2020

Standards of Response Coverage
Eugene Springfield Fire






Eugene Springfield Fire

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2020 Facts at a Glance
For the Combined Cities of Eugene and Springfield

Fire Service

Sq. Miles: 94.3

Population: 250,335

Ambulance Service

Sq. Miles: 1,625.6

Population: 287,824

Calls for Service: 44,729

Percent Fire and Other: 18.5%

Percent Medical: 81.5%

Billable Patients: 23,716 (65.1% of medical calls for service)

FY19 Budget: **$65.5 million**
Eugene: $44.7 million
Springfield $20.8 million

Contract Districts:

• Bailey/Spencer Creek	$125,095
• Eugene Rural #1	$322,267
• River Road	$1,094,228
• Willakenzie	$157,302
• Zumwalt	$294,299
Total:	**$1,993,191**

Full Time Employees (FTE): 308

Fire Response Personnel: 249

Front Line Apparatus: 50 (Fire Apparatus and Ambulances)

- **Fire Apparatus:** 20
- **Advanced Life Support Ambulances:** 7
- **Basic Life Support Ambulances:** 3
- **Command Vehicles:** 6
- **Specialized Equipment/Trailers:** 14

MISSION

To serve our communities by preserving life, protecting property, and the environment through prevention, education, emergency medical services, rescue, and fire suppression services.

VISION

To deliver efficient and effective services by working together to maintain a progressive, caring, professional organization that remains flexible within a changing environment. We strive to be recognized for our leadership within the region and the state by fostering cooperative working relationships. We work to be innovative, fiscally responsible, and financially stable and secure.

VALUES

We value respect, integrity, accountability, teamwork, service, and adaptability. We measure our success by the satisfaction of the communities we serve, our personnel, and our strategic partners.

MOTTO

Courage, Honor, Service

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Executive Summary

Introduction

By definition, a Standards of Coverage report addresses the emergency response resources and deployment strategies necessary to deliver a defined level of emergency service. The primary goal is to portray a snapshot of the current complement of emergency services delivered in a community, identify how they are performing, and reflect on future initiatives to increase efficiencies in the delivery of these services.

In the fire service we often refer to and make decisions based on service level objectives, defined as the number, type, and spacing of resources necessary to meet the response time, on-scene staffing, and risk mitigation objectives set by the Authority Having Jurisdiction (AHJ). The Standards of Coverage report strives to identify these objectives and provide analysis on the department's ability to meet them. Based on the analysis, the report identifies questions and research topics for future analysis.

Eugene Springfield Fire

In 2007, the fire departments of the Cities of Eugene and Springfield began the process of creating a combined department that offered the potential to increase the efficiency and effectiveness of emergency response. In fiscal year (FY) 2010, the Cities signed an intergovernmental agreement combining several administrative and support functions, with a view toward improving overall service while reducing taxpayer costs on a metropolitan level. The officially adopted name of the combined department is **Eugene Springfield Fire (ESF)**. For this report, ESF is used to describe the fire department, and City of Eugene and City of Springfield are used to describe the financial and governance authorities.

In addition to department demographics and statistics, the report presents analysis using the following categories:

Risk Factors

In any service area, a number of community factors combine to create varying levels of risk. These include the geographic area, type and density of development, topography, seasonal factors, water supply, transportation systems, and population demographics. Recognition of changes to the specific mix of community risk factors is a key consideration in service and deployment decisions.

In the analysis described in Section Three, risk areas are established in two ways to better facilitate review. For all emergency services except ambulance transport, the service area is divided into two risk areas. Risk Area A includes Eugene city limits plus the contiguous contract water district and Springfield city limits plus contiguous contract water districts. Risk Area B includes the rural and semi-rural property in the other four special districts. For ambulance transport services, the Ambulance Service Areas are divided into response zones as established in the Lane County Ambulance Service Area Plan, which are routinely used to analyze response times.

On-Scene Operations and Critical Tasks

As presented in Section Four, on-scene operations, identification of critical tasks, and an effective emergency response force are the key elements in determining appropriate staffing levels, number of companies needed, optimal deployment strategies, and priority duties to be performed on the fire ground or emergency incident scene. Effective all-hazards fire departments must be able to work under duress, with limited time and incomplete information to be able to:

- Identify the critical tasks that need to be completed
- Immediately prioritize the tasks.
- Address the number of personnel needed.
- Request and deploy the specific type of apparatus required to complete the identified tasks.

Accomplishing these actions and having a positive influence on the outcome of the incident is heavily influenced by the number and location of fire department operational staff.

Emergency Response Times

As detailed in Sections Five and Six, unit response time is defined as the time interval between the moment a resource is dispatched and the time it arrives at the incident. Public safety industry standards measure response time against a percentile, or a percentage of the calls that fall within set parameters. Based on these measurements, analysis of response times, and assessing community risk, the department has established local response time goals which indicate the level of service that can be expected by the community for fire suppression and ambulance response. Ambulance response goals are also set in compliance with Lane County Code.

Distribution of Resources

As highlighted in Sections Seven, Eight, and Nine of the report, the department currently operates from 16 fire stations, staffing and deploying the following resources:

- 12 engines
- 2 ladders
- 3 trucks
- Airport Rescue and Fire Fighting (ARFF) unit

- 10 ambulances including 7 Advanced Life Support (ALS) units, and 3 Basic Life Support (BLS) units
- Various command, fire prevention, and support units.

The contract non-emergency ambulance provider deploys 4 basic life support units and the contracted critical care transport agency provides one helicopter and can provide critical care ground transport as needed.

Performance Measurement and Quality Assurance

As discussed in Section Ten, organized response to emergencies is performed in a stressful and inherently unpredictable environment. Critical decisions must often be made quickly, without the benefit of complete information, or a methodical risk-benefit analysis. Given this fact, it is expected that errors will sometimes occur. The department consistently seeks to use performance measures as opportunities to learn how we can improve our service and to adjust our policies and procedures accordingly. ESF conducts a comprehensive array of performance measurements and quality assurance programs at the individual, work unit, division, and organizational levels. The programs include regular structured training, after action reviews, medical chart analysis, and other periodic and ongoing performance reviews.

Historical Analysis and Future Planning

Section Eleven details the historical trends and sets the table for future planning. The reality of emergency resources is that the number of calls for service and the total population of ESF's service area have risen dramatically, while the total number of personnel and companies have remained relatively static for more than 30 years. Future analysis will need to be undertaken for ESF to project its ability to meet local standards as well as initial alarm assignment capability stated in *National Fire Protection Association (NFPA) 1710: Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*. This analysis should look at growth and development on a metropolitan level and planning for station locations that will optimize response capability, taking into account factors of greater density, increased call volume, shifting demographics, and other risks.

SECTION ONE: Introduction

Introduction to the Standards of Coverage

Purpose

Standards of Coverage is a comprehensive report that aims to analyze and review community risk, deployment strategies, and past performance as it relates to current distribution of resources and personnel. To produce this report, the department researches and evaluates areas of risk, critical tasks, service level objectives, deployment plans, reliability measures, and historical performance**.** Through analysis of this data and community demographics, this report offers a current portrait of organizational capabilities and performance. This analysis can serve as a guide for developing policy and operational standards, reflecting the level of service that can be regularly expected within a designated service area.

This Standards of Coverage report provides analysis to address a number of service delivery options, including:

- Deployment options, taking into consideration the degree and location of the various types of community risk and resources available to provide the appropriate level of response for the various services provided by the department.
- Meeting the changing demands for service in various parts of the Eugene-Springfield metropolitan area brought about by shifting demographics and local topography.
- Response and service options into the future.

The Standards of Coverage report can be used as:

- A tool for defining and consistently measuring response performance standards, objectives, and goals.
- A standard for evaluation of fire department resource deployment including defining urban levels of service for use in evaluating land use applications.
- A tool for defining whether future streets are designed to safely and efficiently accommodate emergency fire and medical service apparatus.
- A summary of community risk encompassing life safety, economic, geographic, and environmental aspects.
- An analysis of critical tasks assuming maximum utilization of all personnel under a worst-case scenario, consistent with the department's risk analysis, staffing levels, and goals.
- An analysis of resource reliability based on current staffing models.
- A review of historical performance based on statistical information.
- Recommendations for short-term and long-term strategic decisions.

A Standards of Coverage analysis examines key elements including:

- Community Baselines — highlights history, demographics, and legal organization of designated service areas.
- Risk Assessment — a review of six key elements: fire flow, probability, consequences, occupancy, demand, and service area profile.
- Critical Tasks — identifies critical tasks to determine appropriate level of staffing.
- Staffing levels — the numbers of response-ready personnel and their assignments.
- Performance Measures — highlights standards and goals for response times and identifies cascade of events as well as provides analysis of key response times.
- Distribution — the station and resource locations needed to assure rapid response deployment to minimize and mitigate emergencies.
- Concentration — the spacing of multiple resources arranged so that an initial "effective response force" can arrive on scene within acceptable time frames to mobilize and likely stop the escalation of an emergency commensurate with a specific risk category.
- Reliability — the probability that the resource assigned to a given area will be available to respond first from within the assigned area.
- Historical Perspective — a comparison of current measures to historical data.
- Quality Assurance — highlights department standards for training and certification.
- Recommendations — identify suggestions to address highlighted challenges to improve service.

SECTION TWO: Community Baseline

Overview and Legal Jurisdiction

This report highlights services funded by the City of Eugene, the City of Springfield, and associated contract districts. For the purposes of this discussion, the report presents each city jurisdiction as separate entities and the fire service area as a single entity under the title of Eugene Springfield Fire (ESF).

CITY OF EUGENE

The City of Eugene is the second-largest city in Oregon, with a population of 169,695[1] and an incorporated area of 43.9 square miles. Located in western Oregon's southern Willamette Valley, the community, recognized officially with the establishment of a post office in 1850, formally incorporated in 1862 as Eugene City after early settler Eugene Skinner. The citizenry renamed the community the City of Eugene two years later.

The City of Eugene operates under a Council/Manager form of government under the Eugene Charter of 1976, a general grant of powers charter. The City Council, composed of the Mayor and eight council members, forms the legislative branch of the city government, while the City Manager acts as the administrative head. The City functions under six organized departments – Central Services, Public Works, Library, Recreation & Cultural Services, Planning & Development, Police, and Fire & Emergency Medical Services.

Fire protection in Eugene began on April 3, 1872 as the Eugene Hook and Ladder Company Number 1. The fire department, the City of Eugene's first, has been in continuous operation since inception. In 1981, the department began providing ambulance transport services.

[1] Portland State University

CITY OF SPRINGFIELD

The City of Springfield is the ninth-largest city in Oregon with a population of 60,865[1] and has an incorporated area of 15.7 square miles. Located in western Oregon's southern Willamette Valley, the community's first settlers were Elias and Mary Briggs and their family who arrived in the valley in 1848. Elias Briggs chose for his home a place convenient to a spring of water; in due time this land was fenced in. This enclosure, historically known as the "springfield" eventually became the town's namesake. In 1852, Mr. Briggs began building a town starting with the Mill Race. Later, he collaborated with Mr. Driggs of Linn County and formed the Briggs and Driggs Company. The company built a flourmill and a sawmill in 1853 and 1854 respectively.[2] In 1885, Springfield incorporated as a city on February 25th. The City adopted its charter March 17, 1893.

The City of Springfield operates under a Council/Manager form of government. The City Council, the legislative branch, consists of the Mayor and six members. The City Council develops and adopts legislation and policies that direct the City organization and appoints a professional administrator, the City Manager, to carry out direction and to manage personnel. The City functions under eight organized departments – Development Services, Finance, Human Resources, Information Technology, Library, Police, Public Works, and Fire and Life Safety.

