by each district and/or listed in the two bargaining unit agreements, ESCI noted similarities in position titles, and significant variation in associated wages between the Districts. The following figure summarizes the various wages, by position, in each district.

Figure 21: Operations—Pay Classifications by Fire District

Career Operations Positions	Clackamas	Estacada
Battalion Chief	X	N/A
Fire Captain/EMT-I	X	X
Fire Captain/Paramedic	X	X
Lieutenant/EMT	X	X
Lieutenant/Paramedic	X	N/A
Apparatus Operator/EMT	X	N/A
Apparatus Operator/EMT-I	X	X
Apparatus Operator/Paramedic	X	X
Firefighter/EMT	X	X
Firefighter/EMT-I	X	X
Firefighter/Paramedic	X	X
Single-Role Paramedic	X	N/A

The salary data submitted from the two Districts revealed significant variations in job classifications and salaries. The following figure is a comparison between the two Districts, of the average (starting pay versus top-step pay) 2019 wages of basic, full-time uniformed positions.

Figure 22: Uniformed Staff Average Salary Comparisons (2019)

Positions	Clackamas	Estacada[1]	% Difference[2]
Fire Chief	$189,350	$141,644	**34%**
Deputy Chief	$173,728	N/A	**N/A**
Division Chief	$157,920	$117,921	**34%**
Battalion Chief (Operations)	$136,940	N/A	**N/A**
Battalion Chief (Administration)	$142,418	N/A	**N/A**
Fire Captain	$113,074	N/A	**N/A**
Fire Captain (Administration)	$113,074	N/A	**N/A**
Lieutenant	$104,227	$88,232	**18%**
Lieutenant (Administration)	$104,227	N/A	**N/A**
Apparatus Operator/EMT	$89,223	N/A	**11%**
Apparatus Operator/EMT-I	$94,274	N/A	**N/A**
Apparatus Operator/Paramedic	$97,641	$84,474[2]	**N/A**
Firefighter/EMT	$73,168	$73,447	**0.4%**
Firefighter/EMT-I	$78,293	N/A	**N/A**
Firefighter/Paramedic	$81,710	$82,627	**1%**
Single-Role Paramedic	$61,496	N/A	**N/A**

[1]Includes $1.50 per hour for Paramedic certification

[2]Percentages rounded

None of the positions in operations that have firefighter responsibilities as listed in the preceding figure include regularly scheduled FLSA overtime pay—as the work schedule and job duties qualify for the FLSA 7K exemption. The pay disparity is greatest at the Fire Chief and Division Chief positions, with the next greatest disparity at the Lieutenant and Apparatus Operator positions. The pay disparities at the remaining positions do not appear to be significant. ERFD69 has 5% per step longevity pay. Clackamas does not have longevity pay. However, both Districts provide additional vacation shifts based on years of service.

ERFD69 employees receive $5 per hour for carrying a pager, primarily to cover as a Duty Officer during off-duty hours. CFD1 personnel who are required to carry a pager as a "stand-by" off-duty assignment (Fire Investigators and Public Information Officers) are paid at a rate of 14.5% of top-step Fire Inspector pay.

ESCI analyzed the various benefits provided by each District, which is summarized in the following:

Figure 23: Uniformed Employee Benefits Provided by the Districts

Benefits Description	Clackamas	Estacada
Uniform Allowance	No	No
Educational Incentives	Yes	Yes
Social Security	Yes	Yes
Workers Compensation	Yes	Yes
Pension (PERS)	Yes	Yes
Deferred Compensation/Match	Yes	Yes
Medical	Yes	Yes
Dental	Yes	Yes
Long-term Disability	Yes	Yes
Vision	Yes	Yes
Life Insurance	Yes	Yes

Analysis of the benefits packages between the Districts revealed many similarities, with all providing comprehensive medical, dental, vision and life insurance packages. Estacada recently changed health insurance carriers, although the benefits remained the same. Both Districts offer optional additional life insurance. Neither district pays a uniform allowance. Both offer educational incentive and reimbursement pay. All full-time firefighters are enrolled in either the *Oregon Public Employees Retirement System* (PERS) or *Oregon Public Service Retirement Plan* (OPSRP) (if hired after Aug. 28, 2003) programs. Non-uniformed administrative personnel are enrolled in the Oregon PERS retirement system.

Salaries & Benefits Discussion

The pay disparity between the Districts for the Administrative Chief Officer and Operations Officer positions is significant. In the planning and negotiation process of a potential integration, the operational impacts will need to be negotiated with the bargaining unit(s). The *Oregon Employment Relations Board* (ERB) 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 districts in Oregon have typically been made with consideration of the salary and benefits provided by other fire departments with similar jurisdictional assessed property values and populations. If the two Districts functionally integrate, merge, or otherwise consolidate into a larger operational deployment model, it is likely that fire districts comparable to CFD1 will be used in equalizing and establishing appropriate salary and benefits in a new operational model.

Operations Work Schedules

The two fire districts have the same shift rotation: 24-hours on, with 48-hours off. However, they have slightly different average workweeks, with ERFD69 having a Kelly Day shift off after every 15th shift worked, and CFD1 having a Kelly Day shift off after every 12th shift worked. The following figure summarizes the shift schedules, FLSA work periods, and average scheduled hours for operations employees.

Figure 24: Operations Staff Work Schedule at the Districts

Benefits Description	Clackamas	Estacada
Shift Rotation	24-on/48-off	24-on/48-off
Average Workweek Hours	51.5 hours	53.7 hours
FLSA Work Period	7 days	27 days
Total Annual Hours	2,676 hours	2,792 hours
Shift Start Time	0730 hours	0700 hours
Kelly Days	10	6.34

ESCI noted that the Clackamas CBA includes a phase-in of additional Kelly Days over the next two years, which will result in a Kelly-Day shift off after every ninth shift worked. This will result in an a 49.92-hour average workweek.

ESCI also noted that effective July 1, 2019, Estacada operations employees can schedule vacation time off that was previously unavailable if another employee was off on a Kelly Day on the same shift. Estacada administration is concerned that this will result in an increase in overtime use to cover vacant shifts. The District's firefighters can work 48-hours straight without administrative approval. However, employees may work up to 72-hours straight with Chief Officer approval.

Work Schedule & Staffing Discussion

The current workweek schedule is 52.6 hours; which translates to an annual average of 2,734 hours. The 24-hour shift remains the predominant schedule for fire departments, including the two fire districts studied. However, some fire departments have transitioned to a 48-hour shift. ESCI understands that Estacada firefighters previously worked this schedule, but discontinued it three years ago due to difficulties in scheduling and delivering training as well as other administrative complications.

The 48-hour shift 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. Given the significant workload and frequency of overtime hire-back to meet minimum staffing, a 48-hour shift may not prove a viable option.

As noted previously, CFD1 should theoretically have a significant number of additional personnel to provide coverage for scheduled and unscheduled leaves—especially given the increased number of Kelly Days that will be implemented in 2020–21. The continued reliance on routinely hiring operations personnel back on overtime to cover for scheduled and unscheduled leaves should be scrutinized, especially from a worker fatigue perspective of employees working up to 72 hours straight.

In looking at worker fatigue, and its impacts on safety, ESCI references *Federal Motor Carrier Safety Administration* (FMCSA) regulations. Due to fatigue concerns, this agency aggressively regulates and monitors commercial transportation workers, including commercial pilots, railroad workers, long-haul truck drivers, and ship workers. Regarding long-haul truck and passenger-carrying drivers, very restrictive rules are set in place to address potential driver fatigue. ESCI highlights these specific requirements because fire and EMS employees routinely drive emergency vehicles in all types of weather conditions.

The following figure provides 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.[12]

Figure 25: 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 on not only the length of the work periods, but also *the length of the off-duty/rest periods.* Given the significant daily emergency response workload, as well as the reliance on hiring back overtime as a primary means of covering scheduled absences (vacation, Kelly Days, scheduled training, etc.), and the average amount of overtime worked by employees on an annual basis, firefighter fatigue and burnout should be viewed as a legitimate concern within CFD1.

In ESCI's experience, a functional and operationally efficient consolidation will require a homogenized shift schedule. While each district 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 integration efforts. However, as with any proposed change to working conditions, especially resulting from a planned consolidation, it likely would require a focused collaboration between the two bargaining units and fire district leadership to identify an acceptable and cost-effective solution.

Effective Response Force Analysis

In addition to reviewing the total number of operations staff available to each district, ESCI also reviewed their daily staffing levels, and compared them to national consensus standards related to providing enough personnel and resources to quickly mitigate emergency incidents—specifically, structure fires and critical EMS situations. Since there is a comparatively large number of Paramedics between the two Districts, including Paramedics who provide non-transport medical first-response services, ESCI focused on each fire district's ability to marshal an *Effective Response Force* (ERF) to mitigate structure fires or other complex and dynamic emergencies.

Critical Task Analysis

Tasks that must be performed at a fire can be broken down into two key components: life-safety and fire-flow. Life-safety tasks are based on the number of building occupants and their location, status, and ability to take self-preservation action. Life-safety related tasks involve the search, rescue, and evacuation of victims. The fire-flow component involves delivering enough water to extinguish the fire and create an environment within the building that allows entry by firefighters.

The number and types of tasks needing simultaneous action will dictate the minimum number of firefighters required to combat different types of fires. In the absence of adequate personnel to perform concurrent actions, the incident commander must prioritize the tasks and complete some in chronological order. These tasks include command; scene safety; search and rescue; fire attack; water supply; pump operation; ventilation; and back-up/rapid intervention. An initial full-alarm assignment should provide for the following:

- Establishment of incident command outside of the hazard area for the coordination and direction of the initial full-alarm assignment. A minimum of one individual shall be dedicated to this task.
- Establishment of an uninterrupted water supply of a minimum 400 GPM for 30 minutes. Supply line(s) shall be maintained by an operator who shall ensure uninterrupted water flow application.
- Establishment of an effective water-flow application rate of 300 GPM from two handlines; each of which shall have a minimum of 100 GPM. Each attack and backup line shall be operated by a minimum of two individuals to effectively and safely maintain the line.
- Provision of one support person for each attack and backup line, deployed to provide hydrant hookup and to assist in line lays, utility control, and forcible entry.
- A minimum of a single-victim search and rescue team as part of the initial full alarm assignment. Each search and rescue team shall consist of a minimum of two individuals.

- A minimum of one ventilation team as part of the initial full alarm assignment. Each ventilation team shall consist of a minimum of two individuals.
- If an aerial device is used in operations, one person shall function as an aerial operator who always maintains control of the aerial device.
- Establishment of an IRIC (Initial Rapid Intervention Company, Rapid Intervention Team) that shall consist of a minimum of two properly equipped and trained individuals.

The *Commission on Fire Accreditation International* provides a sample critical tasking analysis for the number of emergency workers required for various levels of risk.[18] This is summarized as follows.

Figure 26: Sample Critical Task Staffing Need Based on Level of Risk

Critical Task	Maximum Risk	High Risk	Moderate Risk	Low Risk
Attack line	4	4	4	2
Search and rescue	4	2	2	
Ventilation	4	2	2	
Backup line/rapid intervention[2]	4	3	2	2
Pump operator	1	2	1	1
Water supply	1	1	1	
Utilities support	1	1	1	
Command/safety[3]	2	2	2	1
Forcible entry[1]	0			
Salvage[1]	0			
Overhaul	1			
Communication	1			
Chief's aide	1	1		
Operations section chief	1	1		
Logistics	1			
Planning	1			
Staging[1]	1			
Rehabilitation	1	1		
Division/group supervisors[1]	2			
High-rise evacuation[1]	10			
Stairwell support[1]	10			
Total Required:	**51**	**20**	**15**	**4–6**

[1]At maximum and high-risk fires, additional personnel may be needed for these tasks.

[2]Backup line may not be required for certain incidents.

[3]Can often be handled by the first due officer.

Delivering enough personnel to the scene to accomplish the various tasks required to mitigate an emergency is essential, and many of these tasks must be completed quickly. However, it should be noted that not all the tasks listed need to be completed simultaneously.

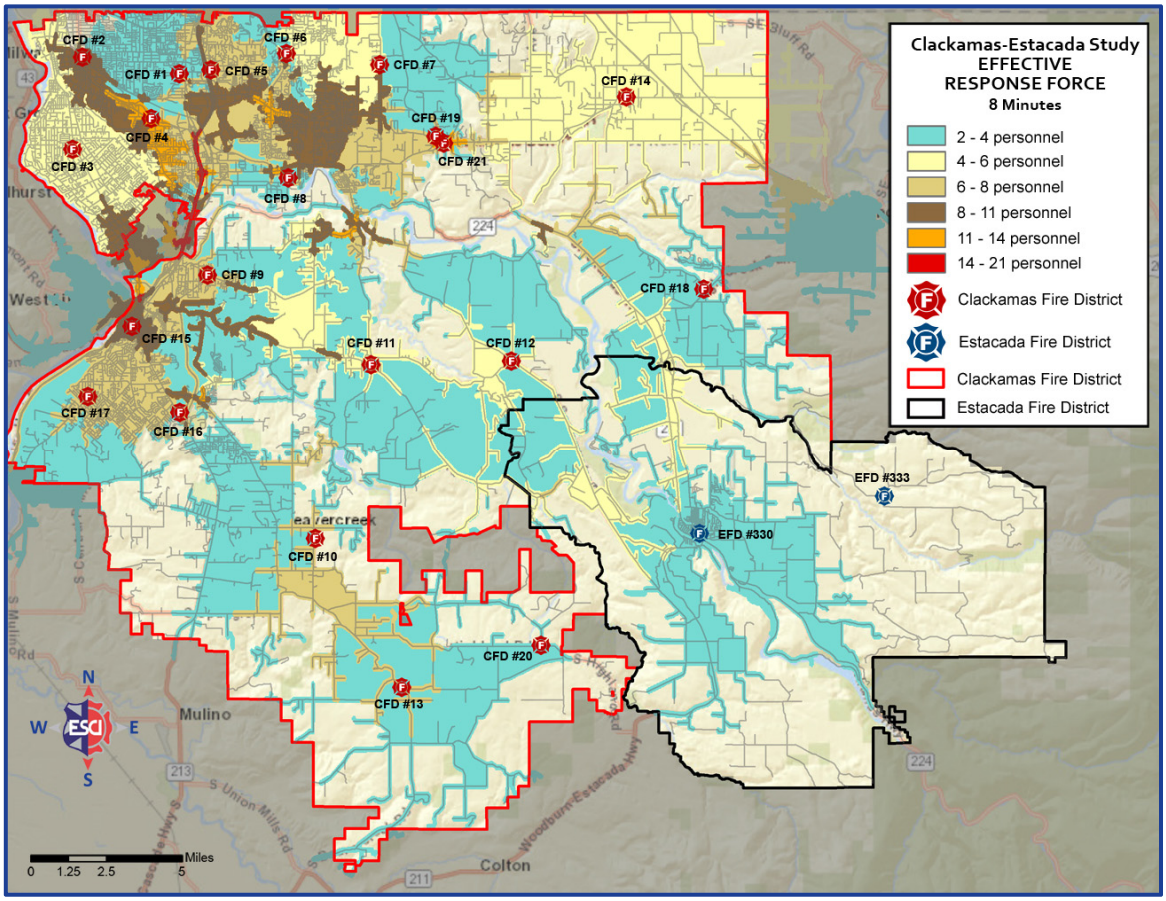
Typically, structure fires are the most labor-intensive incidents. As shown in the preceding figure, national criteria recommend at least 15 personnel should arrive at the scene of a fire in a single-family residence to ensure safe and effective operations. Even more personnel may be required as dictated by the size of the building, incident complexity, and/or special hazards that may be encountered.

The fire service assesses the relative risk of properties and occurrences based on several factors. Properties with high risk for fire 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 are 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 office 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.
- *Maximum Risk*—A structure or area where an incident could or does result in many severe injuries requiring hospitalization and/or fatalities. Significant damage—temporary or permanent—that impacts essential services or the environment. May result in huge financial loss and general displacement for an extended duration.

The next figure is a GIS illustration showing the extent and number of operations personnel that can arrive on the scene within a travel-time of eight minutes or less throughout each of the fire Districts.

Figure 27: Ability to Assemble an Effective Response Force within 8 Minutes or Less



Effective Response Force Discussion

Because of the limited daily operations staffing in ERFD69, it is clear they are unable to muster an effective response force with career personnel for anything other than a low-risk incident on their own, and must rely on volunteer response and automatic aid with CFD1 and neighboring jurisdictions to muster an ERF for moderate to high-risk incidents. In part, this is due to the need to wait for volunteer companies to be staffed as they must travel from home (or other location) to the fire station. This observation is not meant to denigrate the abilities or professionalism of the career and volunteer responders. Rather, it is meant to highlight the very limited initial response capabilities and capacity to respond to concurrent incidents due to the District's limited resources.

CFD1 appears to have adequate resources to muster an effective response force for response to a high-risk incident. However, this response capability and capacity can vary at any given time, depending on the number of concurrent incidents and availability of response units.

FINANCIAL REVIEW OF THE FIRE DISTRICTS

Financial analysis proves an important part of determining the potential for, and viability of a fire district integration. To this end, a computer-driven model was developed for each respective fire district budget which is designed to fairly represent the monetary policies of each agency in a consistent manner. Modeling is designed to neutralize the normal differences usually found in unilateral fiscal practices and to account for any financial peculiarities between agencies. This approach provides an "apples-to-apples" comparison of the agencies, which allows an estimation of the public cost of each District's operation and provides a means for financial evaluation of the outcome of integration. The modeled budget yields a baseline estimate of the public cost of services. In addition, the methodology facilitates projection of consolidation outcomes into the future.

The following section provides background information on the historical and current financial condition of Clackamas Fire District #1 and Estacada Rural Fire District #69. Understanding of fire service financial resources and costs within the overall study area begins with an overview of the current operating conditions, including analysis and discussion of the financial structure for each respective agency. This includes a multi-year historical review of revenues and expenses followed by a status quo financial forecast from Fiscal Year (FY)2019 through FY2023 utilizing historical trend data and key assumptions about future trajectory. This analysis relies on extensive financial documentation provided by the two Districts, including the actual and adopted budget documents and the Districts' *Comprehensive Annual Financial Reports* (CAFR).

The following comparative snapshot of historical financial results and the status quo projection for each organization—assuming no changes in organizational structure and working conditions—sets the stage for modeling various alternatives to the status quo. The status quo projection utilizes a series of revenue and expenditure assumptions based upon historical trajectory and known or expected future conditions in the community.

Historical Revenue & Expense

Clackamas Fire District #1

Clackamas Fire District #1 uses a modified accrual basis for its budgeting and accounting and maintains several discrete funds specific to various functions. These funds include the following: General Fund (GF), Equipment Replacement Fund, Capital Projects Fund, Enterprise Fund, Debt Service Fund, and the PERS Reserve Fund. The District's General Fund is its principal operating and administrative fund used for day-to-day operations and to account for the receipt of ad valorem revenues, which are disbursed to other funds (except the debt service, enterprise, and capital construction funds) through fund transfers. Interest income and transfers from the GF are used to support other functions accounted for in the Equipment Replacement Fund, Capital Projects Fund, and PERS Reserve Fund.

The District's *Debt Service Fund* has its own ad valorem revenue stream and is used to service various bonds and other debt service instruments. The millage associated with the debt service fund varies with debt financing needs and is above and beyond the government limited millage ceiling of 2.4012 per $1,000 of assessed value used for the GF and related funds. The fiscal year is July 1 through June 30.

Figure 28: Clackamas Fire District #1 Ad Valorem Summary (FY 2019)

Component	Description
Fiscal Year	July 1–June 30
Assessed Property Value (FY 2019)*	$22,376,686,996
Ad Valorem-Supported GF Budget	$52,910,709
Millage Rate[13]	2.4012

*After URD reduction

The following figure shows actual revenues for all government funds combined and is divided into recurring and non-recurring revenues. Because the following figure includes all District funds, interfund transfers between funds balance out with a net total revenue impact of $0. Recurring revenues are those such as ad valorem taxes, contracts, ambulance and related revenues, and investment/interest income that are reasonably predictable in many cases and expected to continue annually. Non-recurring revenues on the other hand are more sporadic in nature and/or difficult to predict such as grant funds, donations and sales of surplus property and equipment. Bond or loan proceeds are considered non-recurring revenue sources and can significantly skew total District financial resources year over year. In order to more appropriately compare the two Districts, a subsequent discussion will focus solely on recurring revenue (and expense).

Figure 29: Clackamas Fire District #1 Combined Revenues (FY 14–FY 18 Actual)[14, 15]

Revenue	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Actual
Taxes	39,196,109	40,790,325	43,392,009	49,789,871	52,090,969
Contract /Ambulance Income	12,500	3,963,510	4,163,681	1,243,630	2,932,388
Investment Earnings	85,676	160,326	213,831	389,663	690,004
Recurring Revenue:	**$39,294,285**	**$44,914,161**	**$47,769,521**	**$51,423,164**	**$55,713,361**
Grant Income	—	—	853,465	75,846	461,073
Intergovernmental	—	—	—	—	553,636
Sale of Surplus Items	—	15,794	45,025	392,900	13,489
Miscellaneous Income	749,551	4,100,008	818,473	351,118	493,842
Bond Proceeds (less cost)	—	—	19,550,783	12,482,538	—
Non-Recurring Revenue:	**$749,551**	**$4,115,802**	**$21,267,746**	**$13,302,402**	**$1,522,040**
TOTAL REVENUE:	**$40,043,836**	**$49,029,963**	**$69,037,267**	**$64,725,566**	**$57,235,401**

Recurring revenue for the District has increased at an average annual rate of 8.6% between FY 2014 and FY 2018, and comes from several sources outlined in the following:

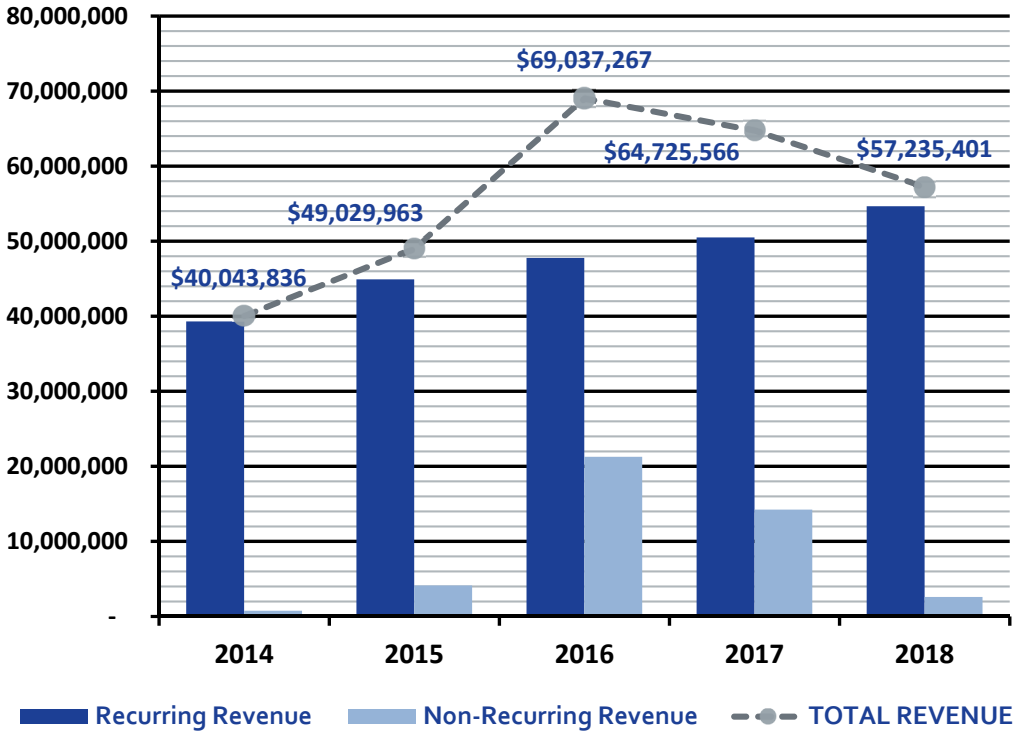
- Ad Valorem Tax—as shown in the figure above combines both the primary GF millage and the dedicated debt service millage. Total ad valorem revenue ranged from $39,196,109 in FY 2014, to $52,090,969 in FY 2018; a 32.9% increase over the period. The average annual increase from FY 2014 through FY 2016 was 5.2%. Tax revenue increased significantly between FY 2016 and FY 2017, following the merger with the Boring fire district. However, the annual rate of increase from FY 2017 to FY 2018 was approximately 4.5%. which approximates the previously observed trend prior to the merger.
- Contractual/Ambulance Income—has varied considerably over the period from a low of $12,500 in FY 2014 to a high that averaged approximately $4 million in FY 2015–16. Prior to the merger with the Boring Fire District, revenues for services provided by Clackamas Fire District #1 to the Boring Fire District were accounted for under contractual revenue.
- Investment/Interest Earnings—have increased considerably over the period from $85,676 in FY 2014 to $690,004 in FY 2018; an increase of just over 700%. Investment revenue as a percent of total recurring revenue has increased from 0.22% in FY 2014 to 1.24% by FY 2018.

Non-recurring revenue for the District, as expected, has varied considerably, from a low of approximately $750,000 in FY 2014 to a high of $21.3 million in FY 2016 due to bond proceeds. Non-recurring revenue sources are outlined as follows:

- Grant Revenue—has varied from zero in FY 2014–15 to a high of $853,465 in FY 2016.
- Intergovernmental Revenue—has not been a part of the District's revenue stream until FY 2018, when a reimbursement of $553,636 was received for radio equipment purchased with the Capital Construction Fund.
- Sale of Surplus Property—has varied considerably from zero to a high of $392,900 in FY 2017 resulting from the sale of property acquired through the Boring Fire District merger.
- Miscellaneous Income—has varied from a low of just under $750,000 in FY 2014 to a high of $4.1 million in FY 2015. Miscellaneous income includes revenues from intergovernmental and other reimbursements and external services provided.
- Bond Proceeds—of approximately $19.6 million and $12.5 million were received in FY 2016 and FY 2017; respectively.

The following figure compares recurring to non-recurring and total revenue for all District funds and clearly shows the sporadic impact of the bond proceeds on total revenue. Conversely, recurring revenue has increased in a relatively uniform manner as might be expected as the District has continued to balance revenue against increasing staffing and other operational expenses that are also recurring in nature.

Figure 30: Clackamas Total Revenues—All Funds (FY 14–FY 18 Actual)



The following figure shows actual expenditures for all government funds combined and is divided into recurring and non-recurring expenses. Recurring expenses are those such as employee wages and benefits, materials and services costs, and debt service (P & I) that are reasonably predictable and expected to continue from year-to-year. In some cases, Districts spend a predictable amount each year on apparatus and equipment replacement. Typically, they consider this a recurring cost and can budget for this as recurring revenue. Non-recurring expenses on the other hand are more sporadic in nature and may be difficult to predict such as land acquisition, facility construction and major renovation and large-scale equipment or apparatus purchases.

Figure 31: Clackamas Combined Expenses (FY 14–FY 18 Actual)

Expense	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Actual
Personnel Services	31,627,667	36,730,123	39,631,914	41,823,049	47,531,426
Materials and Services	4,731,342	5,591,207	5,070,891	6,341,133	6,217,515
Debt Service	933,700	937,300	1,701,060	1,759,600	2,178,543
Recurring Expense:	**$37,292,709**	**$43,258,630**	**$46,403,865**	**$49,923,782**	**$55,927,484**
Capital Outlay*	2,978,883	1,038,877	3,311,837	10,241,954	18,509,350
Non-Recurring Expense:	**$2,978,883**	**$1,038,877**	**$3,311,837**	**$10,241,954**	**$18,509,350**
TOTAL EXPENSES:	**$40,271,592**	**$44,297,507**	**$49,715,702**	**$60,165,736**	**$74,436,834**

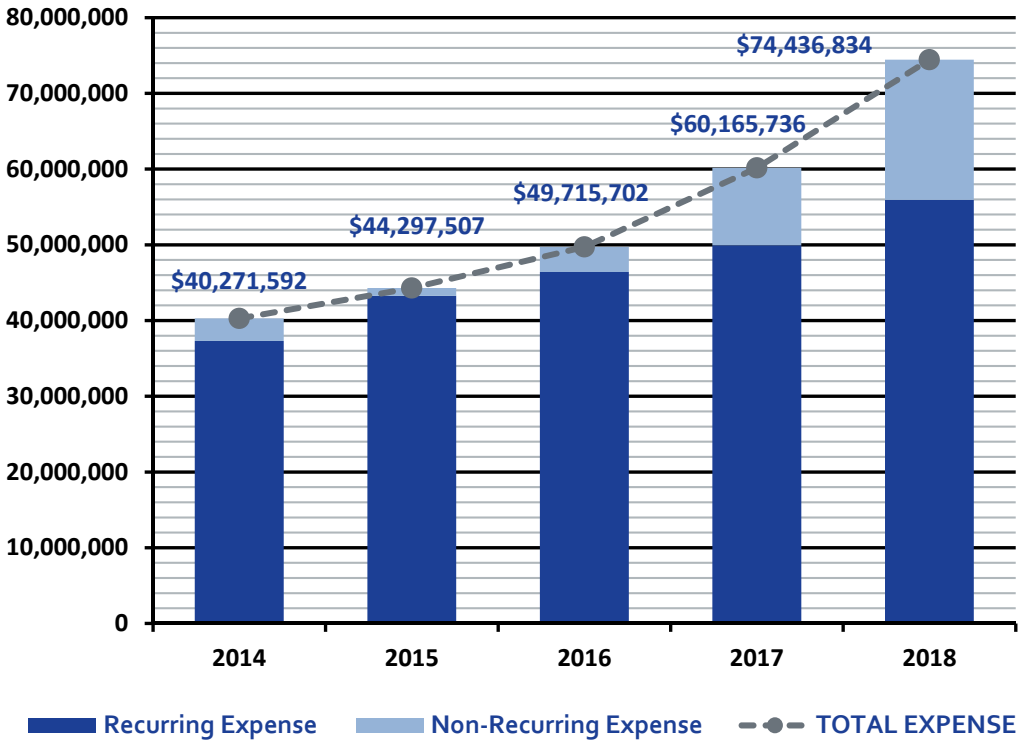
*Facilities and equipment

Recurring expense for the District has increased at an average annual rate of 10.7% between FY 2014 and FY 2018, with the major categories described as follows:

- *Personnel Services*— in total have increased from $31.6 million in FY 2014 to $47.5 million in FY 2018 for an increase of 50.3% over the period which represents an average annual increase of 10.7%. In FY 2018, overtime costs (sick/vacation and other operational coverage) were almost 18% of total wages while benefits were approximately 34% of the total compensation costs. Overtime costs appear high, relative to industry observation—particularly when Kelly Day schedules are used. Generally, when adequate staffing is budgeted to cover expected sick/vacation leave, the ratio of overtime to wages is closer to 5–8% of total wages.
- *Materials and Services*—have increased from $4.7 million to $6.2 million, for an increase of 31% over the period or an average annual increase of 7%.
- *Debt Service*—has increased at an average annual rate of 23.5% as the District has borrowed and raised bond funding to undertake several construction projects. According to the FY 2018 annual financial audit report, as of June 30, 2018 the District "…had long-term debt of $45,298,737… a promissory note for the purchase of the Training Center property for $693,175, the 2015 GO Bonds of $14,550,000, the 2017 GO Bonds of $11,220,000 and the unamortized premiums totaling $2,815,562."

The following figure compares recurring, non-recurring, and total expense for all funds from FY 2014 through FY 2018. Non-recurring expense for the District has varied between a low of $1.1 million in FY 2015 and $3.3 million between FY 2014 and FY 2016, before jumping to $18.5 million in FY 2018 as several major construction projects were underway.

Figure 32: Clackamas Total Expense—All Funds (FY 14–FY 18 Actual)



The District has adopted a Cash Management Policy and Program stating that adequate resources are to be maintained in ending fund balance to meet cash needs in the succeeding year.[16] For the GF, this was initially defined as five months of Personnel Services costs, 25% of Materials and Services and 25% of Capital Outlay. This requirement was subsequently reduced to 35% of operating expenses for the FY 2019 proposed budget, based upon operating cash flow from July 1 until substantial tax revenues are received in November.

The following figure shows the General Fund beginning and ending fund balances for the District over the review period with the added fund balance from the merger with the Boring Rural Fire District shown in FY 2017, while the subsequent figures show the beginning and ending fund balances for all District funds combined versus GF and non-GF Funds separately. The General Fund balance analysis below shows the impact of both transfers into and out of the GF through the period while in the subsequent figures combining all funds, the net impact of transfers between funds is zero and has no impact on combined fund balance.

The District has maintained a beginning General Fund balance of between 31% and 33% percent of operating expenses (excluding GF capital) during the historical period. This is less than the original goal of the GF cash management policy but approximates the revised policy of 35% of operating expenses as adopted for FY 19.

Figure 33: Clackamas Beginning/Ending Fund Balance—General Fund Only (FY 14–FY 18 Actual)

Fund Balance (All Funds)	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Actual
Beginning Fund Balance	$12,021,387	$12,980,430	$14,255,130	$15,900,459	$17,609,116
Annexation—Boring FD	—	—	—	$1,018,691	—
Ending Fund Balance:	**$12,980,429**	**$14,255,130**	**$15,900,459**	**$17,609,116**	**$17,303,197**
BFB as % of GF Operating:	**33%**	**31%**	**32%**	**33%**	**33%**

The following figures show the combined fund balance for the District increasing from $13.6 million in FY 14 to $44.8 million in FY 18. The significant increases in beginning fund balance seen in FY 2017 and again in FY 2018 are the result of bond proceeds. The District's beginning General Fund balance has increased from $12 million in FY 14 to $17.6 million in FY 18 which has generally remained at 31–33% or approximately four months of recurring expenses.