Fire protection in Springfield began on July 25, 1886.

Services

Fire Services

Eugene Springfield Fire (ESF) operates under five functional divisions: Office of the Chief, Operations, Strategic Services, Fire Prevention, and Administrative Services. Division Managers report directly to the Fire Chief. Services including:

- Fire suppression
- Specialized rescue
- Hazardous materials response, mitigation, and management

[2] http://www.ci.springfield.or.us/history.htm

- Emergency Medical Services (EMS): Advanced life support and basic life support first response and ambulance transport
- Fire prevention, education, and life safety outreach education
- Fire code enforcement and plan review
- Fire investigations
- Routine, on-going, and specialized training
- Logistical support
- Operations analysis
- Financial management, planning, and record keeping

The department's primary fire suppression response area totals 94.3 square miles. Sixteen strategically located fire stations serve response needs of the community. However, equipment and personnel assigned to Fire Station #12 (Airport Station) are not routinely available to respond to incidents off airport property, which covers approximately 2.5 square miles located at the northwest corner of the City of Eugene. The average area covered by each station is approximately 6 square miles.

For the fire service, there are five categories identifying service area classifications[3]:

- ***Metropolitan*** – geography with populations over 200,000 in total and/or a population density of over 3,000 people per square mile. These areas are distinguished by mid-rise and high-rise buildings, often interspersed with smaller structures.
- ***Urban*** – geography with a population of over 30,000 people and/or a population density of over 2,000 per square mile.
- ***Suburban*** – geography with a population of 10,000 – 29,999 people and/or a population density of between 1,000 and 2,000 per square mile.
- ***Rural*** – geography with a population of less than 10,000 people or with a population density of less than 1,000 per square mile.
- ***Wilderness/Frontier/Undeveloped*** – geography that is both rural and not readily accessible by a publicly or privately maintained road.

The department also provides fire suppression services to seven neighboring special districts through long-standing contractual agreements. Neighboring districts served under contract include Bailey-Spencer Rural Fire Protection District (RFPD), Eugene Fire District #1 RFPD, Glenwood Water District, Rainbow Water District, River Road Water District, Willakenzie RFPD, and Zumwalt RFPD.

An analysis of the fire service area reveals that the area mostly falls within three categories: metropolitan within the areas of the two cities and the River Road and Rainbow Water Districts, urban within the Glenwood Water District, and rural within the remaining contract rural fire protection districts.

[3] Commission on Fire Accreditation International (CFAI)

Figure 2.1 shows the geographical (population, area, and assessed value) breakdown of the cities and special districts serviced by the department.

Figure 2.1 Primary Service Area Demographics

DISTRICTS	POPULATION	AREA (sq mi)	ASSESSED VALUE
City of Eugene	169,695	45.53	$30,815,937,995
City of Springfield	60,865	15.79	$9,110,886,037
Bailey-Spencer RFPD	503	4.99	$94,153,289
Eugene Fire District #1	952	9.77	$224,007,748
Glenwood Water District	1,330	0.41	$98,650,387
Rainbow Water District	5,156	1.41	$620,125,839
River Road Water District	7,647	1.73	$834,923,618
Willakenzie-Eugene RFPD	1,003	0.95	$219,560,966
Willakenzie-Springfield RFPD	1,967	2.35	$113,107,164
Zumwalt RFPD	1,217	11.38	$226,334,948
TOTALS	250,335	94.31	$42,357,687,991

Ambulance Transport Services

In addition to fire suppression services, the department provides advanced life support (ALS) ambulance transport service to Lane County Ambulance Service Areas (ASA) #4 and #5 (see Figure 3.15). The assigned ASAs include the metro areas of both cities and large outlying geographic areas located generally west for Eugene and east for Springfield. The City of Eugene's ASA #4 covers a total of 173.4 square miles, while Springfield's ASA #5 has a total area of 1,507.3 square miles.

Under Federal Medicare regulations, there are three reimbursement categories that identify ambulance transport service area classifications[4]:

- **Urban** – geographic area characterized by higher population density. Areas have at least 50,000 or more people.
- **Rural** – geographic area that is located outside the city area.
- **Super Rural** – geographic area outlining the rural areas and is even farther from city area.

For ESF, the ambulance service area mostly falls within two categories: urban within the metro areas of the cities and water districts; and rural, within the remaining contract districts.

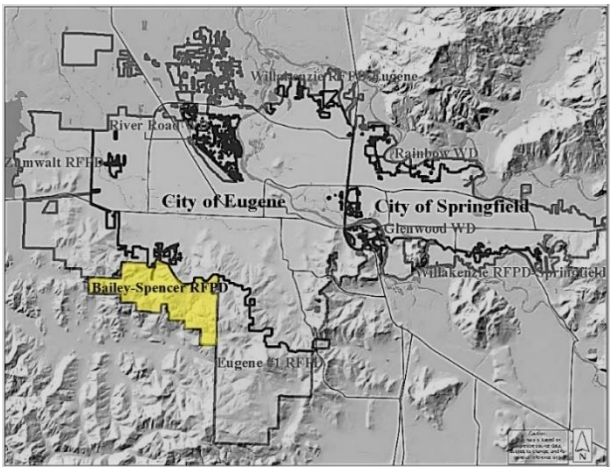
[4] Medicare

Locally, the department identifies ambulance service areas as follows (for more information, see Ambulance Response Zones on page 41): Urban, Suburban, Rural, and Frontier.

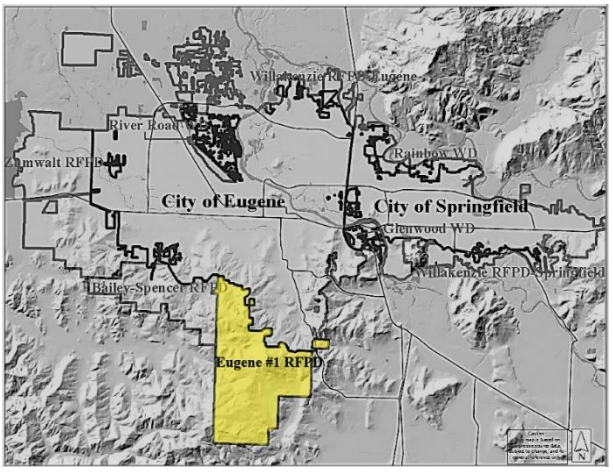
Contract Districts

ESF currently has intergovernmental agreements with seven local districts. These agreements stipulate that Eugene Springfield Fire provides fire protection and investigation services, as well as ALS and BLS emergency medical services. Other services provided in these contracts include hazardous materials response, special rescue call outs, motor vehicle extrication, and water rescue. Each contract district is represented by a board of directors which meet with ESF senior staff annually to review contracts and discuss any issues and concerns across the service area. Below is a brief description of each contract district and contract information:

Bailey Spencer RFPD	
Population	503
Area (sq mi)	4.99
Assessed Value	$94,153,289
Location in relation to the Metro Center	SW

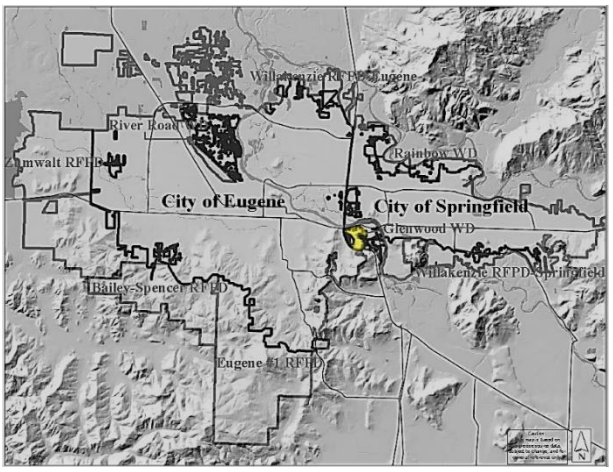


Eugene #1 RFPD	
Population	952
Area (sq mi)	9.77
Assessed Value	$224,007,748
Location in relation to the Metro Center	S



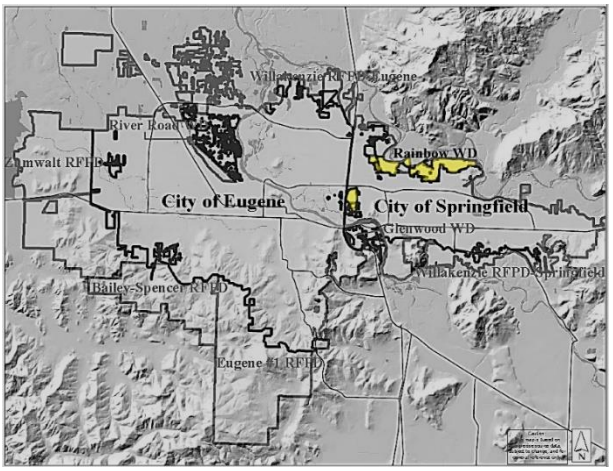
Glenwood WD

Population	1,330
Area (sq mi)	.41
Assessed Value	$98,650,387
Location in relation to the Metro Center	SE



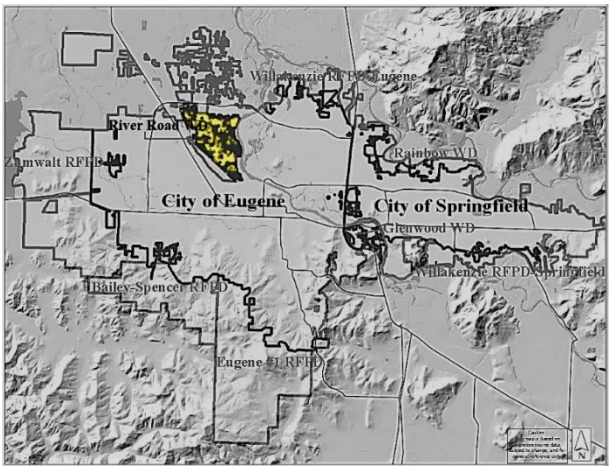
Rainbow WD

Population	5,156
Area (sq mi)	1.41
Assessed Value	$620,125,839
Location in relation to the Metro Center	NE



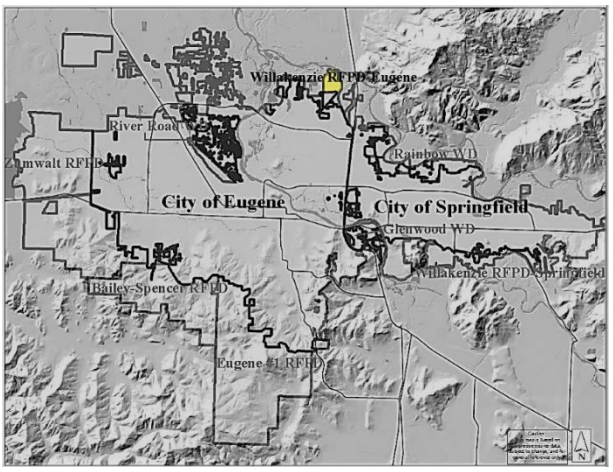
River Road WD

Population	7,647
Area (sq mi)	1.73
Assessed Value	$834,923,618
Location in relation to the Metro Center	NW



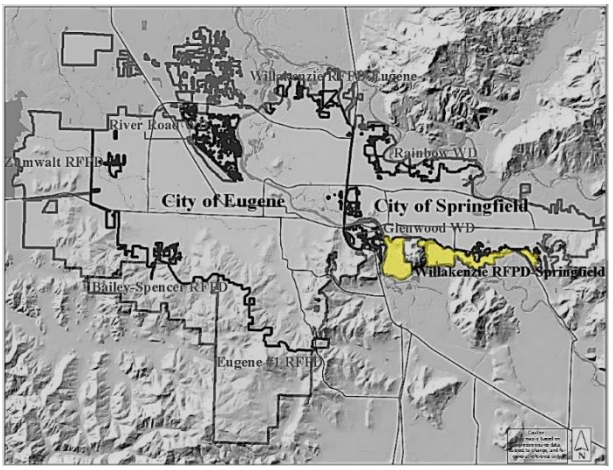
Willakenzie – Eugene RFPD

Population	1,003
Area (sq mi)	.95
Assessed Value	$219,560,966
Location in relation to the Metro Center	N



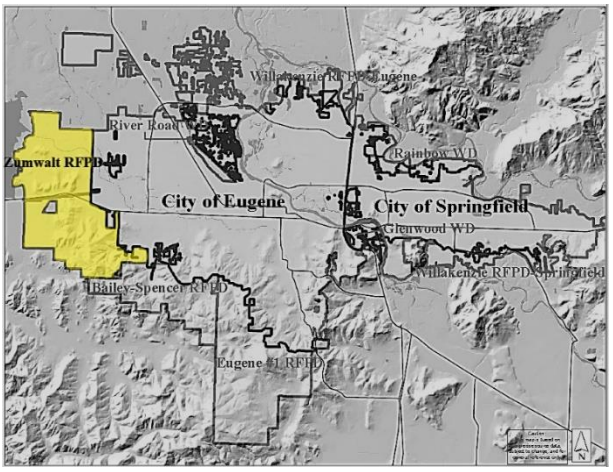
Willakenzie – Springfield RFPD

Population	1,967
Area (sq mi)	2.35
Assessed Value	$113,107,164
Location in relation to the Metro Center	SE



Zumwalt RFPD

Population	1,217
Area (sq mi)	11.38
Assessed Value	$226,334,948
Location in relation to the Metro Center	W



Resources

ESF operates fire suppression and ambulance transport services out of 16 fire stations divided into three (3) geographically defined districts: Battalion One (central), Battalion Two (west), and Battalion Three (east). Supervised by a battalion chief, each battalion consists of five to six

fire stations. Staffing includes one employee per battalion chief vehicle, two personnel on ambulances, two personnel on the ARFF engine, and three personnel on all other fire suppression apparatus.

Figure 2.2 breaks down minimum staffing standards by showing the battalion > station > unit level. Not included are specialized resources such as brush rigs that do not have regularly assigned staffing. These resources will be further discussed in Section Seven. Additionally, Figure 2.3 illustrates battalion boundaries and fire station locations.

Figure 2.2 Battalion Boundaries

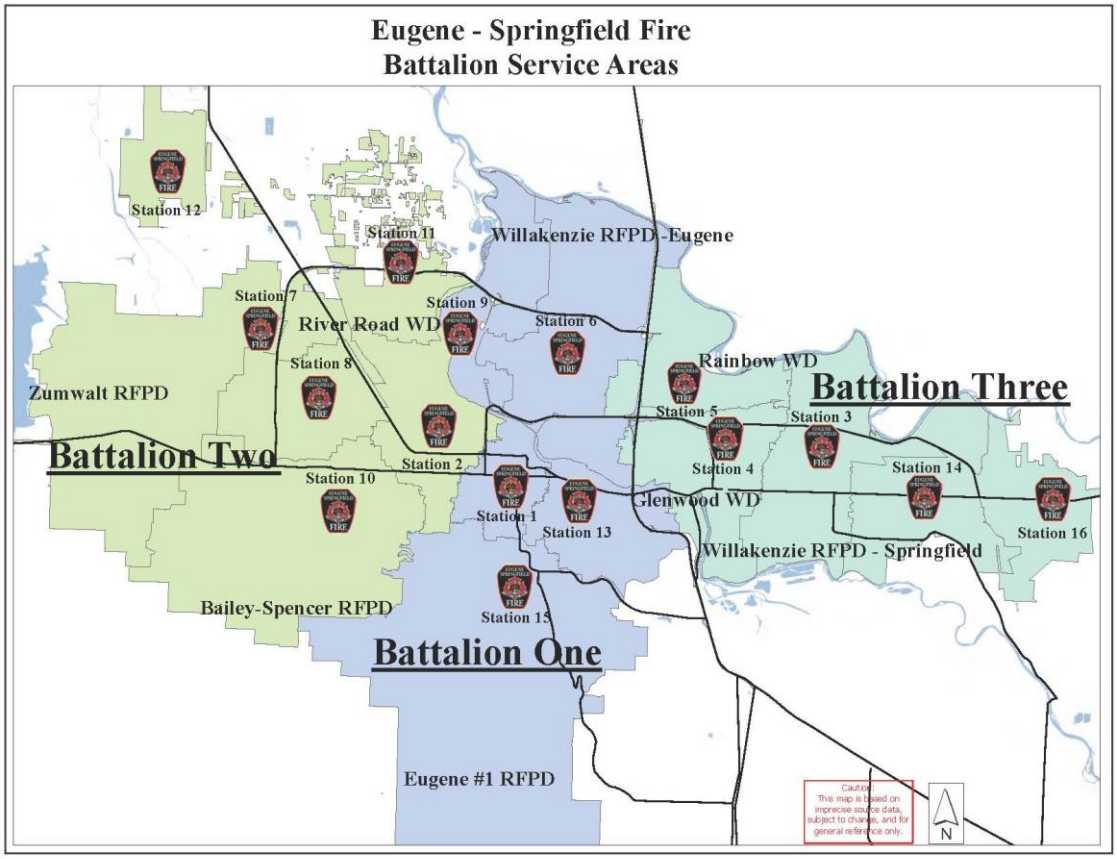


Figure 2.3 Battalion Minimum Staffing Standards

Battalion One: Station/Apparatus		Personnel per Apparatus
Station 1 – Downtown Eugene Station	Battalion Chief	1
	Engine	3
	Truck/Aerial	3
	ALS Medic Unit	2
	BLS Medic Unit (12-hour or peak unit)	2
Station 6 – Sheldon Station	Engine/Ladder	3
	BLS Medic Unit (24-hour unit)	2
Station 9 – Valley River Station	Engine	3
Station 13 – Campus Station	Engine	3
Station 15 – South Hills Station	Engine	3
		23

Battalion Two: Station/Apparatus		Personnel per Apparatus
Station 2 – Whiteaker Station	Battalion Chief	1
	Engine	3
	Truck Tower	3
	ALS Medic Unit	2
Station 7 – Bethel Station	Engine	3
Station 8 – Danebo Station	Engine/Ladder	3
Station 10 - Bailey Hill Station	Engine	3
	ALS Medic Unit	2
Station 11 – Santa Clara Station	Engine	3
	ALS Medic Unit	2
Station 12 – Airport Station	ARFF Apparatus	2
		25

Battalion Three: Station/Apparatus		Personnel per Apparatus
Station 3 – 28th Street Station	Battalion Chief	1
	Truck/Tower	3
Station 4 – 5th Street Station	Engine	3
	ALS Medic Unit	2
Station 5 - Gateway Station	Engine	3
	ALS Medic Unit	2
	BLS Medic Unit (12-hour or peak unit)	2
Station 14 – 48th Street Station	Engine	3
Station 16 – Thurston Station	Engine	3
	ALS Medic Unit	2
		22

SECTION THREE: Risk Assessment

Risk Assessment

Overall community risk management consists of risk assessment and risk control. In analyzing community risk, it is important to review the components of risk, identify unique factors affecting level of risk, and identify the magnitude and scope of the risk of fire, life safety, rescue, and medical emergencies. Additionally, we also look at other hazards that threaten life, safety, property, or the environment within the service area. The analysis discussion includes a review of actual and potential loss.

Community Risk Assessment Components

Developing a comprehensive risk assessment involves six key components: fire flow, probability, consequence, occupancy risk, demand zones, and community profile. These apply to all fire, life safety, rescue, first response EMS, and miscellaneous calls for services. In addition, a parallel risk assessment was conducted for ambulance transport. However, in the case of transport the area served is different; by definition the nature of the service is not "first response," and the goals for response times are set by Lane County.

- **Fire Flow** — the flow rate of a water supply, measured at 20 pounds per square inch (psi) residual pressure that is available for firefighting.

- **Probability** — the likelihood that a particular event will occur within a given period of time. An event that occurs daily is highly probable. An event that occurs only once in a century is very unlikely. Probability is an estimate of how often an event will occur, based on available local historical data.

- **Consequence** — has two primary components: 1) *life safety* which includes risks to the lives of occupants and responders from life-threatening situations that include fire, rescue, hazardous substance, and emergency medical events, and 2) *economic impact* representing the loss of property, income, or irreplaceable community assets.

- **Occupancy Risk** — an assessment of the relative risk to life and property resulting from a fire inherent in a specific occupancy or in generic occupancy classes.

- **Demand Zones** — geographic areas utilized to more definitively analyze risk situations. ESF uses three primary types of zones for analytical purposes:

    - *Response Zones:* Zones based on current fire station locations and corresponding to the first-due response area for each of these stations. Fire station placement and resource assignments are determined by desired response time performance, transportation network, population, topography, construction and occupancy character, density, and the relative risk level of a neighborhood or area.

    - *Risk Area Zones***:** Zones based on the degree of risk and the expected level of service to be provided.

    - *Ambulance Response Zones:* Zones within the county-established Ambulance Service Area for the purpose of measuring response time compliance with the adopted Ambulance Service Area Plan.

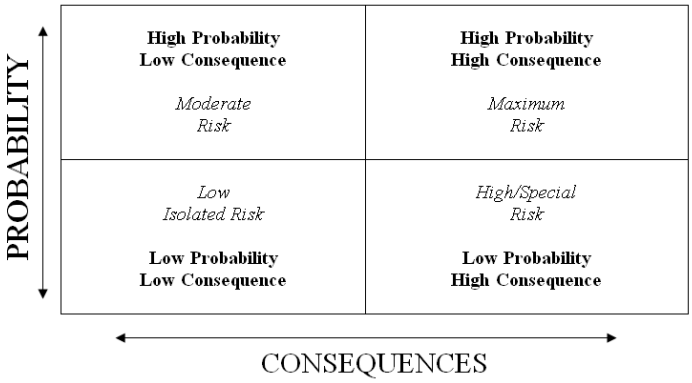
- **Community Profile** — an analysis of the attributes of a specific community based on its unique mixture of demographics, socioeconomic factors, occupancy risks, demand zones, historical trends, and level of service currently being provided.

Through a methodical analysis of the risk dynamics present in a community, a risk assessment evaluation makes it possible to develop logical resource deployment strategies to meet the identified needs. The goal of the risk assessment process is to determine the probability of an event occurring, as well as the potential consequences of that event.

Risk Assessment Matrix

The following matrix shows elements to consider when assessing risk. Each quadrant shows a combination of probability of an event occurring and the consequences should that event occur. Each category of risk represents different emergency resource commitment requirements.

Figure 3.1 – Risk Assessment Matrix



The community risk assessment includes defining inherent differences between a single-family dwelling, multiple-family dwelling, large industrial occupancy or commercial campus, and a high-rise residential or commercial structure, then assigning each occupancy type to a different quadrant of the risk assessment matrix. Fire stations and emergency apparatus are distributed throughout the community to provide prompt initial response to all types of incidents, or resources may be concentrated in high-consequence areas to enable a faster large-scale response to an unlikely but highly consequential event. Even when resources are distributed relatively evenly throughout the community, deployment differs based on type of risk and needs of each particular incident type, or in considering seasonal changes, special situations or other events.