Figure 34: Clackamas Beginning/Ending Fund Balance—GF vs Non-GF Funds (FY 14–FY 18 Actual)

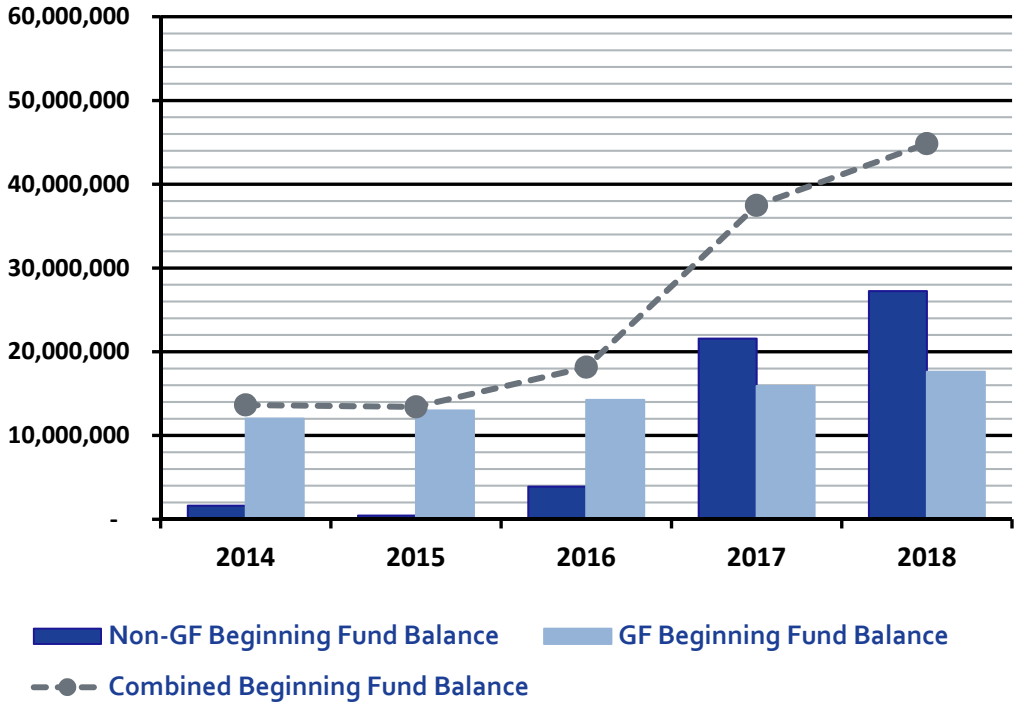
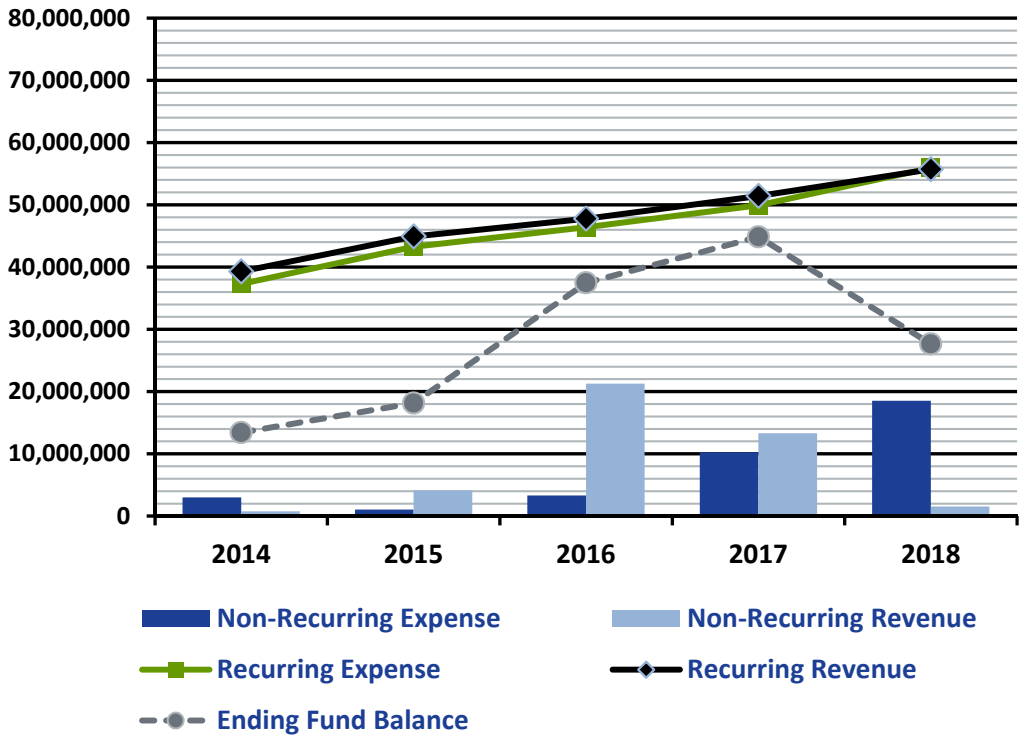


Figure 35: Clackamas Beginning/Ending Fund Balance—All Funds (FY 14–FY 18 Actual)

Fund Balance (All Funds)	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Actual
Beginning Fund Balance	$13,643,412	$13,415,656	$18,148,112	$37,469,677	$44,852,705
Annexation—Boring FD	—	—	—	$2,823,198	—
Ending Fund Balance	$13,415,656	$18,148,112	$37,469,677	$44,852,705	$27,651,272

Figure 36: Clackamas Revenue & Expense Impact on Ending Fund Balance All Funds (FY 14–FY 18 Actual)



The preceding figure illustrates how recurring and non-recurring revenue and expense interact to impact combined ending fund balance each year. The District has been very judicious in ensuring that enough recurring revenue is generally available to offset recurring expense. Typically, the District's recurring expenses have been somewhat less than recurring revenues which has resulted in a net operating gain that adds to the ending fund balance.

The more significant fluctuations in combined ending fund balance are due primarily to the non-recurring revenue from bond revenues and, to a much lesser degree, other non-recurring sources which are used to offset major construction projects. Once these major projects are completed, combined District fund balance will return to levels as observed historically in FY 14–16 where the majority of District fund balance is held in the General Fund. Historical GF fund balance has been close to the revised policy of 35% of operating expenses which the District has adopted for FY 2020 onward.

Estacada District #69

Estacada District #69 uses an accrual basis for its budgeting and accounting and maintains several distinct funds specific to various functions. These funds include the General Fund (GF) and the Facilities and Property Reserve Fund, the District's two major governmental funds, and a series of non-major governmental reserve funds used for various capital projects which include; the Apparatus Reserve Fund, Utility Vehicle Reserve Fund, Fire/EMS/Rescue Tool Reserve Fund, Communications and Data Systems Reserve Fund and the PPE and SCBA Systems Reserve Fund.

The District's General Fund is its principal operating and administrative fund used for day-to-day operations and to account for the receipt of ad valorem revenues, which are disbursed to other funds through fund transfers. The Facilities and Property Reserve Fund is primarily funded through embezzlement recovery, property sales, and grants.

There is no additional millage support for the District that is approved beyond the government limited millage ceiling of 2.4029 mills used for the GF and related funds. The fiscal year is July 1 through June 30.

Figure 37: Estacada Ad Valorem Summary (FY 2019)

Component	Description
Fiscal Year	July 1–June 30
Assessed Property Value (FY 2019)	$1,169,578,123
Ad Valorem-Supported GF Budget	$2,613,649
Millage Rate	2.4029

The following figure shows actual revenues for all government funds combined, and is divided into recurring and non-recurring revenues. Recurring revenues are those such as ad valorem taxes, contracts, and investment/interest income that is reasonably predictable in many cases, and expected to continue from year-to-year. Non-recurring revenues on the other hand are more sporadic in nature and difficult to predict such as grant funds, donations and sales of surplus property and equipment. Bond or loan proceeds are considered non-recurring revenue sources.

Figure 38: Estacada Combined Revenues (FY 14–FY 18 Actual)

Revenue	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Actual
Taxes	2,071,392	2,179,548	2,332,131	2,497,128	2,622,812
Charges for Services	5,882	18,535	11,500	—	—
Investment Earnings	7,820		—	—	—
Recurring Revenue:	**$2,085,094**	**$2,198,083**	**$2,343,631**	**$2,497,128**	**$2,622,812**
Grant Income	563,636	—	—	—	371,905
Intergovernmental	—	213,882	—	—	—
Sale of Surplus Equip/Prop	8,801	—	153,949	—	30,156
Miscellaneous Income	27,669	28,221	74,383	53,914	183,708
Transfers In (Out)	52,800	171,676	—	—	—
Non-Recurring Revenue:	**$652,906**	**$413,779**	**$228,332**	**$53,914**	**$585,769**
TOTAL REVENUE:	**$2,738,000**	**$2,611,862**	**$2,571,963**	**$2,551,042**	**$3,208,581**

Recurring revenue for the District has increased at an average annual rate of 6% between FY 2014 and FY 2018 and comes from several sources outlined as follows:

- Ad Valorem Tax— shown in the figure above ad valorem revenue ranged from $2.07 million in FY 2014, to $2.6 million in FY 2018, a 26.6% increase over the period. This represents an average annual increase of 6%. Ad valorem revenue makes up over 99% of the District's recurring revenue.
- Charges for Services—this relatively minor source of revenue has varied from a low of just under $6,000 in FY 2014 to a high of $18,535 in FY 2015 and was zero in FY 2017–18.
- Investment/Interest Earnings—have been relatively minor at only $7,820 in FY 2014 with no additional earnings reported in financial statements between FY 2015 and FY 2018.

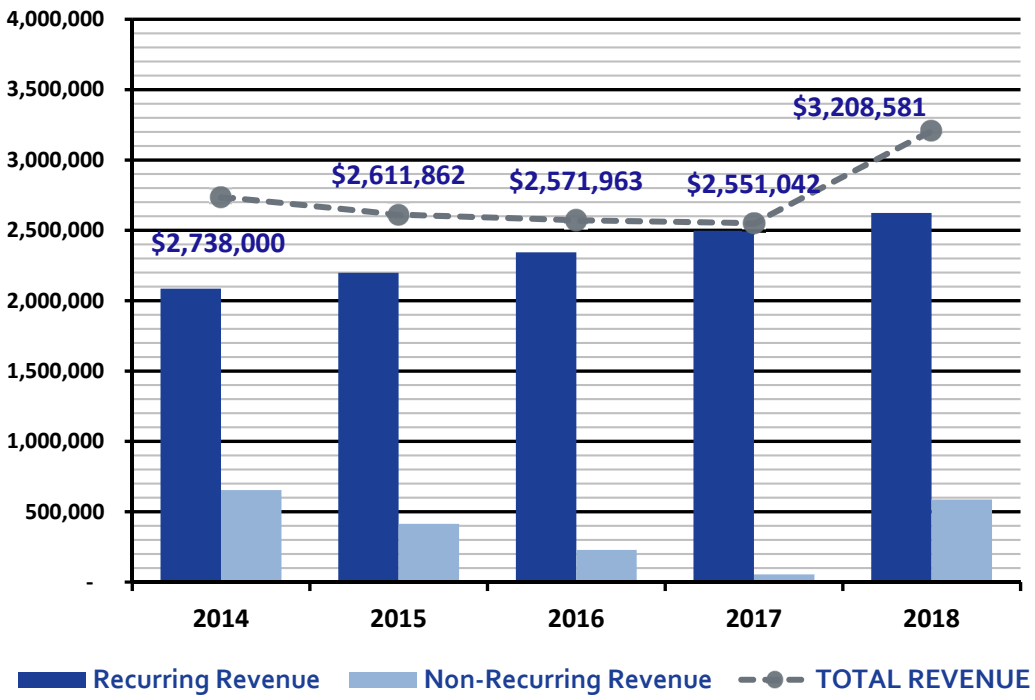
Non-recurring revenue for the District, as expected, has varied considerably, from a high of approximately $650,000 in FY 2014 to a low of near $54,000 in FY 2017. Non-recurring revenue sources are outlined as follows:

- *Grant Revenue*—was received in FY 2014 but has remained at zero through FY 2017 before the District received an additional grant of $371,905 in FY 2018.
- Intergovernmental Revenue—of $213,882 was received in FY 2015 but has been zero in all other years of the review period.
- *Sale of Surplus Property*—has varied considerably from zero to a high of $153,949 in FY 2016.
- Miscellaneous Income—has varied but has generally increased from a low of approximately $28,000 in FY 2014 to a high of $183,708 in FY 2018.

- *Transfers*—although shown as non-recurring revenue, interfund transfers should zero out but were a net positive in the FY 2014–15 audits and show as revenue. In subsequent audits, transfers show as net zero.

The following figure compares recurring to non-recurring and total revenue for all District funds. The total revenue trend is clearly driven by the changes in non-recurring revenues, which decreased each year from FY 2014 through FY 2017 after which they increased. Non-recurring revenues on the other hand have shown a steady annual increase driven by the annual increase in tax revenue.

Figure 39: Estacada Total Revenue—All Funds (FY 14–FY 18 Actual)



The following figure shows actual expenditures for all government funds combined and is divided into recurring and non-recurring expense. Recurring expenses are those such as employee wages and benefits, materials and services costs, and debt service (P & I). These are reasonably predictable and expected to continue from year-to-year.

In some cases, the Districts spend a predictable amount each year on apparatus and equipment replacement which they consider a recurring cost, and enables them to budget for the use of recurring revenues. Non-recurring expenses, in contrast, are more sporadic in nature and may be difficult to predict such as land acquisition, facility construction and major renovation and large-scale equipment or apparatus purchases.

Figure 40: Estacada Combined Expenses (FY 14–FY 18 Actual)

Expense	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Actual
Personnel Services	1,536,506	1,480,130	1,523,302	1,786,166	2,058,150
Materials and Services	711,534	447,925	503,321	702,819	673,672
Debt Service	—	2,140	—	—	—
Recurring Expense:	**$2,248,040**	**$1,930,195**	**$2,026,623**	**$2,488,985**	**$2,731,822**
Capital Outlay[1]	694,146	78,071	96,092	322,380	452,315
Non-Recurring Expense:	**$694,146**	**$78,071**	**$96,092**	**$322,380**	**$452,315**
TOTAL EXPENSES:	**$2,942,186**	**$2,008,266**	**$2,122,715**	**$2,811,365**	**$3,184,137**

[1]Facilities and equipment

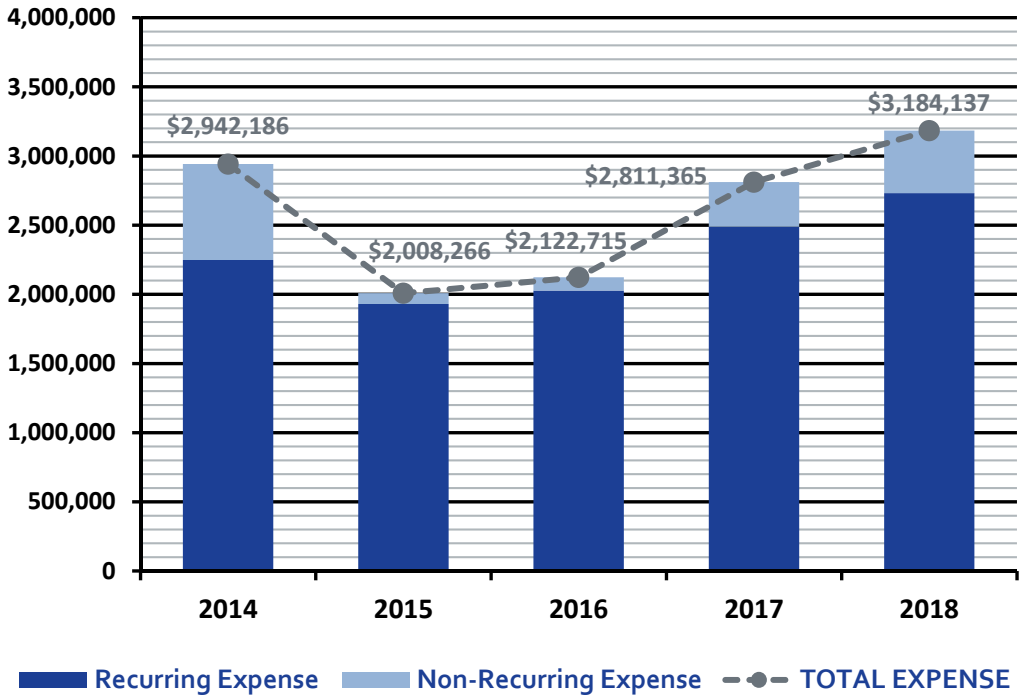
Recurring expense for the District has increased at an average annual rate of 5% between FY 2014 and FY 2018, with the major categories described as follows:

- *Personnel Services*—in total have increased from $1.5 million in FY 2014 to $2.06 million in FY 2018 for an increase of 40% over the period which represents an average annual increase of 7.6%. In FY 2014–15, overtime costs (sick/vacation and other operational coverage) averaged approximately 4% of total wages while benefits were approximately 30% of the total compensation costs. Overtime costs increased to 5% of total wages in the adopted FY 2018 budget and jumped to 13% in the proposed FY 2019 budget. At the same time, benefits as a percentage of total compensation have increased to 37%.
- *Materials and Services*—fell from a high of just over $700,000 in FY 2014 to just under $450,000 in FY 2015 after which it increased over the next two years to an average of $700,000 in FY 2017 and FY 2018.
- *Debt Service*—the District currently carries no debt. The FY 2015 audit shows $2,140 in finance charges but there is no debt service in any of the other fiscal years reviewed.

Non-recurring capital facility and equipment expenditures are funded through non-recurring revenues and have varied annually between a high of $694,146 in FY 2014, and a low of 478,071 in FY 2015. Net non-recurring revenues have exceeded non-recurring expenses for the five-year period by $291,696.

The following figure compares recurring, non-recurring and total expense for all funds from FY 2014 through FY 2018. Non-recurring expense for the District was at a high of almost $700,000 in FY 2014, which fell to a low averaging $92,000 in FY 2015–16 before gradually increasing in successive years to approximately $450,000 in FY 2018.

Figure 41: Estacada Expenses—All Funds (FY 14–FY 18 Actual)



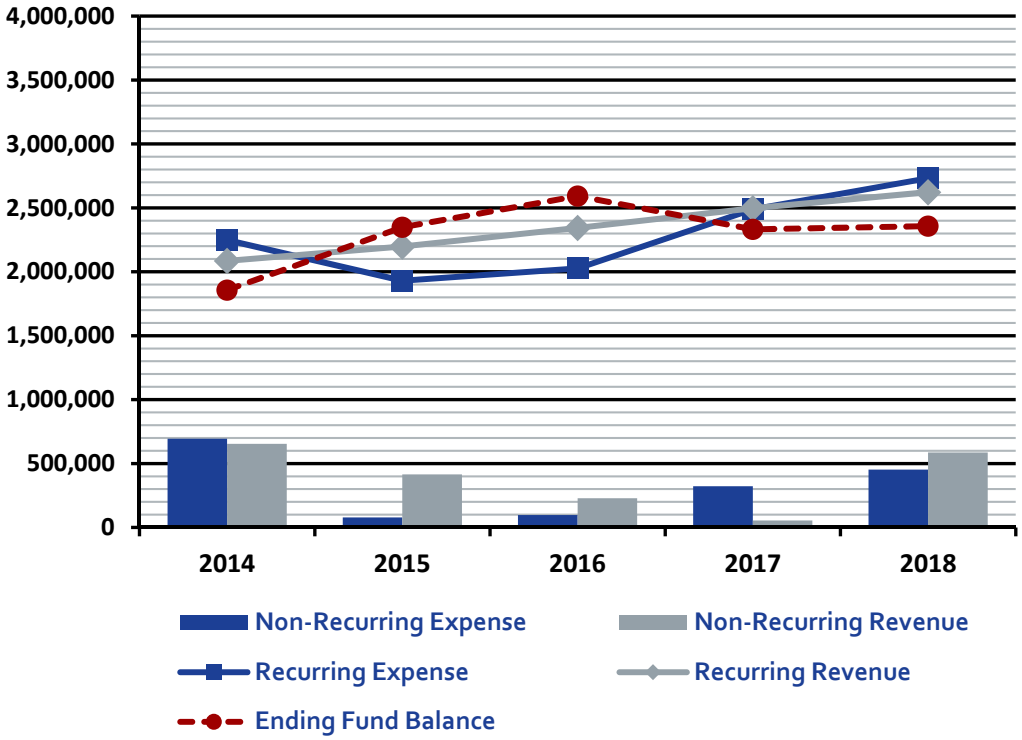
The following figure shows the combined beginning and ending fund balances for the District over the review period. The District has generally kept a beginning fund balance of not less than approximately $1.7 million. And it has adopted a minimum fund balance policy, which states that "...a prudent reserve for a District our size is enough funds to sustain the operation of the District for four months, so as to enable normal General Fund expenditures and other financing uses between July 1 and receipt of tax revenue in November."[17]

The District has maintained a fund balance between 85% and 105% of its annual recurring expenses for the period FY 14 through FY 18, well above its stated policy goal of 33%.

Figure 42: Estacada Beginning/Ending Fund Balance—All Funds (FY 14–FY 18 Actual)

Fund Balance (All Funds)	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Actual
Beginning Fund Balance	$2,060,983	$1,744,918	$2,143,363	$2,592,614	$2,332,291
Ending Fund Balance	$1,856,797	$2,348,514	$2,592,611	$2,332,291	$2,356,735

Figure 43: Estacada Revenue/Expense & Impact on Ending Fund Balance
All Funds (FY 14–FY 18 Actual)



The preceding figure shows how recurring and non-recurring revenue and expense interact to impact ending fund balance each year. The District has closely monitored this trend, even reducing the expense as necessary to ensure enough recurring revenue is generally available to offset recurring expense. Although recurring expenses exceeded recurring revenue in FY 2014, resulting in a net operating loss, expenses were less than recurring revenues in the following three years until they again exceeded revenues in FY 2018. Non-recurring revenues were also in excess of non-recurring expenses, contributing to increases in ending fund balance for FY 2014 through FY 2016. Excess expenditures over total revenues in FY 2017 resulted in a reduction in ending fund balance. Although recurring expense exceeded recurring revenue in FY 2018, the potential net operating loss was offset by an excess of non-recurring revenue over expense, resulting in no net change in fund balance.

Financial best practice as recommended by the *Government Financial Officers Association* (GFOA) provides guidance on how to account for fund balance and how much is recommended for various purposes.[18] A formal policy should be adopted and explain the level of unrestricted fund balance to be maintained, how it should be used, and how and over what time period it should be restored, if used. Risk of various types, whether natural or artificial, should be accounted for when developing fund balance policy. Specifically, GFOA recommends that governments maintain at least two months or just under 17% of operating revenues or expenditures at a minimum. Under GFOA best practices, the minimum recommended fund balance for the District would have varied from approximately $375,000 in FY 2014 to $455,000 in FY 2018.

However, since the District fiscal year begins in July and significant tax revenues don't come in until November, a higher operating cash reserve closer to six months or 50% of operating expenditures ($1.1 million in FY 2014 to $1.4 million in FY 2018) would provide a more conservative approach. The District has maintained a total reserve well in excess of that amount as shown in the preceding figure. The actual ending fund balance for the review period has been well above a conservative minimum.

Combined Recurring Revenue & Expenses of the Fire Districts

Due to the variability of non-recurring expenditures and dependence upon non-recurring funding, such as bond proceeds, loans, grants, and other sources, the following comparison of recurring revenue and expenditures between the Districts is provided. This presentation gives policymakers a better basis for comparing the annual costs of providing services between the Districts. The following figure compares recurring revenues and expenses for each fire district, and an annual total for FY 2014 through FY 2018 actual, and FY 2019 as adopted (and FY 2019 supplemental for Clackamas) for all funds in each District.

Interfund transfers are net zero, and contingency amounts are not shown for FY 2019 adopted. Recurring expenses exceeded recurring revenues in both Districts in FY 2018 by a total of $323,123—a trend which is anticipated to recur in FY 2019, with the deficit increasing to approximately $2.35 million.

Figure 44: Clackamas & Estacada Combined Recurring Revenue & Expenses (FY 2014–FY 2019)

District	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Actual	2019 Adopted
Revenue						
Clackamas	39,294,285	44,914,161	47,769,521	51,423,164	55,713,361	56,935,887
Estacada	2,085,094	2,198,083	2,343,631	2,497,128	2,622,812	2,670,202
Totals:	**$41,379,379**	**$47,112,244**	**$50,113,152**	**$53,920,292**	**$58,336,173**	**$59,606,089**
Expense						
Clackamas	37,292,709	43,258,630	46,403,865	49,923,782	55,927,484	58,686,394
Estacada	2,248,040	1,930,195	2,026,623	2,488,985	2,731,822	3,268,075
Totals:	**$39,540,749**	**$45,188,825**	**$48,430,488**	**$52,412,767**	**$58,659,306**	**$61,954,469**
Net Gain (Loss):	**$1,838,630**	**$1,923,419**	**$1,682,664**	**$1,507,525**	**($323,133)**	**($2,348,380)**

Property Tax Levy Rates & Revenue

Each of the Districts levies property taxes as the major source of available revenue, the bulk of which is limited by statute. Clackamas District #1 has a voter-approved debt service levy of approximately 0.0933 mills. For comparison purposes, the property tax levy(s) and revenue generated (at 100%) for each District are provided in the next figure.

Figure 45: Property Tax Levy Rates by Fire District (FY 2019)

Source: Fire District Budget Documents

Tax Levy	Clackamas		Estacada	
	Mill Rate	Revenue	Mill Rate	Revenue
General Revenue	2.4012	$53,730,901	2.4029	$2,810,379
Debt Service	0.0933	$2,087,745	0	$0
Totals:	**2.4945**	**$55,818,646**	**2.4029**	**$2,810,379**

Financial Forecasts

ESCI evaluated the historical information provided by each fire district, as well as the current FY 2019 adopted budgets to prepare forecasts for each fire district. The forecasts rely on trends previously developed through the historical review period along with forecast information available from the respective Districts when available, in order to understand potential anomalies due to personnel changes, apparatus acquisitions, and other major events. For each District, certain assumptions were made about revenue and expenses. These assumptions are described in each section.

Clackamas Fire District #1

The following figure is the revenue forecast for Clackamas District #1 for the period FY 2019 supplemental and FY 2020 approved through FY 2024 forecast.

Figure 46: Clackamas Revenue Forecast (FY 2019 Supplemental–FY 2024)

Revenue	2019 Supplemental	2020 Forecast	2021 Forecast	2022 Forecast	2023 Forecast	2024 Forecast
Taxes	54,908,637	57,202,403	59,776,511	62,466,454	65,277,445	68,214,930
Contract	1,623,550	1,387,490	1,424,952	1,463,426	1,502,938	1,543,518
Investments	403,700	375,700	379,457	383,252	387,084	390,955
Recurring:	**$56,935,887**	**$58,965,593**	**$61,580,920**	**$64,313,132**	**$67,167,467**	**$70,149,402**
Grant Income	692,265	258,182	100,000	100,000	100,000	100,000
Surplus Sales	20,000	15,000	15,000	15,000	15,000	15,000
Misc. Income	1,533,233	1,643,000	1,643,000	1,643,000	1,643,000	1,643,000
Non-Recurring:	**$2,245,498**	**$1,916,182**	**$1,758,000**	**$1,758,000**	**$1,758,000**	**$1,758,000**
TOTALS:	**$59,181,385**	**$60,881,775**	**$63,338,920**	**$66,071,132**	**$68,925,467**	**$71,907,402**

The revenue assumptions used in the Clackamas District #1 forecast are described in the next figure.

Figure 47: Clackamas Revenue Forecast Assumptions (FY 2020–2024)

Revenue Source	Assumptions
Ad Valorem Tax	Average annual growth from FY2014–18 was 7.4% and includes the impact of the Boring Fire District annexation in FY 2017, as well as a one-time tax settlement from Comcast in FY 2018. According to staff the average annual growth since FY 2009 has been 4.5%; Clackamas County Tax Assessor estimated 4.5–5.25% for FY 2019, while actual growth was 4.37%. Forecast uses approved budget from FY 2020 and increases tax revenue at 4.5% annually.
Contract/Ambulance Fees	SeaTac CPI-U estimated at approximately 2.7% based upon 2018 through first quarter 2019. Forecast uses FY 2020 approved as base with 2.7% annual increase.
Interest/Investment	Although rising at much higher rates historically, forecast assumes FY 2020 approved as base with annual increase of 1%.
Grants	Variable over the years averaging $275,000 from FY 2014–18. Forecast assumes District will continue to aggressively pursue grants and uses a fixed annual amount of $100,000. Actual annual amounts may be significantly higher or lower.
Surplus Property	Very sporadic; forecast assumes $15,000 annual average.
Intergovernmental	None assumed in forecast
Miscellaneous/Other	Variable and contains many sources. Forecast assumes $2.5 million annually based upon FY 2020 approved.

The following figure is the expenditure forecast for Clackamas Fire District #1 for the FY 2019 supplemental and FY 2020 approved through FY 2024 forecast period. Total District capital expenditures for the approved FY 2020 budget are listed in budget documents at $7,252,064, in order show a balanced budget that meets legal requirements. However, the District CIP shows capital expenditures of only $190,145 and staff expects the CIP to be a more accurate reflection of the actual FY 2020 capital expense. Therefore, the following forecast shows only the CIP amount of $190,145 for FY 2020.

Figure 48: Clackamas Expense Forecast (Revised FY 2019– Supplemental FY 2024)

Expense	2019 Supp.	2020 Forecast	2021 Forecast	2022 Forecast	2023 Forecast	2024 Forecast
Personnel Services	49,694,798	49,397,118	51,234,691	53,140,621	55,117,452	57,167,822
Materials & Services	6,660,300	7,047,152	7,047,152	7,047,152	7,047,152	7,047,152
Debt Service	2,331,296	4,567,261	4,731,858	4,889,757	5,060,349	5,235,785
Recurring:	**58,686,394**	**61,011,531**	**63,013,701**	**65,077,530**	**67,224,953**	**69,450,759**
Capital Outlay*	11,873,664	190,145	1,697,409	597,094	1,112,469	461,853
Non-Recurring:	**11,873,664**	**190,145**	**1,697,409**	**597,094**	**1,112,469**	**461,853**
TOTALS:	**$70,560,058**	**$61,201,676**	**$64,711,110**	**$65,674,624**	**$68,337,422**	**$69,912,612**

*Equipment, apparatus, and facilities per District Capital Improvement Program (CIP). Note that FY 2020 capital amount in forecast matches the CIP amount and is significantly less than the approved FY 2020 budget amount of $7,252,064 used to meet legal requirements for budget appropriation.

The expense assumptions used in the Clackamas Fire District #1 forecast are described the following figure.

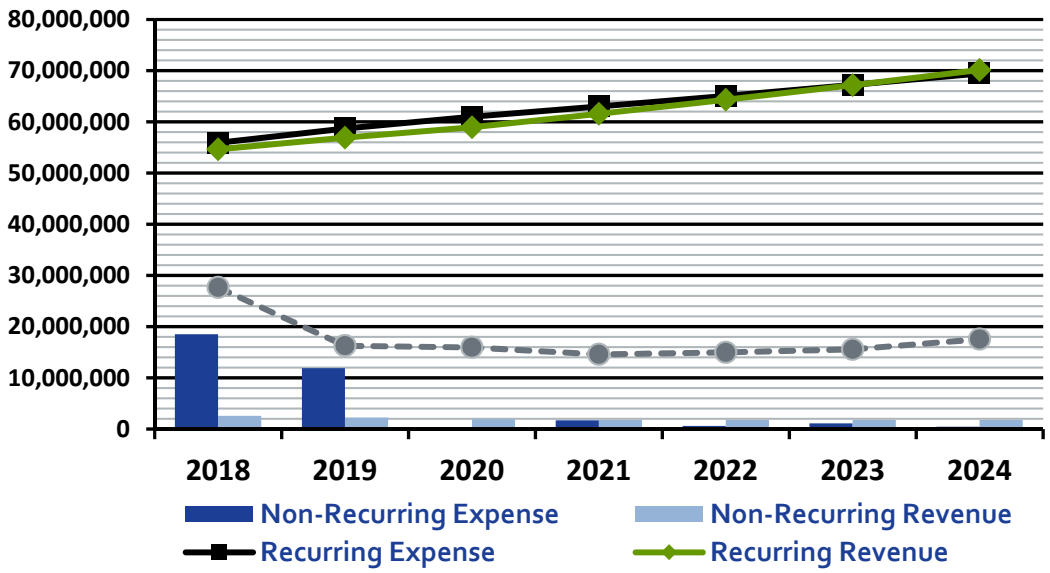
Figure 49: Clackamas Expense Forecast Assumptions (FY 2020–FY 2024 Forecast)

Revenue Source	Assumptions
Personnel Services	Historical increase of 10.7% annually from FY 2014–18 includes addition of personnel and CBA changes. FY 2019 benefits are approximately 38% of total compensation and are assumed to increase at 5% annually. For forecast purposes, wages are increased at 3% annually. FY 2019 total is used as base.
Materials & Services	Have increased historically at approximately 7.1% annually in a relatively linear manner. Staff stated the District will hold the line on M&S expenditures through the forecast period. The forecast uses the approved FY 2020 amount as a base and does not include any increase thereafter.
Debt Service	Forecast amounts based upon actual full District debt-service schedule provided by staff from the FY 2020 proposed budget document. Debt service includes all General Obligation, Pension, and other obligations.
Capital	Capital facilities, apparatus and equipment replacement in forecast are based upon District Capital Improvement Plan (CIP) provided. Note that the FY 2019 Adopted (revised) capital outlay amounts (from all funds) reflect appropriated budget to meet legal requirements and may not match actual expenditures at year-end. Further, the forecast FY 2020 CIP expenditures are significantly less than the approved FY 2020 capital expenditures shown which will reflect a larger actual ending fund balance that will carry forward in the forecast.

The next figure is a comparison of the forecast revenues and expenses for all funds combined and their impact on the ending fund balance for Clackamas District #1 for the period FY 2019 supplemental through FY 2024 forecast. The forecast shows recurring expenses (notably Personnel Services and Materials & Services) higher than recurring revenue by an average of approximately $1.9 million between FY 19 and FY 20 after which recurring revenue begins to increase at a faster rate than recurring expense. At the same time, non-recurring expenses, approach or are less than non-recurring revenue by FY 2020. These trends combine to reduce ending fund balance significantly between FY 2018 actual and FY 2019 ($27.7 million to $16.3 million) after which it continues to slowly drop to $14.6 million by FY 2021 after which it stabilizes and then begins to increase to $17.6 million by FY 2024. This trend may have an impact on the District's ability to meet its short-term cash flow each year before substantial tax revenues are received in November.

It is important to note that the forecast does not anticipate adding staff, although the District has plans to do so to cover vacancy factor. While some potential offset may occur due to reduced overtime, adding additional staff will significantly increase recurring costs and the impact on fund balance will be much more negatively pronounced without a corresponding increase in revenue.

Figure 50: Impact on Clackamas Ending Fund Balance—All Funds (FY 2018 Actual–FY 2024 Forecast)



Estacada District #69

The following figure is the revenue forecast for Estacada District #69 for the period FY 2019 adopted through FY 2024.

Figure 51: Estacada Revenue Forecast (FY 2019 Adopted–FY 2024)

Revenue	2019 Adopted	2020 Forecast	2021 Forecast	2022 Forecast	2023 Forecast	2024 Forecast
Taxes	2,663,649	2,796,831	2,936,673	3,083,507	3,237,682	3,399,566
Charges for Services	—	—	—	—	—	—
Investment Earnings	6,553	6,619	6,685	6,752	6,819	6,887
Recurring:	**$2,670,202**	**$2,803,450**	**$2,943,358**	**$3,090,258**	**$3,244,501**	**$3,406,453**
Grant Income	623,737	—	—	—	—	—
Intergovernmental	—	—	—	—	—	—
Surplus Sales	—	10,000	10,000	10,000	10,000	10,000
Miscellaneous	13,100	50,000	50,000	50,000	50,000	50,000
Non-Recurring:	**$636,837**	**$60,000**	**$60,000**	**$60,000**	**$60,000**	**$60,000**
TOTAL REVENUE:	**$3,307,039**	**$2,863,450**	**$3,003,358**	**$3,150,258**	**$3,304,501**	**$3,466,453**

The revenue assumptions used in the Estacada District #69 forecast are described in the following figure.

Figure 52: Estacada Revenue Forecast Assumptions (FY 2020–2024)

Revenue Source	Assumptions
Ad Valorem Tax	Average annual growth from FY2014–18 was 6.1%; Clackamas County Tax Assessor estimated 5–5.5% for FY 2019; forecast used adopted budget from FY 2019 and increases annually at 5%.
Service Charges	None anticipated in forecast.
Interest/Investment	Although not credited in historical annual financial reports except in FY 2014, FY 2019 adopted budget shows $6,500 in interest. Forecast assumes FY 2019 as base with annual increase of 1%.
Grants	Highly variable over the historical period averaging $190,000 from FY 2014–18. Forecast assumes no additional grant revenue beyond FY 2019.
Surplus Property	Variable over the years averaging $39,000 from FY 2014–18. Forecast assumes $10,000 annual average.
Intergovernmental	None anticipated in forecast.
Miscellaneous/Other	Historical average of $74,000 from FY 2014 through FY 2018. Forecast assumes $50,000 annually.

The next figure is the expenditure forecast for Estacada District #69 for FY 2019 adopted through FY2024.

Figure 53: Estacada Expense Forecast (FY 2019 Adopted–FY 2024)

Expense	2019 Adopted	2020 Forecast	2021 Forecast	2022 Forecast	2023 Forecast	2024 Forecast
Personnel Services	2,407,075	2,497,100	2,590,491	2,687,375	2,787,883	2,892,150
Materials & Services	861,000	884,247	908,122	932,641	957,822	983,683
Debt Service	0	0	0	0	0	0
Recurring:	**$3,268,075**	**$3,381,347**	**$3,498,613**	**$3,620,016**	**$3,745,706**	**$3,875,834**
Capital Outlay	1,043,605	250,000	260,000	270,400	281,216	292,465
Non-Recurring:	**$1,043,605**	**$250,000**	**$260,000**	**$270,400**	**$281,216**	**$292,465**
TOTAL EXPENSES:	**$4,311,680**	**$3,631,347**	**$3,758,613**	**$3,890,416**	**$4,026,922**	**$4,168,298**

The expense assumptions used in the Estacada District #69 forecast are described in the following figure.