Service Area Factors Unique to the System

Eugene and Springfield's primary area for fire and first response emergency medical services (EMS) is contained within the city limits of the respective cities and the aforementioned water and rural fire protection districts: Bailey-Spencer RFPD, Eugene Fire District #1 RFPD, Glenwood Water District, Rainbow Water District, River Road Water District, Willakenzie RFPD, and Zumwalt RFPD.

The fire service area consists of relatively traditional community distribution patterns featuring a densely developed downtown business core surrounded by well-established residential neighborhoods. There are areas of industrial and commercial development outside each City's downtown core. This arrangement lends itself to a traditional fire station location network based on experiential predictions of emergency incident response patterns. Noteworthy exceptions include the urban transition areas located in unincorporated River Road, Santa Clara, and the Highway 99 Industrial Corridor. The majority of these areas lie within Eugene's Urban Growth Boundary (UGB), and it is anticipated that all properties will eventually be annexed, although a definitive timeline has not been established for this transition to occur. As a result, the area contains a growing number of properties, which have been annexed into the City of Eugene,

interspersed among properties which have not yet been annexed. ESF is charged with providing fire protection and EMS first response to only the annexed properties in this larger area, while service to the un-annexed properties is provided by rural fire protection districts. These noncontiguous annexations have resulted in a growth pattern that does not extend out predictably from the existing city limits but is dispersed in a patchwork fashion throughout the urban transition area. This presents a variety of challenges in meeting the service needs of the entire area. Similarly, City of Springfield's UGB presents a challenge for future response capability in both the Glenwood Water District and Jasper Road areas. Both of these areas represent an opportunity to increase response redundancy through the relocation of existing fire stations.

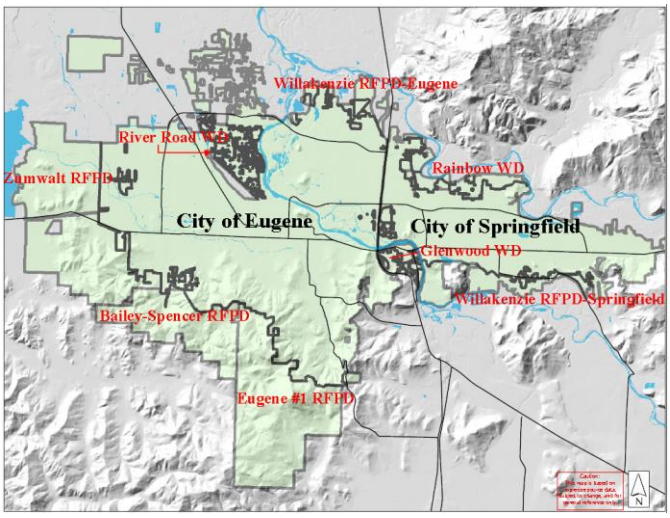
Topography

The topography of the service area protected by the service system is widely diverse. The core metropolitan service areas are relatively flat, although several buttes and hillside ridges define distinct neighborhoods and a portion of the metropolitan boundary. The Willamette River flows along the south edge of the Willakenzie RFPD, through Glenwood Water District and the City of Eugene. The McKenzie River flows along the northern edge of both cities. On the periphery, the terrain varies including rolling to steep hills and broad riparian zones.

Eugene and Springfield contain a significant area of wildland/urban interface in the south hills and southwestern portions of Eugene, and the southeastern portion of Springfield. These areas consist of mostly upscale residential development along winding, narrow, and steep streets, interspersed within heavily forested areas, all of which contribute to increased response times. In addition, this situation presents a significant fire danger during the dry season in late summer and early fall. Public education on this issue has been and continues to be a priority for the department, and fortunately the number of calls for wildfire response service in these areas has remained relatively low.

The rural fire districts, particularly those to the south and west, are less densely populated and developed. In general, they are hilly and forested and often feature long driveways and narrow access roads.

Figure 3.2 Fire Suppression Service Area



Transportation System and Networks

The streets, roads, and highways within the service area are the primary means of delivering emergency resources to fire, rescue, and medical scenes. The main highways running through the cities are Interstate-5, Interstate-105, Highway 569 (Pape-Beltline), Delta Highway, Highway 99, Franklin Boulevard, and Highway 126. In addition, other main arterials include Coburg Road, River Road, Franklin Boulevard, Chambers Street, Jefferson Street, Amazon Parkway, Willamette Street, Roosevelt Boulevard, Main Street, Pioneer Parkway, Gateway Street, 13th, 18th, and 29th Avenues, 28th and South A Streets and Mohawk Blvd. While these transportation routes are usually adequate for the volume of traffic they carry, periods of rush hour congestion significantly slow traffic, including emergency response, along these and other peripheral routes.

The Oregon Department of Transportation has begun construction on several major roadways within Eugene and Springfield. The I-105 Bridge Preservation Project seeks to repair and upgrade the bridges and ramps between the Delta Highway Interchange and downtown Eugene. This project will include installing guard rails, paving, seismic upgrades, and replacing bridge joints. In addition, proposals to improve Highway 569 (Pape-Beltline) have begun, including work at the Beltline/Delta Interchange and a study to review the environmental impact of expanding the area from River Road to Delta Highway to three lanes.

Within the rural areas served by the department, limited road networks, varying contours of terrain, private bridges unable to bear the weight of fire apparatus, and long, narrow, winding private driveways further impede response.

While both cities openly encourage connectivity and the department provides regular input supporting projects that enhance emergency response, several factors that slow or obstruct emergency vehicle response are beyond the department's control. As the cities become increasingly developed and densely populated, more people and vehicles compete for space on aging streets. In an effort to keep neighborhoods safe and livable, residents are favoring street designs that slow traffic and/or transfer it to other streets. Any design that slows the flow of normal traffic will have a similar impact on emergency response. Department personnel work regularly with traffic engineering and transportation staff from both cities to develop compromise solutions that seek a balance between safe neighborhood streets and adequate emergency vehicle access. However, it is inevitable that the trend toward more traffic calming devices will have the unintended consequence of increasing emergency response times.

In the early 1980s and 1990s, Eugene and Springfield began implementation of a citywide traffic signal pre-emption system designed to allow a fire, rescue, or EMS vehicle to request and receive a green light as it approaches a controlled intersection during emergency response. At a considerable investment by the cities, all traffic signals in the metro service area are now equipped with this system, and all emergency response vehicles are equipped with the appropriate signal emitters. While this system enhances the ability to respond to emergencies faster and with greater safety, its benefit is being gradually reduced by the regular addition of the previously discussed traffic calming designs such as narrow streets and roundabouts throughout the metro area.

Development

Downtown Riverfront Site

Several revitalization projects are in progress in Eugene and Springfield. These include the Downtown Riverfront project, which will occupy a 16-acre piece of property previously owned by the Eugene Water & Electric Board. The redevelopment project will be completed in spring of 2021 and will create a new waterfront district containing parks, housing, and businesses.

The area surrounding the University of Oregon has begun large-scale construction projects, including the Knight Research Facility and the reconstruction of historic Hayward Field in preparation to host several upcoming track and field events.

Hayward Field Reconstruction

Park Blocks Design Concept

The city of Eugene is also working on a redesign of the city's park blocks in downtown which has hosted the Eugene Saturday Market and the Lane County Farmers Market for decades. Not only would this project provide permanent, year-round structures to house the Lane County Farmers Market, it would also include a new City Hall.

The City of Springfield has been working to revitalize and improve safety along historic Main Street, which has encouraged new businesses and development. These projects include increased downtown art installations and the Main Street Safety Project, which aims to create a coordinated plan that will save lives, reduce injuries, and lessen property damage due to traffic incidents along Main Street.

Mural Unveiling in Downtown Springfield

Population Growth

The 2019 population estimate for the City of Eugene is 169,695[1]. The city has seen an increase of 9.6% in population between 2010 and 2019. In 1970, the population within the city limits was 69% of the total population in the Eugene Urban Growth Boundary. By 2010, this figure had increased to 88%. In 1990, 5.8% of all persons residing in the River Road/Santa Clara area lived within the city limits of Eugene. By 2000, this percentage had increased to 26%, and the 2010 Census shows an additional increase to 38%.

Growth within the Eugene UGB has not been uniform. Population declined in the West University, Fairmount, and Friendly neighborhoods during the 1990s, but increased in the 2000s. Generally, the greatest growth in the 1990s occurred in the Willakenzie (northeast), Bethel (west), and Santa Clara (northwest) areas. The trend continued into the 2000s for growth in these areas. A more detailed analysis of Eugene neighborhood population trends, which includes 2010 Census data analysis, is available from City of Eugene's Planning & Development Department.

The 2019 population for the City of Springfield was 60,865[1]. Springfield has seen an increase of 3.3% in population between 2010 and 2019. In 1970, Springfield's population was 26,874, with steady increases throughout the 1970s and 1980s. Over this same period, Springfield annexed 730 acres of land. In the 2002-2007 timeframe, 1,051 dwelling units were added to the service area. This increase (6.20%) is slightly less than the rise in population.

Density is increasing throughout the Springfield area, and higher concentrations of population are appearing in areas that historically have not had population centers. Examples include the infill development in the Jasper Road area, Riverbend areas north of Harlow Road, the Glenwood area, and the older commercial areas. The Jasper-Natron Development (southeast) and

[1]Portland State University Population Research Center

RiverBend Hospital and Master Plan (north) areas will continue to produce large impacts over the next several years.

Water Supply

For the City of Eugene, water is provided by Eugene Water & Electric Board (EWEB). In partnership, the department and EWEB inspect and maintain more than 4,500 public fire hydrants, nearly all within the city limits of Eugene. In addition, private hydrants are inspected by department personnel but maintained by the individual occupancies the hydrants supply. Based on a long-term plan, the department and EWEB are working to replace aging hydrants.

EWEB monitors the volume and pressure in the water mains of all hydrants and staffs 24-hour water system troubleshooters to resolve system problems or pressure requirements. EWEB provides fire flow for the community and routinely adjusts water supply to accommodate firefighting operations. Over the last five years, EWEB has expanded their high elevation reservoir and distribution system to increase fire flow in the South Hills for residential and urban interface firefighting operations. High elevation fire flows have also been improved through the installation of high flow electric fire pumps capable of supporting extensive firefighting operations. These pumps are buoyed by emergency generator power allowing continuous operations during power outages.

Within its UGB, the City of Springfield has three water systems managed by Springfield Utility Board (SUB), Rainbow Water District, and Glenwood Water District, that provide an interconnected and well-supplied water system. SUB inspects and provides maintenance on all publicly owned fire hydrants within their service area. Through an intergovernmental agreement with the City of Springfield, SUB and the City work together to ensure Springfield water quality standards are maintained and that a consistent supply of water is available for emergency services.

SUB hydrants are tested annually for volume and pressure. During normal fire ground operations, the department has not historically experienced issues acquiring and maintaining adequate fire flows. SUB also provides maintenance resources and manages the status of the Glenwood Water District facilities. The Rainbow Water District provides for the water requirements of the unannexed areas of north and west Springfield.