Figure 54: Estacada Expense Forecast Assumptions (FY 2019 Actual–2023 Forecast)

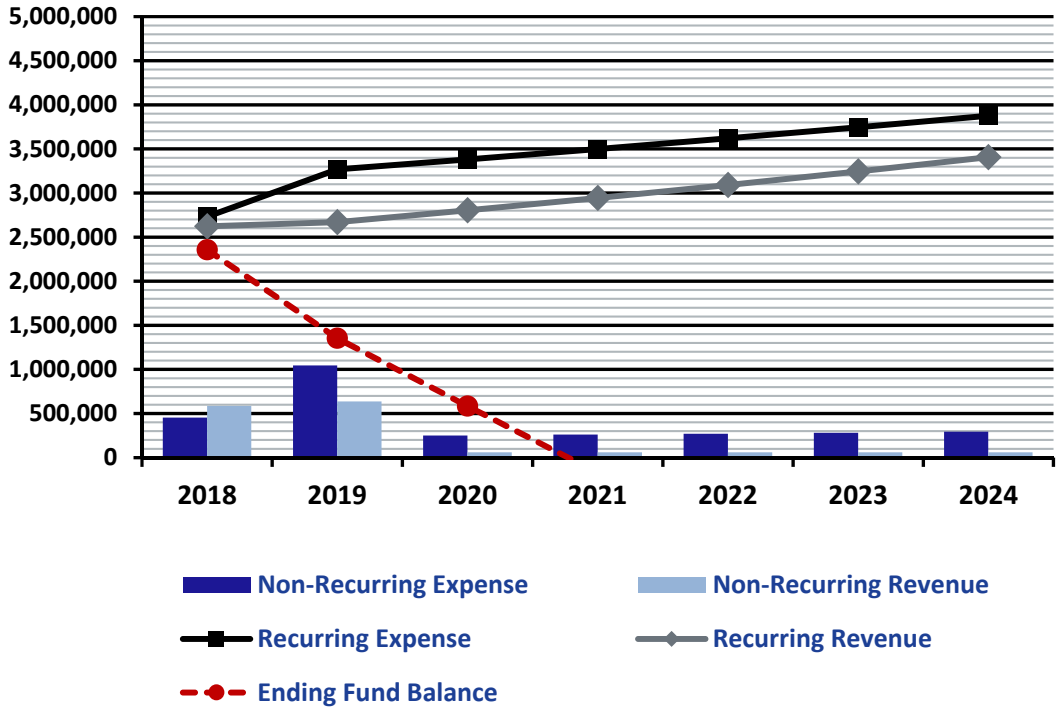
Revenue Source	Assumptions
Personnel Services	Historical increase of 7.6% annually from FY 2014–18. Benefits are approximately 37% of total compensation and are assumed to increase at 5% annually. For forecast purposes, wages are increased at 3% annually. FY 2019 total is used as base. No additional staff are included in the forecast.
Materials & Services	Have varied historically but have averaged $700,000 in FY 2017-18, which is the level they were at in FY 2014 before falling to an average of $475,000 in FY 2015–16. SeaTac CPI-U estimated at approximately 2.7% based upon 2018 through first quarter 2019.[19] Forecast uses FY 2019 as base with 2.7% annual increase.
Debt Service	Forecast assumes no debt will be incurred.
Capital	Between FY 2014 and FY 2018, the District averaged $330,000 in annual capital expenditures including equipment/apparatus replacement according to its long-range plan. The forecast assumes $250,000 annual replacement spending, which will increase at 4% annually based upon ESCI experience with equipment/apparatus inflation.

The next figure is a comparison of the forecast revenues and expenses for all funds combined and their impact on the ending fund balance for Estacada for the period FY 2018 actual adopted through FY 2024 forecast. The forecast shows recurring expenses (notably Personnel Services and Materials & Services) starting out in FY 2019 at a significantly higher amount than recurring revenues.

Although the gap is forecasted to be less by FY 2024, this trend is not sustainable without a significant service level reduction or addition of revenue. At the same time, non-recurring expenses also exceed non-recurring revenue. These factors force the use of the fund balance to make up the deficit each year, causing a rapid reduction in the available beginning fund balance. This negatively affects the District's ability to meet its short-term cash flow each year before substantial tax revenues are received in November.

The District has insufficient cash balance to sustain operations until November, when significant tax revenues are received without short-term borrowing or otherwise raising revenue to cover recurring expenses by FY 2020 as forecast. The District is not financially viable in its current operational mode after FY 2020, and *may have difficulty meeting its financial obligations in FY 2020.*

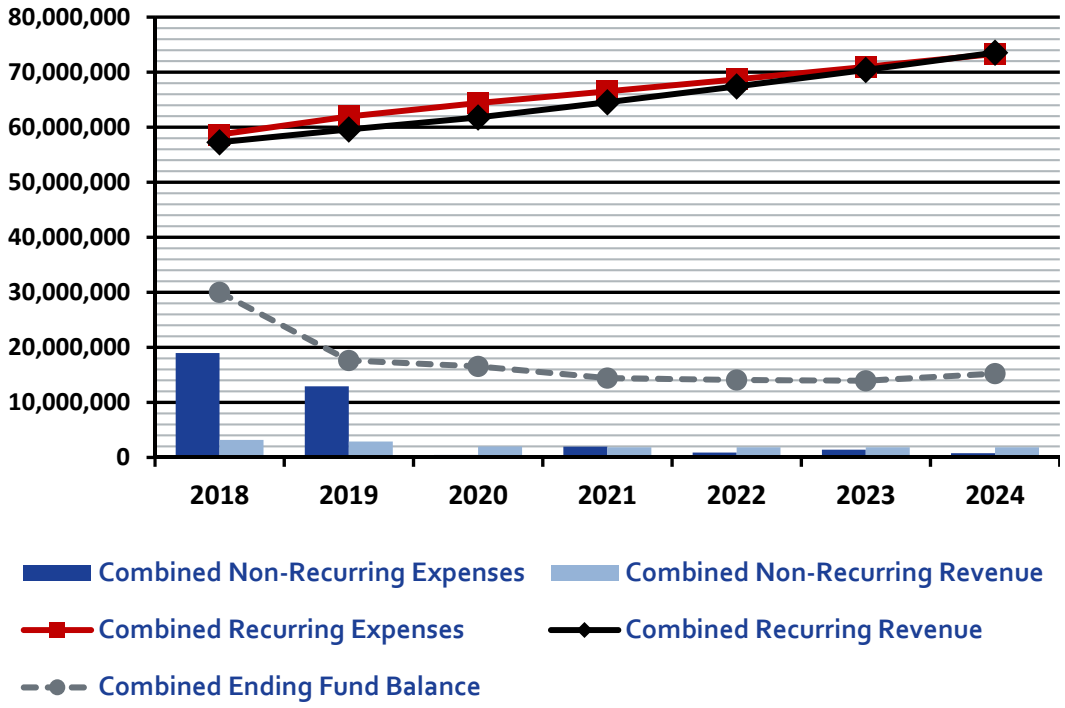
Figure 55: Impact on Estacada Ending Fund Balance—All Funds (FY 2019 Actual–FY 2024 Forecast)



Combined Forecast

The next figure is a comparison of the forecast revenues and expenses for both districts combined and the impact on the total ending fund balance for the period FY 2018 actual adopted through FY 2024 forecast. It is important to note that this combined forecast merely adds the two district revenues, expenses and fund balance and does not account for any millage changes. However, as will be seen later, a combined millage scenario only adds approximately $150,000 in FY 2019 and will not appreciably alter the results shown in the combined forecast below which essentially mirrors that of Clackamas Fire District #1 as discussed above. While ending fund balance dips a bit more than in the individual Clackamas forecast in order to absorb the net loss in the Estacada forecast, the trend of flattening and then gradual increase remains.

Figure 56: Combined Clackamas/Estacada Revenue & Expense Impact on Ending Fund Balance
(FY 2018 Actual–FY 2024 Forecast)



CAPITAL FACILITIES & APPARATUS

Three basic resources are required to successfully carry out the mission of a fire department—trained personnel, firefighting equipment, and strategically located fire stations. No matter how competent or numerous the firefighters, if appropriate capital equipment is not available for use by responders, it would be impossible for either of the fire districts in this study to deliver services effectively. The most essential capital assets for use in emergency operations are facilities and apparatus (response vehicles). Of course, each fire district's financing ability will determine the level of capital equipment it can acquire and make available for use by emergency personnel. This section of the report is an assessment of CFD1's and ERFD69's respective capital facilities, vehicles, and apparatus.

District Fire Stations & Other Facilities

Fire stations play an integral role in the delivery of emergency services for several 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 potentially saving a patient who suffered a sudden cardiac arrest. Fire stations also need to be designed to adequately house equipment and apparatus, as well as meet the 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 fire district'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; including decontamination and disposal of biohazards.
- Residential living space and sleeping quarters for on-duty personnel (all genders).
- Kitchen facilities, appliances, and storage.
- Bathrooms and showers (all genders).
- Administrative and management offices; computer stations and office facilities for personnel.
- Training, classroom, and library areas.
- Physical fitness area.
- Shared space with other government or private business agencies.
- Public meeting space.

In gathering information from the two fire districts, ESCI asked the fire districts to rate the condition of each of their fire stations and administrative facilities, using the criteria in the following figure.

Figure 57: Criteria Utilized to Determine Fire Station Condition

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

ESCI toured each of the stations operated by the two fire districts involved in this study and, combined with the information each provided, produced the observations listed in the following figures.

Clackamas Facilities

The following section lists the details and characteristics of each of the 21 Clackamas Fire District #1 fire stations and facilities. Fire Station 1 houses apparatus and career staff, but also serves as the District's Administrative facility.

Figure 58: Clackamas Fire Station 1 & Administration (Town Center)

Physical Location:	11300 SE Fuller Rd., Milwaukie, OR 97222

General Description:
Station 1 also serves as the District's administrative facility. Crews are housed in the second floor, and access the apparatus bay via "fire poles." Minimum staffing is four firefighters.

Structure						
Construction Type	Concrete tilt-up, joisted masonry					
Date of Construction	1987					
Seismic Protection	Not reported					
Auxiliary Power	50 kW diesel generator					
General Condition	Good					
Number of Apparatus Bays	3	Drive-through bays	0	Back-in bays		
Special Considerations (ADA, etc.)	Mixed-gender appropriate; ADA access					
Square Footage	15,546					
Facilities Available						
Separate Rooms/Dormitory/Other	1	Bedroom	3	Beds	9	Beds in dormitory
Maximum Station Staffing Capability	9+					
Exercise/Workout Facilities	Yes					
Kitchen Facilities	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Yes					
Training/Meeting Rooms	No					
Washer/Dryer	Yes					
Safety & Security						
Sprinklers	Yes					
Smoke Detection	Yes					
Decontamination/Biohazard Disposal	Yes					
Security	All access doors are Sonitrol HID card access					
Apparatus Exhaust System	Yes					

Figure 59: Clackamas Fire Station 2 (Milwaukie)

Physical Location:	3200 SE Harrison St., Milwaukie, OR 97222

General Description:
Station 2 is a shared-use public safety facility (with Milwaukie PD) and owned by the City of Milwaukie. The fire station portion has two bays and is home to a three-person engine and a Volunteer Rehab Unit.

Structure						
Construction Type	Wood Frame					
Date of Construction	1993					
Seismic Protection	Yes					
Auxiliary Power	250 kW diesel generator; also serves the city of Milwaukie					
General Condition	Good					
Number of Apparatus Bays	2	Drive-through bays	0	Back-in bays		
Special Considerations (ADA, etc.)	Mixed-gender appropriate; ADA accessible					
Square Footage	12,480					
Facilities Available						
Separate Rooms/Dormitory/Other	11	Bedrooms	11	Beds	N/A	Beds in dormitory
Maximum Station Staffing Capability	11					
Exercise/Workout Facilities	Yes					
Kitchen Facilities	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Yes					
Training/Meeting Rooms	Yes					
Washer/Dryer	Yes					
Safety & Security						
Sprinklers	Yes					
Smoke Detection	Yes					
Decontamination/Biohazard Disposal	Yes					
Security	All access doors are Sonitrol HID card access					
Apparatus Exhaust System	Yes					

Figure 60: Clackamas Fire Station 3 (Oak Grove)

Physical Location:	2930 SE Oak Grove Blvd., Milwaukie, OR 97267

General Description:
Station 3 is a large facility that houses multiple apparatus, with a capacity for eight personnel. It has a community meeting room, and includes offices for the Fire Marshal's staff, although space is limited. The Community Paramedicine program is also located at this station. A small portion serves as a substation for the Sheriff's Office.

Structure						
Construction Type	Brick/joisted masonry					
Date of Construction	1997					
Seismic Protection	Yes					
Auxiliary Power	80 kW diesel generator					
General Condition	Good					
Number of Apparatus Bays	4	Drive-through bays	0	Back-in bays		
Special Considerations (ADA, etc.)	Mixed gender appropriate, ADA					
Square Footage	17,544					
Facilities Available						
Separate Rooms/Dormitory/Other	8	Bedrooms	8	Beds	N/A	Beds in dormitory
Maximum Station Staffing Capability	8					
Exercise/Workout Facilities	Yes					
Kitchen Facilities	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Yes					
Training/Meeting Rooms	Yes					
Washer/Dryer	Yes					
Safety & Security						
Sprinklers	Yes					
Smoke Detection	Yes					
Decontamination/Biohazard Disposal	Yes					
Security	All access doors are Sonitrol HID card access					
Apparatus Exhaust System	Yes					

Figure 61: Clackamas Fire Station 4 (Lake Road)

Physical Location:	6600 SE Lake Rd., Milwaukie, OR 97222

General Description:
Large station housing a single four-person truck company and a Battalion Chief. The station was upgraded and remodeled since its original construction. Station 4 includes a large community meeting room.

Structure						
Construction Type	Joisted masonry/concrete block					
Date of Construction	1999					
Seismic Protection	Yes					
Auxiliary Power	100 kW diesel generator					
General Condition	Good					
Number of Apparatus Bays	2	Drive-through bays		1	Back-in bay	
Special Considerations (ADA, etc.)	Mixed gender appropriate					
Square Footage	11,720					
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 Facilities	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Yes					
Training/Meeting Rooms	Yes					
Washer/Dryer	Yes					
Safety & Security						
Sprinklers	Yes					
Smoke Detection	Yes					
Decontamination/Biohazard Disposal	Yes					
Security	All access doors are Sonitrol HID card access					
Apparatus Exhaust System	Yes					

Figure 62: Clackamas Fire Station 5 (Mount Scott)

Physical Location:	9339 SE Causey Ave., Happy Valley, OR 97086

General Description:
Station 5 houses the District's Heavy Rescue apparatus, as well as a reserve apparatus with support equipment. Crews are housed on the second floor and can access the apparatus bay by a "fire pole" or elevator. This station also houses the District's Human Resources staff, includes a community meeting room, and has four-person minimum staffing.

Structure						
Construction Type	Joisted masonry					
Date of Construction	2003					
Seismic Protection	Yes					
Auxiliary Power	100 kW diesel generator					
General Condition	Good					
Number of Apparatus Bays	3	Drive-through bays	0	Back-in bays		
Special Considerations (ADA, etc.)	Mixed gender appropriate					
Square Footage	14,389					
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 Facilities	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Yes					
Training/Meeting Rooms	Yes					
Washer/Dryer	Yes					
Safety & Security						
Sprinklers	Yes					
Smoke Detection	Yes					
Decontamination/Biohazard Disposal	Yes					
Security	All access doors are Sonitrol HID card access					
Apparatus Exhaust System	Yes					

Figure 63: Clackamas Fire Station 6 (Happy Valley)

Physical Location:	12901 SE King Rd., Happy Valley, OR 97086

General Description:
Station 6 has had several remodels since it was first built. Uniform lockers are in the bedrooms, which can cause problems during shift change.

Structure						
Construction Type	Joisted masonry/wood frame					
Date of Construction	1950; major remodel in 2000					
Seismic Protection	Yes					
Auxiliary Power	50 kW diesel generator					
General Condition	Fair					
Number of Apparatus Bays	0	Drive-through bays	3	Back-in bays		
Special Considerations (ADA, etc.)	Mixed gender appropriate					
Square Footage	6,997					
Facilities Available						
Separate Rooms/Dormitory/Other	3	Bedrooms	9	Beds	N/A	Beds in dormitory
Maximum Station Staffing Capability	9					
Exercise/Workout Facilities	Yes					
Kitchen Facilities	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Yes					
Training/Meeting Rooms	No					
Washer/Dryer	Yes					
Safety & Security						
Sprinklers	Yes					
Smoke Detection	Yes					
Decontamination/Biohazard Disposal	Yes					
Security	All access doors are Sonitrol HID card access					
Apparatus Exhaust System	Yes					

Figure 64: Clackamas Fire Station 7 (Pleasant Valley)

Physical Location:	10921 SE 172nd Ave., Happy Valley, OR 97086

General Description:
This station has a large and well-equipped community meeting room and can house a maximum of nine personnel.

Structure						
Construction Type	Wood frame					
Date of Construction	2007					
Seismic Protection	Yes					
Auxiliary Power	50 kW diesel generator					
General Condition	Good					
Number of Apparatus Bays	2	Drive-through bays	0	Back-in bays		
Special Considerations (ADA, etc.)	Mixed gender appropriate					
Square Footage	6,800					
Facilities Available						
Separate Rooms/Dormitory/Other	3	Bedroom	9	Beds	0	Beds in dormitory
Maximum Station Staffing Capability	9					
Exercise/Workout Facilities	Yes					
Kitchen Facilities	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Yes					
Training/Meeting Rooms	Yes					
Washer/Dryer	Yes					
Safety & Security						
Sprinklers	Yes					
Smoke Detection	Yes					
Decontamination/Biohazard Disposal	Yes					
Security	All access doors are Sonitrol HID card access					
Apparatus Exhaust System	Yes					

Figure 65: Clackamas Fire Station 8 (Clackamas)

Physical Location:	16100 SE 130th Ave., Clackamas, OR 97015

General Description:
Fire Station 8 is located on SE 130th Avenue, next door to the Clackamas Fire District #1 Training Center.

Structure						
Construction Type	Wood frame					
Date of Construction	1987					
Seismic Protection	Not reported					
Auxiliary Power	50 kW diesel generator					
General Condition	Fair					
Number of Apparatus Bays	2	Drive-through bays	1	Back-in bays		
Special Considerations (ADA, etc.)	Mixed gender appropriate					
Square Footage	8,465					
Facilities Available						
Separate Rooms/Dormitory/Other	N/A	Bedroom	N/A	Beds	12	Beds in dormitory
Maximum Station Staffing Capability	12					
Exercise/Workout Facilities	Yes					
Kitchen Facilities	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Yes					
Training/Meeting Rooms	No					
Washer/Dryer	Yes					
Safety & Security						
Sprinklers	Yes					
Smoke Detection	Yes					
Decontamination/Biohazard Disposal	Yes					
Security	All access doors are Sonitrol HID card access					
Apparatus Exhaust System	Yes					

Figure 66: Clackamas Fire Station 9 (Holcomb)

Physical Location:	300 Longview Way, Oregon City, OR 97045

General Description:
Station 9 is staffed with a three-person crew on a structural engine. The station is the designated "conflagration" station, mobilized when state Conflagration Act resources are requested from the Oregon State Fire Marshal to assist other agencies within the state.

Structure						
Construction Type	Wood frame					
Date of Construction	1976					
Seismic Protection	No					
Auxiliary Power	50 kW diesel generator					
General Condition	Fair					
Number of Apparatus Bays	0	Drive-through bays	2	Back-in bays		
Special Considerations (ADA, etc.)	Mixed gender appropriate					
Square Footage	3,993					
Facilities Available						
Separate Rooms/Dormitory/Other	3	Bedrooms	3	Beds	0	Beds in dormitory
Maximum Station Staffing Capability	3					
Exercise/Workout Facilities	Yes					
Kitchen Facilities	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Yes					
Training/Meeting Rooms	No					
Washer/Dryer	Yes					
Safety & Security						
Sprinklers	Yes					
Smoke Detection	Yes					
Decontamination/Biohazard Disposal	Yes					
Security	All access doors are Sonitrol HID card access					
Apparatus Exhaust System	Yes					

Figure 67: Clackamas Fire Station 10 (Beavercreek)

Physical Location:	22310 S Beavercreek Rd., Beavercreek, OR 97004

General Description:
Station 10 is staffed with a four-person crew operating a structural engine and cross-staffing two water tenders and brush unit. There are two driver-certified personnel within the crew of four. It is also home to the SCBA maintenance function for the District.

Structure						
Construction Type	Wood frame					
Date of Construction	2000					
Seismic Protection	Yes					
Auxiliary Power	125 kW diesel generator					
General Condition	Good					
Number of Apparatus Bays	3	Drive-through bays	0	Back-in bays		
Special Considerations (ADA, etc.)	Mixed gender appropriate					
Square Footage	13,536					
Facilities Available						
Separate Rooms/Dormitory/Other	4	Bedrooms	10	Beds	N/A	Beds in dormitory
Maximum Station Staffing Capability	10					
Exercise/Workout Facilities	Yes					
Kitchen Facilities	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Yes					
Training/Meeting Rooms	Yes					
Washer/Dryer	Yes					
Safety & Security						
Sprinklers	Yes					
Smoke Detection	Yes					
Decontamination/Biohazard Disposal	Yes					
Security	All access doors are Sonitrol HID card access					
Apparatus Exhaust System	Yes					

Figure 68: Clackamas Fire Station 11 (Redland)

Physical Location:	18265 S Redland Rd., Oregon City, OR 97045

General Description:
Station 11 is staffed with a three-person structural engine crew that also cross-staffs either a brush unit (Type 6) or a water tender, depending upon the incident being responded to. This station also serves to manage and create District decals for equipment identification.

Structure						
Construction Type	Wood frame					
Date of Construction	1969; major remodel in 2000					
Seismic Protection	Yes					
Auxiliary Power	50 kW diesel generator					
General Condition	Good					
Number of Apparatus Bays	0	Drive-through bays	3	Back-in bays		
Special Considerations (ADA, etc.)	Mixed gender appropriate					
Square Footage	7,217					
Facilities Available						
Separate Rooms/Dormitory/Other	4	Bedrooms	4	Beds	0	Beds in dormitory
Maximum Station Staffing Capability	4					
Exercise/Workout Facilities	Yes					
Kitchen Facilities	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Yes					
Training/Meeting Rooms	No					
Washer/Dryer	Yes					
Safety & Security						
Sprinklers	Yes					
Smoke Detection	Yes					
Decontamination/Biohazard Disposal	Yes					
Security	All access doors are Sonitrol HID card access					
Apparatus Exhaust System	Yes					

Figure 69: Clackamas Fire Station 12 (Logan)

Physical Location:	18081 S Harding Rd., Oregon City, OR 97045

General Description:
Station 12 is a volunteer station that houses a structural engine, a brush unit (Type 6), and a water tender. This is a volunteer station.

Structure					
Construction Type	Wood frame				
Date of Construction	1980				
Seismic Protection	Yes (in 2017)				
Auxiliary Power	50 kW diesel generator				
General Condition	Good				
Number of Apparatus Bays	1	Drive-through bay	1	Back-in bay	
Special Considerations (ADA, etc.)	Mixed gender appropriate				
Square Footage	3,600				
Facilities Available					
Separate Rooms/Dormitory/Other	1	Bedrooms	1	Beds	4 Beds in dormitory
Maximum Station Staffing Capability	4				
Exercise/Workout Facilities	Yes				
Kitchen Facilities	Yes				
Individual Lockers/Storage Assigned	Yes				
Shower Facilities	Yes				
Training/Meeting Rooms	No				
Washer/Dryer	Yes				
Safety & Security					
Sprinklers	No				
Smoke Detection	Yes				
Decontamination/Biohazard Disposal	Yes				
Security	All access doors are Sonitrol HID card access				
Apparatus Exhaust System	Yes				

Figure 70: Clackamas Fire Station 13 (Clarkes)

Physical Location:	25675 S Beavercreek Rd., Beavercreek, OR 97004

General Description:
Station 13 is a volunteer-staffed station and has a structural engine and brush unit (Type 6) assigned to the station. The living quarters are within a modular structure behind the apparatus bays, connected by a deck. The site is also home to a 33,000-gallon water storage tank on site, which improves the ISO rating.

Structure						
Construction Type	Wood frame					
Date of Construction	Living quarters built–2010 Apparatus bay built–1985					
Seismic Protection	Yes (in 2017)					
Auxiliary Power	20 kW propane generator					
General Condition	Station: Good Bay: Good					
Number of Apparatus Bays	0	Drive-through bays	2	Back-in bays		
Special Considerations (ADA, etc.)	Mixed gender appropriate; ADA					
Square Footage	1,440/living quarters; 2,080/bays					
Facilities Available						
Separate Rooms/Dormitory/Other	4	Bedrooms	6	Beds	0	Beds in dormitory
Maximum Station Staffing Capability	6					
Exercise/Workout Facilities	Yes					
Kitchen Facilities	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Yes					
Training/Meeting Rooms	No					
Washer/Dryer	Yes					
Safety & Security						
Sprinklers	In living area, not in detached engine bay					
Smoke Detection	Yes					
Decontamination/Biohazard Disposal	Yes					
Security	All access doors are Sonitrol HID card access					
Apparatus Exhaust System	Yes					

Figure 71: Clackamas Fire Station 14 (Boring)

Physical Location:	28655 SE Hwy 212, Boring, OR 97009

General Description:
It is a large facility with substantial space for apparatus and storage. The front office houses administrative staff and a Battalion Chief. A Training Tower and other props are located behind the fire station. It also includes a large classroom with audiovisual and other training equipment. Lighting upgraded 2018. East wing addition (115 x 30) 2001.

Structure						
Construction Type	Mixed; concrete tilt-up/wood frame					
Date of Construction	1969					
Seismic Protection	Upgraded 2001 seismic retrofit					
Auxiliary Power	130 kW diesel generator					
General Condition	Good					
Number of Apparatus Bays	2	Drive-through bays	2	Back-in bays		
Special Considerations (ADA, etc.)	Mixed-gender appropriate					
Square Footage	10,932					
Facilities Available						
Separate Rooms/Dormitory/Other	4	Bedrooms	4	Beds	0	Beds in dormitory
Maximum Station Staffing Capability	4					
Exercise/Workout Facilities	Yes					
Kitchen Facilities	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Yes					
Training/Meeting Rooms	Yes					
Washer/Dryer	Yes					
Safety & Security						
Sprinklers	Yes					
Smoke Detection	Yes					
Decontamination/Biohazard Disposal	Yes					
Security	All access doors are Sonitrol HID card access					
Apparatus Exhaust System	Yes					

Figure 72: Clackamas Fire Station 15 (John Adams)

Physical Location:	624 7th St., Oregon City, OR 97045

General Description:
Station 15 is staffed with a three-person crew on a structural engine. It is also home to the Data Services Division, which is the central repository for all statistical data collection and analysis for the District. This station is owned by the City of Oregon City.

Structure						
Construction Type	Masonry/wood frame					
Date of Construction	1922; remodeled in 1998					
Seismic Protection	Yes					
Auxiliary Power	80 kW diesel generator					
General Condition	Poor					
Number of Apparatus Bays	1	Drive-through bays	2	Back-in bays		
Special Considerations (ADA, etc.)	Mixed gender appropriate					
Square Footage	11,250					
Facilities Available						
Separate Rooms/Dormitory/Other	4	Bedrooms	12	Beds	N/A	Beds in dormitory
Maximum Station Staffing Capability	12					
Exercise/Workout Facilities	Yes					
Kitchen Facilities	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Yes					
Training/Meeting Rooms	Yes					
Washer/Dryer	Yes					
Safety & Security						
Sprinklers	Yes					
Smoke Detection	Yes					
Decontamination/Biohazard Disposal	Yes					
Security	All access doors are Sonitrol HID card access					
Apparatus Exhaust System	Yes					

Figure 73: Clackamas Fire Station 16 (Hilltop)

Physical Location:	19340 Molalla Ave., Oregon City, OR 97045

General Description:
Station 16 is the sister station to Station 19 (Damascus); the design and footprint are the same. A four-person crew staff a tractor-drawn truck. This station also houses the shift Battalion Chief and a single-role paramedic unit scheduled for 12-hour days. The station is sprinklered, ADA compliant and very efficiently designed. All living quarters have direct access to the apparatus bay, making turnout times as expedient as possible.

Structure						
Construction Type	Wood frame					
Date of Construction	2019					
Seismic Protection	Yes					
Auxiliary Power	150 kW diesel generator					
General Condition	Excellent					
Number of Apparatus Bays	3	Drive-through bays	0	Back-in bays		
Special Considerations (ADA, etc.)	Mixed gender appropriate					
Square Footage	12,700					
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 Facilities	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Yes					
Training/Meeting Rooms	No					
Washer/Dryer	Yes					
Safety & Security						
Sprinklers	Yes					
Smoke Detection	Yes					
Decontamination/Biohazard Disposal	Yes					
Security	All access doors are Sonitrol HID card access					
Apparatus Exhaust System	Yes					

Figure 74: Clackamas Fire Station 17 (South End)

Physical Location:	19001 South End Rd., Oregon City, OR 97045

General Description:
Station 17 is staffed with a three-person crew on a structural engine.

Structure						
Construction Type	Wood frame					
Date of Construction	2005					
Seismic Protection	Yes					
Auxiliary Power	40 kW diesel generator					
General Condition	Good					
Number of Apparatus Bays	2	Drive-through bays	0	Back-in bays		
Special Considerations (ADA, etc.)	Mixed-gender appropriate; ADA					
Square Footage	6,850					
Facilities Available						
Separate Rooms/Dormitory/Other	3	Bedrooms	9	Beds	N/A	Beds in dormitory
Maximum Station Staffing Capability	9					
Exercise/Workout Facilities	Yes					
Kitchen Facilities	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Yes					
Training/Meeting Rooms	Yes					
Washer/Dryer	Yes					
Safety & Security						
Sprinklers	Yes					
Smoke Detection	Yes					
Decontamination/Biohazard Disposal	Yes					
Security	All access doors are Sonitrol HID card access					
Apparatus Exhaust System	Yes					

Figure 75: Clackamas Fire Station 18 (Eagle Creek)

Physical Location:	32200 SE Judd Rd., Eagle Creek, OR 97009

General Description:
Station 18 is staffed with a three-person crew 40 hours per week and turned over to an all-volunteer crew after hours. The volunteer activity is high, resulting in the station being staffed the rest of the 24-hours per day, seven days per week, for an average of 27 days in a given month. This is the District's top volunteer assignment priority.

Structure						
Construction Type	Wood frame with metal roof					
Date of Construction	1999					
Seismic Protection	Built to 1999 standards					
Auxiliary Power	65 kW propane; 1,000 gals on site					
General Condition	Good					
Number of Apparatus Bays	3	Drive-through bays			0	Back-in bays
Special Considerations (ADA, etc.)	All restrooms ADA compliant; mixed-gender appropriate					
Square Footage	6,442					
Facilities Available						
Separate Rooms/Dormitory/Other	3	Bedrooms	3	Beds	N/A	Beds in dormitory
Maximum Station Staffing Capability	3					
Exercise/Workout Facilities	Yes					
Kitchen Facilities	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Yes					
Training/Meeting Rooms	Yes					
Washer/Dryer	Yes, and including an extractor					
Safety & Security						
Sprinklers	Yes					
Smoke Detection	Yes					
Decontamination/Biohazard Disposal	Yes					
Security	All access doors are Sonitrol HID card access					
Apparatus Exhaust System	Yes					

In April 2019, a new Station 19 replaced the previous station, which is now Station 21. The new fire station is located at 19750 SE Damascus Lane in Damascus. This is a state-of-the-art modern fire station and a sister station to Fire Station 16.

Figure 76: Clackamas Fire Station 19 (Damascus)

Since Station 19 is a brand-new station, ESCI did not conduct a detailed evaluation of this facility.

Figure 77: Clackamas Fire Station 20 (Highland)

Physical Location:	22295 S Lower Highland, Beavercreek, OR 97004

General Description:
Station 20 consists of two apparatus bays with no living quarters. It is essentially a storage facility, housing one water tender. No personnel, neither career nor volunteer, are assigned to this station.

Structure						
Construction Type	Joist masonry					
Date of Construction	1964					
Seismic Protection	No					
Auxiliary Power	None					
General Condition	Poor					
Number of Apparatus Bays	0	Drive-through bays	2	Back-in bays		
Special Considerations (ADA, etc.)	No living space					
Square Footage	1,024					
Facilities Available						
Separate Rooms/Dormitory/Other	0	Bedrooms	0	Beds	0	Beds in dormitory
Maximum Station Staffing Capability	0					
Exercise/Workout Facilities	No					
Kitchen Facilities	No					
Individual Lockers/Storage Assigned	No					
Shower Facilities	No					
Training/Meeting Rooms	No					
Washer/Dryer	No					
Safety & Security						
Sprinklers	No					
Smoke Detection	No					
Decontamination/Biohazard Disposal	No					
Security	Rollup doors are key-lock activated					
Apparatus Exhaust System	No					

Figure 78: Clackamas Fire Station 21–Inactive (Centennial Park/Damascus)

Physical Location:	20100 SE Hwy. 212, Damascus, OR 97089

General Description:
Station 21 is now used as the home for the "Rehab Unit" and supplies for the rehab function. The station will also be used for community meeting space.

Structure						
Construction Type	Wood frame					
Date of Construction	1974 (remodeled in 2016)					
Seismic Protection	No					
Auxiliary Power	35 Kw diesel generator; powers entire station					
General Condition	Fair					
Number of Apparatus Bays	0	Drive-through bays	2	Back-in bays		
Special Considerations (ADA, etc.)	Mixed-gender appropriate					
Square Footage	3,300					
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 Facilities	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Yes					
Training/Meeting Rooms	Yes					
Washer/Dryer	Yes & extractor					
Safety & Security						
Sprinklers	Yes					
Smoke Detection	Yes					
Decontamination/Biohazard Disposal	Yes					
Security	All access doors are Sonitrol HID card access					
Apparatus Exhaust System	Yes					

Clackamas Fire District #1 Fleet & Logistics Center

In 2018, the District completed construction on a new *Fleet & Logistics Center* consisting of 20,000 square feet. In addition to maintaining the vehicles and apparatus of Clackamas Fire District #1, the Fleet Division also maintains and repairs apparatus and vehicles from the Gladstone Fire Department, Canby Fire Department, and Lake Oswego Fire Department through an intergovernmental agreement. The Logistics Department currently supplies the District's 21 career and volunteer fire stations, as well as the Administrative and Support Divisions.

Figure 79: Clackamas Fire District #1 Fleet & Logistics Center

Estacada Facilities

The following section lists the details and characteristics of Estacada Rural Fire District #69's two fire stations and administrative facility.

Figure 80: Estacada Fire Station 330

Physical Location:	SE Jeremy Loveless Ave., Estacada, OR 97023
	**General Description:** This is a relatively large station with the capacity to house many apparatus and at least seven personnel. Recently, lead paint was found in the kitchen cabinets, as well as asbestos in the kitchen. These issues are currently being addressed.

Structure						
Construction Type	Ordinary construction					
Date of Construction	1964					
Seismic Protection	Added in 2018					
Auxiliary Power	Yes, propane generator with 2-week fuel supply					
General Condition	Fair					
Number of Apparatus Bays	0	Drive-through bays	9	Back-in bays		
Special Considerations (ADA, etc.)	Not ADA-compliant					
Square Footage	8,500					
Facilities Available						
Separate Rooms/Dormitory/Other	5	Bedrooms	7	Beds	0	Beds in dormitory
Maximum Station Staffing Capability	7					
Exercise/Workout Facilities	No (contract with local gym)					
Kitchen Facilities	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Yes					
Training/Meeting Rooms	In annex building					
Washer/Dryer	Yes					
Safety & Security						
Sprinklers	No					
Smoke Detection	Yes					
Decontamination/Biohazard Disposal	No					
Security	Yes					
Apparatus Exhaust System	Ceiling fans & Ward No Smoke systems on some apparatus					

Figure 81: Estacada Fire Station 333

Physical Location:	40595 SE George Rd., Estacada, OR 97023

General Description:
Station 333 is in a very rural and remote area of Estacada Rural Fire District #69. It is not staffed on a 24-hour basis, but does have a single volunteer resident.

Structure						
Construction Type	Wood Frame					
Date of Construction	1976					
Seismic Protection	Grant for upgrade approved, waiting for a contract.					
Auxiliary Power	Yes, older military diesel generator					
General Condition	Fair					
Number of Apparatus Bays	0	Drive-through bays	2	Back-in bays		
Special Considerations (ADA, etc.)	Not reported					
Square Footage	2,176					
Facilities Available						
Separate Rooms/Dormitory/Other	3	Bedrooms	3	Beds	0	Beds in dormitory
Maximum Station Staffing Capability	3					
Exercise/Workout Facilities	Yes (in apparatus bay)					
Kitchen Facilities	Yes					
Individual Lockers/Storage Assigned	Yes					
Shower Facilities	Yes					
Training/Meeting Rooms	No					
Washer/Dryer	Yes					
Safety & Security						
Sprinklers	No					
Smoke Detection	No					
Decontamination/Biohazard Disposal	No					
Security	Yes					
Apparatus Exhaust System	Ward No Smoke System on engine					

Figure 82: Estacada District Administration Building

Physical Location:	445 SE Currin St, Estacada, OR 97023

General Description:
This facility is adjacent to Station 330, and includes a meeting room, kitchen, offices, and bathroom. There is another smaller building with a kitchen, sleeping quarters, and bathrooms used by the District's resident volunteers. Career staff will use the kitchen facilities in that building until the kitchen at Station 330 is repaired.

Structure				
Construction Type	Mobile office building			
Date of Construction	1998			
Seismic Protection	No			
Auxiliary Power	Yes			
General Condition	Fair			
Number of Apparatus Bays	N/A	Drive-through bays	N/A	Back-in bays
Special Considerations (ADA, etc.)	Not reported			
Square Footage	1,764			
Facilities Available				
Separate Rooms/Dormitory/Other	N/A			
Maximum Station Staffing Capability	N/A			
Exercise/Workout Facilities	No			
Kitchen Facilities	No			
Individual Lockers/Storage Assigned	N/A			
Shower Facilities	No			
Training/Meeting Rooms	Yes			
Washer/Dryer	No			
Safety & Security				
Sprinklers	No			
Smoke Detection	No			
Decontamination/Biohazard Disposal	No			
Security	Yes			
Apparatus Exhaust System	No			

Capital Facilities Replacement & Improvement Planning

Managing capital assets is an important responsibility in managing a fire district. Citizens expect prudent and careful spending of their tax dollars, especially as it pertains to funding station facilities and apparatus—which may result in long-term tax increases in a community. Careful and long-range capital planning is essential in ensuring funding will be available when the time comes to add, improve, or replace capital assets.

Clackamas Fire District #1

Clackamas has a capital facilities improvement plan in place for 2015–2035, from which revenue is added to the fund from the General Fund.

Estacada Rural Fire District #69

Estacada Rural Fire District #69 has a capital improvement (but not a replacement) plan in place for its facilities.

Capital Fire Apparatus & Vehicles

This section of the report describes the frontline fleet inventories of each of the fire districts, which includes emergency response apparatus, support units, and staff/command vehicles.

Estacada Rural Fire District #69

The following figure lists the current Estacada Rural Fire District #69 inventory of frontline fire apparatus and other vehicles. Estacada did not list any reserve apparatus in its fleet.

Figure 83: Estacada Frontline Fleet Inventory (2019)

Designation	Type	Year	Manufacturer	Condition	Features
Engine 330	Pumper	2015	Pierce	Excellent	1500 gpm/2000 gal.
Engine 331	Pumper	2010	Pierce	Excellent	1500 gpm/800 gal.
Engine 333	Pumper/Tender	1998	E-One	Good	1000 gpm/1500 gal.
Brush 330	Wildland	2005	Ford	Good	400 gal.
Brush 331	Wildland	2008	Ford	Good	200 gal.
Tender 330	Tender	2003	E-One	Good	500 gpm/3000 gal.
Support & Staff Vehicles					
Rehab 330	Rehab	2008	H&W Fire	Good	
C-330	Staff	2013	Ford Explorer	Excellent	
BC-331	Command	2009	Ford F-350	Excellent	
BC-332	Command	2012	Ford F-350	Excellent	
Not applicable	Enclosed Trailer	2011	Not reported	Good	

Clackamas Fire District #1

The following figure lists the current Clackamas Fire District #1 inventory of frontline engines, trucks, and water tenders. The figure does not include a list of reserve apparatus.

Figure 84: Clackamas Frontline Engines/Trucks/Tenders Inventory (2019)

Designation	Type	Year	Manufacturer	Condition	Pump/Tank
E301	Engine	2017	Pierce	Very Good	1500 gpm/650 gal.
E303	Engine	2017	Pierce	Very Good	1500 gpm/650 gal.
E302	Engine	2017	Pierce	Very Good	1500 gpm/650 gal.
E306	Engine	2017	Pierce	Very Good	1500 gpm/650 gal.
E307	Engine	2015	Pierce	Good	1500 gpm/650 gal.
E308	Engine	2017	Pierce	Very Good	1500 gpm/650 gal.
E309	Engine	2009	Pierce	Good	1500 gpm/750 gal.
E310	Engine	2008	Pierce	Good	1500 gpm/750 gal.
E311	Engine	2008	Pierce	Good	1500 gpm/750 gal.
E312	Engine	2009	Pierce	Good	1500 gpm/750 gal.
E313	Engine	2010	Pierce	Good	1500 gpm/750 gal.
E314	Engine	2007	Pierce	Good	1500 gpm/750 gal.
E315	Engine	2014	Pierce	Good	1500 gpm/650 gal.
E317	Engine	2017	Pierce	Very Good	1500 gpm/650 gal.
E318	Engine	2007	Pierce	Good	1500 gpm/750 gal.
T302	Aerial	2014	Pierce	Good	100 ft.; 250 gpm/250 gal.
T304	Aerial	2014	Pierce	Good	100 ft.; 250 gpm/250 gal.
T319	Aerial	2017	Pierce	Very Good	100 ft.; 250 gpm/300 gal.
T316	Aerial	2017	Pierce	Very Good	100 ft.; 250 gpm/300 gal
WT310	Tender	2017	Pierce	Very Good	1000 gpm/3000 gal.
WT311	Tender	2017	Pierce	Very Good	1000 gpm/3000 gal.
WT312	Tender	2012	E-One	Good	500 gpm/3000 gal.
WT313	Tender	1999	Pierce	Fair	1500 gpm/3000 gal.
WT314	Tender	2017	Pierce	Very Good	1000 gpm/3000 gal.
WT318	Tender	1999	Pierce	Fair	1500 gpm/3000 gal.
WT320	Tender	1993	H & W	Fair	300 gpm/2800 gal.
WT324	Tender	2007	Pierce	Good	250 gpm/2800 gal.

The preceding list excludes two engines assigned to Training. As of 2019, Clackamas frontline engines ranged in age from 2–12 years, with an average age of 6.4 years. Frontline engines had an average of 45,707 miles. The three aerials are relatively new, with an average age of three years and 24,900 miles. CFD1 water tenders ranged in age from 2–26 years, averaging 11.4 years and 14,238 miles. Most engines and trucks were rated as good or very good, while most of the tenders were considered either fair or good.

The following figure lists the inventory of Clackamas District #1 frontline wildland units (brush trucks), support vehicles, and medic units.

Figure 85: Other Clackamas Frontline Apparatus & Specialty Units Inventory (2019)

Designation	Type	Year	Manufacturer	Condition	Features
BR311	Wildland	1994	Protech	Fair	125 gpm/250 gal.
BR312	Wildland	2005	Protech	Good	125 gpm/250 gal.
BR318	Wildland	2010	ALF	Good	125 gpm/400 gal.
BR313	Wildland	2010	ALF	Good	125 gpm/400 gal.
BR310	Wildland	2002	Protech	Good	125 gpm/250 gal.
IE309	Interface Engine	2017	Pierce	Very Good	500 gpm/500 gal.
IE314	Interface Engine	2017	Pierce	Very Good	500 gpm/500 gal.
IE30	Interface Engine	2019	Pierce	Excellent	500 gpm/500 gal.
HM303	Hazmat Unit	2010	Pierce	Very Good	
HR305	Heavy Rescue	2017	Pierce	Very Good	
M303	Medic	2016	Braun NW	Good	
M316	Medic	2016	Braun NW	Good	
WR308	Water Rescue	2007	Pierce	Good	
FIU	Investigation Unit	2001	Lifeline	Fair	
RH302	Rehab Unit	1997	RSQ	Fair	
RH321	Rehab Unit	2017	Pierce	Very Good	SCBA fill & bathroom
USAR305	USAR	2007	Freightliner	Fair	Trench rescue
BT308	Water Craft	2012	Rogue	Good	Jet boat

When combined, the wildland units and interface engines ranged in age from new to 25 years, averaging 7.6 years, with an average of 43,724 miles—however, the majority has mileage well below 37,000 miles. Both frontline medic units are three years old, with an average of 29,600 miles (most of which are attributable to Medic 303).

Figure 86: Clackamas Staff & Command Vehicles (2019)

Designation	Year	Manufacturer	Condition	Assigned To
BC301	2011	Ford F350 CC	Good	East battalion
BC302	2014	Ford F350 CC	Good	North battalion
BC303	2017	Ford F350 CC	Very Good	South Battalion
C301	2019	Chevrolet Tahoe	Excellent	Fire Chief
C303	2016	Chevrolet Tahoe	Good	Deputy Chief–Ops
C302	2016	Chevrolet Tahoe	Good	Deputy Chief–Business
C304	2016	Chevrolet Tahoe	Good	Division Chief–Ops
C305	2018	Ford Explorer	Excellent	Division Chief–Business
C307	2017	Ford Explorer	Good	Division Chief–EMS
C310	2016	Ford Explorer	Good	Training Chief
C316	2015	Ford Explorer	Good	EMS Chief
EM301	2004	Ford Explorer	Good	Emergency Manager
PIO301	2014	Ford Explorer	Good	Public Information Officer
C314	2015	Ford Explorer	Good	Fire Marshal
C320	2014	Ford Explorer	Good	Volunteer Services Chief
None	2013	Ford F-250	Good	Facilities Manager
FM301	2009	Dodge Caravan	Fair	Captain DFM
FM302	2013	Ford F150 SC	Good	Captain DFM
FM303	2015	Ford F150 SC	Good	Captain DFM
FM304	2007	Chevrolet Impala	Fair	Lieutenant DFM
FM305	2018	Ford F150 SC	Good	Lieutenant DFM
TRN301	2005	Chevrolet Tahoe	Fair	Training Division

In addition to the preceding list, Clackamas has two vehicles assigned to logistics, two assigned to fleet services, one assigned to the Paramedic Public Educator, and others to the Fire Inspectors.

Reserve Apparatus

Clackamas maintains four reserve engines; two reserve trucks; and two reserve medic units. One each of these is assigned to Training. One each of a heavy rescue, water tender, and water rescue unit is held in reserve, along with several command and staff vehicles. Two additional water craft are also assigned to reserve status.

Apparatus Station Assignments

The following figure lists the stations to which Clackamas Fire District #1 frontline apparatus are assigned.

Figure 87: Clackamas Frontline Apparatus Station Assignments

Station*	Engine	Truck	Wildland/Tender	Other
Station 1	E301	—	—	—
Station 2	E302	—	—	RH302
Station 3	E303	—	—	M303/HM303
Station 4	—	T304	—	BC302
Station 5	—	—	—	HR305
Station 6	E306	—	IE306	—
Station 7	E307	—	—	—
Station 8	E308	—	—	—
Station 9	E309	—	IE309	—
Station 10	E310	—	WT310/313/BR310	—
Station 11	E311	—	WT311/BR311	—
Station 12 (v)	E312	—	WT312/BR312	—
Station 13 (v)	E313	—	BR313	—
Station 14	E314	—	IE314; WT314/324	BC301
Station 15	E315	—	—	
Station 16	—	T316	—	M316/BC303
Station 17	E317	—	—	—
Station 18	E318	—	WT318/BR318	—
Station 19	—	T319	—	WR319; BT319
Station 20	—	—	WT320	—
Station 21 (v)	—	—	—	RH321

*Excludes reserve apparatus; some apparatus staffed by volunteers (v).

The following figure lists the stations to which Estacada Rural Fire District #69 frontline apparatus are assigned.

Figure 88: Estacada Frontline Apparatus Station Assignments

Station*	Engine	Wildland/Tender	Other
Station 330	E330/E331	WT330/BR330/BR331	RH330
Station 333	—	WT333	—

Apparatus Maintenance & Replacement Planning

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

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

Those within each of the fire districts responsible for managing and maintaining the fleet should be concerned about aging apparatus and vehicles, and ensure that a funded replacement schedule is in place. As frontline units age, fleet costs will naturally be higher and more downtime will be associated with necessary repairs and routine maintenance.

Estacada Apparatus Replacement Planning

Estacada Fire updates their apparatus replacement plan annually, and it is current through 2037. The same is true for capital equipment purchases and replacement.

Clackamas Apparatus Replacement Planning

Clackamas Fire maintains a capital improvement plan which is currently being updated. The apparatus replacement fund, which includes other capital equipment replacement, is scheduled to extend 2015–2035.

Future Apparatus Serviceability

An important consideration when evaluating the feasibility of consolidating fire districts into a combined organization, lie the costs associated with future replacement of major equipment. Apparatus service-lives can be readily predicted based on factors including vehicle type, call volume, age, and maintenance considerations.

The *National Fire Protection Association* (NFPA) *1901 Standard for Automotive Fire Apparatus* recommends that fire apparatus 15 years of age or older be placed into reserve status, and apparatus 25 years or older should be replaced.[20] This is a general guideline, and the standard recommends using the following objective criteria in evaluating fire apparatus lifespan:

- Vehicle road mileage.
- Engine operating hours.
- The quality of the preventative maintenance program.
- The quality of the driver-training program.

- Whether the fire apparatus was used within its design parameters.
- Whether the fire apparatus was manufactured on a custom or commercial chassis.
- The quality of workmanship by the original manufacturer.
- The quality of the components used in the manufacturing process.
- The availability of replacement parts.

Current Ages of Frontline Apparatus

In the following figure, ESCI calculated the average age of frontline apparatus, in order to offer a point of reference when considering future vehicle replacement costs that may be incurred. The figure includes the quantity and average age of each type of apparatus.

Figure 89: Combined Frontline Engines/Aerials/Wildland Apparatus (2019)

District	No. of Engines	Average Engine Age	No. of Trucks	Average Truck Age	No. of Brush[B]	Average Brush Age
Clackamas #1	20	8 years	3	3 years	8	10 years
Estacada #69	3[A]	11 years	0	N/A	2	13 years
Totals:	**23**	**9.5 years**	**3**	**3.0 years**	**10**	**12.0 years**

[A]One engine is a pumper/tender. [B]Includes three wildland interface engines.

The next figure lists the quantity and average age of each fire districts water tenders, support units (hazmat units, rehab units, heavy rescues, water rescues, etc.), and staff/command vehicles assigned to management staff and emergency operations.

Figure 90: Combined Frontline Water Tenders/Support Units/Command Vehicles (2019)

District	No. of Tenders	Average Tender Age	No. of Support[1]	Average Support Age	No. of Staff Units[2]	Average Staff Unit Age
Clackamas #1	8	11 years	9	9 years	24	8 years
Estacada #69	1	16 years	1	13 years	3	8 years
Totals:	**9**	**13.5 years**	**10**	**11.0 years**	**27**	**8.0 years**

[1]Excludes the Clackamas Jet boat. [2]Excludes two logistics vans and two fleet services vans.

It important to note that age is *not* the only factor for evaluating serviceability and replacement. Vehicle mileage and pump hours on engines must also be taken into consideration. A two-year-old engine with 250,000 miles may need replacement sooner than a 10-year-old one with 2,500 miles. The following figure is one example that can be used for determining the condition of fire apparatus and vehicles.

Figure 91: Example Criteria & Method for Determining Apparatus Replacement

Evaluation Components	Points Assignment Criteria
Age:	One point for every year of chronological age, based on in-service date.
Miles/Hours:	One point for each 10,000 miles or 1,000 hours
Service:	1, 3, or 5 points are assigned based on service-type received (e.g., a pumper would be given a 5 since it is classified as severe duty service).
Condition:	This category takes into consideration body condition, rust interior condition, accident history, anticipated repairs, etc. The better the condition, the lower the assignment of points.
Reliability:	Points are assigned as 1, 3, or 5, depending on the frequency a vehicle is in for repair (e.g., a 5 would be assigned to a vehicle in the shop two or more times per month on average; while a 1 would be assigned to a vehicle in the shop an average of once every three months or less.

Point Ranges	Condition Rating	Condition Description
Under 18 points	Condition I	Excellent
18–22 points	Condition II	Good
23–27 points	Condition III	Consider Replacement
28 points or higher	Condition IV	Immediate Replacement

Capital Medical Equipment Inventory

Since calls for EMS represent the highest demand for service in both fire districts, in this report, ESCI elected to list the inventories of capital medical equipment. Acquiring cardiac monitor/defibrillators is a substantial financial investment, and a critical piece of equipment for use in emergency medical calls. The following figure lists each District's inventory of cardiac monitor/defibrillators and Automated External Defibrillators (AED).

Figure 92: Fire District Inventories of Cardiac Monitors & AEDs (2019)

Model	Manufacturer	Qty.	12-Lead	SpO_2	$etCO_2$	CO	BP	Temp
Clackamas Fire District								
X-Series	Zoll	27	Yes	Yes	Yes	Yes	Yes	No
E-Series	Zoll	2–3	Yes	Yes	Yes	Yes	Yes	No
AED Plus	Zoll	49	No	No	No	No	No	No
AED	HeartStart	3	No	No	No	No	No	No
Estacada Fire District								
X-Series	Zoll	2	Yes	Yes	Yes	No	Yes	No
E-Series	Zoll	2	Yes	Yes	Yes	No	Yes	No
AED	Zoll	2	No	No	No	No	No	No
AED Plus	Zoll	5	No	No	No	No	No	No

In the event of integrations, it will be important that the cardiac monitor/defibrillators deployed to frontline apparatus be standardized throughout the fire district, including standard features and capabilities of each device. Clackamas Fire District #1 maintains three powered stretchers (gurneys)—manufactured by Stryker®—for use in their medic units, as well as three stair chairs by the same manufacturer.

SERVICE-DELIVERY & PERFORMANCE

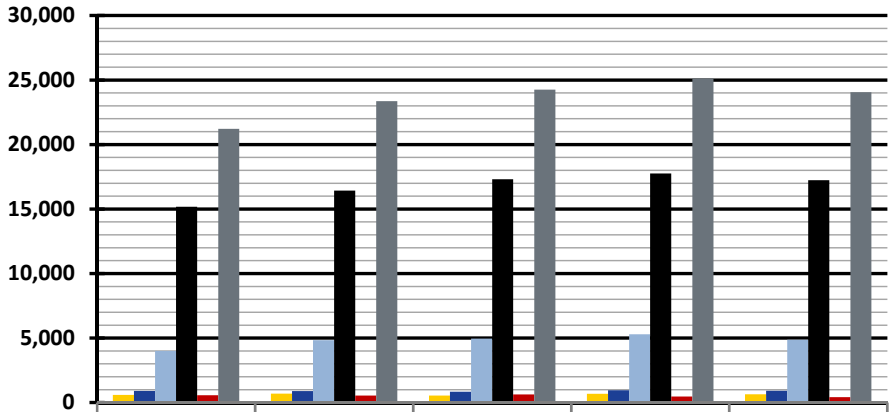
The most important aspect of any emergency services agency is its ability to deliver services when requested. The discussion begins with a summary of the current service delivery and performance elements in place at Clackamas Fire District #1 and Estacada Rural Fire District #69.

Service Demand Analysis

Incident Type Analysis

While service demand can be measured simply as the number of incidents within a given time period, seeing that same demand categorized by incident type provides policymakers the ability to assess current demand and plan for future demand. With data for both jurisdictions combined, the following figure provides an historical overview of incidents as based upon the classification system established by the National Fire Incident Reporting System (NFIRS). For purposes of this analysis, NFIRS 200, 500, 600, 800 and 900 incident-types were combined into the "Other" category.

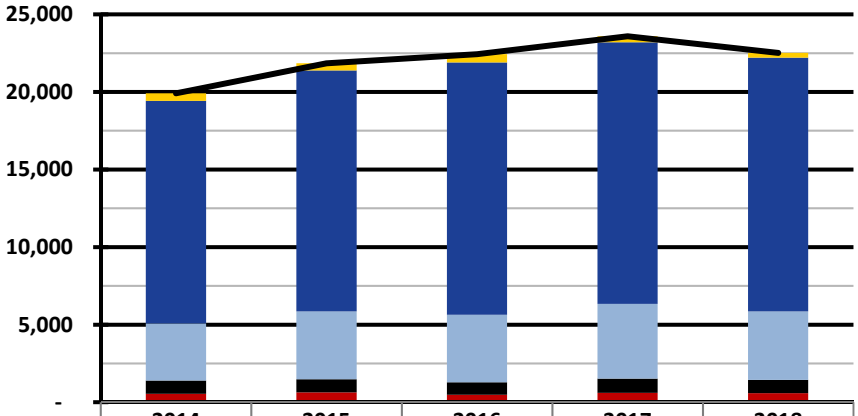
Figure 93: Combined Service-Demand of the Districts by Incident Type (2014–2018)



	2014	2015	2016	2017	2018
Fire	587	686	532	670	630
Alarm	902	887	838	940	903
Other	3,993	4,827	4,947	5,288	4,871
EMS	15,170	16,423	17,305	17,752	17,233
MVC	564	538	626	463	413
Total	21,216	23,361	24,248	25,113	24,050

Overall, this demonstrates a steady increase of service demand, with an overall increase of 13.4% from 2014 through 2018.

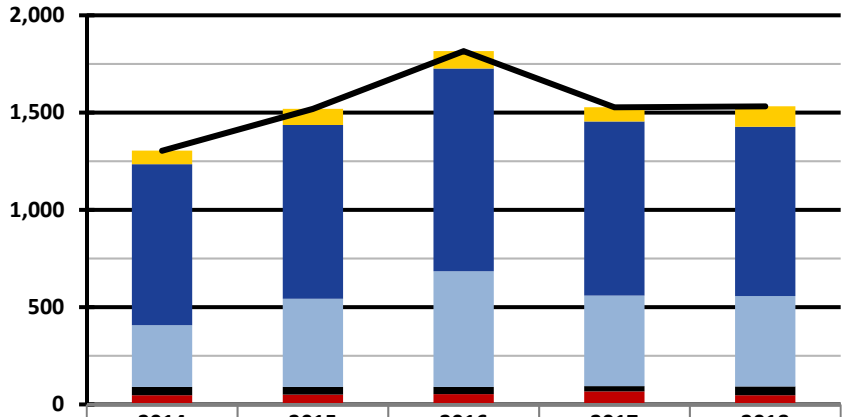
Figure 94: Clackamas Service-Demand by Incident Type (2014–2018)



	2014	2015	2016	2017	2018
MVC	494	455	536	390	308
EMS	14,343	15,530	16,263	16,857	16,363
Other	3,676	4,374	4,353	4,823	4,406
Alarm	859	847	801	913	858
Fire	540	636	479	603	583
Total	19,912	21,842	22,432	23,586	22,518

The preceding figure provides the same analysis for the CFD1 dataset. CFD1 experienced an overall increase of 13% in service demand from 2014 through 2018.

Figure 95: Estacada Service-Demand by Incident Type (2014–2018)

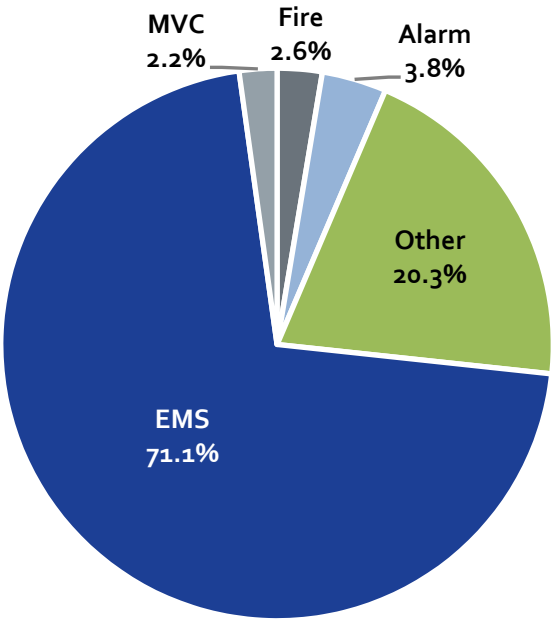


	2014	2015	2016	2017	2018
MVC	70	83	90	73	105
EMS	827	893	1,042	895	870
Other	317	453	594	465	465
Alarm	43	40	37	27	45
Fire	47	50	53	67	47
Total	1,304	1,519	1,816	1,527	1,532

The preceding figure provides the same analysis for the ERFD69 dataset. The District experienced an overall increase of 17.5% in service demand from 2014 to 2018, with a spike in demand during 2016. While the actual number of calls is much lower for ERFD69 than CFD1, ERFD69 did see a greater percentage increase in call volume over the study period. Service-demand for Estacada did decline following implementation of 40-hour career staffing at Clackamas Station 18, as some of these calls were previously covered by ERFD#69.

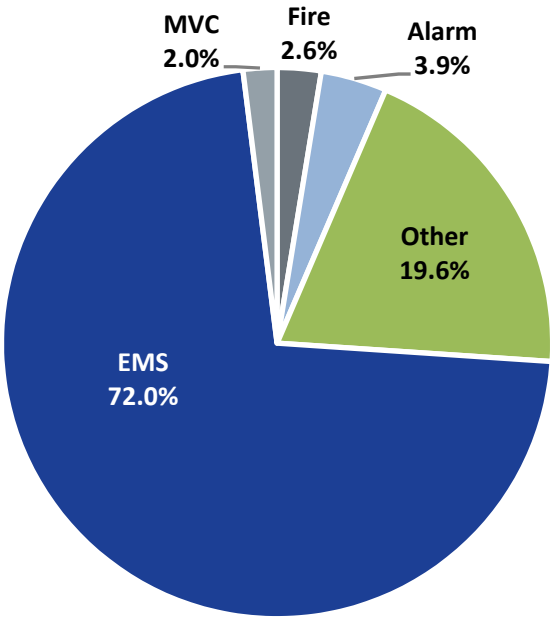
It is also valuable to compare the various incident types as a part of the whole. Utilizing the combined data from both jurisdictions, the following figure displays the 2014–2018 comparing the overall percentage of each incident type.

Figure 96: Clackamas & Estacada Combined Service-Demand by Type (2014–2018)



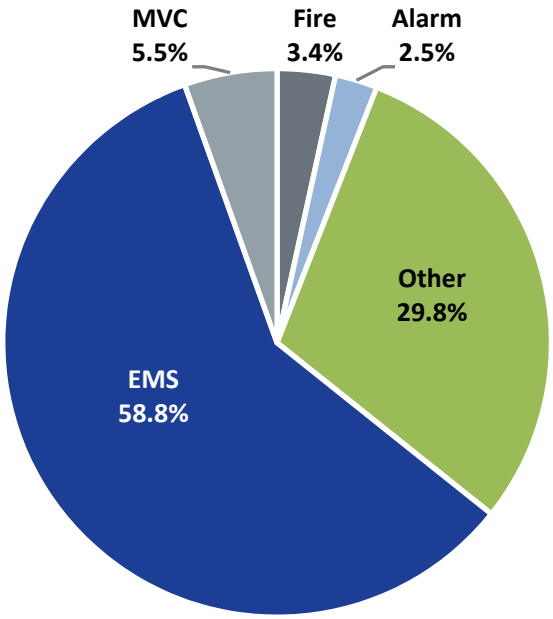
EMS has the greatest impact on service demand at 71.1%, followed by Other at 20.3%, Alarms at 3.8%, Fires at 2.6% and Motor Vehicle Collisions at 2.2%. This is much like the distribution by incident type found in many fire-service organizations providing emergency services.

Figure 97: Clackamas Service-Demand by Incident Type (2014–2018)



Although EMS represents the greatest service-demand, it is important to consider that responses to other incident types often require a greater number of personnel. As shown in the previous figure, the greatest service demand for CFD1 is EMS at 72.0%, followed by Other types at 19.6%, Alarms at 3.9%, Fires at 2.6%, and Motor Vehicle Collisions at 2.0%—a distribution often found in other communities.

Figure 98: Estacada Service-Demand by Incident Type (2014–2018)



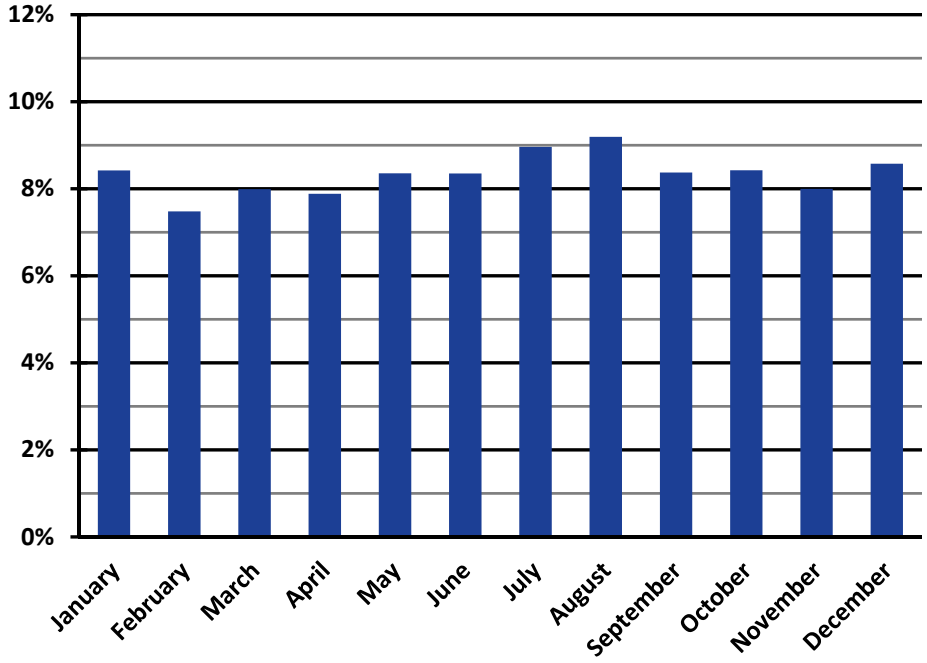
As shown in the previous figure, the greatest service demand for ERFD69 is EMS at 58.8%, followed by Others at 29.8%, Motor Vehicle Collisions at 5.5%, Fires at 3.4%, and Alarms at 2.5%. As compared to CFD1, the service demand for EFD6 is distributed differently, with a significantly lower amount of EMS responses.

Temporal Analysis

Another important component of service delivery and performance is the temporal analysis of historical data. This enables jurisdictions to determine optimal staffing levels and anticipate workload demands. Understanding this component also allows leadership to better determine best practices for scheduling training, maintenance, and other non-response activities.

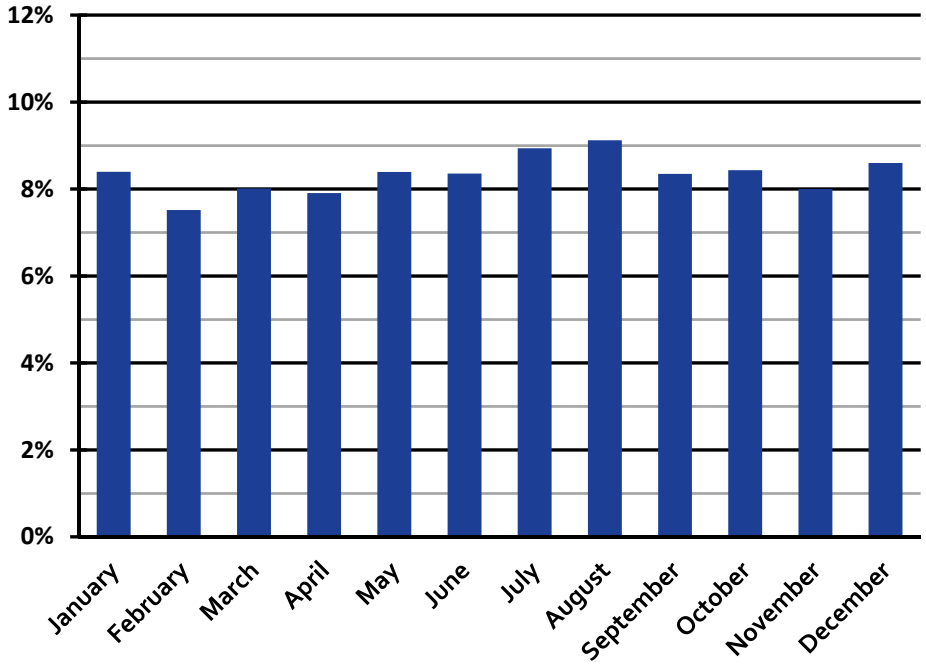
The following figures show temporal variation by month. Each month is represented by the number of incidents occurring in that month compared to the total number of incidents that occurred January 2014 through December 2018. These are presented as percentages relative to total service demand that occurred during the study period.

Figure 99: Clackamas & Estacada Combined Service-Demand by Month (2014–2018)



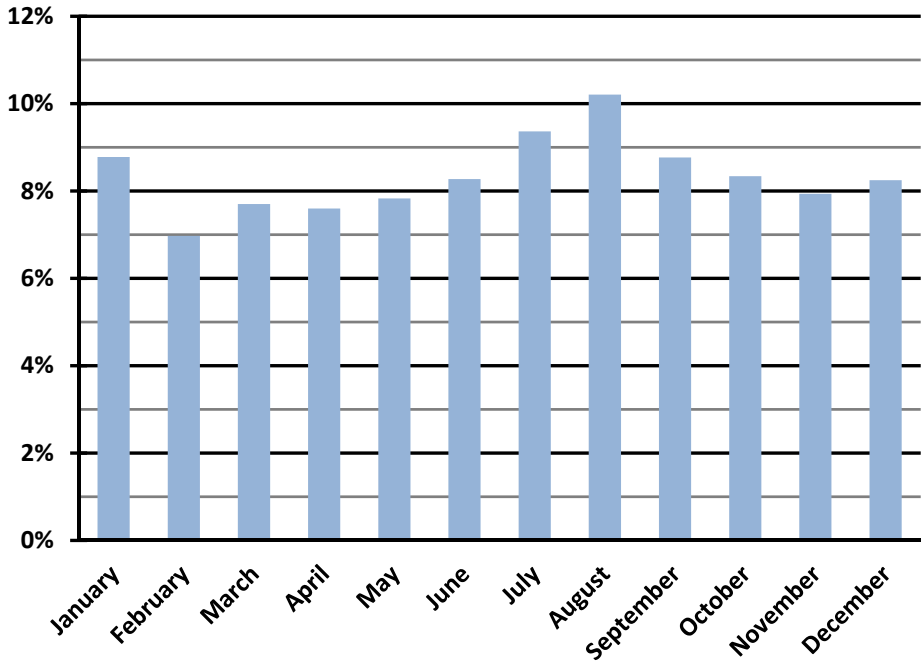
The combined data showed that a relatively flat demand existed for service by month. The highest demand for service occurred in July and August, with the lowest demand for service occurring in February.

Figure 100: Clackamas Service-Demand by Month (2014–2018)



Analyzing the CFD1 data separately, it appeared to follow the same pattern as the combined data. This similarity was to be expected since the greater volume of incidents in the combined dataset came from the CFD1 dataset. The trend was relatively flat, with the highest demand for service occurring in July and August and the lowest demand for service during February.