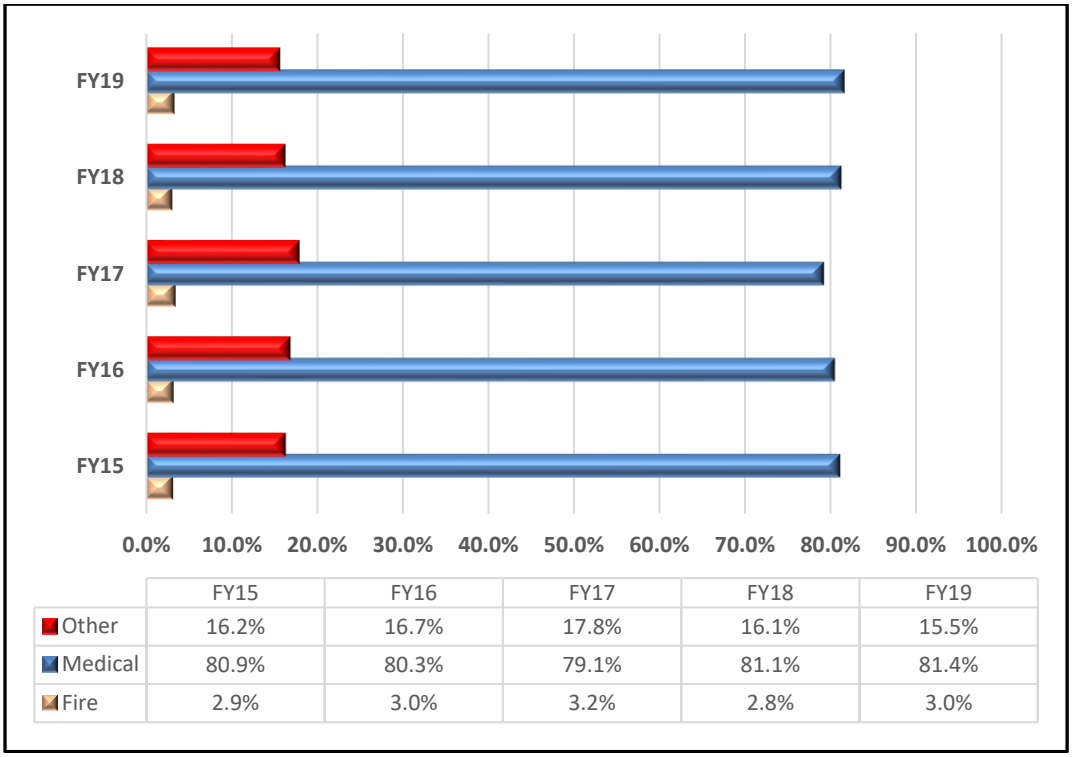
All water systems are maintained in accordance with standards set by the American Water Works Association (AWWA) and in compliance with current Insurance Services Office (ISO) standards for quality and function. Eugene hydrant inspections, maintenance, and replacements are tracked using an automated database maintained by the City of Eugene and EWEB.

For the most part, the rural areas do not have fire hydrants in place. For this reason, the department maintains three water tenders, two located in the City of Eugene and one located in the City of Springfield. These vehicles each carry 3,000 gallons of water to support firefighting in outlying areas. The department also maintains portable pumps to supply water for firefighting purposes in rural areas. In addition, the department has signed mutual and automatic aid agreements with surrounding fire districts to shuttle large amounts of water to fire scenes by rural fire district water tenders.

Incident Type

Response requests are categorized in three main Incident Types: **Fire, EMS,** and **Other** based on dispatch activity descriptions. As shown in Figure 3.3, the majority of calls are medical in nature. Service demand is currently driven by distribution of population rather than the characteristics of fixed real property. Because citizens are highly mobile, demand for service in a particular area changes frequently depending upon the time of day, day of week, specific season or event, or other significant and long-term demographic shifts.

Figure 3.3 Total Incidents by Type per Fiscal Year



	FY15	FY16	FY17	FY18	FY19
Other	16.2%	16.7%	17.8%	16.1%	15.5%
Medical	80.9%	80.3%	79.1%	81.1%	81.4%
Fire	2.9%	3.0%	3.2%	2.8%	3.0%

Risk Evaluation – General

The department has identified specific risks in certain portions of the service area and deployed resources appropriately to match those risks. For example, the placement of water rescue equipment and trained personnel at fire stations nearest major launch points along the Willamette River for use in water rescue incidents. Another example is the placement of trained personnel

and specialized equipment at the aircraft rescue and firefighting (ARFF) station located at the Eugene Airport. The department continues to evaluate the location of specialized personnel and equipment based on needs of the community.

Another risk-based deployment example is the placement of highly maneuverable four-wheel-drive brush engines for steep terrain and off-road operation in the wildland interface zones and rural areas, as well as water tenders for prompt deployment to fires in non-hydrant areas of the contract fire protection districts.

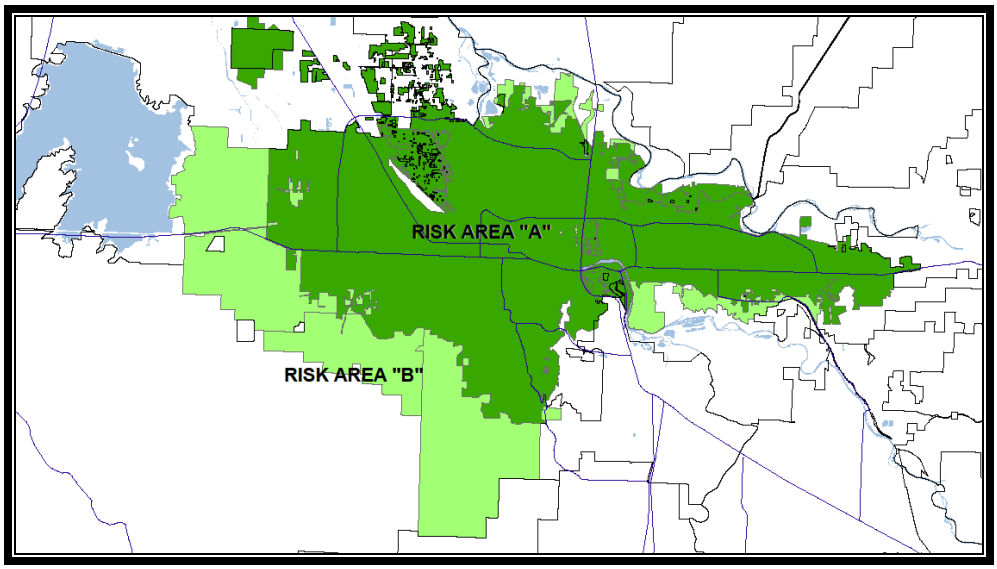
Additionally, construction of new high-rise buildings in the response area is monitored, and the placement of aerial ladder resources may be modified in the future based on ongoing risk analysis.

In looking at the service area in its entirety, the types of structures and occupancies at various risk levels do not fall neatly into small geographic units that would warrant specific resources needed only in those areas. Instead, the department has evaluated actual performance and infrastructure, and classified their service areas into two distinct response zones making up risk area zones. Within these zones, pre-determined response assignments vary according to type of call and structure or property involved. The two zones are:

- **Risk Area A:** Territory classified as Risk Area A includes the cities and the three water districts served by the department. This area, while varying somewhat in density and land use, has a relatively high number of industrial, commercial, and residential structures.

- **Risk Area B:** Territory classified as Risk Area B includes the mainly rural property in the four rural fire districts served by the department. These areas contain primarily agricultural or forest lands and associated structures, with some rural residential development. For the most part, these areas are not served by municipal water systems, nor are they equipped with a fire hydrant network.

Figure 3.4 Risk Area Boundaries



Buildings in the Fire Protection Area

Occupancies

For the purpose of this report, data was gathered from the Lane County Regional Land Information database, which is maintained by the Lane Council of Governments (LCOG). This database tracks land use or inspection category but not the total number of buildings. The following figure represents the department's best calculation of the number of buildings currently located within the fire service area.

Figure 3.5 Buildings by Occupancy Type

Building Occupancy Type	Risk Area "A"	Risk Area "B"
Single Family Residential	64,735	2,369
Multi-family Residential	43,515	41
Group Residential	240	1
Government	408	0
Religious/Charitable	329	10
General Services	4,134	14
Educational Facilities	354	1
Industrial	834	4
Retail & Wholesale	2,897	8
Communication	76	10
Other	558	20
Totals	**118,080**	**2,478**

High-rise Structures

The HUB Apartment Complex

High-rise structures, defined as those with six (6) or more stories, pose a unique set of challenges in performing firefighting operations due to the associated life risk and high density of occupants, challenges of deploying personnel and equipment, and the development of support systems needed to sustain high-rise firefighting operations.

High-rise structure locations are a key consideration in decision-making around apparatus placement, especially for the three truck companies on duty. During the past several years, many new high-rise and mid-rise structures have been completed in the Eugene-Springfield metro area, with more in the planning and development phase. Currently, truck companies are deployed at Fire Station 1 (Downtown), Fire Station 2 (Whiteaker), and Fire Station 3 (28th Street). The Downtown Station is located in Eugene's downtown core area, close to the university district, which accounts for the majority of Eugene's high-rise structures. Fire Station 2 (Whiteaker) is positioned further to the west in central Eugene, which contains the largest industrial area. Fire Station 3 (28th Street) is centrally located within Springfield's city limits, which allows for more consistent and timely truck response throughout the Springfield area.

Risk Classifications – Specific

Analytical techniques can be utilized to stratify risks into more definitive risk categories and determine the values exposed to loss, the probability of an event occurring, and the consequences that such an event may have on the community. Primary risk liability falls into five general categories in order of severity: **life risk, community economic risk, environmental risk, historical risk, and dollar loss**. Life and community economic risks are of primary importance and nearly all property associated with those risk categories are located within Risk Area A and, to a lesser extent, Risk Area B. Following are descriptions of the five general risk classification categories:

1. **Life Risk:** Any location that presents a high risk of life loss, such as high-density housing (particularly unsprinklered), high-rise and older remodeled structures, foster care homes, skilled nursing facilities, hospitals, housing within close proximity to hazardous manufacturing or storage, day care centers, and schools.

2. **Community Economic Risk:** Those facilities that have a high dollar value and, if destroyed or damaged by fire, could close or relocate resulting in a severe economic burden on the community through the loss of jobs and/or tax revenue. This category also includes critical infrastructure of primary importance such as utilities, roads, waterways, and bridges.

3. **Environmental Risk**: Any area where a high risk of severe or permanent environmental damage would likely occur in the event of a fire or hazardous materials release.

4. **Historical Risk**: Any structure or property of significant historical value to the community.

5. **Dollar Loss:** Structures that have a high value yet pose a low risk of life loss or community economic impact and are insured against accidental loss. Examples of dollar loss structures are large rural residential and farm structures, as well as some commercial buildings primarily housing large inventories of merchandise.

Probability Analysis

Probability is the likelihood that a particular event will occur within a given period of time. For example, an event that occurs daily is highly probable. Whereas an event that occurs only once in a century is very unlikely. Probability is an estimate of how often an event will occur within a given period of time and should be evaluated for each type of emergency.

Figure 3.6 shows total incidents per fiscal year, beginning in FY15. Figure 3.7 depicts total incidents including type and sub-type by fiscal year. Both show service needs increasing over the period of the analysis. There is a decrease in call volume for FY18, but that is followed by a 10.3% increase in FY19.