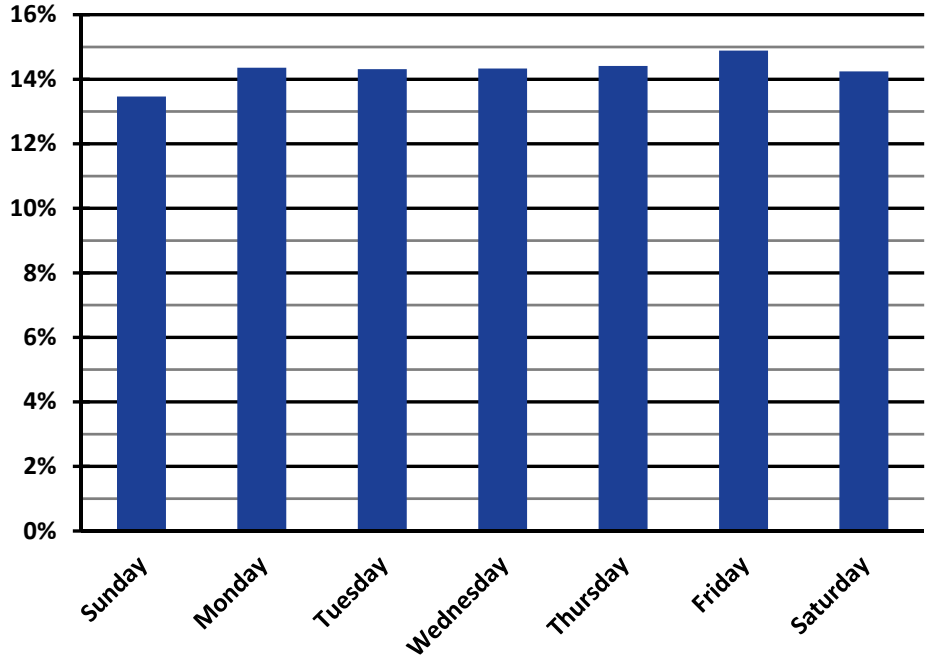
Figure 101: Estacada Service-Demand by Month (2014–2018)



Analyzing the ERFD69 incident data, the preceding figure showed that the lowest demand for service occurred in February, with a gradual increase to the highest demand for service during August. After August, it gradually declined, with a slight increase in December and January before returning to the lowest demand level in February.

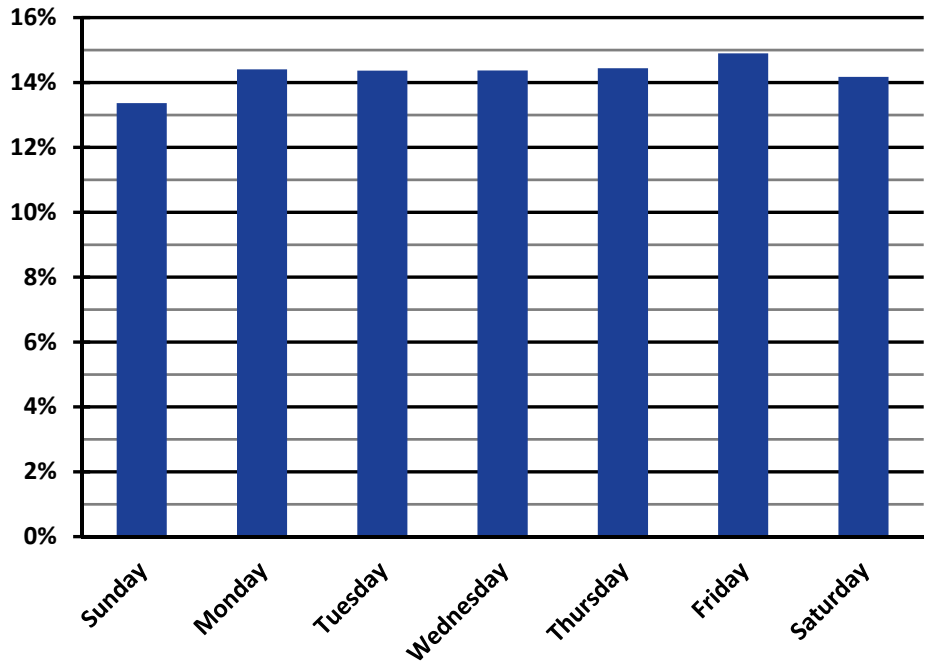
The next component of the temporal analysis is by day-of-the-week. As with monthly service-demand, the daily analysis is displayed based on the relative frequency of occurrence throughout the study period.

Figure 102: Clackamas & Estacada Combined Service-Demand by Day-of-Week (2014–2018)



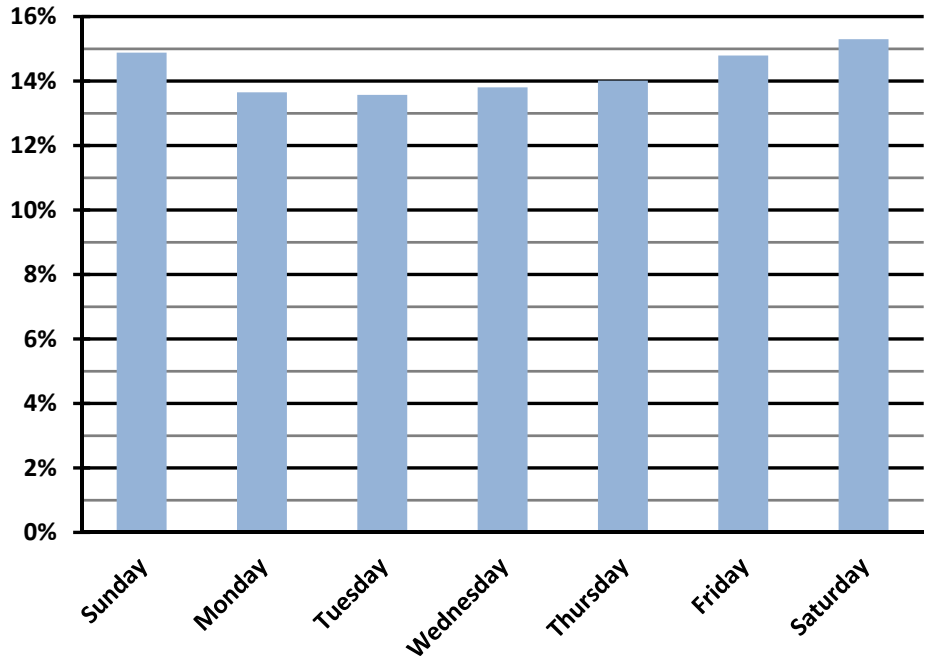
The preceding figure displays the demand for service by day of the week. The demand for service remained relatively flat for most of the week, with the highest service demand occurring on Fridays and the lowest on Sundays.

Figure 103: Clackamas Service-Demand by Day-of-Week (2014–2018)



The preceding figure presented the Clackamas demand for service by day of the week. With the greater amount of data in the combined chart coming from the Clackamas dataset, the CFD1 demand for service followed the same pattern as the combined data.

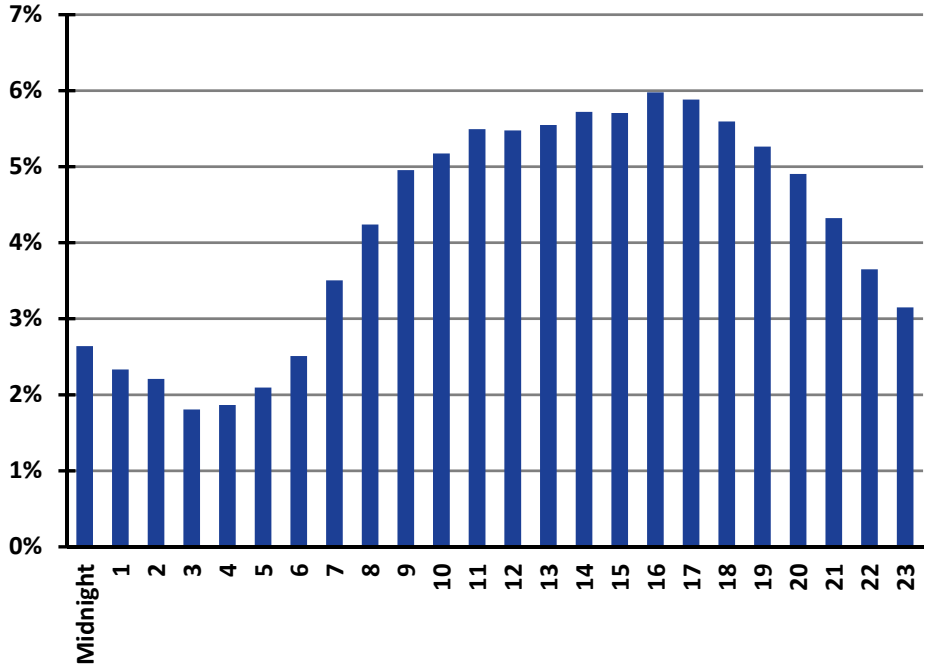
Figure 104: Estacada Service-Demand by Day-of-Week (2014–2018)



The analysis of Estacada's incident data demonstrates a much different demand for service throughout the week. The lowest demand for service occurred on Tuesdays, with a gradual increase in demand until the weekend. The highest demand for service occurred on Saturdays, with the demand-level for Fridays and Sundays just below that peak.

The final component of the temporal analysis is by hour-of-day. The following figures provide the relative frequency of incidents within a specific hour-of-day during the study period.

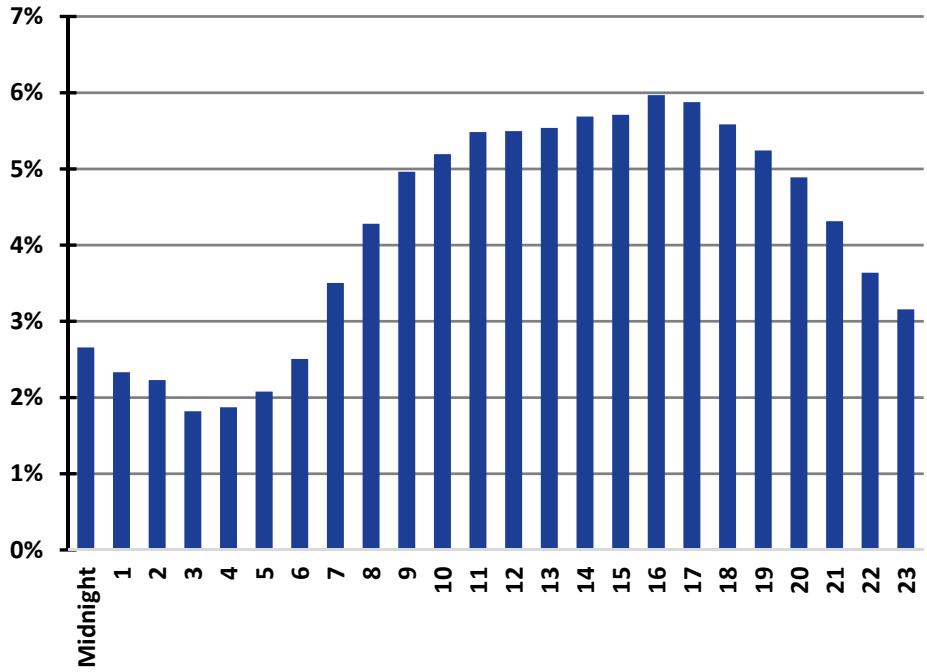
Figure 105: Clackamas & Estacada Combined Service-Demand by Hour (2014–2018)



For the combined incident data, the trend for time of day for service-demand followed a pattern typically found in most communities. Service-demand increased as the population awoke and began to be more active—at 6:00 a.m.—and then continually increased throughout the day. The highest level of demand occurred in the late afternoon, with a gradual decrease coinciding with the movement of the population to home and beginning their evening activities.

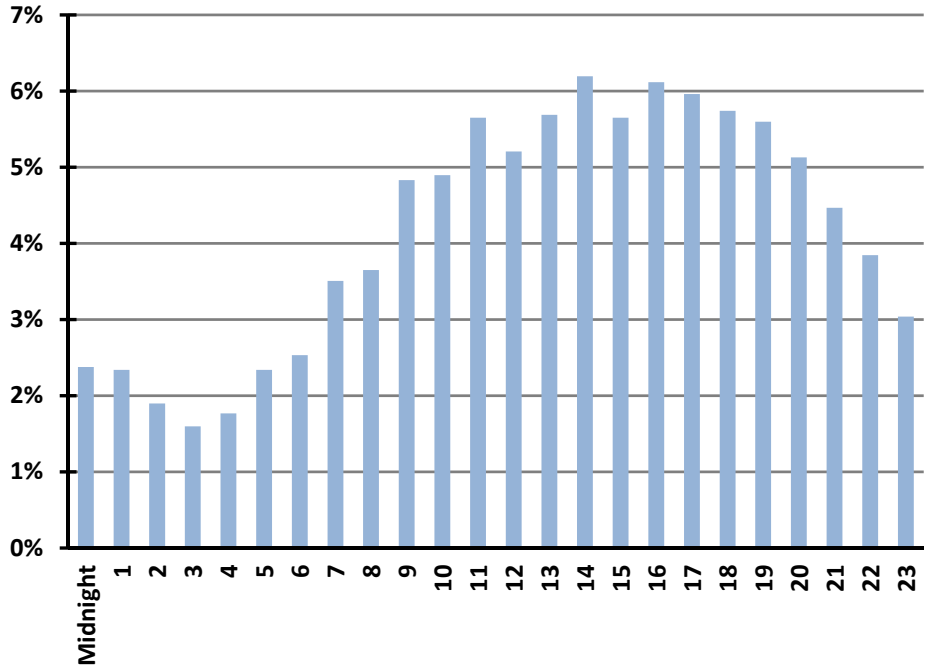
When analyzing time of day service-demand, it is critical to consider that while demand for service is at its lowest during the night hours, fatal residential fires occur during that same time frame. Based on findings from a national study from 2009–2011, residential fatal fires were highest between 1:00–2:00 a.m. and 4:00–5:00 a.m. The eight-hour peak period (11:00 p.m.–7:00 a.m.) accounted for 48% of residential fatal fires.[21]

Figure 106: Clackamas Service-Demand by Hour (2014–2018)



The preceding figure shows a similar pattern of demand for service for Clackamas Fire District #1 as the combined data pattern.

Figure 107: Estacada Service-Demand by Hour (2014–2018)



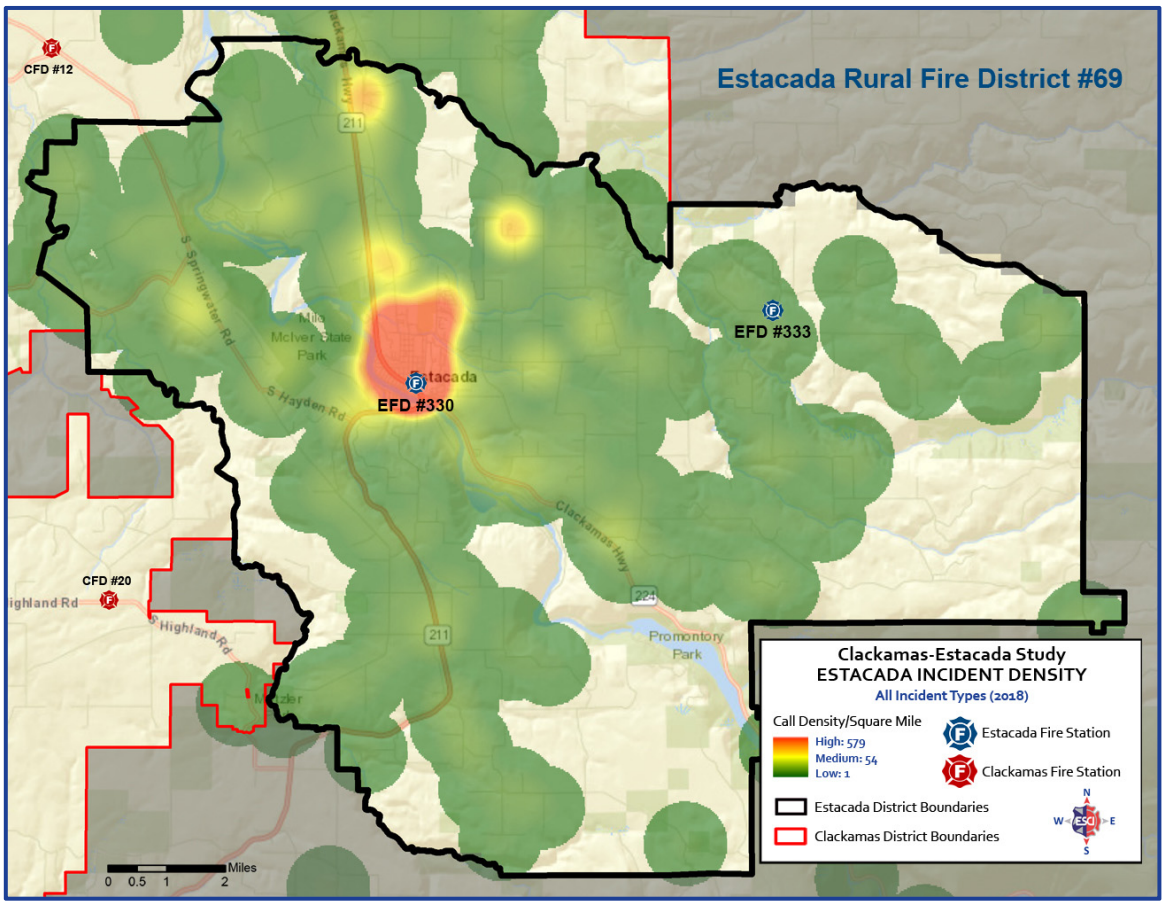
Geographical Analysis

In addition to the temporal analysis of workload, it is useful to examine the geographic distribution of service demand. ESCI utilized geographic information systems software (GIS) to plot the location of incidents within the study area and calculated the mathematical density of incidents (incidents per square mile) in the study area. The following figure illustrates the density of all incidents within the study area during 2018.

Estacada Incident Density

The following figures are geographic illustrations of Estacada 2018 incident densities by call type. Because of the small data sample, ESCI did not create separate incident-density maps for fire-related and EMS calls.

Figure 108: Estacada Incident Density—All NFIRS Incident Types (2018)

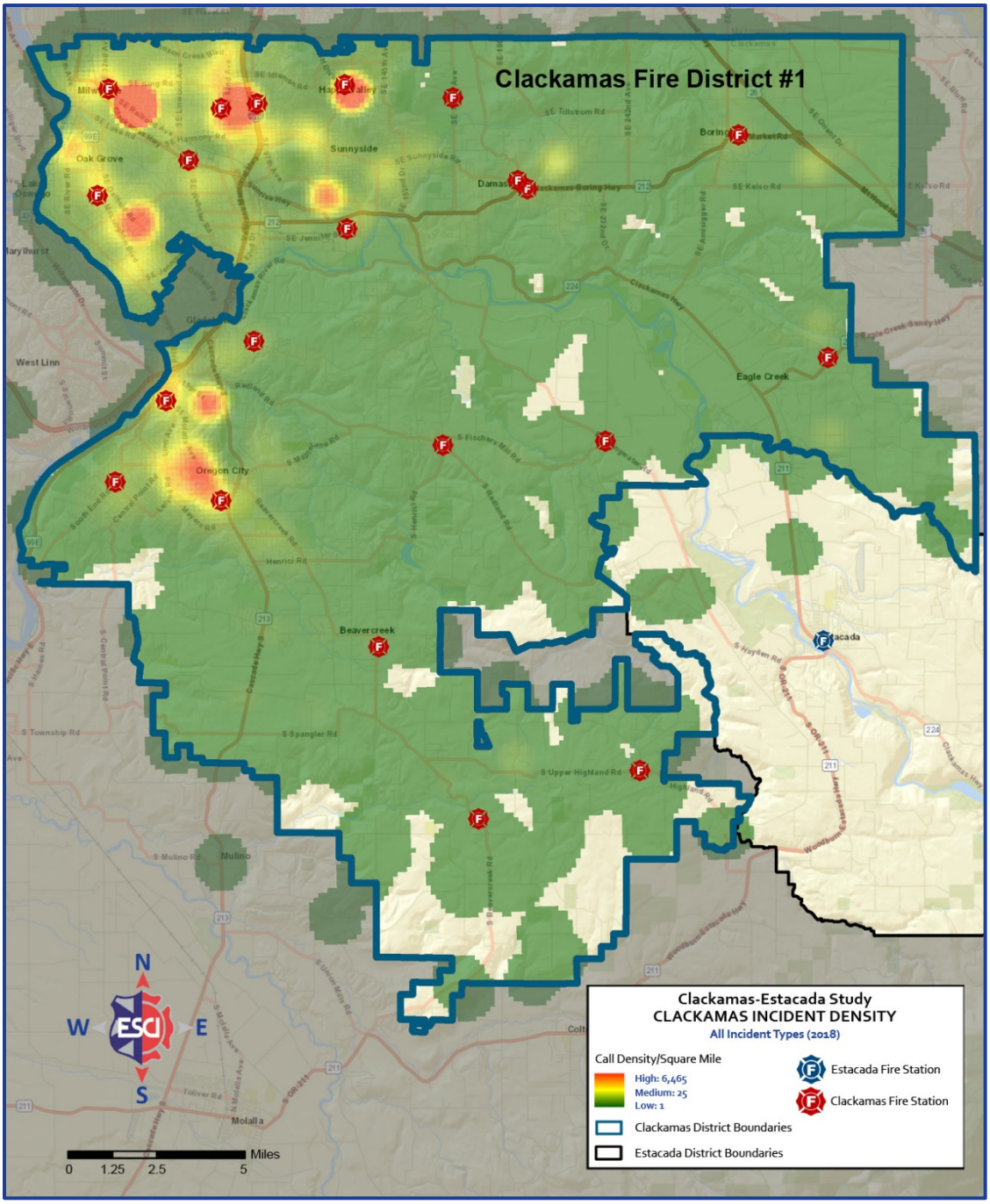


As expected, and shown in the preceding figure, the highest demand for service occurred in and around the City of Estacada. It is important to note that other areas with higher service-demand occurred around the northern boundary of Estacada Rural Fire District #69, relatively close to Clackamas Stations #18 and #12.

Clackamas Incident Density

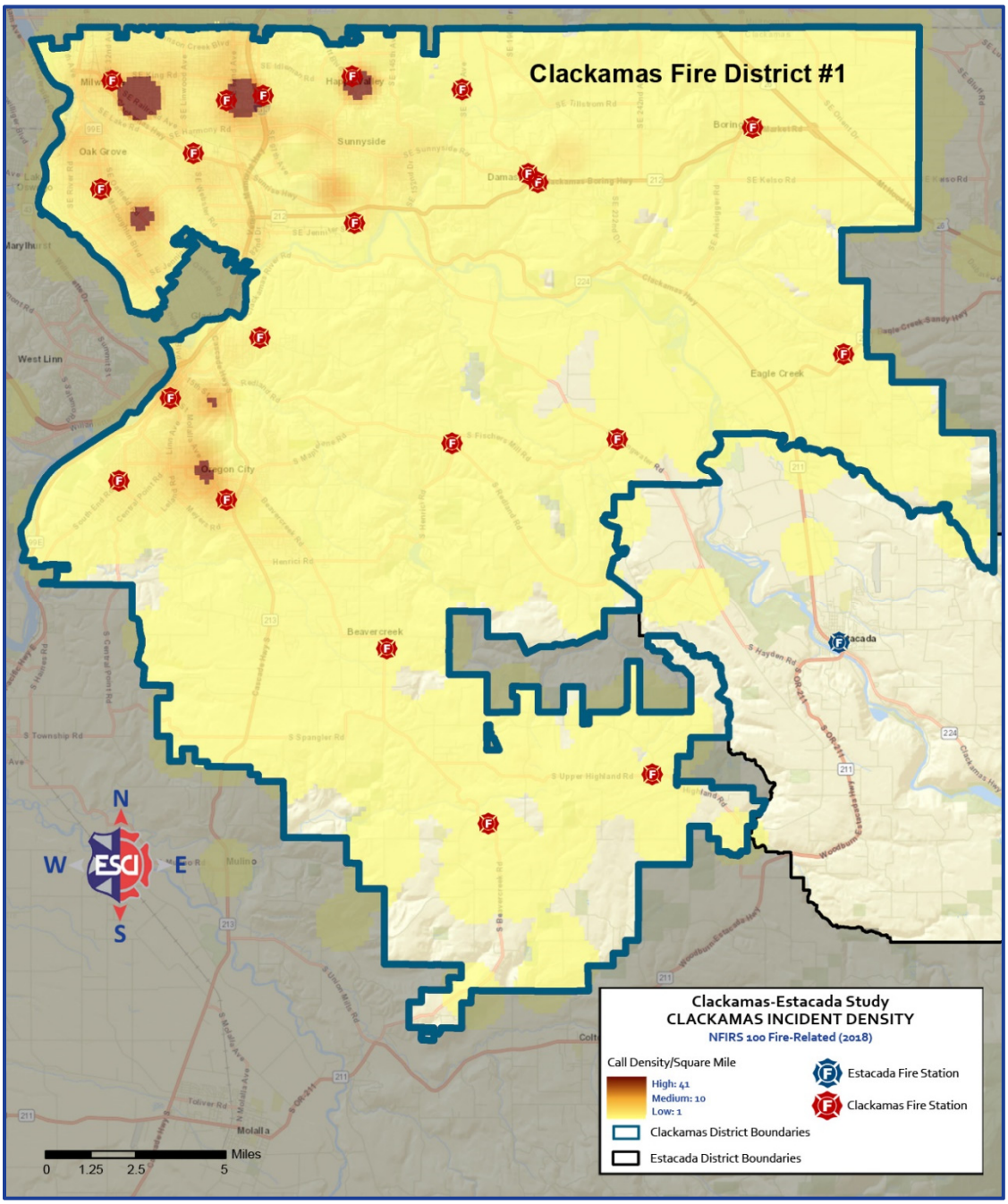
The following figures are geographic illustrations of Clackamas 2018 incident densities by call type.

Figure 109: Clackamas Incident Density—All NFIRS Incident Types (2018)



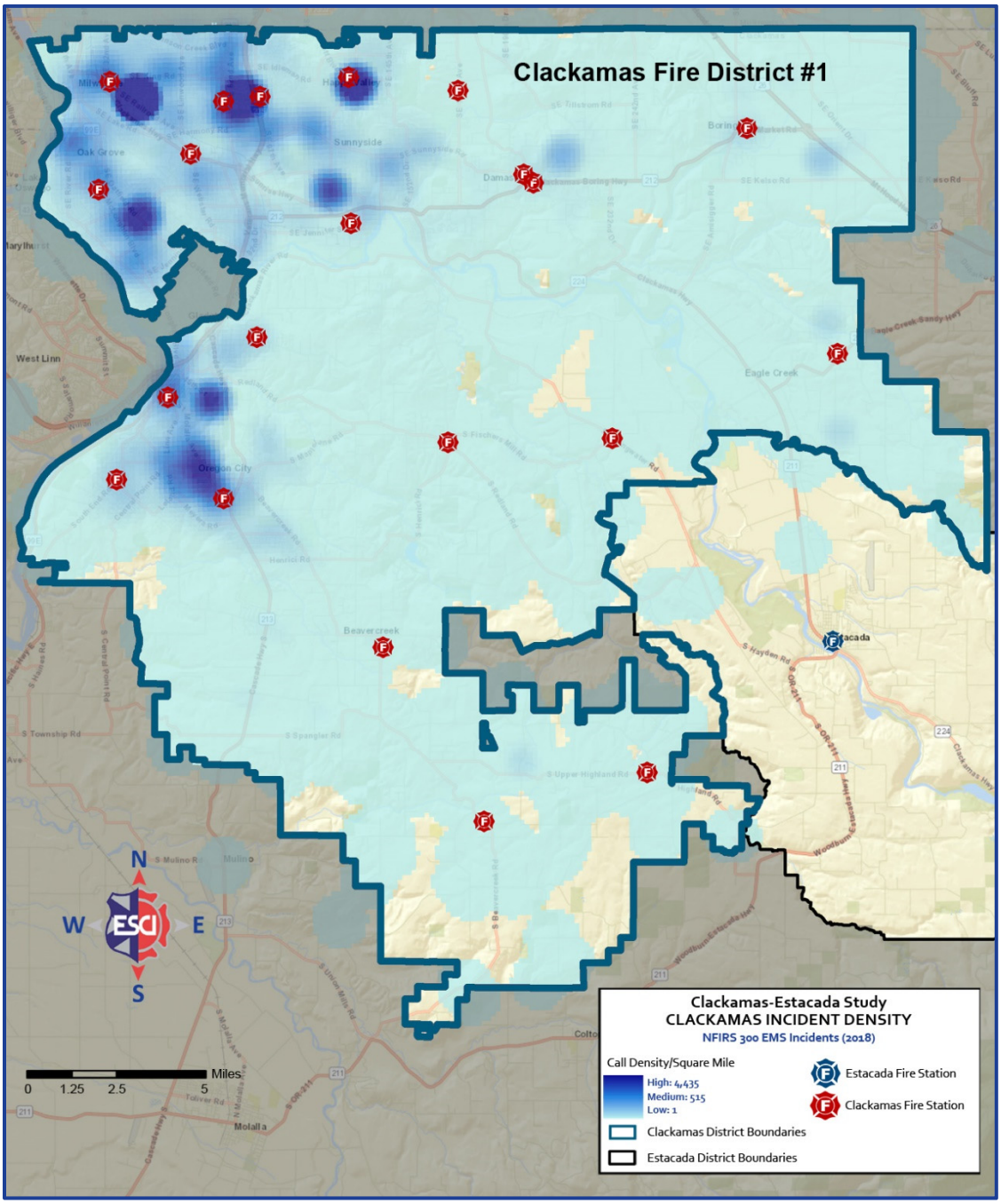
As expected, the highest service-demand for all incident types in Clackamas during 2018 occurred on the west and northwest sides of the fire district. The next figure illustrates fire-related incident density.

Figure 110: Clackamas Incident Density—NFIRS 300 Incident Types (2018)



The next figure illustrates the Clackamas 2018 EMS incident density, which represents the highest demand for service in the fire district.

Figure 111: Clackamas Incident Density—NFIRS 300 Incident Types (2018)



Resource Distribution Analysis

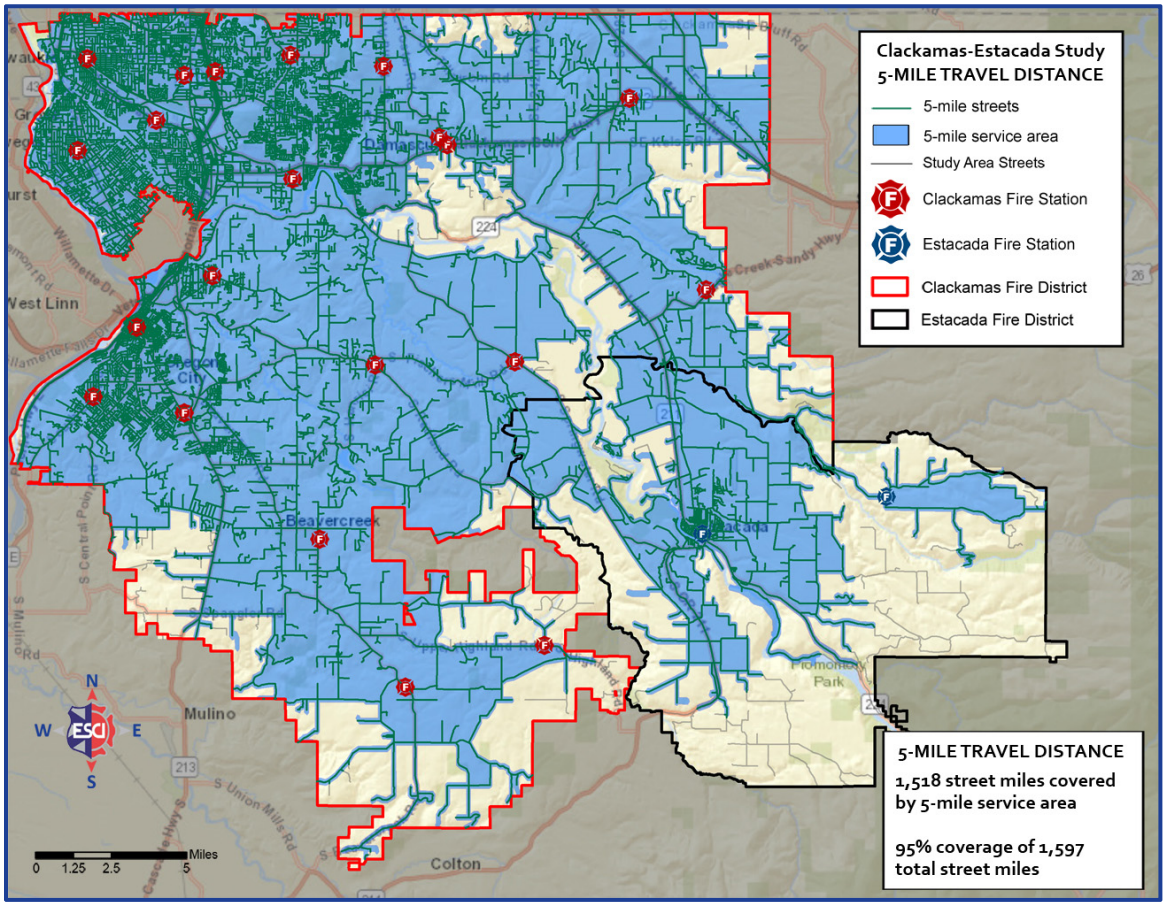
The distribution analysis presents an overview of the current distribution of fire district resources within the CFD1 and ERFD69 service areas.

ISO Distribution

There are two standards commonly used in the fire service for response distribution. The Insurance Services Organization (ISO) is a national insurance industry organization that evaluates fire protection for communities across the country. A jurisdiction's ISO rating is an important factor when considering fire station and apparatus distribution since it can affect the cost of fire insurance for individuals and businesses.

To receive maximum credit for station and apparatus distribution, ISO recommends that in urban areas, all "built upon" areas in a community be within 1.5 road miles of an engine company. If there are more than five structures over three stories or have a "needed fire flow" of over 3,500 gpm, ISO requires an aerial truck responding from within 2.5 miles. Additionally, ISO states that a structure must be within five miles of a fire station to receive any fire protection rating for insurance purposes.

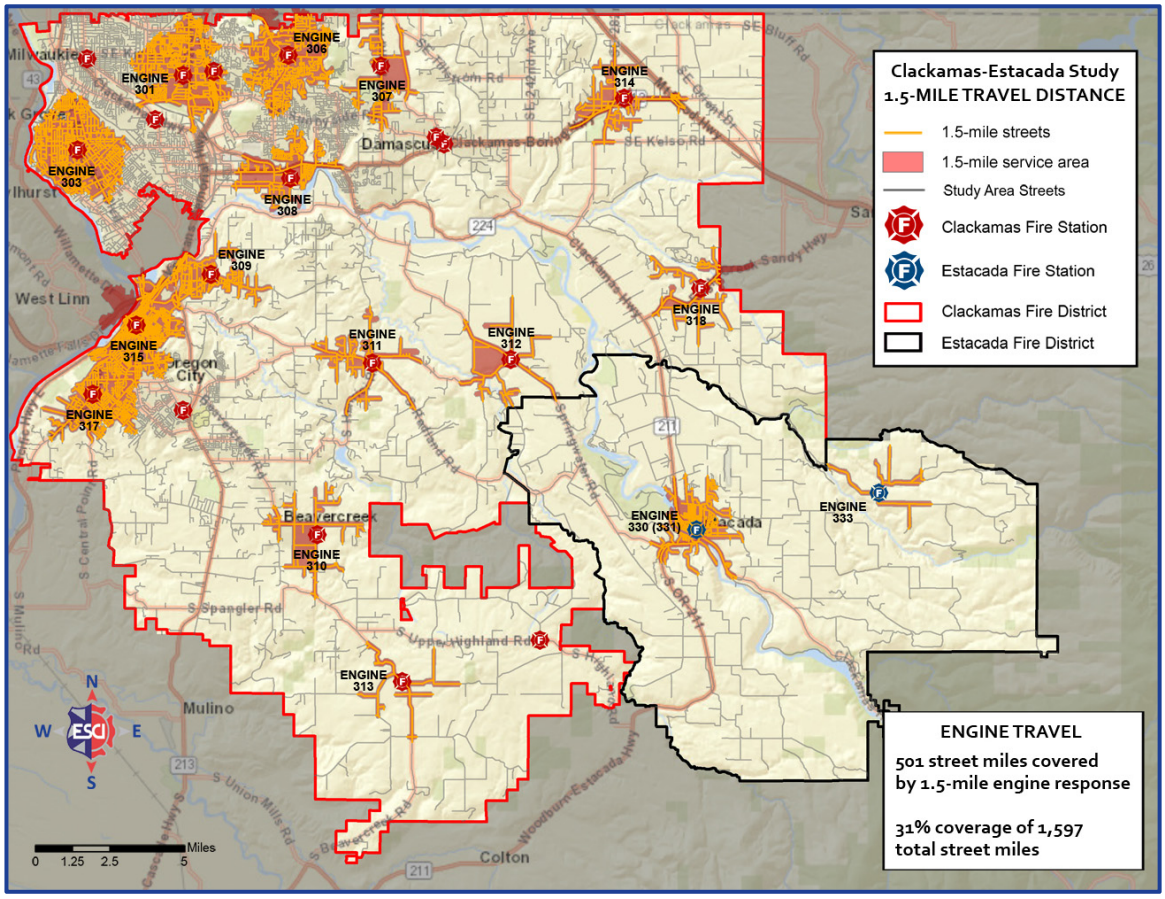
Figure 112: ISO 5-Mile Travel Distance in the Study Area



The preceding figure illustrates the ISO five-mile travel distance for the CFD1 service area. With 95% of the service area's street miles falling within five miles, most of the structures lie within the expected standard and limits the number of structures that may encounter difficulty in obtaining affordable insurance coverage.

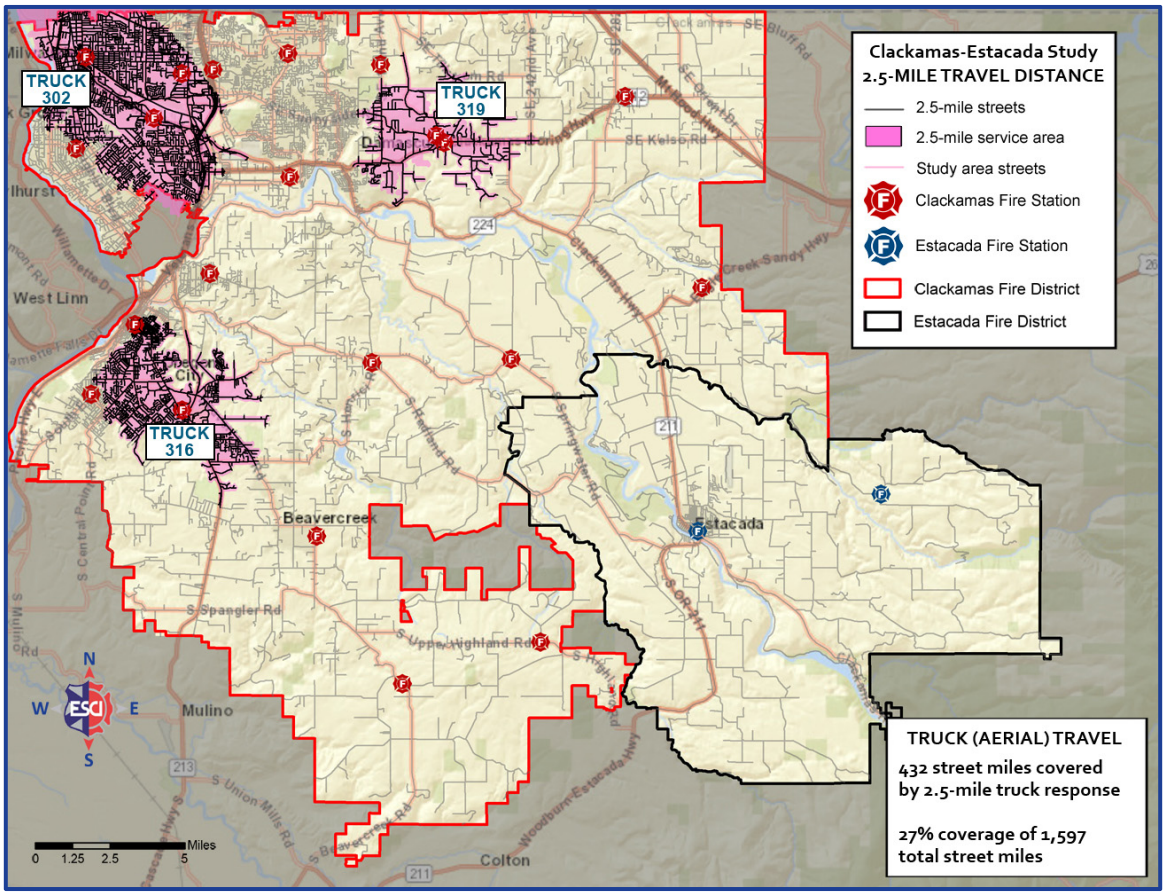
The next figure illustrates the ISO 1.5-mile travel distance for the CFD1 service area. With only 35.6% of streets falling within the 1.5-mile travel distance, a significant number of structures fall outside of the expected standard.

Figure 113: ISO 1.5-Mile Engine Travel Distance in the Study Area



The next figure illustrates the ISO 2.5-mile travel distance for the CFD1 service area. This distance is measured from those stations at which aerial apparatus are located. With only 22% of the streets falling within the 2.5-mile distance, a significant number of structures fall outside of the expected standard.

Figure 114: ISO 2.5-Mile Truck Travel Distance in the Study Area

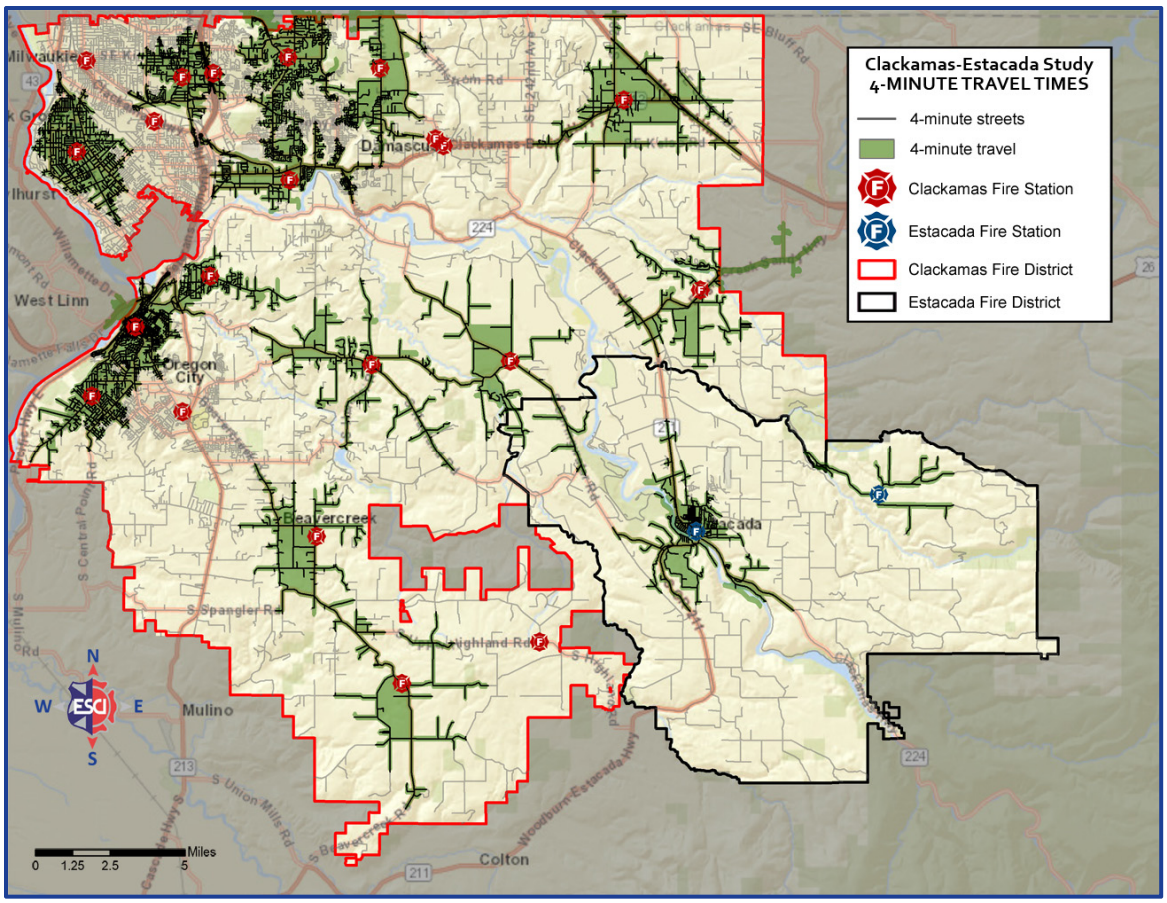


NFPA Distribution

The second standard for resource distribution is using response time criteria. This method is used by NFPA standards and the Center for Public Safety Excellence accreditation of fire departments. The following figures represent four-minute and eight-minute travel-time models from the current station locations over the existing road network. Travel time is calculated using the posted speed limit and adjusted for negotiating turns, intersections, and one-way streets.

The next image illustrates the projected distance that can be covered from the Clackamas Fire District #1 and Estacada Rural Fire District #69 fire stations in a four-minute travel time.

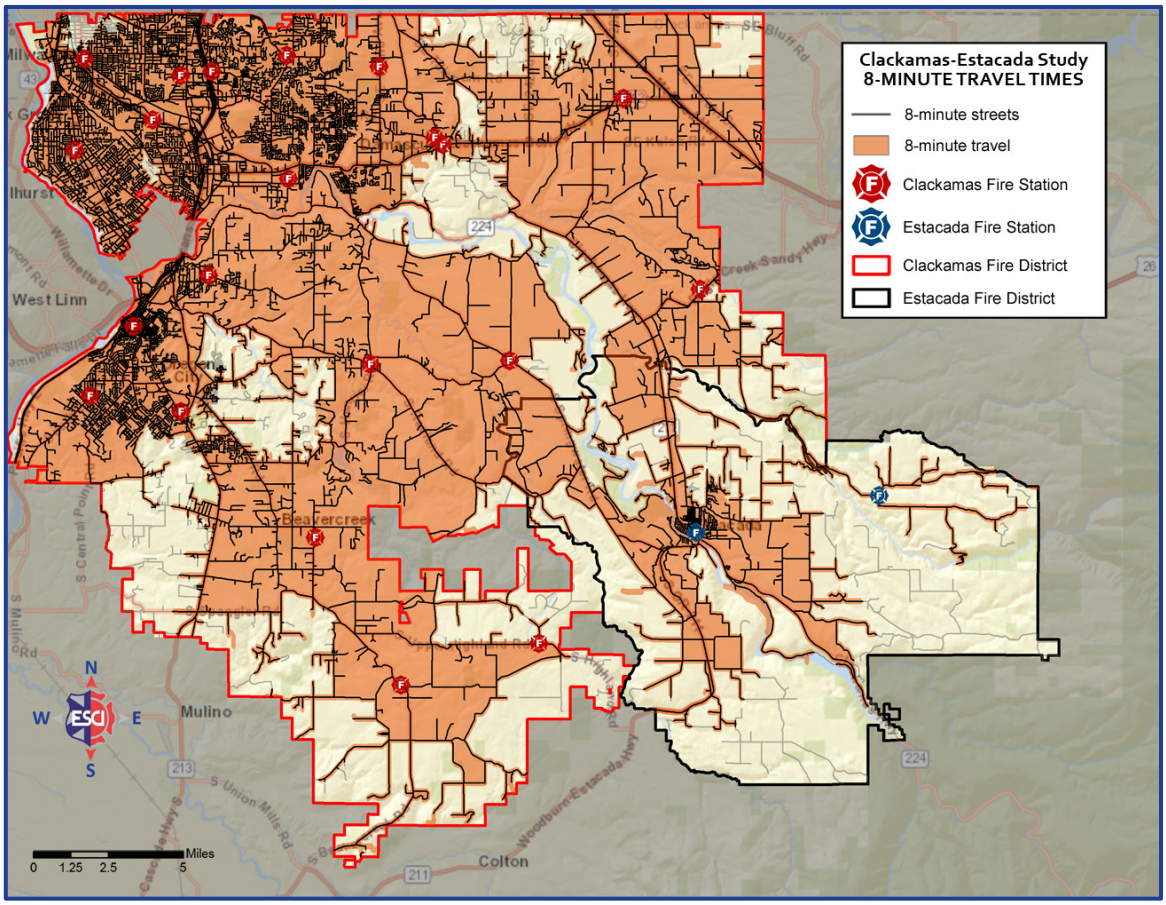
Figure 115: Projected 4-Minute Travel Times from Clackamas & Estacada Fire Stations



The preceding four-minute travel map shows just over 641 street miles covered in four minutes. This represents about 40% of 1,597 street miles.

The next image illustrates the projected distance that can be covered from the Clackamas Fire District #1 and Estacada Rural Fire District #69 fire stations in an eight-minute travel time.

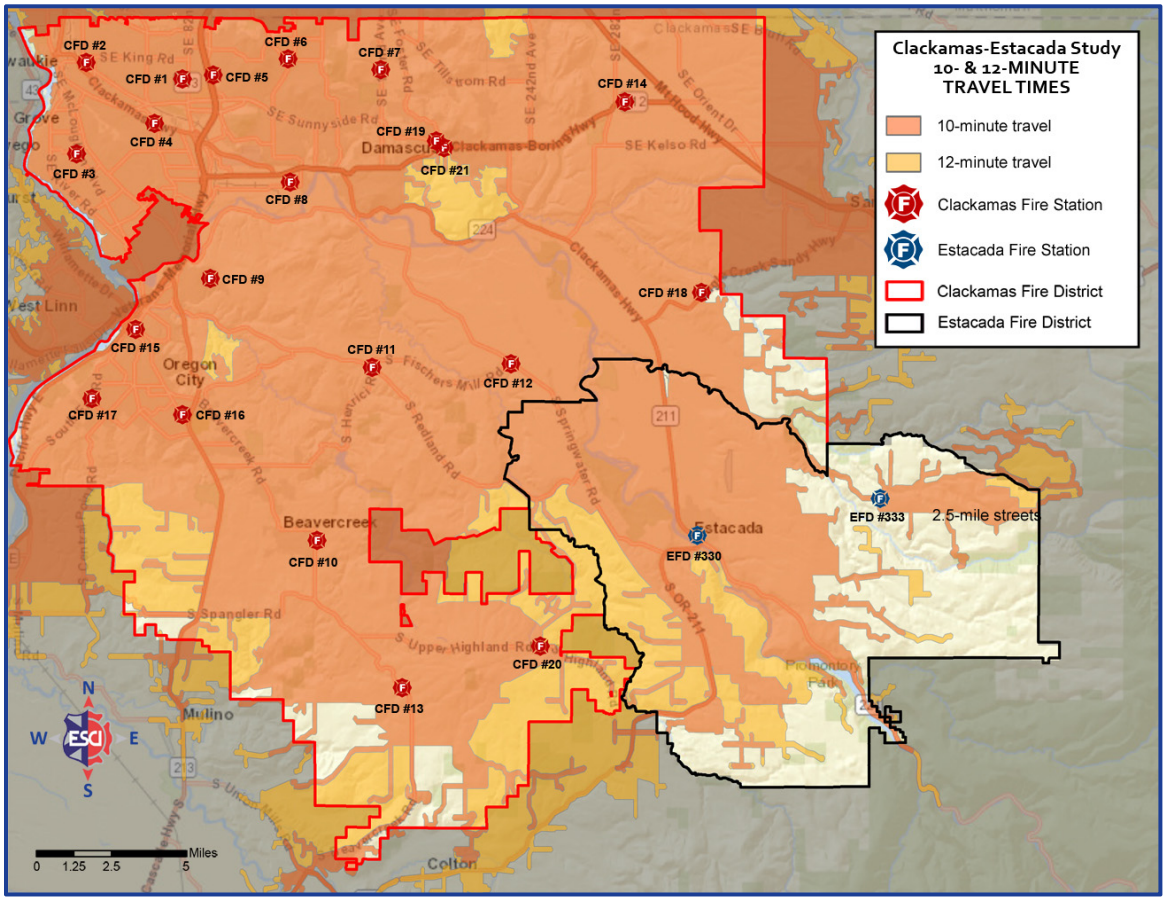
Figure 116: Projected 8-Minute Travel Times from Clackamas & Estacada Fire Stations



The preceding eight-minute travel map shows just over 1,460 street miles covered in eight minutes. This represents just over 91% of 1,597 street miles.

The next image illustrates the projected distance that can be covered from each fire station in both a 10-minute and 12-minute travel time.

Figure 117: Projected Travel Times from Clackamas & Estacada Fire Stations (10 & 12 minutes)



The GIS analysis indicates that nearly all areas of Clackamas Fire District #1 can be accessed with a travel-time of 10 minutes or less. In addition, a substantial portion of Estacada Rural Fire District #69 can be accessed within a travel-time of 10 minutes or less.

Workload & Response Reliability

Reliability of response is impacted by the percentage of time that units are available to respond to incidents as they occur. For example, if a unit is committed to incidents 30% of the time, they are not likely to meet the expected response time standards as other units must travel from farther away to handle calls within their zone. Additionally, when multiple incidents are occurring at the same time, or calls are received concurrently, it can put strain on the fire district's resources and affect their ability to muster additional resources to respond to additional calls for service.

Unit Hour Utilization

Unit hour utilization (UHU) is calculated by measuring the amount of time individual apparatus are committed to an incident and dividing the result by the total number of hours in a year (8,760). This measure demonstrates the amount of time a unit is not available for response to additional incidents because it is already committed to an incident.

While there are limited formal performance measures to use as a target measure, in May 2016, Henrico County (VA) Division of Fire published an article after studying their department's EMS workload.[11] As a result of the study, Henrico County Division of Fire developed a general commitment-factor scale for their department. The next figure is a summary of the findings as it relates to commitment factors.

Figure 118: Commitment Factors as Developed by Henrico County (VA) Division, 2016[22]

Factor	Indication	Description
16%–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% of the day.
25%	System Stress	Community availability and unit sustainability are not questioned. First-due units are responding to their assigned community 75% of the time, and response benchmarks are rarely missed.
26%–29%	Evaluation Range	The community served will experience delayed incident responses. Just under 30% of the day, first-due ambulances are unavailable; thus, neighboring responders will likely exceed goals.
30%	"Line in the Sand"	Not Sustainable: Commitment Threshold—community has less than a 70% 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.

The following figure illustrates the UHU for CFD1 units in 2018, expressed as a percentage of the total hours in the year. The number of responses and average time committed to incidents are displayed as well.

Figure 119: Clackamas Unit Hour Utilization (2018)

Unit	Incident Count	Average Time[1]	% UHU[2]	UHU[2]
E301	2,837	0:15:53	**9%**	**0.09**
E303	1,526	0:18:19	**5%**	**0.05**
E304	2,139	0:17:35	**7%**	**0.07**
E306	1,197	0:18:51	**4%**	**0.04**
E307	618	0:20:29	**2%**	**0.02**
E309	645	0:20:21	**3%**	**0.03**
E310	629	0:23:55	**3%**	**0.03**
E311	466	0:28:38	**3%**	**0.03**
E312	15	0:15:53	**0.1%**	**0.00**
E313	28	0:23:22	**0.1%**	**0.00**
E314	757	0:21:52	**3%**	**0.03**
E315	1,739	0:16:07	**5%**	**0.05**
E317	953	0:20:16	**4%**	**0.04**
E318	103	0:25:02	**1%**	**0.01**
E319	789	0:21:17	**3%**	**0.03**
E324	1	0:13:50	**0.0%**	**0.00**
M301	487	0:18:00	**2%**	**0.02**
M303	3,126	0:25:20	**15%**	**0.15**
M316	1,138	0:27:06	**6%**	**0.06**
T302	1,989	0:16:38	**6%**	**0.06**
T308	1,339	0:18:14	**5%**	**0.05**
T316	1,826	0:18:13	**6%**	**0.06**
BC301	160	0:28:56	**1%**	**0.01**
BC302	375	0:24:48	**2%**	**0.02**
BC303	334	0:25:19	**2%**	**0.02**

[1]Average time on incident. [2]Rounded to the nearest integer.

As shown in the preceding figure, none of CFD1 units reached a concerning level of unit hour utilization.

Figure 120: Estacada Unit Hour Utilization (2018)

Unit	Incident Count	Average Time[1]	UHU[2]
Chief 330	9	0:43:53	**0.1%**
Battalion Chief 331	66	0:45:20	**0.1%**
Battalion Chief 332	85	0:42:33	**0.1%**
Battalion Chief 333	13	0:33:05	**0.1%**
Engine 330	554	0:33:33	**4%**
Engine 331	98	1:24:31	**2%**
Engine 333	27	1:00:20	**0.01%**

[1]Average time on incident. [2]Rounded to the nearest integer.

The preceding figure shows that none of ERFD69 units reached a concerning level of unit hour utilization.

Call Concurrency

It is also useful to examine response reliability by analyzing the number of units required to handle incidents. This provides insight as to the ability of the fire district to have adequate resources for incidents before requesting mutual aid and automatic aid resources. Analyzation of the CFD1 and ERFD69 incident data is shown in the following figures.

Figure 121: Clackamas Concurrent Incidents (2018)

Concurrent Incidents	Percentage
1 Incident	28.64%
2 Incidents	33.09%
3 Incidents	22.19%
4 Incidents	10.35%
5 Incidents or Greater	5.72%

Based on the 2018 data for CFD1, it appears that the fire district can respond to most incidents with its existing fire district resources.

Figure 122: Estacada Concurrent Incidents (2018)

Concurrent Incidents	Percentage
1 Incident	45.43%
2 Incidents	48.77%
3 Incidents	5.47%
4 Incidents	0.33%

Based on the 2018 data for ERFD69, it appears that the fire district can respond to most incidents with its existing fire district resources.

Figure 123: Clackamas & Estacada Combined Concurrent Incidents (2018)

Concurrent Incidents	Percentage[1]
1 Incident	13%
2 Incidents	30%
3 Incidents	28%
4 Incidents	17%
5 Incidents or Greater	12%

[1]Rounded to the nearest integer

In the preceding figure, the incidents from both datasets were combined to present a potential call concurrency comparison. As a combined dataset, the concurrency of four incidents and five incidents and greater increased from the separate datasets. Should the fire districts merge, ESCI recommends that the combined department continue to monitor call concurrency to ensure they are able to provide appropriate response resources.

Response Performance

Perhaps the most publicly visible component of an emergency services delivery system is that of response performance. Policymakers and citizens want to know how quickly they can expect to receive emergency services. For policymakers and citizens to make informed decisions concerning response performance, it is essential that jurisdictions record and report the various components of the jurisdiction's current performance.

In analyzing response performance, ESCI generates percentile measurements of response time performance. The use of percentile measurement using the components of response time follows the recommendations of industry best practices. The best practices are derived by the Center for Public Safety Excellence (CPSE), Standard of Cover document, and the National Fire Protection Association (NFPA) 1710: *Standard for the Organization & Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*.

The "average" measure is a commonly used descriptive statistic also called the "mean" of a dataset. The most important reason for not using the average for performance standards is that it may not accurately reflect the performance for the entire dataset and may be skewed by outliers, especially in small datasets. One extremely good or bad value can skew the average for the entire dataset.

The "median" measure is another acceptable method of analyzing performance. This method identifies the value at the middle of a dataset and thus tends to not be as strongly influenced by data outliers.

Percentile measurements are a better measure of performance because they show that most of the dataset has achieved a certain level of performance. The 90th percentile means that 10% of the values are greater than the value stated, and all other data are at or below this level. This can be compared to the desired performance objective to determine the degree of success in achieving the goal.

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 point at which the fractile percentile is calculated exists in a set of data unto itself.

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

- **Alarm Handling Time**—the interval between when a call-taker answers the 911 call and the start of call processing.
- **Call Processing Time**—the interval between when a dispatcher receives the call and the unit is dispatched.
- **Turnout Time**—the time between unit notification of the incident and when they are responding.
- **Travel Time**—the interval between when the unit begins responding until it arrives on scene.
- **Response Time**—a combination of turnout time and travel time, commonly used to measure response performance when the fire district does not have direct control over the PSAP and/or dispatch center. It excludes the alarm-handling and call-processing time.
- **Total Response Time**—the interval between when the 911 call is answered until the dispatched unit arrives on the scene. This is the true measure of response-time performance.

Total response time is the amount of time a resident or business waits for resources to arrive at the scene of an emergency, beginning when they first placed a 911 call. This process begins for the fire department once the appropriate unit is dispatched by the communications center. The NFPA standard for alarm handling and call processing is derived from NFPA 1221: *Standard for the Installation, Maintenance, & Use of Emergency Services Communications Systems* and provides for communication centers to have alarm handling times of not more than 15 seconds, 90% of the time, and not more than 20 seconds, 95% of the time. Additionally, NFPA 1221 requires the processing of the call to occur within 64 seconds, 90% of the time for high-priority incidents. Similarly, NFPA 1710 requires the call processing time to be 60 seconds or less, 90% of the time, as does ISO.

Figure 124: NFPA 1710 Standards for Fire & EMS Responses

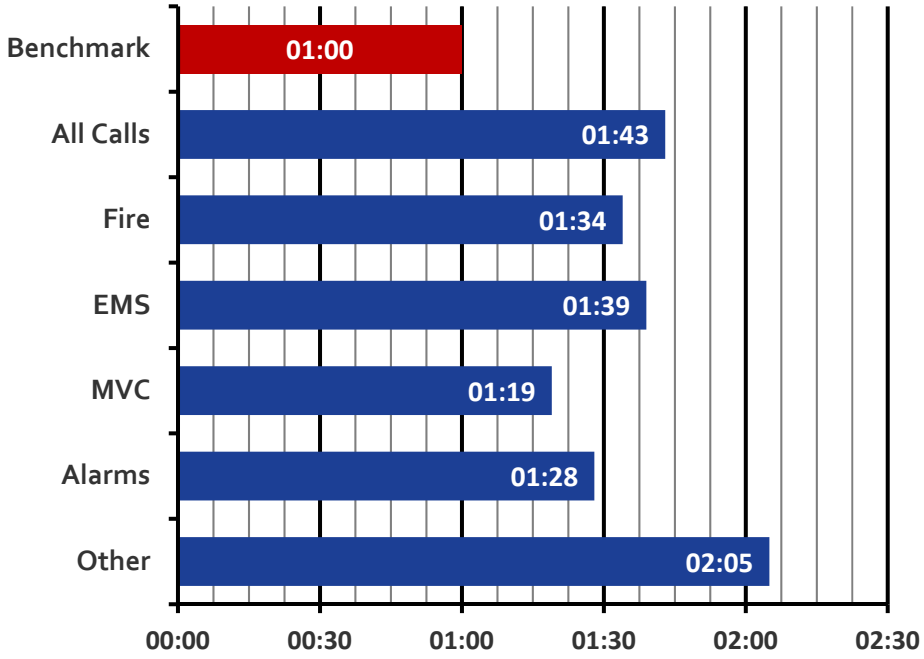
Response Interval	NFPA/CFAI Recommendations
Call Processing	60 seconds or less at 90%
Turnout Time	60 seconds or less at 90%
Travel Time	240 seconds

Tracking the individual components of response time enables jurisdictions to identify deficiencies and areas for improvement. In addition, knowledge of current performance for the components listed in the preceding figure is an essential element of developing response goals and standards that are relevant and achievable. Fire service best practice documents recommend that fire jurisdictions monitor and report the components of total response time.[23]

Alarm-Handling Performance

The next figure illustrates the alarm handling performance for CFD1. Performance by incident type ranged from 1 minute, 19 seconds to 2 minutes, 5 seconds. The overall performance was 1 minute, 43 seconds which is outside the expected performance of 1 minute. CFD1 should continue to work with its partner PSAP agency to improve alarm-handling performance.

Figure 125: Clackamas Alarm-Handling Performance (2014–2018)

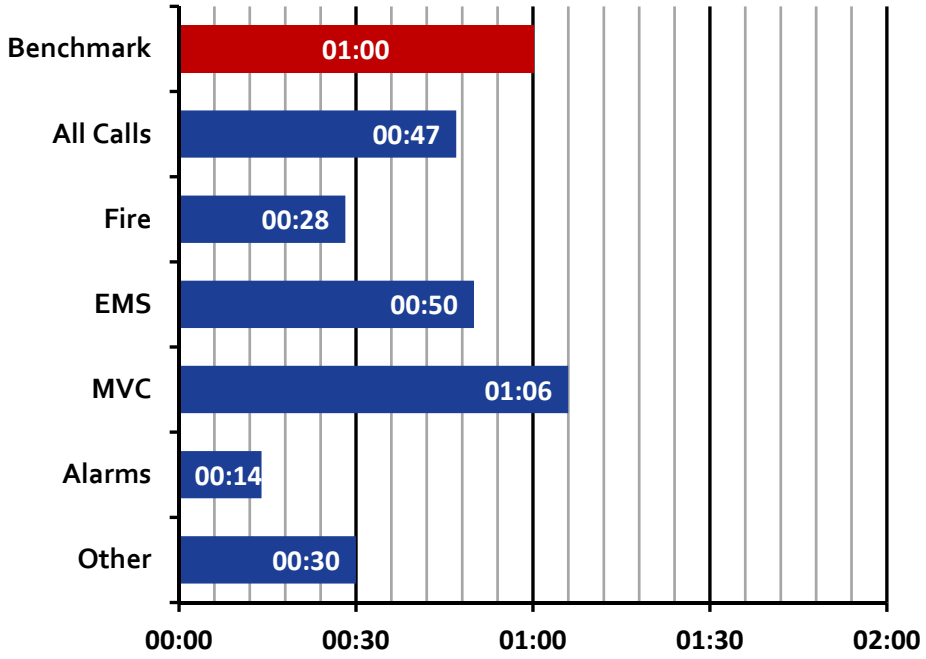


Alarm handling for Estacada could not be analyzed, as the necessary timestamps to conduct the calculations were not included in the dataset.

Call-Processing Performance

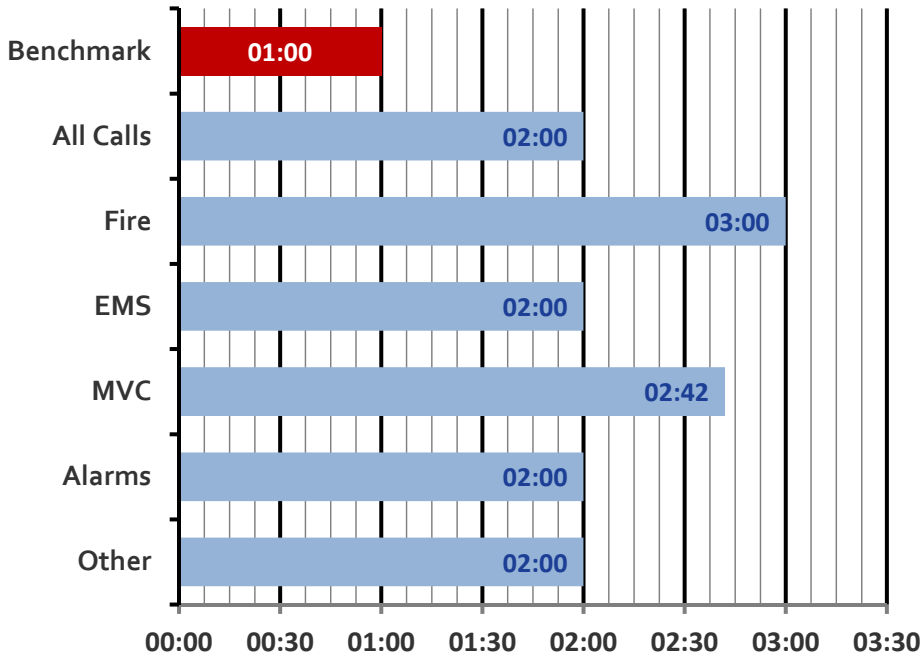
The following figure illustrates the call processing performance for CFD1. Performance by incident type ranged from 14 seconds to 1 minute, 6 seconds. The overall performance was 47 seconds, well within the expected performance of 1 minute.

Figure 126: Clackamas Call-Processing Performance (2014–2018)



The next figure illustrates the call processing performance for ERFD69. Due to incomplete data, the analysis by ESCI calculated this performance measure from the PSAP timestamp until the dispatch timestamp. The call processing performance ranged from two to three minutes. The overall performance was two minutes, which is well outside of the expected performance of one minute.

Figure 127: Estacada Call-Processing Performance (2014–2018)

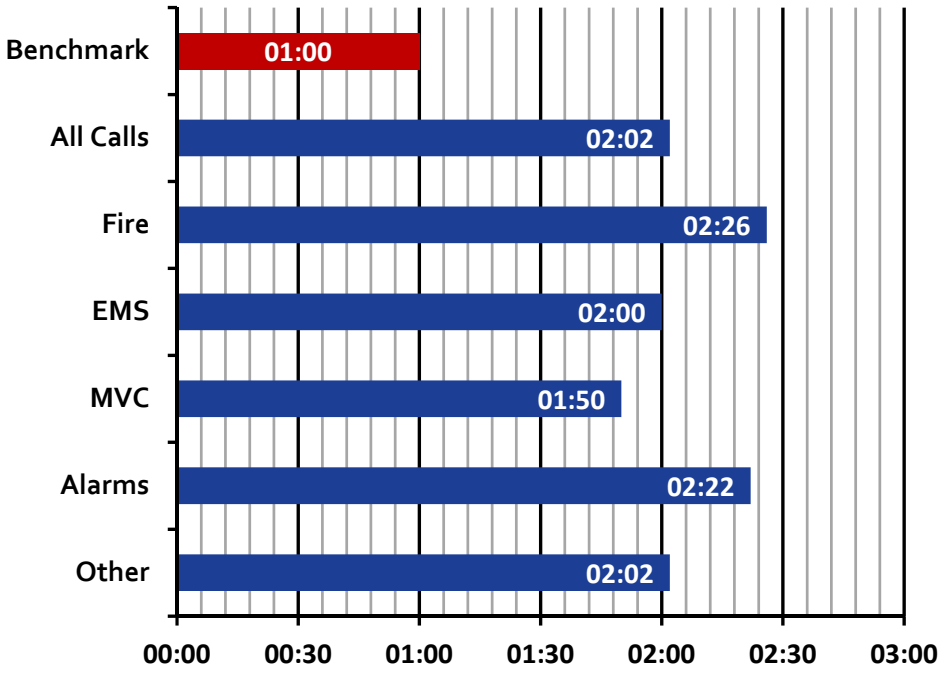


Turnout-Time Performance

The first component of the response continuum and the one directly affected by fire district personnel is turnout time. Turnout is the time it takes personnel to receive the dispatch information, move to the appropriate apparatus, and proceed to the incident. NFPA 1710 specifies that turnout time performance should be less than 60 seconds (01:00), measured at the 90th percentile.[24]

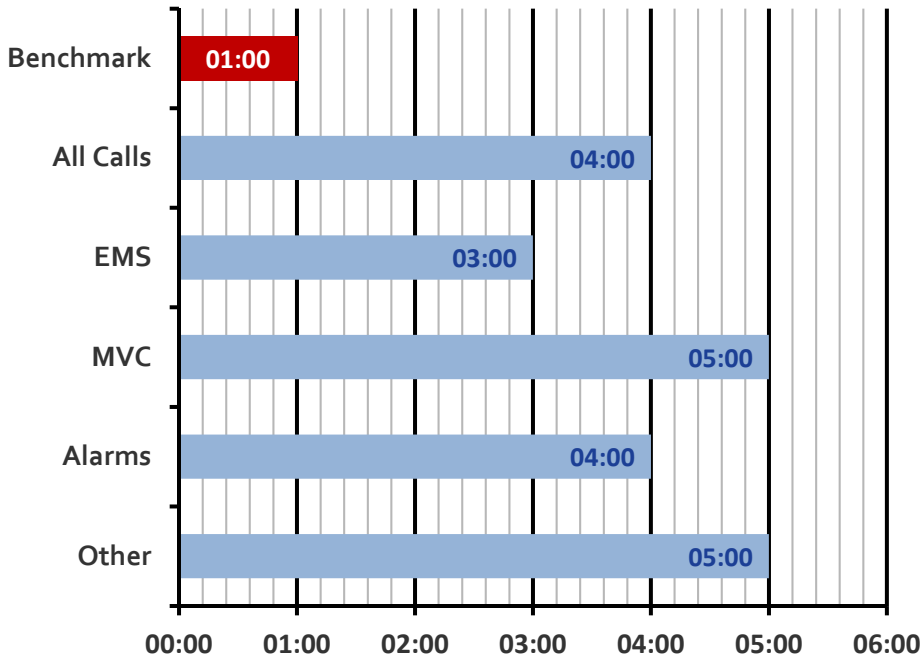
The following figure illustrates the turnout time performance for CFD1. Performance by incident type ranged from 1 minute, 50 seconds to 2 minutes, 26 seconds. The overall performance was 2 minutes, 2 seconds, nearly double the expected performance of one minute.