Figure 3.6 Total Incidents

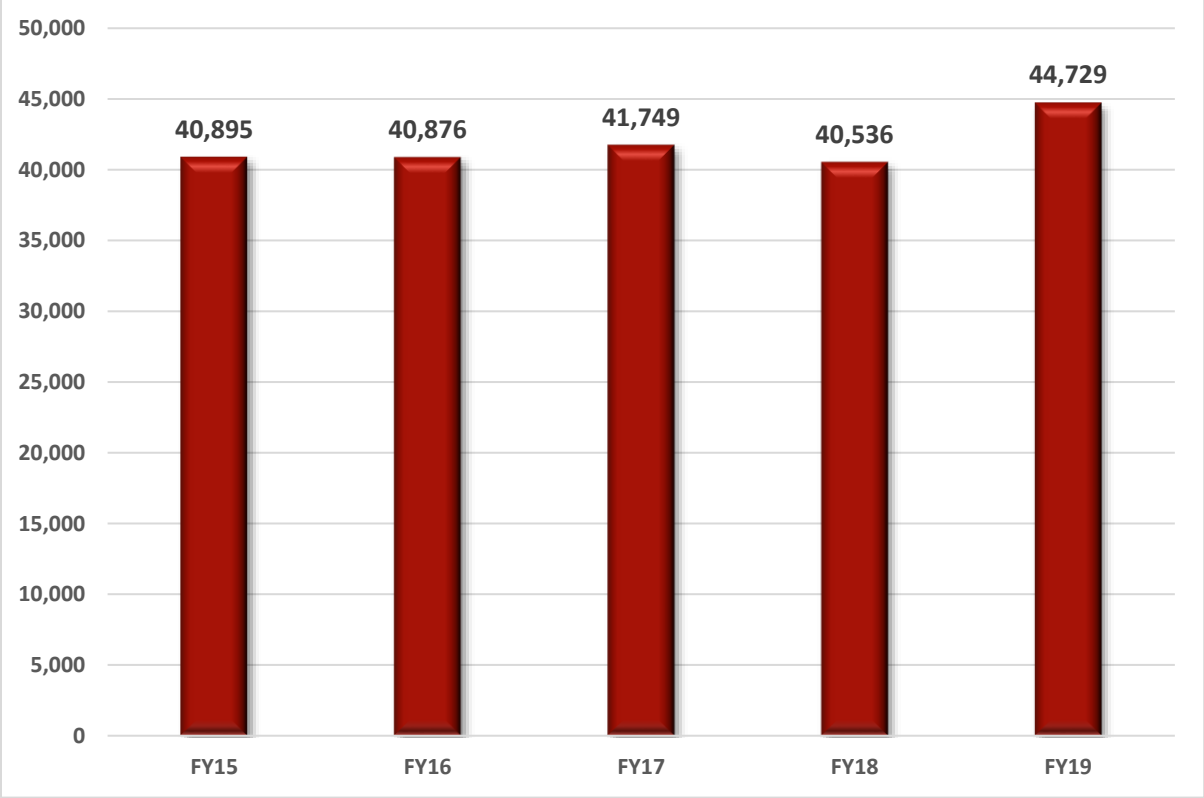


Figure 3.7 Total Incidents by Type

FIRE	FY15	% Total	FY16	% Total	FY17	% Total	FY18	% Total	FY19	% Total
Structure	318	0.8%	318	0.8%	306	0.7%	291	0.7%	350	0.8%
Brush	480	1.2%	453	1.1%	499	1.2%	452	1.1%	601	1.3%
Vehicle	129	0.3%	153	0.4%	143	0.3%	139	0.3%	128	0.3%
Other	257	0.6%	286	0.7%	377	0.9%	253	0.6%	283	0.6%
Subtotal	**1,184**	**2.9%**	**1,210**	**3.0%**	**1,325**	**3.2%**	**1,135**	**2.8%**	**1,362**	**3.0%**
EMS										
Emergent	24,476	59.9%	24,715	60.5%	24,350	58.3%	24,111	59.5%	26,295	58.8%
N/Emer	8,626	21.1%	8,118	19.9%	8,655	20.7%	8,754	21.6%	10,135	22.7%
Subtotal	**33,102**	**80.9%**	**32,833**	**80.3%**	**33,005**	**79.1%**	**32,865**	**81.1%**	**36,430**	**81.4%**
OTHER										
Hazmat	200	0.5%	215	0.5%	238	0.6%	241	0.6%	266	0.6%
Pub. Assist	2,824	6.9%	2,853	7.0%	3,435	8.2%	2,611	6.4%	2,512	5.6%
Rescue	986	2.4%	1,025	2.5%	999	2.4%	997	2.5%	1,026	2.3%
Fire Alarms	1,605	3.9%	1,796	4.4%	1,749	4.2%	1,649	4.1%	1,848	4.1%
Misc	994	2.4%	944	2.3%	998	2.4%	1,038	2.6%	1,285	2.9%
Subtotal	**6,609**	**16.2%**	**6,833**	**16.7%**	**7,419**	**17.8%**	**6,536**	**16.1%**	**6,937**	**15.5%**
TOTAL	**40,895**	**100.0%**	**40,876**	**100.0%**	**41,749**	**100.0%**	**40,536**	**100.0%**	**44,729**	**100.0%**
Daily Average	112		112		114		111		123	

Fire Incidents

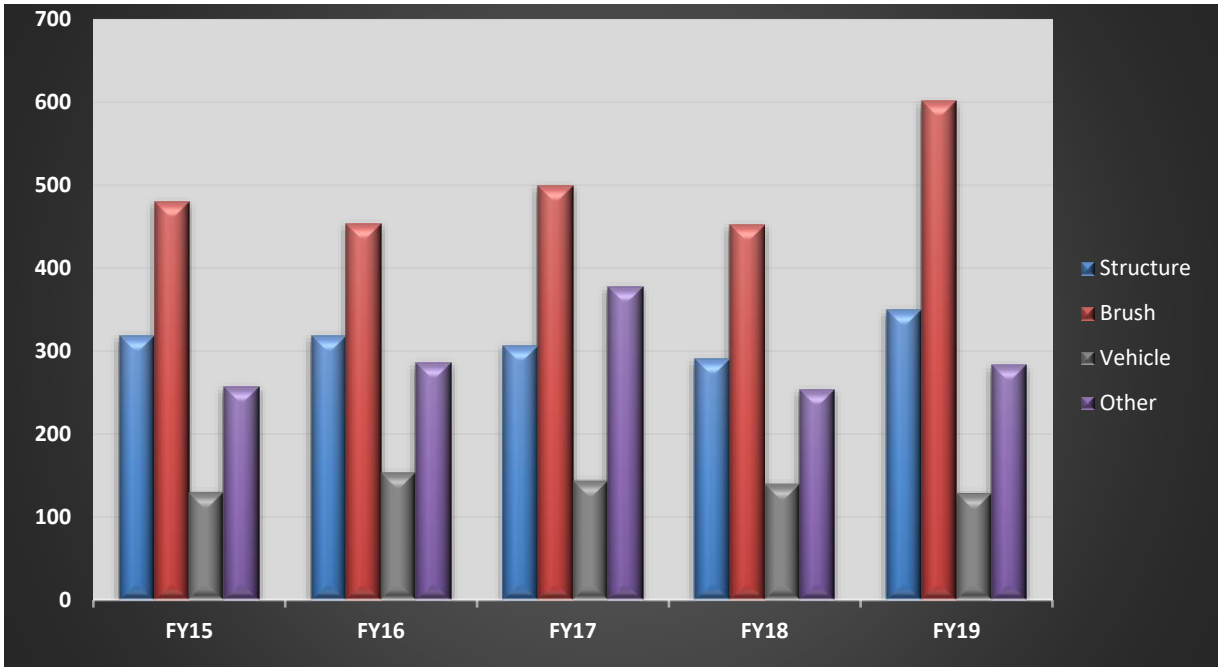
To further analyze the data, the following discussion and figures are shown by city and in total per incident type and sub-type. In analyzing each type of incident, the department evaluated the frequency of incidents over the past three fiscal years, as well as a temporal analysis of aggregate data to determine the demand patterns for response services at various times of the day.

Figure 3.8 summarizes fire incidents by type, city, and fiscal year illustrating frequency. Also included is the daily (24-hour) average for each city and total by fiscal year. One important note is that type categorization is based on information received at time of call, not on the actual nature of call reported by a company officer at the scene. Figure 3.8.1 is a graphical representation of total fire incidents by fiscal year.

Figure 3.8 Frequency of FIRE Incidents

FIRE	FY15	FY16	FY17	FY18	FY19
Structure	318	318	306	291	350
Brush	480	453	499	452	601
Vehicle	129	153	143	139	128
Other	257	286	377	253	283
Total	**1,184**	**1,210**	**1,325**	**1,135**	**1,362**
Daily Average	**3.2**	**3.3**	**3.6**	**3.1**	**3.7**

Figure 3.8.1



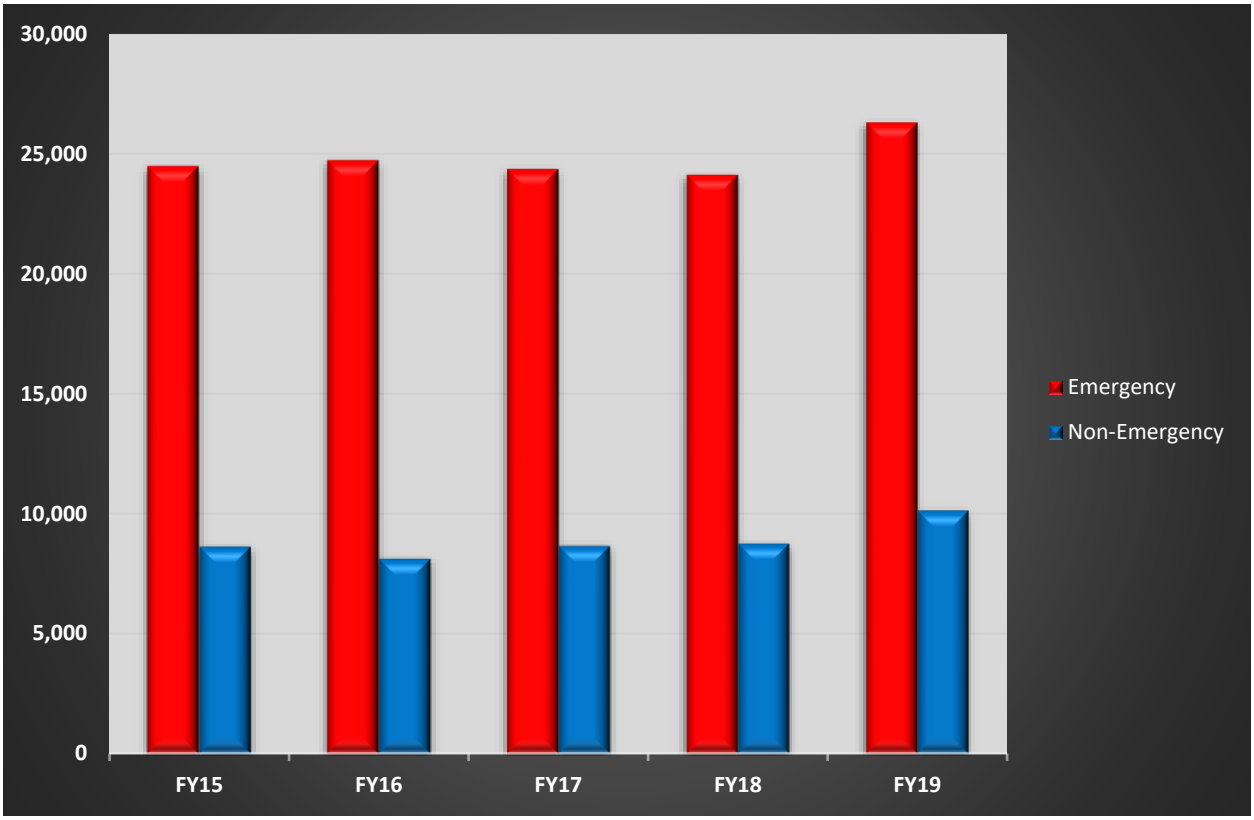
Emergency Medical Services Incidents

Following with the national trend for fire agencies, the majority of calls for service are medical in nature. The department currently responds to approximately 100 such incidents each 24-hour period. Fire companies, including those provided by surrounding rural fire districts, are strategically located throughout the ambulance service areas and provide consistent first response capability. Figures 3.9 and 3.9.1 present total EMS incidents split into emergency and non-emergency incidents by fiscal year>city, and total. An "emergency" is defined by Lane County Code Chapter 18.015 as any non-hospital occurrence or situation involving illness, injury or disability requiring immediate medical or psychiatric services, wherein delay in the provision of such services is likely to aggravate the condition and endanger personal health or safety.

Figure 3.9 Frequency of EMS Incidents

OTHER	FY15	FY16	FY17	FY18	FY19
Emergency	24,476	24,715	24,350	24,111	26,295
Non-Emergency	8,626	8,118	8,655	8,754	10,135
Total	**33,102**	**32,833**	**33,005**	**32,865**	**36,430**
Daily Average	**90.7**	**90.0**	**90.4**	**90.0**	**99.8**

Figure 3.9.1



Other

The Other category is further divided into sub-categories including hazardous materials, public assistance, rescue, automatic fire alarms, and miscellaneous.

Hazardous material incidents include calls to chemical spills, fuel spills, and fixed facility releases of gases or liquids. For calls of this nature, the department provides services within predetermined boundaries as well as to an expanded service area as defined by state contract. The department supports one of the State of Oregon's 14 regional Hazardous Materials Response Teams, covering all of Oregon Region 2, which includes all of Lane County and a small section of Deschutes County and provides backup to the rest of the State.

Public assistance requests include calls such as lifting assistance for patients in private residences or foster care facilities, leaking fire hydrants, downed power lines, and assisting local law enforcement agencies.

Rescue incidents include non-auto accidents, water rescue, and technical rescue calls that include high angle, collapse, or cave-in emergencies.

Automatic fire alarm calls require an emergency response based on information received in the dispatch center. Statistically speaking, the majority of automatic fire alarms are false. Consequently, many of these calls result in a disregard or cancellation of the responding unit(s) once the responsible party confirms there is no emergency response needed. These calls generally consist of system malfunctions, inadvertent activation, or notification system failure during alarm maintenance. In the most recent analysis of these calls, 42% of these were disregarded or cancelled, and 51% were alarm malfunctions or unintentional activations. The department also tracks automatic alarms that result in an emergency response where damage is recorded or where there was a working fire incident. Forms of damage include but are not limited to water damage from sprinkler system activation or malfunction, smoke from small fires extinguished prior to department arrival, or overheated or short-circuited electrical equipment. The most recent analysis indicates approximately 0.5% of the automated alarm responses had damage recorded.

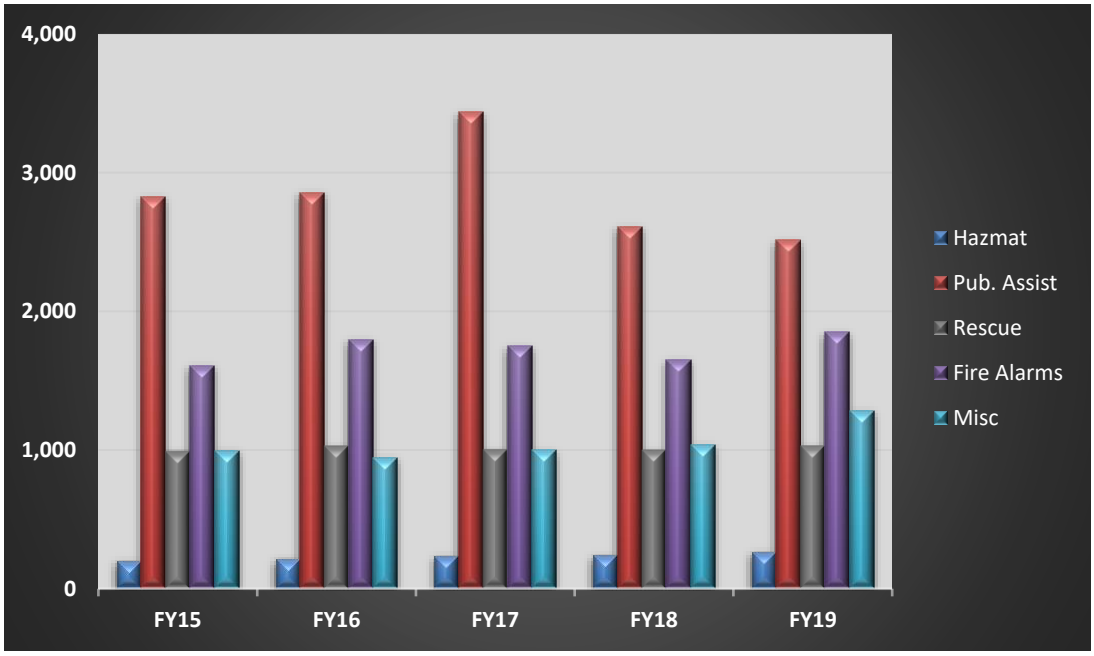
Miscellaneous responses include calls for carbon monoxide alarms, illegal burning, noxious odor investigations, and suspicious conditions. These incidents do not fit neatly into other categories yet represent important and ongoing services that require resources.

The following figures show totals and daily average for each of these sub-categories.

Figure 3.10 Frequency of OTHER Incidents

OTHER	FY15	FY16	FY17	FY18	FY19
Hazmat	200	215	238	241	266
Pub. Assist	2,824	2,853	3,435	2,611	2,512
Rescue	986	1,025	999	997	1,026
Fire Alarms	1,605	1,796	1,749	1,649	1,848
Misc	994	944	998	1,038	1,285
Total	**6,609**	**6,833**	**7,419**	**6,536**	**6,937**
Daily Average	**18.1**	**18.7**	**20.3**	**17.9**	**19.0**

Figure 3.10.1



Mutual and Automatic Aid Incidents

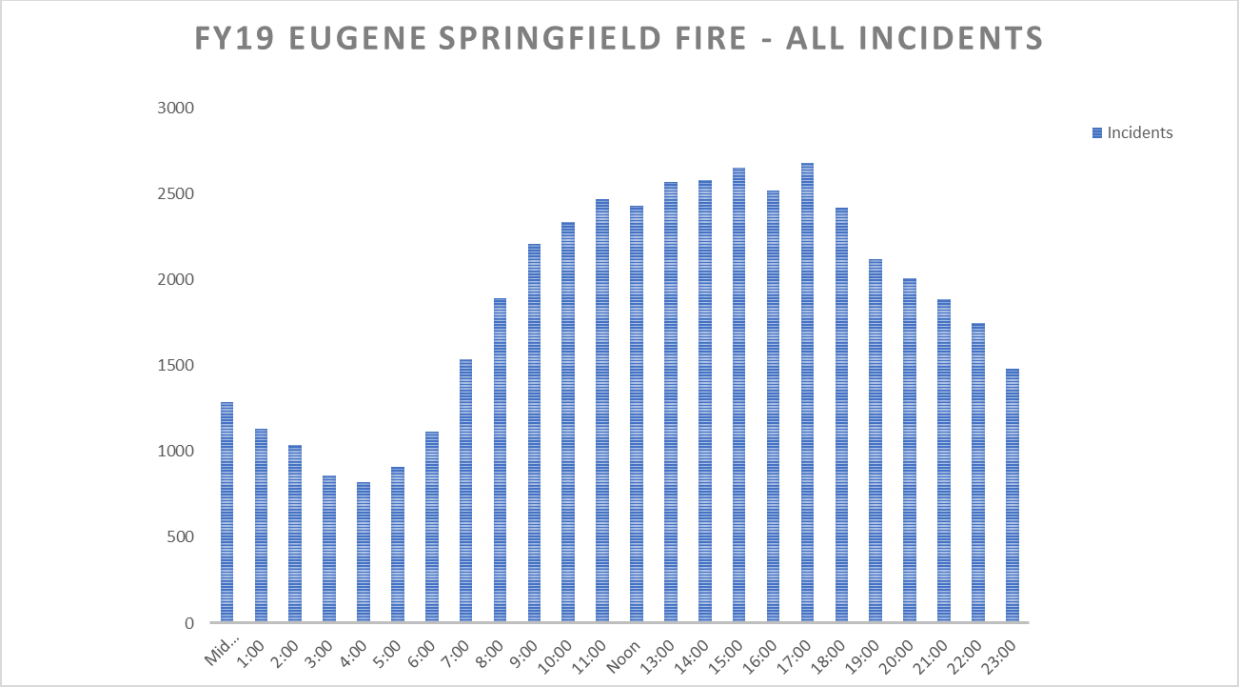
Included in the above numbers are department responses in support of mutual and automatic aid agreements with surrounding jurisdictions. Mutual aid defines services provided to another area at the specific request of the jurisdiction having authority and is granted whenever doing so will not leave areas of primary responsibility with an inadequate level of protection.

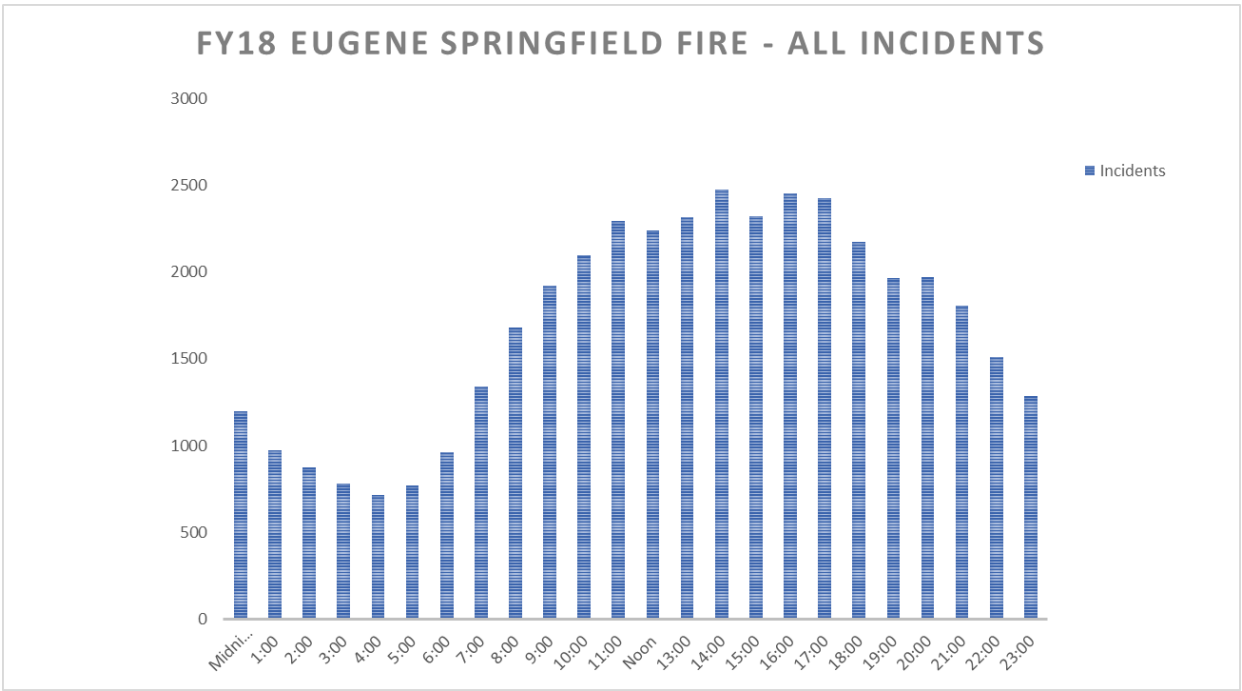
Automatic aid refers to agreements that provide a predetermined level of cross-jurisdictional response support on the initial alarm, usually in boundary areas, and without the need for a specific request. The Cities of Eugene and Springfield address metro response by delivering service under the umbrella of their shared fire department in the 3-Battalion System. Prior to the functional consolidation, calls within the other City's service boundary were considered automatic aid incidents.