Figure 128: Clackamas Turnout-Time Performance (2014–2018)



The next figure illustrates the turnout time performance for ERFD69. Performance by incident type ranged from two to five minutes. The overall performance was four minutes, which is three minutes greater than the expected performance of one minute. Fire incidents were not included in the chart, as the small dataset for this incident type resulted in a performance time of 17 minutes, 36 seconds.

Figure 129: Estacada Turnout-Time Performance (2014–2018)

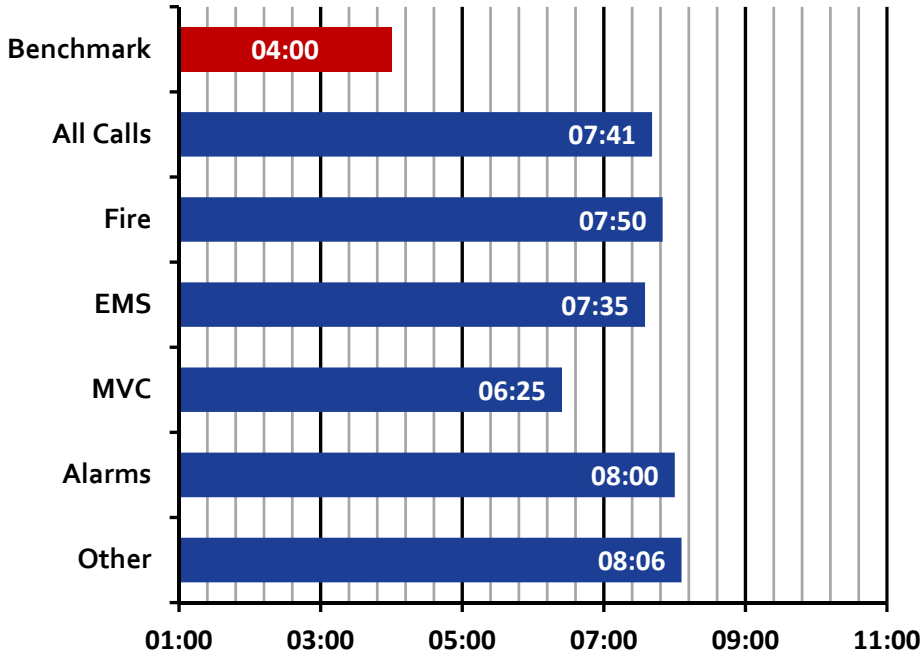


Travel-Time Performance

Travel time is potentially the longest component of total response time. The distance between the fire station and the location of the emergency influences total response time the most.

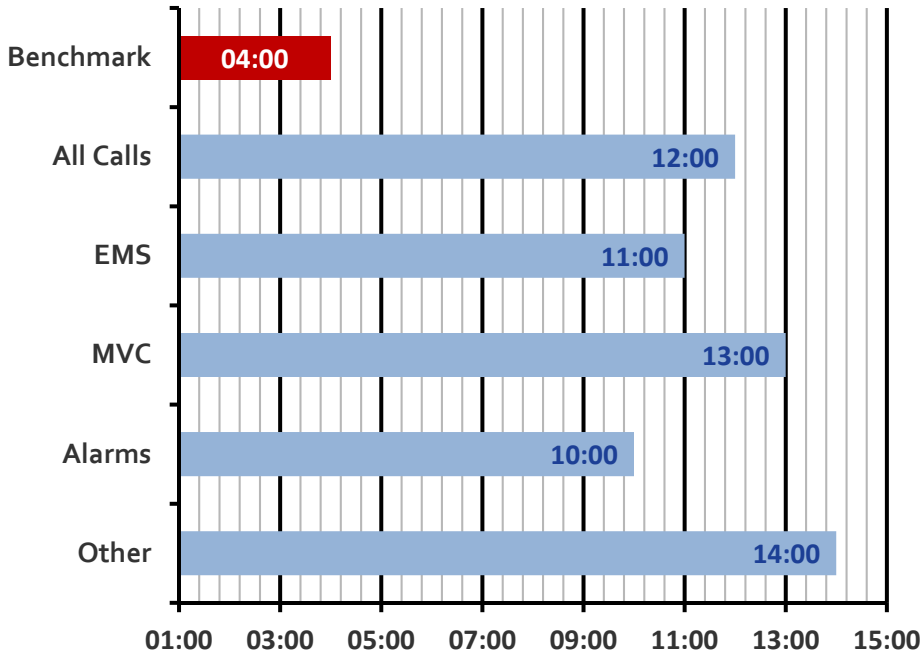
The next figure illustrates the travel time performance for CFD1. Performance by incident type ranged from 6 minutes, 25 seconds to 8 minutes, 6 seconds. The overall performance was 7 minutes, 41 seconds, well outside the expected performance of four minutes.

Figure 130: Clackamas Travel-Time Performance (2014–2018)



The following figure illustrates the travel time performance for ERFD69. Performance by incident type ranged from 10 minutes to 14 minutes. The overall performance was 12 minutes which is eight minutes higher than the expected performance of four minutes. Fire incidents are not included in the chart as the small dataset for this incident type resulted in a performance time of 22 minutes.

Figure 131: Estacada Travel-Time Performance (2014–2018)

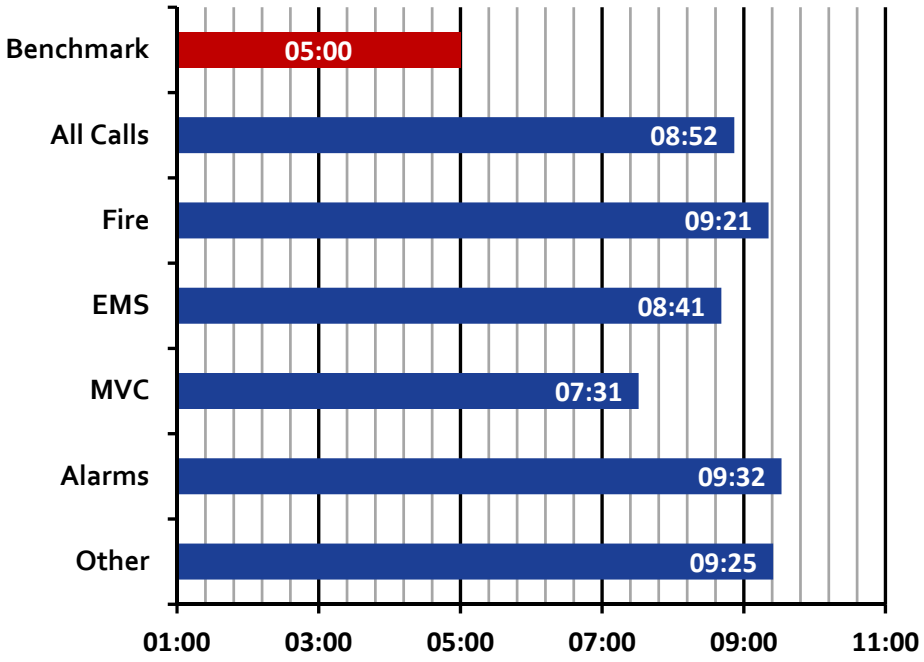


Response-Time Performance

When turnout time and travel time are combined, this is expressed as response time with an expected performance of five minutes or less. This is perhaps one of the most often tracked and reported response time performance measures, as it is comprised of components under direct control of the District.

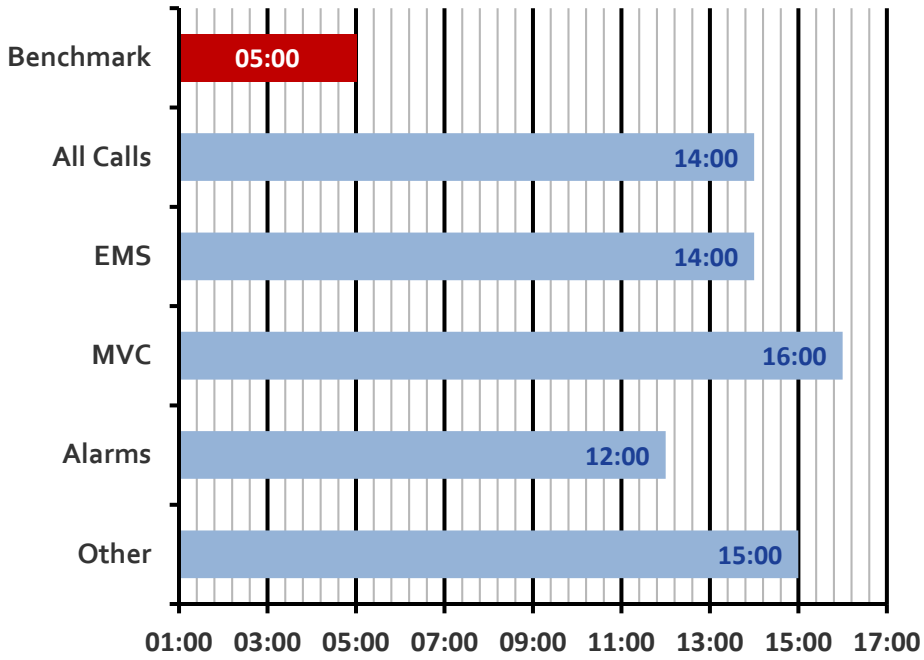
In the next figure, the response time performance for CFD1 is illustrated. Performance by incident type ranged from 7 minutes, 31 seconds to 9 minutes, 25 seconds. The overall performance was 8 minutes, 52 seconds which is 3 minutes, 52 seconds greater than the expected performance of five minutes.

Figure 132: Clackamas Response-Time Performance (2014–2018)



The following figure illustrates the response time performance for Estacada. Performance by incident type ranged from 12–16 minutes. Overall performance was 14 minutes, which is nine minutes greater than the expected performance of five minutes. Fire incidents were not included in the figure as the small dataset for this incident type resulted in a performance time of 35 minutes.

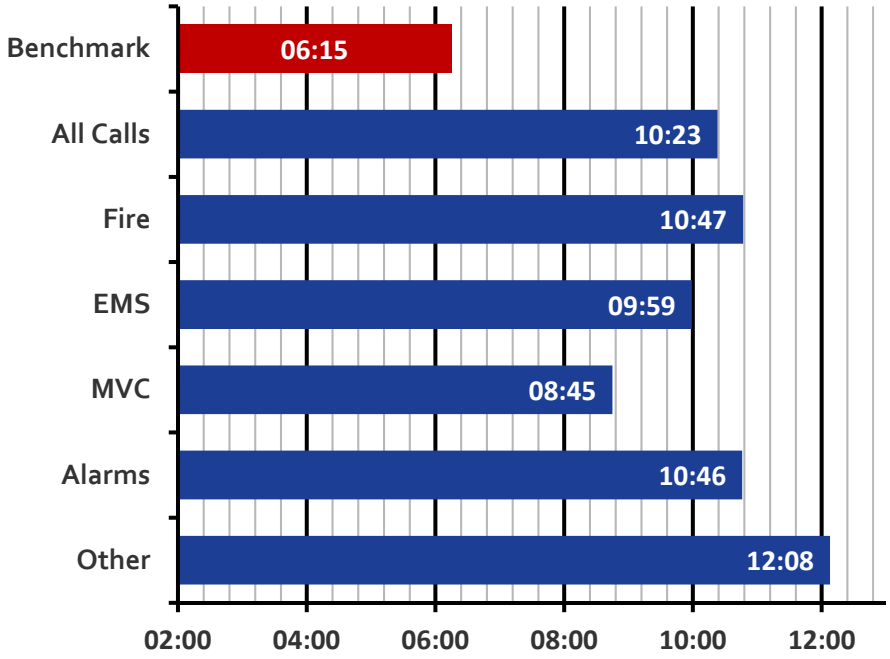
Figure 133: Estacada Response-Time Performance (2014–2018)



Total Response-Time Performance

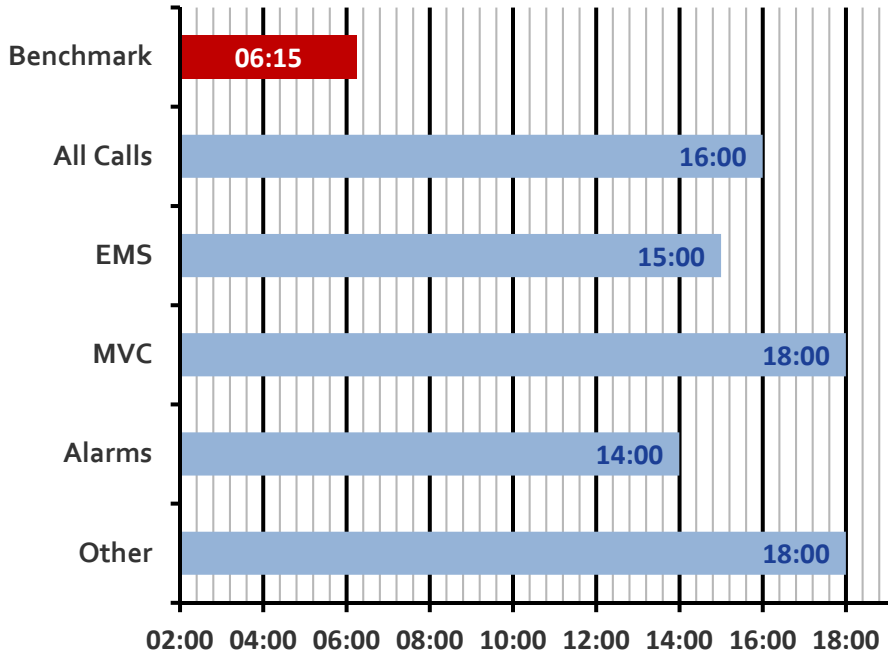
Total response time combines all components of the response—from the 911-call until arrival on scene. The next figure illustrates the total response time performance for CFD1. Performance by incident type ranged from 8 minutes, 45 seconds to 12 minutes, 8 seconds. Overall performance was 10 minutes, 23 seconds, which is over four minutes greater than the expected performance of 6 minutes, 15 seconds.

Figure 134: Clackamas Total Response Time Performance (2014–2018)



The next figure illustrates the total response time performance for ERFD69. Performance by incident type ranged from 14 minutes to 18 minutes. Overall performance was 16 minutes, which was nearly 10 minutes greater than the expected performance of 6 minutes, 15 seconds. Fire incidents were not included in the chart as the small dataset for this incident type resulted in a performance time of 41 minutes.

Figure 135: Estacada Total Response Time Performance (2014–2018)



Response-Time Performance Discussion

Clackamas Fire District #1

Although the response-performance analysis presented in this study is based upon benchmarks established through NFPA standards, Clackamas has established their own benchmarks. These will be shown in the following figures. The data provided did not enable the ability to analyze the response-performance against the Clackamas benchmarks within the specific population densities, so the following compares performance against the urban baseline.

Figure 136: Clackamas Response-Performance Baseline Comparison—All Incident-Types

First Unit on Scene	Urban	Suburban	Rural	2018 Actual (All locations)
Alarm-Handling Baseline	1:30	1:30	1:30	**1:43**
Turnout-Time Baseline	1:30	1:30	1:30	**2:02**
Travel-Time Baseline	5:12	6:30	13:00	**7:41**
Dispatch to On-Scene Baseline	6:42	8:00	14:30	**8:52**
Total Response Time Baseline	8:12	9:30	16:00	**10:23**

Figure 137: Clackamas Response-Performance Baseline Comparison—Fire Incidents

First Unit on Scene	Urban	Suburban	Rural	2018 Actual (All locations)
Alarm-Handling Baseline	1:00	1:00	1:00	**1:34**
Turnout-Time Baseline	1:20	1:20	1:20	**2:26**
Travel-Time Baseline	4:00	5:00	10:00	**7:50**
Dispatch to On-Scene Baseline	5:20	6:20	11:20	**9:21**
Total Response Time Baseline:	6:20	7:20	12:20	**10:47**

Figure 138: Clackamas Response-Performance Baseline Comparison—EMS Incidents

First Unit on Scene	Urban	Suburban	Rural	2018 Actual (All locations)
Alarm-Handling Baseline	1:00	1:00	1:00	**1:39**
Turnout-Time Baseline	1:00	1:00	1:00	**2:00**
Travel-Time Baseline	4:00	5:00	10:00	**7:35**
Dispatch to On-Scene Baseline	5:00	6:00	11:00	**8:41**
Total Response Time Baseline:	6:00	7:00	12:00	**9:59**

Estacada Rural Fire District #69

Estacada did not provide any established benchmarks for comparison, so only the comparison to the NFPA standard was produced.

Summary

When compared to the NFPA standards, the analysis of both fire districts indicated that neither met the standards of the various components during 2018. ESCI recommends that regardless of the final decision to integrate the fire districts, senior leadership should consider the following concepts as related to response performance.

- Alarm handling is provided by C-COM. Performance should be monitored regularly, and the fire districts should work closely with the dispatch center to assist in verifying data and setting goals for improvement to meet the expected standard.
- Turnout-time should be monitored, and the fire districts should work with operations personnel to identify any components contributing to the inability to meet this benchmark. This may include things such as station configuration, alarm notification processes, etc.
- Travel-time is a component with a significant impact on both response time and total response time. A major factor in the ability to meet this benchmark is the geographical location of resources based on the service area. The fire districts have little to no control over travel times when apparatus and vehicles are deployed from existing stations.

- With approximately 40% of Estacada's current service area falling within four minutes of a fire station, the ability to meet a response-time performance of four minutes or less at the 90th percentile (NFPA) is unlikely.
- When considering the standard of eight-minutes or less at the 90th percentile, just over 91% of Estacada's current service falls within eight minutes of a fire station. Much of the remaining area falls within rural population densities.

TRAINING

Delivering safe and effective fire and emergency services requires a well-trained work force. Initial, ongoing, and high-quality training and education are critical for agency effectiveness and safety of its personnel. Without it, the community may experience significant losses, and/or emergency responder injury or death.

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

In the following section, ESCI reviewed each District's fire, EMS, and specialized training programs; resource allocation; schedule; and training documents and practices. It then compared these support programs to national standards and best practices and made recommendations where appropriate.

Intergovernmental Agreement for Training

CFD1 and ERFD69 coordinate training services through an intergovernmental agreement (IGA), which stipulates CFD1 will provide substantial fire prevention, operations, and training and administrative support to ERFD69 for a monthly fee. The IGA stipulates the following training services will be provided by CFD1:

- Monthly company training assignments through the *Target Solutions*® web portal
- Webinars
- Quarterly "Down and Dirty" drills
- Quarterly Battalion drills
- Training records management and reporting via *Target Solutions*
- Engine company backfill while ERFD69 crews are out of service for training
- Volunteer firefighter training—up to eight times per month

In addition, ESCI understands that CFD1 provides ERFD69 volunteer firefighter recruit training, and that this service will be discontinued in September 2019. At the time of this report, ERFD69 is exploring other avenues in delivering this training.

Training Resources & Methodology

Delivering adequate training to fire and EMS personnel requires providing instructors with specific tools and facilities. Both agencies use NFPA Level 1 Instructors to conduct training. Adequate training space, props, and equipment are vital to ensuring safe and effective emergency operations. Both Districts have dedicated training grounds and facilities, including drill towers, SCBA confidence courses, roof ventilation props (Estacada does not), confined space rescue props, forcible entry props, Class A live fire props, and sprinkler/standpipe props.

As the primary EMS training entity for both Districts, CFD1 has a wide range of EMS training props and equipment, including CPR/airway mannequins, trauma/medical kits, spinal immobilization equipment, basic and advanced airway management equipment, and a fully equipped ambulance used solely for training. Both Districts have adequate classroom space, with CFD1 having substantial classroom space available at their training center as well as many of their fire stations.

District Training Facilities

Both Clackamas Fire District #1 and Estacada Rural Fire District #69 have various fire and rescue training centers with an assortment of facilities and resources.

Clackamas Training Facilities

Clackamas Fire District #1 maintains their primary training center in a relatively central location for both Districts. The Training Center has an extensive drill ground area, drill tower, and areas for specialized rescue training, including an above-ground and below-ground confined space training prop, trench rescue prop, and various roof ventilation props. Junk cars are stored on site for vehicle extrication drills.

This facility and associated equipment are maintained by a full-time Training Technician, who also serves as a volunteer firefighter. The facility includes a large inventory of training equipment dedicated to training activities, including chain saws, rotary saws, extrication equipment, ladders, forcible entry equipment, EMS equipment, etc.

The Training Center's large, main meeting room can be divided in half to allow for separate meetings and training activities. Many of the fire stations have classroom facilities that also serve as community meeting rooms, and each station has a networked interactive display board for remote training delivery.

Figure 139: Training Center Classroom

Figure 140: Training Center Props

East Training Center (Station 14)

The East Training Center has an extensive drill ground area, drill tower, and areas for specialized training, including confined space, various roof ventilation props, bail-out, and forcible entry props. Junk cars are stored on site for vehicle extrication drills. The East Training Center also has one large and one smaller classroom with audio/visual equipment.

Figure 141: Station 14 (Boring) Training Center

Estacada Training Center

Estacada Rural Fire District #69 maintains a small training center across from Station 330. The figure below shows this facility.

General Training Competencies

Along with required tools, props and facilities, standardized training is another critical component in providing high quality emergency response training throughout the organization. This training should be based on established standards, best practices, and validated curriculum. A variety of sources are available to develop training standards. Both Districts reference the NFPA, IFSAC, Oregon Department of Public Safety Standards and Training, and International Fire Service Training Association (IFSTA) curriculums, and comply with applicable federal *Occupational Safety & Health Administration* (OSHA) regulations and standards. They also follow the *Oregon Health Authority* requirements for EMS providers.

Figure 142: Estacada Training Center

Training Manual, Methodologies, & Scheduling

Training conducted in ERFD69 is closely coordinated between the ERFD69 Division Chief and a CFD1 Battalion Chief. However, both noted that the scheduling and coordination of training can be difficult at times due to inherent institutional barriers in each organization. An annual training calendar and associated budget are developed by September of the prior year. Coordination and delivery of training includes ensuring adequate emergency response coverage is maintained when crews are unavailable during training. Crews in each agency routinely move up or stay available to cover for each other as necessary.

Classes and drills in both Districts are typically conducted and facilitated by company officers. Safety is stressed during all training, regular drills, and exercises, and emergency scene operations. Specialized training, including technical rescue awareness, Hazmat, EMS, and leadership courses are taught by outside subject matter experts.

Volunteer firefighter training in both Districts is conducted weekly on Wednesday and Thursday nights, and once a month on Saturdays. On-line training is also available through the *Target Solutions* web portal.

Initial EMT/paramedic courses are conducted through local community colleges, or other educational institution that certifies graduates as nationally registered EMTs and paramedics. Didactic EMS continuing education for both Districts is delivered by CFD1, through a combination of in-classroom instruction, "hands-on" practical scenarios, and on-line webinars. CFD1 Training Division approved instructors and evaluators are used in the delivery of EMS training and practical skills assessments.

New Personnel Training

Comprehensive and robust training of new emergency services personnel is critical to ensuring their safety and effectiveness before being authorized to respond to emergency incidents. Specific knowledge and skills for basic fireground, EMS, incident command, and other emergency operations must be taught effectively and retained by new employees and volunteers.

CFD1 routinely conducts recruit firefighter academies at their Training Center. These academies are conducted for career and volunteer recruits. Career recruits must already have completed Firefighter 1 training. This allows CFD1 to build upon this knowledge base to ensure recruits understand and learn CFD1 and ERFD69's unique techniques, methods, procedures and equipment before moving into an operations assignment. The career recruit academy is approximately nine weeks long.

Volunteer recruits are trained to the Firefighter 1 standard and must complete the same requirements as career firefighter recruits. However, the training takes longer to complete (approximately five months) as a result of conducting this training only during evening hours and weekends.

Given an anticipated influx of many volunteer firefighters with previous experience and Firefighter 1 certifications, CFD1 plans on conducting an abbreviated volunteer recruit academy in fall 2019.

Incumbent & Specialized Training Hours

After their first year of employment, firefighters participate in varying types of training activities, almost all of which are facilitated by company officers. The following figure is a summary of the training hours accomplished in each District in 2018.

Figure 143: Combined Total Training Hours

General Training Topics	Estacada	Clackamas
Fire-Related	3,171	72,625
Emergency Medical Services	301	72,625
Other Miscellaneous Topics[1]	N/A	31,125
Total Training Hours:	**3,472**	**193,805**
Average Hours per Trained Employee:	**81**	**400**

[1]Topics include assorted technical rescue classes, hazmat, & ladder operations

Training Program & Administration

Training programs must be closely monitored, supported, and funded. Administrative program support is important, along with program guidance in the form of planning, goals, and defined objectives. The next figure reviews the administration and management practices of the ERFD69 and CFD1 Training Program.

Figure 144: Training Program Administration & Management

Training Support Components	Estacada	Clackamas
Goals & objectives identified	Yes	Yes
Certified instructors used	Yes (CFD1)	Yes
Annual training report produced	No	No
Priority by management toward training	Yes	Yes
Budget allocated to training	Yes	Yes
Condition of facilities for training administration	Adequate	Adequate
Adequate office space, equipment, supplies	Yes	Yes
Clerical staff support assigned to training admin	None	Yes

Both Districts record and archive training in the *TargetSolutions*® cloud-based records management system, although neither publishes an annual training report. The assigned Training Officers in each District monitor certification expiration dates to ensure completion of required annual training.

Training Program Discussion

Both agencies have substantial and geographically dispersed training facilities and equipment to support their respective education and training activities. The sharing of operational resources to cover for units that are out of service to participate in training is an excellent example of interagency cooperation and community responsiveness. The current IGA appears to be a positive step in enabling further operational integration efforts and should be supported and enhanced where practical.

FIRE PREVENTION & LIFE-SAFETY PROGRAMS

Proactive fire prevention and life-safety code enforcement services are a key component in maintaining safety in a community and comprises a much more cost-effective approach than mitigation of working fires and other emergencies. It is also a fire district's best opportunity to minimize human suffering and financial loss in the community.

> *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.*[25]

A fire district needs to understand and embrace the role of fire prevention, public education, and fire code enforcement in a community's planning efforts. 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 145: Fire Prevention Program Components

Fire Prevention Program Components	Elements Required to Address 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 & 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 & Life-Safety Code Enforcement

Preventing or minimizing the impact of fires by requiring specific fire protection features in buildings is much more effective than relying on the availability and capabilities of a fire district response when a fire starts. A strong fire-code enforcement program, bolstered by local adoption of current state, national and international codes, is critical to improving fire safety in a community.

Through an intergovernmental agreement, Estacada Rural Fire District #69 contracts with Clackamas Fire District #1 for all fire prevention and life-safety education services. The 2014 *Oregon Fire Code* is enforced, without any local amendments.

Figure 146: Estacada/Clackamas Fire Codes Adopted

Survey Component	Both Districts
Fire codes adopted	Yes
Code used	2014 Oregon Fire Code
Local codes/ordinances; amendments	No
Sprinkler ordinance in place	N/A

New Construction Plan Review & Inspection

Plan reviews of new construction and development are the foundation of an effective fire-code enforcement program. Once a building and/or development is completed, the District assumes responsibility for protecting them. Both Districts have a fundamental interest and duty to ensure all buildings and developments within their respective jurisdictions are properly constructed and protected.

Figure 147: Estacada/Clackamas New Construction Plan Reviews & Inspections

Survey Component	Both Districts
FD consulted in proposed new construction	Yes
Perform fire and life-safety plan review	Yes
Sign-off on new construction	Yes
Charges for inspections or reviews	No
Perform existing occupancy inspections	Yes
Special risk inspections	Yes
Storage tank inspections	Yes
Key-box entry program in place	Knox & Supra
Hydrant flow records maintained	Water purveyors

Plan Reviews & Inspections Discussion

Clackamas Fire District #1 has eight certified Plan Reviewers. Currently, three are responsible for reviewing and approving new developments and commercial building construction plans. The new commercial construction plan-review process is appropriate and properly established for building permits. New development and building permits are received and reviewed by the Clackamas County Building Department in the unincorporated areas or by the building departments in the cities of Estacada, Happy Valley, Milwaukie, or Oregon City. Commercial and multi-family residential structure plans are then forwarded to CFD1's Fire Prevention Division for review and approval.

The Division does not approve the design or installation of fire protection systems (fire sprinklers or alarm systems) but does review and inspect them in conjunction with the building departments. The City of Estacada relies on a third-party vendor—*Northwest Code Professionals®*—for review of the systems planned within the City boundaries. the Clackamas County Building Department and other city building departments review the systems in the remainder of both fire districts.

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.

Existing Occupancy Inspection Program

Existing occupancy inspections to find and eliminate potential life-hazards are an essential part of the overall fire protection services provided in a community. These efforts are most effective when completed by individuals having the proper combination of training and experience, coupled with conducting periodic inspections based on occupancy risk and hazards. Previously, Clackamas Operations personnel completed online company inspection training consistent with the Oregon State Fire Marshal's training curriculum, and performed company inspections for some low to medium risk commercial occupancies. However, due to an inability to ensure the delivery of adequate company training, these inspections are now being completed by CFD1 fire inspectors. The frequency of these inspections is based on the type of building use and associated risk. For example, public assembly, multi-family residential, high-rise, and other high-risk buildings are inspected annually. Manufacturing and hazard storage facilities are inspected every two years, and all other low-risk commercial buildings are inspected every four years.

Utilizing adequately trained fire suppression personnel to conduct basic fire inspections is an effective practice in many jurisdictions, as it has the benefit of increasing a fire district's inspection capability and frequency. Furthermore, it provides excellent opportunities for firefighters to become familiar with buildings in their service area while conducting pre-incident planning. While this program has been discontinued in each District, basic fire inspection principles and techniques are taught in the Clackamas firefighter recruit academy.

Fire Prevention & 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 successful program. Fire and life-safety education provides the best chance for minimizing the effects of fire and sudden illness and injury.

Clackamas Fire District #1 administers and delivers a wide range of public safety education programs for both Districts. The following figure summarizes the various public education programs offered.

Figure 148: Estacada/Clackamas Public Education Programs

Survey Component	Both Districts
Calling 9-1-1	Yes
EDITH (exit drills in the home)	Yes
Smoke alarm program	Yes
Carbon monoxide program	Yes
Fire safety	Yes
Injury prevention	Yes
Fire extinguisher use	P.A.S.S. taught upon request
Fire brigade training	No
Elderly care and safety	NFPA *Remembering When*™ & *File of Life*
Curriculum used in schools	*Learn Not to Burn*® & *Risk Watch*®
Babysitting classes offered	No
CPR courses, BP checks offered	Yes
Publications available to public	Yes
Bilingual info available	Brochures in five languages
Annual fire prevention report distributed	Yes
Juvenile fire-setter program offered	Yes
Wildland interface education offered	*Firewise* Program

Public Education Discussion

Clackamas has two full-time employees assigned to oversee the preceding public education programs. The breadth and depth of the educational offerings provide tangible evidence of both District's commitment in addressing the human risk factors often identified in post-incident investigations. Much like how the training resources and programs are shared, public safety education services should be continued and expanded where practical and feasible.

Fire Cause & Origin Investigation

Accurately determining the cause of a fire is an essential element of a fire prevention program. When fires are set intentionally, identification and prosecution of those responsible are critical in preventing additional fires and potential loss of life. Further, identifying the cause and potential trends enables the district to provide specific public information and fire prevention education to prevent reoccurrence.

Clackamas Fire District #1 provides fire investigation services to both Districts. Nine employees assigned to fire prevention are certified fire investigators through either the *International Association of Arson Investigators*® or the *National Fire Protection Association*.®

Section III:
FUTURE OPPORTUNITIES FOR COOPERATIVE EFFORTS

OPTIONS FOR COOPERATIVE SERVICES

General Partnering Options

Various partnering options are available to fire agencies in Oregon. While not necessarily described by state statute, the following terms differentiate between the various approaches to partnering.

Definition of Terms

- ***Status Quo***—maintain the existing condition and relationship of the parties.
- ***Intergovernmental Agreement (IGA)***—a contract for services between agencies as provided for by ORS 190, often referred to as "190 Agreements." There are two major subtypes of IGAs, as follows:
  - *Functional Partnership*—Shared or contracted programmatic services at the functional level, such as training, fire prevention, logistics, or support services.
  - *Operational Partnership*—Shared or contracted operational services at the operational level, such as shift commander coverage, emergency response, or operational staffing.
- ***Legal Integration***—Combining two or more agencies into one agency, including all aspects of policy, administration, governance, financing, functions, and operations. These occur generally in three forms; merger, consolidation, and annexation.
  - *Merger*— a form of legal integration, in which one or more agencies cease to exist by being absorbed into a single surviving district.
  - *Consolidation*—a form of legal integration in which two or more agencies form a new, successor agency.
  - *Annexation*—a form of legal integration where an agency extends beyond its existing boundary to incorporate an adjacent district's boundaries and operations. While the law allows one agency to expand its boundaries to annex another agency into its service area, it may only do so if the involved agencies are formed under differing statutory authority or if an agency dissolves, rendering it available for annexation.[26]

The following terms further illustrate the partnering options available to the Clackamas and Estacada Districts. They are listed from least engaged to most engaged in a partnership option.

Option A: Maintain Status Quo

Option A-1: Maintain Status Quo with Continuation of the Existing IGA

This option continues the current status of the two organizations without change. ERFD69 and CFD1 simply continue to do business as usual, cooperating with and supporting each other as is currently done, with no change to governance, staffing, or deployment of resources. However, in this case, the two agencies are already engaged in an IGA, so the status quo includes a continuation of the IGA. The current collaborative practices as expressed in the existing IGA executed on February 5, 2019, remain in effect. ERFD69 and CFD1 are party to an IGA that has Clackamas Fire District #1 providing the following services to Estacada:

- ***Fire Prevention:***
  - Administration.
  - Enforcement.
  - Engineering.
  - Fire investigation.
  - Public education.
  - Data collection, entry, and reports.
  - Public inquiries and requests.
- ***Training Services:***
  - TargetSolutions® assignments (company-level training).
  - Webinars.
  - Battalion drills.
  - Regular exercises 12 times per year.
  - Volunteer training.
  - TargetSolutions® records management & licenses.
  - One move-up company to cover while ERFD69 staff attend training.
- ***Operations:***
  - Enhanced staffing at the Eagle Creek station.
  - ALS engine company coverage at 40 hours weekly, plus enhanced responses in certain circumstances.
  - Engine 318 will move-up to either agency under certain circumstances.
  - Dropped boundary response with ALS-staffed units as determined by AVL.
  - Joint response with tender operators and rehab volunteers via a joint operational plan.
- ***Logistics:***
  - Estacada agrees to purchase alignment with Clackamas items.
  - Clackamas provides no mark-up for these purchases.

This approach has the advantage of being the easiest to accomplish while maintaining the independence of both organizations. What it lacks is a long-term commitment (the 2019 IGA currently in place is a revised version of an agreement implemented in 2017, but the recent agreement expires in September 2019). It also tends to preclude increased efficiency that may be realized in a long-term integrated environment. Given that the contract could be canceled by either party within 30-days advanced, written notice, it requires both agencies to consider contingencies in the event the other party cancels the contract.

The current IGA has elements of a *functional partnership* (fire prevention, training, logistics) and an *operational partnership* (coordinated staffing of Eagle Creek Station, ALS staffing, coordinated move-ups, dropped boundary response for ALS, and joint tender and rehab responses).

The IGA currently in place demonstrates what can happen when two organizations partner for greater efficiency. It also tends to reflect the heavy reliance ERFD69 places upon CFD1 for certain support services. This is natural in that the depth of resources CFD1 brings to the partnership is significant as compared to Estacada. It is important to recognize that the current IGA is only for an eight-month period, expiring in September 2019. This may reflect one or both parties' reluctance to continue the IGA in its current form.

Option A-2: Status Quo with Updated Intergovernmental Agreement

When two or more agencies enter into a collaborative relationship, typically through an Intergovernmental Agreement (IGA), no permanent organizational commitment is made, and all decision-making power remains with individual organizations. Interagency collaboration may include participation in activities such as local fire management associations (e.g., fire defense boards), mutual aid agreements, and interagency disaster-planning exercises. As a rule, most modern fire agencies consistently operate in a collaborative approach. In many instances, this close collaboration eventually results in some form of legal integration.

Oregon State law prioritizes and supports intergovernmental cooperation, granting cities and special districts broad power to contract with other governmental entities in the performance of their legitimate agency functions.[27] Specifically, ORS 190.007 declares that "...in the interest of furthering economy and efficiency in local government, intergovernmental cooperation is declared a matter of *statewide concern* [emphasis added]."

ORS 190.010 gives local government the authority to enter into agreements that authorize the performance of a function or activity by:

- A consolidated department.
- Jointly providing for administrative officers.
- Means of facilities or equipment jointly constructed, owned, leased, or operated.
- One of the parties for any other party.
- An intergovernmental entity created by the agreement and governed by a board or commission appointed by, responsible to, and acting on behalf of the units of local government that are parties to the agreement.
- A combination of the methods described in that section.

In the case of Clackamas Fire District #1 and Estacada Rural Fire District #69, the existing intergovernmental agreement addresses major elements of fire district operations—specifically, Operations, Training, Fire Prevention, and Logistics. However, additional cooperation can occur in these major areas, such as command officer response, dropped boundary responses for fire suppression services, full training integration, apparatus maintenance, and IT services.

However, the most significant element that can be included in an IGA enhancement is administrative services. ERFD69 is currently being led by an interim fire chief. Rather than filling the position on a permanent basis, Estacada could receive full administrative services from Clackamas through an enhancement of the existing IGA. The salary savings could offset some of the cost of the IGA enhancement.

Option B: Legal Integration

Oregon Law provides for the complete integration of agencies as described at the beginning of this section. All three forms of integration (merger, consolidation, or annexation) require an affirmative vote of the electorate of the affected jurisdictions. The outcome of the three approaches is essentially the same, resulting in one legal entity (in this case, a fire district), where once there were two. The law addresses the apportionment of existing debt and the makeup of the resulting governing board. Of all options for shared service, legal integration requires exacting legal processes.

The integration of fire protection services involves a change in the governance of one or more entities; the process is guided by ORS 190, ORS 198, and ORS 478. Single purpose governmental units (such as fire districts) typically have the power to merge and consolidate with other service providers much more freely. Cities frequently may annex to neighboring fire districts to take advantage of economies of scale, and to more effectively plan for the orderly expansion of the city within its urban growth boundary.

Option B-1: Merger

In the State of Oregon, complete integration of fire districts can be accommodated in one of two ways by statute: merger or consolidation.[28, 29]

A merger occurs when one or more fire districts are fully absorbed into, and becomes part of, another agency. For two fire districts to merge, one ceases to exist (merging agency) and the other becomes the surviving entity (merger agency). The employees and volunteers of the merging agency are transferred to the merger agency, and the elected positions are either eliminated from the merging district or brought into the merger district through an agreement to re-configure the composition of the Board of Directors.

A merger between the fire districts involved in this study would require a determination of which agency will be the surviving agency, and which will dissolve. It is logical to assume that CFD1 would be the surviving agency due to its size and history of acquiring other fire districts through mergers. The permanent tax rate of the integrated agency is equivalent to a rate that produces the same amount of revenue as would have otherwise been provided had the merger not occurred. The merger is subject to approval of the respective boards and the communities' voters.

Option B-2: Consolidation

Differing from merger, a consolidation occurs when both fire districts cease to exist and an entirely new fire district is formed. Like a merger, employees and volunteers become members of the newly formed fire district. A newly elected Board of Directors replaces existing elected official positions of both districts. New foundational documents, such as policies, ordinances, IGAs, and resolutions must be created, requiring additional administrative and legal work.

The fiscal process is the same as in a merger, in that the permanent tax rate of the integrated agency is equivalent to a rate that produces the same amount of revenue as would have otherwise been provided had the merger not occurred. As with a merger, a consolidation requires approval of the district's electorate.

Option B-3: Annexation

The ORS states: "Annexation includes the attachment or addition of territory to, or inclusion of territory in, an existing district."[30] Annexations are more typical in the city/fire district relationship, where a city annexes portions of unincorporated adjacent areas that are within a fire district jurisdiction. Conversely, some cities have successfully asked voters to approve the annexation of the city into the fire district and subsequently levy an agreed-upon tax rate to be collected and transferred to the fire district. The fire district assumes all responsibility for fire protection within boundaries of both the district and city.

In the case of ERFD69 and CFD1 however, complete annexation between the two Districts can occur only if one takes the step of dissolving, immediately followed by the surviving district taking action to annex the area served by the dissolved district. Planned annexations must be done in this sequence, as state law prohibits one agency annexing the entire service area of another agency having the same statutory authority.[31]

Recommended Option for Fire District Integration

When considering some type of integration between Clackamas Fire District #1 and Estacada Rural Fire District #69, ESCI recommends **Option B-1: Merger**. This option appears the most viable from an operational, organizational, and administrative perspective. However, *the key issue* which must first be addressed is the assurance of *long-term financial sustainability*.

ESCI Recommends:
OPTION B-1: MERGER

As discussed previously, the most logical course would be for Clackamas Fire District #1 to assume the role of the merger agency, and Estacada Rural Fire District #69 to be the merging agency (and thus District #69 would no longer exist). All Estacada employees and volunteers would be transferred to Clackamas Fire District #1.

Benefits of a Merger to the Fire Districts

Clearly, the primary benefactor of the recommended merger would not only be Estacada Rural Fire District #69, but the residents and visitors of the communities it serves. The service and resources provided by the larger fire district would result in improved administrative and operational coordination; enhanced support and program delivery; enhanced emergency operations; and a wider range of career opportunities for the Estacada employees.

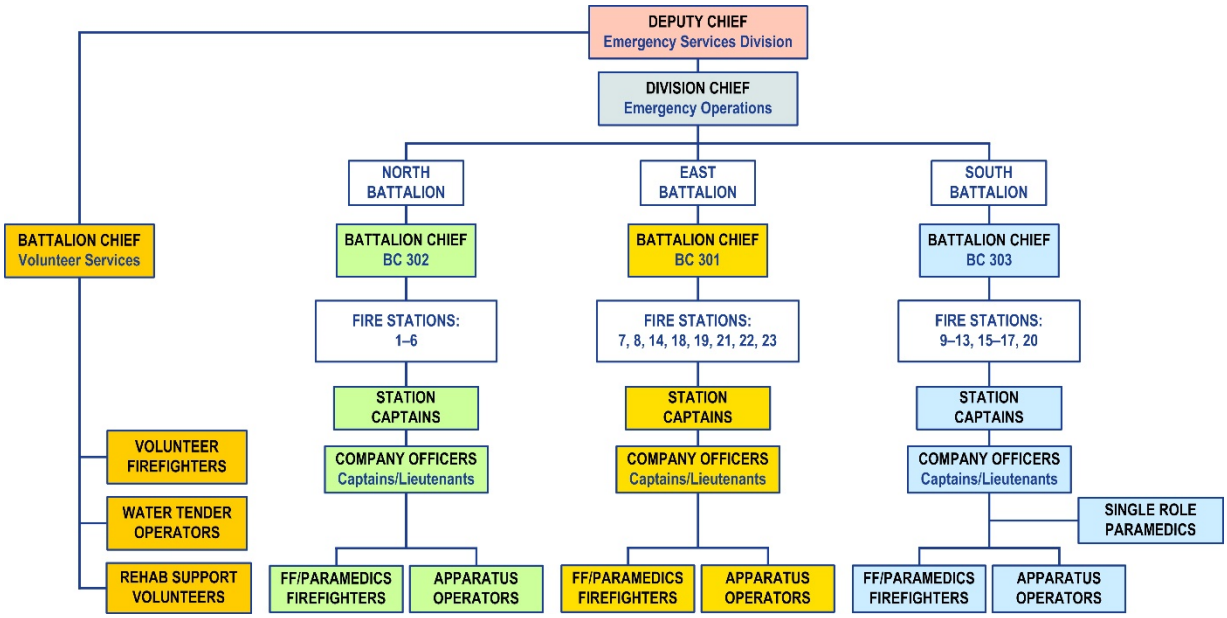
Conversely, a merger could benefit Clackamas Fire District #1 and its residents and taxpayers as well. Currently, Clackamas Station 12 and Station 20 are designated as volunteer stations (although Station 20 does not have any operations volunteers assigned to respond with a primary response apparatus). Clackamas Station 18 is staffed with career personnel 40 hours per week, with volunteers utilized during the remaining hours.

Experience has demonstrated that apparatus deployed from the Estacada station can more quickly access the service areas of Clackamas Stations 12, 18, and 20. A fully staffed Station 22 (previously Station 330) would benefit the residents of the Eagle Creek, Spring Water, and other communities in and around those three Clackamas fire stations. The Estacada station can access Clackamas Station 18's service area more quickly than Station 14; Station 12 residents more effectively than Station 11; and the Station 20 community better than Clackamas Station 10.

PROPOSED FIRE DISTRICT MERGER MODEL

In the event of a final integration of the two fire districts, ESCI recommends a minimal re-organization of the current Clackamas Fire District #1 Emergency Operations Division. The following figure is an illustration of a potential model, with the existing Estacada Rural Fire District #69 fire stations integrated into the current Clackamas Emergency Operations organizational chart. In this model, ESCI assumes that Estacada Fire Stations 330 and 333 would be re-numbered as Clackamas Stations 22 and 23 respectively.

Figure 149: Potential Merged Emergency Operations Model



The preceding figure shows the existing two Estacada Rural Fire District #69 fire stations assigned to the East Battalion under Battalion Chief 301. In this model, Estacada Station 330 would be re-numbered as Station 22, and Station 333 assigned as Station 23.

Cultural Issues

In many fire district integrations, challenges due to cultural differences between the organizations often arise. Clackamas and Estacada are combination fire districts that have worked together for many years, and ESCI believes that minimal cultural challenges in the event of a merger would result. However, the Districts should anticipate that a merger effort may generate angst and uncertainty among some employees and volunteers. In such cases, it can detract or even derail a successful merger.

During ESCI's interviews, some individuals voiced opposition to the idea of legal integration, with some feeling that their value as volunteers would be diminished in a new larger organization. Although these comments were not widespread, and should not be the sole reason for avoiding a merger, they should be taken into consideration during the planning process.

The next figure is a detailed description of a three-battalion model with integration. The figure lists the suggested apparatus and staffing to be assigned to each station and Battalion.

Figure 150: Potential Battalion Reorganization with a Merger (Three Battalions)

Battalion/Station	Engines	Trucks	Wildland	Medic	Other	Staffing
North Battalion (Battalion 2)						
Station 1	1	0	0	0	3	4
Station 2	0	1	0	1	1	4 (v/c)
Station 3	1	0	0	2	1	6
Station 4 (HQ)[A]	0	1	0	1	1	5
Station 5	0	0	0	2	0	4
Station 6	1	0	0	0	1	3
Battalion Totals:	**3**	**2**	**0**	**6**	**7**	**26**
East Battalion (Battalion 1)						
Station 7	1	0	0	1	0	3
Station 8	1	1	0	4	2	4
Station 14 (HQ)[A]	1	0	2	2	0	5 (v)
Station 18[B]	1	0	2	0	0	3 (v/c)
Station 19 (new)	0	1	0	4	0	4
Station 21	0	0	0	2	0	(v)
Station 22 (330)	1	0	1[C]	0	0	4–5 (v/c)[D]
Station 23 (333)	1	0	0	0	0	(v)
Battalion Totals:	**6**	**2**	**5**	**14**	**2**	**23–24**
South Battalion (Battalion 3)						
Station 9	1	0	1	0	0	3
Station 10	1	0	3	0	0	4
Station 11	1	0	2	0	0	3
Station 12	1	0	2	0	0	(v)
Station 13	1	0	1	0	0	(v)
Station 15	1	0	0	1	0	4
Station 16 (HQ)[A]	0	1	0	3	0	7
Station 17	1	0	0	1[D]	0	3
Station 20	0	0	1	0	0	(v)
Battalion Totals:	**7**	**1**	**10**	**5**	**0**	**24**

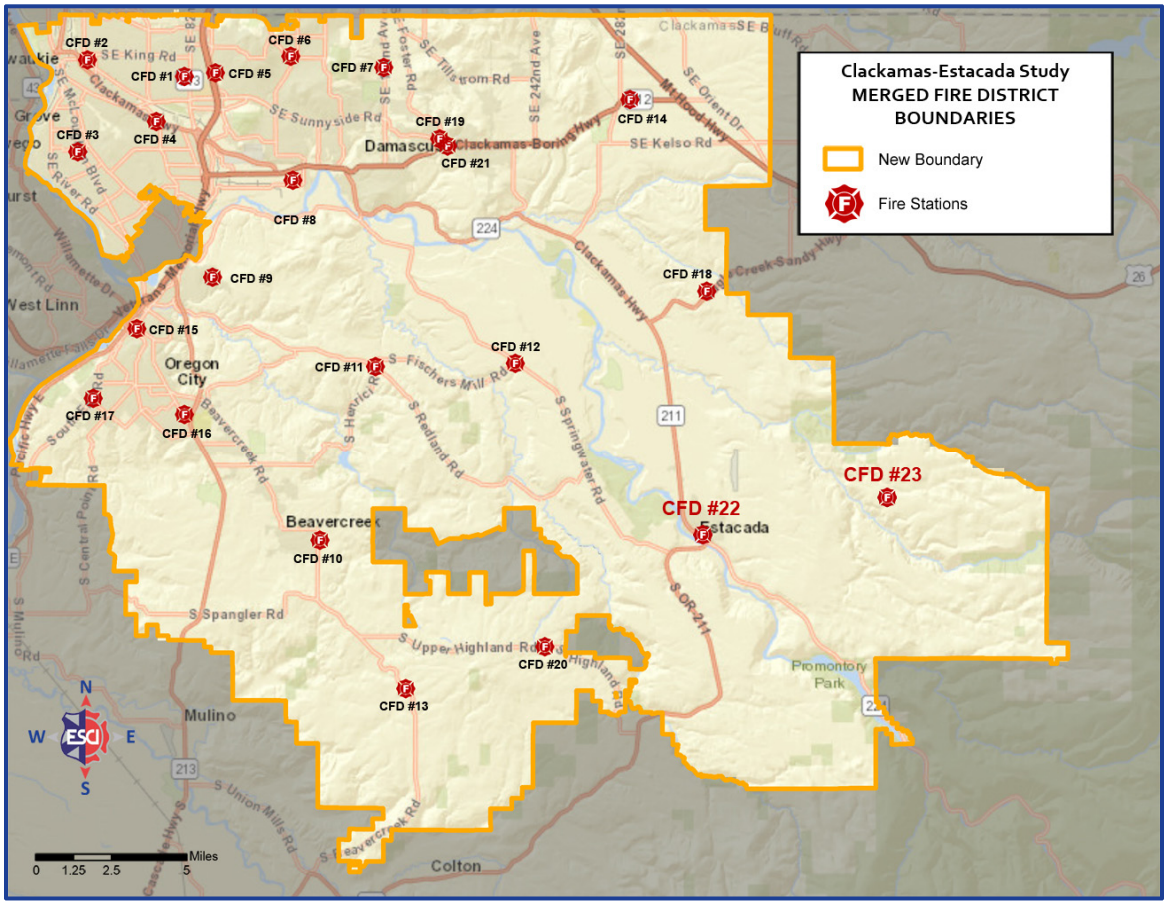
(v) = Volunteer response in addition to career staff. (v/c) = Volunteer response in addition to career staff.

[A]Battalion Chief quarters. [B]40-hour career engine crew; could be modified. [C]Potential rescue or wildland unit.

[D]4–6 career staff supplemented by current Estacada volunteers.

As shown in the preceding figure, the primary change would involve a change in the apparatus and staff assigned to the new Station 22 (Estacada Station 330). Otherwise, apparatus and personnel at the current Clackamas fire stations remains unchanged as of the second quarter of 2019. The next figure is a GIS image illustrating the boundaries of a new integrated fire district.

Figure 151: Potential New Merged Fire District Boundaries



Operational Staffing Changes at Estacada

During 2018, Estacada Rural Fire District #69 averaged just over four calls per day. This is a relatively small number of incidents as compared to many of the other stations at Clackamas Fire District #1. However, Estacada's more "remote" location makes it necessary to ensure that adequate operational staff are available to address most incidents, as well as to begin mitigation of more significant incidents until the arrival of additional resources. This can be an issue of not only firefighter safety but the safety of the citizens and victims of fires, sudden serious illness and injury, and other emergencies.

Ultimately, the leadership of Clackamas Fire District #1 would need to determine the most efficient and cost-effective staffing model to be utilized at the former Estacada Station 330 (new Station 22). However, ESCI recommends consideration of the following staffing models:

- Four-person, career-staffed engine company 24 hours daily; and supplemented with local volunteers.
  - Consider assigning at least one current Estacada firefighter or officer to each shift.
  - Ensure a minimum of one Paramedic is assigned to each shift.
- Five-person, career-staffed station; three personnel assigned to an engine company.
  - Two personnel (with at least one Paramedic) assigned to either a Type 5/6 wildland unit or transport-capable rescue unit (not functioning as a routine transport unit within the AMR ASA).
  - This unit to be first-due on EMS incidents with an expanded service area.
  - Deploy this unit along with the engine company to all structure fires and major incidents within the Estacada service-area. Also supplemented with volunteers.
- Consider assigning a water-rescue boat on a seasonal basis, due to the volume of swiftwater incidents in the recreational areas near Estacada.

To reiterate, the staffing considerations at Estacada discussed above represent ideal or preferred options. However, ultimately this will need to be determined by financial and operational feasibility.

Estacada Career Firefighters & Support Staff

As of June 2019, Estacada employs 10 uniformed and two non-uniformed FTEs, for a total of 12 employees. Decisions and discussions will be necessary to determine what the roles, ranks, wages, and benefits of the Estacada uniformed career staff (as well as the non-uniformed staff), will be if merged into Clackamas Fire District #1. The current Fire Chief is a temporary interim position, and it is assumed that this position would be eliminated in the event of a merger. The current Estacada Division Chief serves in both an operational and administrative role.

Undoubtedly, this will produce some challenges when attempting to determine fair and equitable job assignments, ranks, wages, and benefits. If a merger proceeds, ESCI recommends that all existing Estacada Rural Fire District #69 career staff be employed at Clackamas Fire District #1 without any reductions in wages or benefits.

Estacada Volunteers

Estacada volunteers fill two primary roles. First, those that provide operational support such as tender drivers and/or rehabilitation assistance. And second, as operational firefighters providing a variety of emergency services. These volunteers appear to be motivated to serve for one or two main reasons. They enjoy serving their community and the work, and/or they are actively pursuing a fire service career, and are working to gain experience that can help them secure a career position. These individuals serve a valuable role in the Estacada community, and ESCI recommends that they are absorbed into the Clackamas Volunteer Program, but with a degree of flexibility that would not adversely impact their ability to continue their volunteer activities in the Estacada community.

Potential Impact on ISO PPC Score

ESCI cannot predict how a merger of Clackamas Fire District #1 and Estacada Rural Fire District #69 would impact the current ISO Public Protection Classification® score in the Clackamas service area. Multiple variables are used to decide the final score, which only ISO can ultimately determine. It will be important for the Clackamas leadership to meet with the local ISO representative to ascertain how a potential merger might affect their current PPC score.

Planning & Implementation Process

Should the elected officials and leaders of both Districts decide to move forward with a formal merger, ESCI recommends that an interim comprehensive IGA be developed that would result in Clackamas Fire District #1 assuming the complete administrative and operational functions of Estacada Rural Fire District #69. This process should include organizing a planning committee comprised of staff from each of the fire districts.

ESCI suggests that this IGA continue until the merger issue can be placed on the November 2020 general election ballot. This will be a Presidential election year, so voter turnout should be substantial, compared to other elections.

Given Clackamas Fire District #1's history and experience with previous mergers, the District's Board and staff are likely aware of the steps that must be taken during the planning and implementation process. Because of this, ESCI did not address this process in detail in this portion of the report. However, Appendix A provides a summary of the recommended planning and implementation process.

FINANCIAL IMPACT OF THE RECOMMENDED OPTION

Financial Forecast of a Potential Merger

The next figure shows the combined status quo expenditure forecast for both Districts (all funds) for the period FY 2019 adopted (supplemental for Clackamas Fire District #1) through FY 2024. The non-recurring expenditures for Clackamas Fire District #1 are those shown in the District's CIP. Those for Estacada District #69 are estimated based upon historical trends. The first two rows for each District are the recurring and non-recurring expenses respectively, followed by the total expense. It is important to note that the forecasts did not include potential increases in salary and benefits of Estacada uniformed personnel to be commensurate with Clackamas wages and benefits, as that will require negotiation and discussion with the bargaining units.

Figure 152: Combined Clackamas/Estacada Expenditure Forecast (FY 2019 Adopted–FY 2024)

District	2019 Adopted	2020 Forecast	2021 Forecast	2022 Forecast	2023 Forecast	2024 Forecast
Clackamas	58,686,394	61,011,531	63,013,701	65,077,530	67,224,953	69,450,759
	11,873,664	190,145	1,697,409	597,094	1,112,469	461,853
	$70,560,058	**$61,201,676**	**$64,711,110**	**$65,674,624**	**$68,337,422**	**$69,912,612**
Estacada*	3,268,075	3,381,347	3,498,613	3,620,016	3,745,706	3,875,834
	1,043,605	250,000	260,000	270,400	281,216	292,465
	$4,311,680	**$3,631,347**	**$3,758,613**	**$3,890,416**	**$4,026,922**	**$4,168,298**
Totals:	**$74,871,738**	**$64,833,023**	**$68,469,723**	**$69,565,040**	**$72,364,344**	**$74,080,910**

*Uses current Estacada employee wages & benefits.

Since non-recurring expenditures are typically funded through debt instruments (bonds and loans), grants, and reserve fund balance—all of which vary significantly over time—it is more useful to compare recurring revenue and recurring expenses of the Districts. The next figure identifies recurring funding streams and their impact on status quo recurring expenditure budgets in an integrated organization. The FY 2019 recurring expenses for both fire districts totals $61,954,469 at current operational levels. The calculation assumes that Estacada would merge with Clackamas, and the existing millage rates would be applied across the expanded district.

The two current Clackamas Fire District #1 millage rates (General Fund and Debt Service Fund) are applied to the total assessed taxable value in the potential new merged district. This would generate approximately $55,617,701 in GF property tax income, and $2,161,058 in Debt Service property tax income at the recovery levels anticipated in the FY 2019 supplemental (Clackamas) and adopted (Estacada) budgets. The total increase for the merged district under this scenario is approximately $105,000 in new revenue.

Figure 153: Combined Recurring Revenue vs. Recurring Expenses (FY 2019)

Funding Type	FY 2019 Combined Revenue	FY 2019 Revenue at CCFD1 Levy Rates
Taxes–General Fund[A]	$55,619,657	$55,617,701
Taxes–Debt Service[A]	$2,053,715	$2,161,058
Contract Income	$391,186	$391,186
Interest/Investment	$410,253	$410,253
Transport Fees/ASA Plan	$655,944	$655,944
Total Revenue:	**$59,130,755**	**$59,236,142**
Total Expenses:[B]	**$61,954,469**	**$61,954,469**
Net Gain/Need:	**-$2,823,714**	**-$2,718,327**

[A]Estimated receipts calculated based on CFD1 FY 2019 Supplemental & ERFD69 FY 2019 Adopted budgets.

[B]Uses current Estacada employee wages & benefits.

As mentioned, the financial forecasts did not include potential increases in salary and benefits of Estacada employees following transfer to Clackamas. The following figure shows an estimate of the additional cost of wages should Estacada uniformed staff be paid at the rate equivalent to Clackamas.

Figure 154: Potential Cost Increase if Estacada Positions are Paid Amount Equivalent to Clackamas

Positions	Estacada[A] Wage	Estacada FTEs	Clackamas Wage	Potential Cost Increase
Division Chief	$117,921	1	$157,920	**$39,999**
Lieutenant	$88,232	3	$104,227	**$47,985**
AO/Paramedic	$84,474	4	$89,223	**$18,996**
Firefighter/Paramedic	$82,627	2	$81,710	**$0**
Total Estimated Cost:		**10**		**$106,980**

[A]Includes $1.50 per hour for Paramedic pay

The preceding figure did not include possible additional costs of employee benefits, which are somewhat comparable between the Districts, and would thus not have a significant additional impact beyond the current expenditures. Clackamas Fire District #1 uses an estimate of 43.44% of wages for most uniformed (sworn) personnel, along with an additional fixed amount of $15,105 per person for health insurance and the Post Employment Health Plan (PEHP) contribution.

Further, since the fire chief position is currently not filled, albeit still budgeted, elimination of that position (at a salary of $141,644) should cover the increased salary costs of the other Estacada positions. Therefore, the forecast Estacada expenditures would remain relatively unchanged in the event of a merger.

Discussion of the Financial Impact

The next figure was presented earlier in the "Financial Review of the Fire Districts" section of this report. As with the individual historical status quo forecasts, the combined recurring revenue versus expense analysis found in the following figure shows there was an increasing trend toward a net annual operating *loss* by FY 2018, which would have required use of the fund balance.

As shown in the preceding section, which reviewed the combined recurring revenue and expense for FY 2019 under a merged district scenario using the current Clackamas Fire District #1 millage rates, this trend of increasing net operating losses continues and worsens, with the combined operating loss increasing from $1.4 million in FY 2018 to between $2.7 million and $3.6 million—depending upon whether ambulance and ASA plan revenues are considered recurring revenue sources.

Figure 155: Combined Historical Recurring Revenue & Expense (FY 2014–2019)

District	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Actual	2019 Adopted
Recurring Revenue						
Clackamas	39,294,285	44,914,161	47,769,521	51,423,164	55,713,361	56,935,887
Estacada	2,085,094	2,198,083	2,343,631	2,497,128	2,622,812	2,670,202
Totals:	**$41,379,379**	**$47,112,244**	**$50,113,152**	**$53,920,292**	**$58,336,173**	**$61,954,469**
Recurring Expense						
Clackamas	37,292,709	43,258,630	46,403,865	49,923,782	55,927,484	58,686,394
Estacada[A]	2,248,040	1,930,195	2,026,623	2,488,985	2,731,822	3,268,075
Totals:	**$39,540,749**	**$45,188,825**	**$48,430,488**	**$52,412,767**	**$58,659,306**	**$61,954,469**
Net Gain (Loss):	**$1,838,630**	**$1,923,419**	**$1,682,664**	**$1,507,525**	**($323,133)**	**($2,348,380)**

[A]Uses current Estacada employee wages & benefits.

Without a significant reduction in recurring expenses, or an increase in recurring revenue, the trajectory of merged fire districts mirrors that of the individual forecasts—with Estacada Rural Fire District #69 becoming financially untenable as early as FY 2020.

Therefore, in order to achieve a successful fire district merger that is both viable and sustainable over the long term, recurring expenses and revenues will need to be addressed carefully.

In order to achieve a successful fire district merger that is both viable and sustainable over the long term, recurring expenses and revenues will need to be addressed carefully.

CONCLUSION

While conducting this study, ESCI found that both Estacada Rural Fire District #69 and Clackamas Fire District #1 employ a dedicated group of employees, volunteers, and effective leaders with a strong desire to provide quality fire protection, EMS, and other emergency services. Without hesitation, representatives of each district endeavored to provide ESCI with the necessary information and data with which to thoroughly and accurately complete this study.

Undoubtedly, the residents and visitors of Estacada and its fire district would receive better emergency services through a merger with Clackamas Fire District #1. The District's leadership has built an outstanding fire department capable of mitigating nearly every type of emergency, as well as effective life-safety, and other important programs. Although Estacada would be the primary benefactor of a merger, there would also be benefits to Clackamas. With adequate staffing and deployment from the current Fire Station 330, service and response times would be improved in several of Clackamas Fire District #1's fire station service areas.

Should the fire districts merge, it will be incumbent upon Clackamas Fire District #1 to recognize and preserve the history of Estacada Rural Fire District #69. It was evident to ESCI that most of the employees and volunteers at ERFD69 take pride in their organization, while at the same time understanding that changes must occur in order to ensure the long-term viability of providing emergency services to their community.

There are always challenges and hurdles to overcome in any "consolidation" of fire agencies. Given their long history of working together both operationally and administratively through IGAs and automatic aid, a merger of the two Districts could be achieved relatively seamlessly.

Far too often fire-service organizations pursue some form of consolidation with the goal of saving money, only to find that this cannot be accomplished. ESCI does not believe that this was the intent of the leadership in the Clackamas-Estacada study—but instead, the motive was to improve the quality and effectiveness of providing emergency services.

ESCI's comprehensive financial review, along with a forecast of revenue and expenses, failed to show a positive economic future of a potential merger of the two fire districts. ***ESCI expresses concern for the long-term financial sustainability of an integrated fire district absent additional revenue or a reduction of expenses. If this cannot be addressed, the fire districts may need to consider the other options presented in this study.***

Section IV:
APPENDICES

APPENDIX A: PLANNING & IMPLEMENTATION

If merger strategy is chosen, 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 respective fire district Board members and leadership. Using the shared vision, goals and objectives can propel the agencies toward the vision. This process tends to be the framework of an implementation plan for a merger.

Establish Implementation Working Groups

Various Implementation working groups should be established that will be charged with the responsibility of performing the necessary detailed work involved in analyzing and weighing critical issues and identifying specific tasks. Membership for these implementation working groups should be identified as part of that process as well.

The following list provides some key recommended working groups used in most integration processes, and a description of some of their primary assigned functions and responsibilities. The actual number and titles of the working groups will vary depending on the type and complexity of the strategies pursued.

Joint Implementation Committee (Task Force)

This committee should be comprised of management representatives and some members of the Boards of each fire district. The current *Clackamas-Estacada Interagency Committee* may consist of the appropriate representatives to fulfill the role of the Joint Implementation Committee. This may also include outside stakeholders, such as business and community interests. The responsibilities of this group are to:

- Develop goals and objectives which flow from the joint vision statement approved by the vision sessions.
- Include recommendations contained in this report where appropriate.
- Establish the workgroups and commission their work.
- Identify anticipated critical issues the workgroups may face and develop contingencies to address these.
- Establish timelines to keep the work groups and the processes on task.
- Receive regular updates from the workgroup chairs.
- Provide regular status reports to the policymakers as a committee.

Governance Working Group

This group will be assigned to examine and evaluate various governance options for the integration effort. A recommendation and the proposed process steps will be provided back to the Joint Implementation Committee. Once approved, this group is typically assigned the task of shepherding the governance establishment through to completion. The membership of this group typically involves one or more elected officials and senior management from each participating agency. Equality of representation is a key premise.

Finance Working Group

This group will be assigned to review the financial projections contained in the study and complete any refinements or updating necessary. The group will look at all possible funding mechanisms and will work in partnership with the Governance Working Group to determine impact on local revenue sources and options. The membership of this group typically involves senior financial managers and staff analysts, and may also include representatives from each district's administrative staffs.

Administration Working Group

Working in partnership with the Governance Working Group, this group will study the administrative and legal aspects of the selected strategies they are assigned, and will identify steps to ensure the process meets all administrative best practices and legal requirements. Where necessary, this group will oversee the preparation and presentation of policy actions such as proposed ordinances, joint resolutions, dissolutions, and needed legislation to the policymakers. This group may wish to retain the services of qualified legal counsel to ensure all legal requirements are met. The membership of this group typically involves senior management staff from the entities involved and may also include legal counsel.

Operations Working Group

This group will address the details necessary to make operational changes. This involves a detailed analysis of assets, processes, procedures, service-delivery methods, deployment, and operational staffing. Detailed integration plans, steps, and timelines will be developed. The group will coordinate closely with the Logistics/Support Services Working Group. The membership of this group typically involves senior management, mid-level officers, training staff, volunteer leadership, and labor representatives. This list often expands with the complexity of the services provided by the agencies.

Logistics/Support Services Working Group

This group will be responsible for any required blending of capital assets, disposition of surplus, upgrades necessary to accommodate operational changes, and the preparation for ongoing administration and logistics of the cooperative effort. The membership of this group typically involves mid-level agency management, administrative, and support staffs. Where involved, support functions such as maintenance or fire prevention may also be represented.

Labor Working Group

This group will have the responsibility, where necessary, for blending the workforces involved. This often includes the analysis of differences between collective bargaining agreements, shifts schedules, policies, and working conditions. The process also includes work toward developing a consensus between the bargaining units on any unified agreement that would be proposed. Often, once the future vision is articulated by the policymakers, labor representatives are willing to step up and work together as a team to identify challenges presented by differing labor agreements, and offer potential consensus solutions. The membership of this group typically involves labor representatives from each bargaining unit, senior management and, as needed, legal counsel.

Interagency Communications Working Group

This group will be charged with developing an internal and external communication policy and procedure to ensure consistent, reliable, and timely distribution of information related exclusively to the cooperative effort. The group will develop public information releases to the media and will select one or more spokespersons to represent the communities in their communication with the public on this process. The importance of speaking with a common voice and theme both internally and externally cannot be overemphasized. Fear of change can be a strong force in motivating a group of people to oppose that which they do not clearly understand. A well-informed workforce and public will reduce conflict. The membership of the group typically involves public information officers and senior management.

Meet, Identify, Challenge, Refine, & Overcome

Once the working groups are established, they will set their meeting schedules and begin their various responsibilities and assignments. It will be important to maintain organized communication up and down the chain of command. The working group chairs should also report regularly to the Joint Implementation Committee. When new challenges, issues, impediments, or opportunities are identified by the working groups, this needs to be communicated to the Joint Implementation Committee immediately, so that the information can be coordinated with findings and processes of the other working groups. Where necessary, the Joint Implementation Committee and a working group chairperson can meet with the policymakers to discuss significant issues that may require a refinement of the original joint vision.

The process is continual as the objectives of the implementation plan are accomplished one by one. When adequate objectives have been met, the Joint Implementation Committee can declare various goals as having been fully met, subject to implementation approval by the policy bodies. This formal turning over will mark the point at which implementation ends and integration of the agencies, to whatever extent has been recommended, begins.

APPENDIX B: TABLE OF FIGURES

APPENDIX C: REFERENCES

[1] Clackamas County government website.

[2] American FactFinder, United States Census Bureau.

[3] Ibid.

[4] Ibid.

[5] Ibid.

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

[7] 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

[8] 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

[9] Recommendations for Improving the Recruiting & Hiring of Los Angeles Firefighters, Rand Corp., 2015.

[10] Chicago Sun Times, Oct. 31, 2016.

[11] Article 22.6, Clackamas Fire District 1/IAFF Local 1159 2018-2021 Collective Bargaining Agreement.

[12] 349 Code of Federal Register 395.1-5.

[13] Permanent rate subject to general government limits (ORS 294.456) as certified on Form LB-50 2018-2019 to the Clackamas County Assessor.

[14] Source for actual revenue, expense and fund balance data are the annual financial audit reports prepared by Pauly, Rogers, and Co., P.C. located at 12700 SW 72nd Ave., Tigard, OR 97223 for the period FY 14 through FY 15 and those prepared by Jarrard, Seibert, Pollard & Co., LLC located at 1800 Blankenship Rd., Suite 450, West Linn, OR 97068-4198 for the period FY 16 through FY 18.

[15] The revenue, expense and fund balance data provided here are a composite of all District funds as reported in annual financial statements.

[16]Clackamas Fire District #1 Adopted Budget Document for Fiscal 2018-2019, July 1, 2018 to June 30, 2019

[17] Estacada Rural Fire District No. 69 Board of Directors Policy 12-14-2017 Minimum Fund Balance Policy

[18] Fund Balance Guidelines for the General Fund, Government Finance Officers Association.

[19] United States Department of Labor, Bureau of Labor Statistics, CPI—All Urban Consumers (non-seasonally adjusted).

[20] NFPA 1901: Standard for Automotive Fire Apparatus; Section D.3.

[21] 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.

[22] How Busy Is Busy? Fire Engineering, Vol. 169, Issue 5.

[23] 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

[24] Ibid.

[25] Kirtley, Edward, *Fire Protection Handbook*, 20th Edition, 2008, NFPA, Quincy, MA.

[26] Oregon Department of Revenue, *Boundary Change Information*, pamphlet 150-504-405, 12/10, page 5.

[27] ORS Chapter 190, *Cooperation of Governmental Units*, 2011 Ed.

[28] Oregon Revised Statute 198.705(14).

[29] Oregon Revised Statute 198.705(5).

[30] Oregon Revised Statute 198.705 [3].

[31] Oregon Department of Revenue, *Boundary Change Information*, pamphlet 150-504-405, 12/10, page 5.