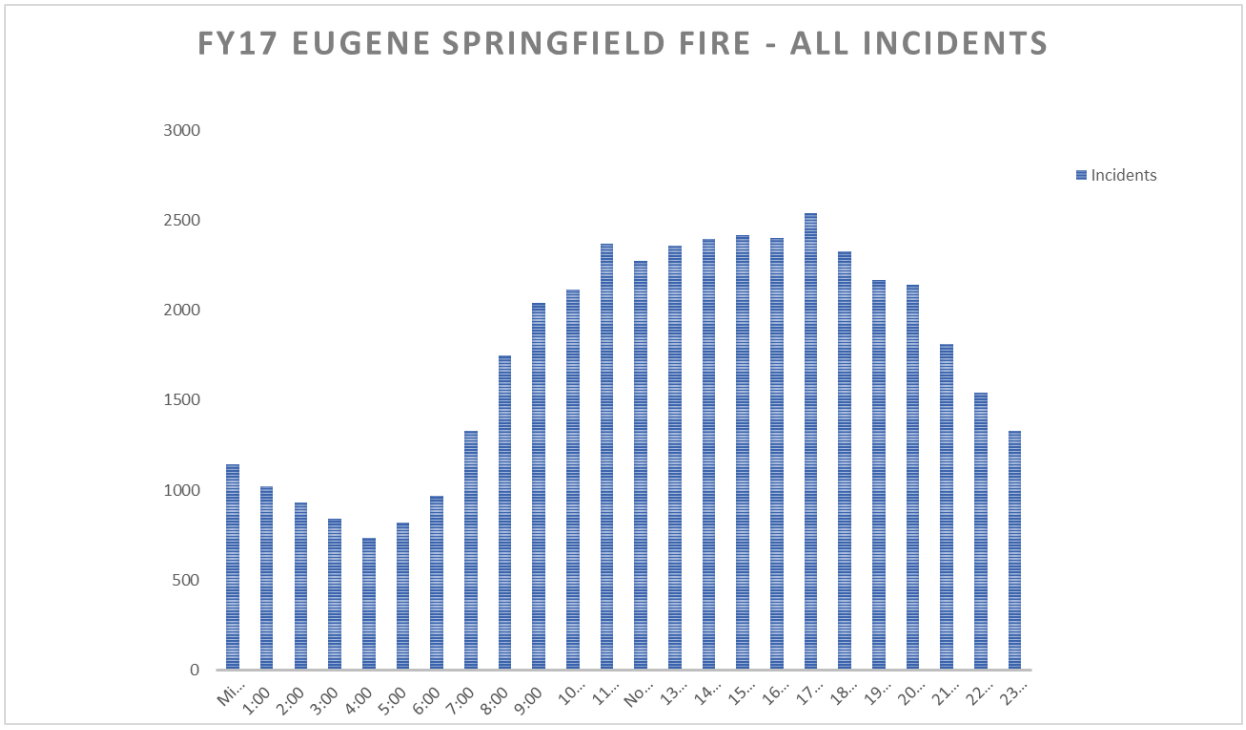
Temporal Distribution of Calls

Calls for service are not distributed uniformly throughout a 24-hour period. Using temporal distribution graphs assists in determining enhanced staffing levels and the need to add peak units during the times of heavy call volume. The figures below illustrate temporal distributions of calls for service for fiscal years 2016 through 2019 by category>time of day using a 24-hour clock. As shown, temporal distribution of call volume has not significantly changed over the past several years.

Figures 3.11 Temporal Distribution






FY17 EUGENE SPRINGFIELD FIRE - ALL INCIDENTS
3000
2500
2000
1500
1000
500
0
Incidents
Mi...
1:00
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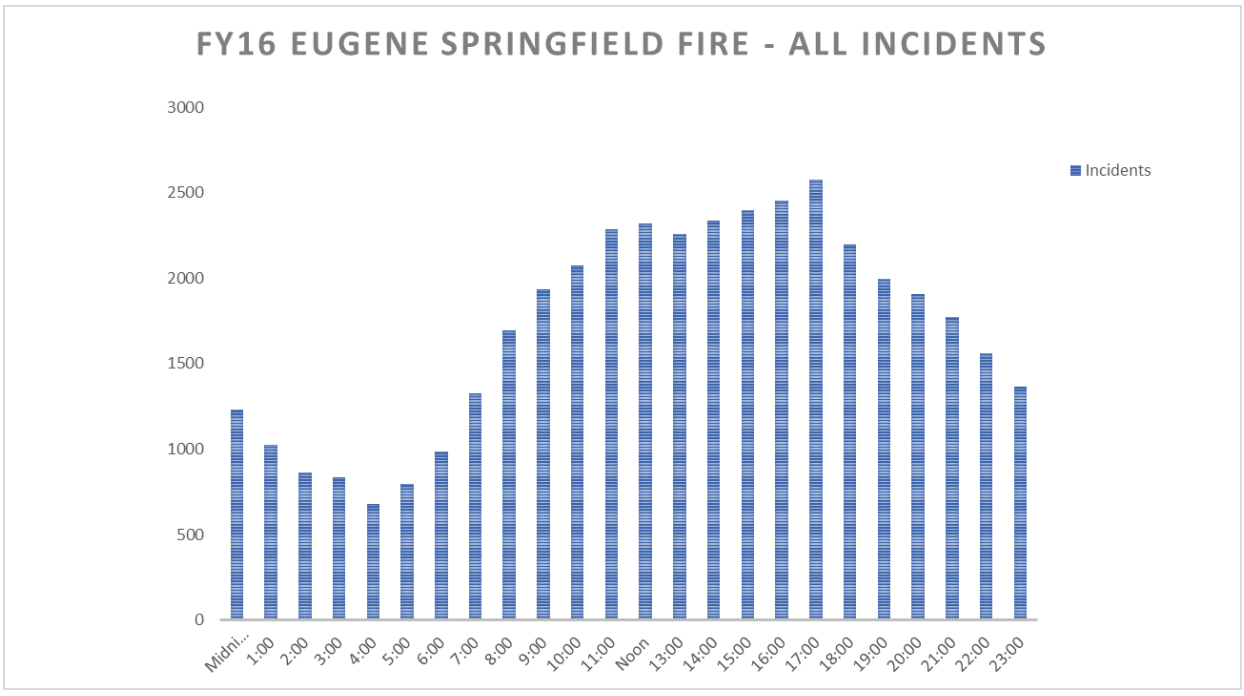
FY16 EUGENE SPRINGFIELD FIRE - ALL INCIDENTS
3000
2500
2000
1500
1000
500
0
Incidents
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2:00
3:00
4:00
5:00
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7:00
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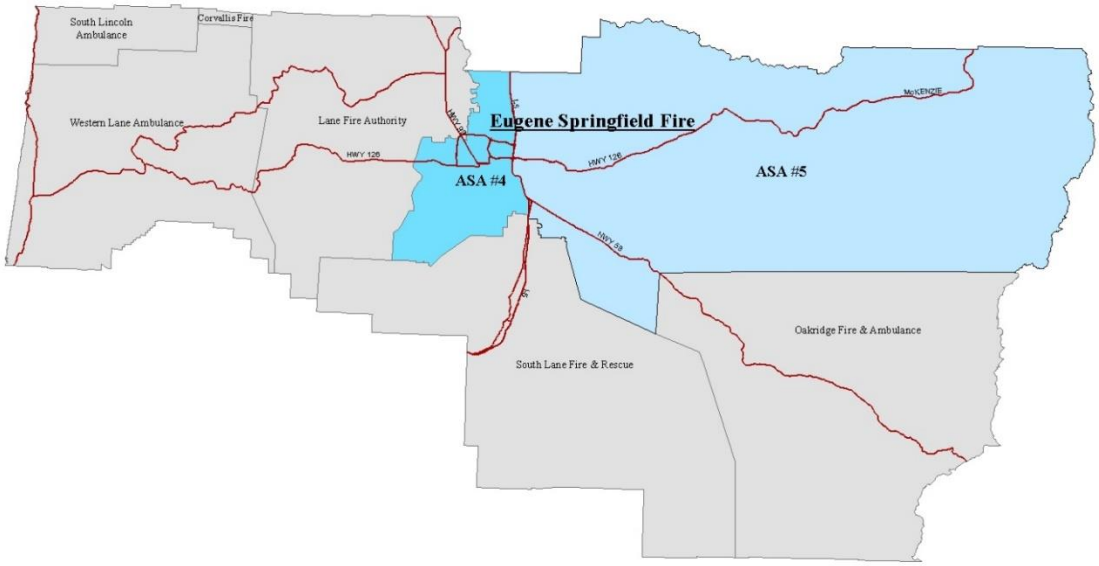
Risk Evaluation – Ambulance Transport

Since 1981, the department has operated emergency ambulance transport services. Under the authority of the Department of Health and Human Services of Lane County, the department is the authorized advanced life support ambulance provider for the West Central Lane Ambulance Service Area (ASA #4) and East Central Lane Ambulance Service Area (ASA #5) of Lane County. The assigned ambulance service areas represent a significantly larger geographical protection zone than the two cities' fire and first response EMS service areas. Figure 3-14 illustrates the ASA boundaries for Eugene and Springfield.

Figure 3.14 Lane County Ambulance Services Areas



The ESF ambulance transport system includes seven 24-hour advanced life support (ALS) units, one 24-hour basic life support (BLS) unit, two 12-hour peak hour BLS units, and two 24-hour combination units that are dispatched on a last-out basis staffed by an engine crew. A Life Flight air medical transport helicopter is located in South Lane County. Life Flight is available 24 hours per day for remote rescue and long-range, inter-facility, critical care transport services.

Lane County Code Chapter 18 was amended to match the Oregon Administrative Rules so that all ambulance transports are regulated by the ASA holder(s). The most significant implications of the amendments relate to non-emergency inter-facility ambulance transports, including out-of-area inter-facility transports, primarily to and from Springfield's two hospitals. For these services, Cities of Eugene and Springfield have subcontracted with a private provider.

Risk evaluation also addresses ambulance funding, as this is directly tied to service delivery. There is a long-term structural financial deficit in the ambulance transport service funding mechanism. This is primarily attributable to reduced levels of reimbursement received from Medicare (federal) and Medicaid (state) for qualifying patient transports. These decreases have been phased in by the federal government since the passage of the *Balanced Budget Act of 1997,*

which shifted much of the financial burden for covered patient transports from the federal government to local providers. The problem was then exacerbated with the *Medicare Modernization Act of 2003*, which further reduced reimbursements.

In addition to the reimbursement reductions associated with Medicare and Medicaid, the department also provides transport service to patients who are uninsured, underinsured, or otherwise unable to privately pay for their transport costs. These calls frequently result in uncollectable debt, which impacts the ability to cover the overhead costs of the system.

ASA Response Zones

The Lane County Health & Human Services Department developed an Ambulance Service Plan, which has been adopted by the Board of County Commissioners. This plan calls for each ambulance service provider in the county to report quarterly on its ambulance response times for emergency calls. Response time goals are set for various zones, based on population density, proximity to urban areas, terrain, transportation networks, and expected travel time to the area.

Zones 1, 2, 3, and 4 in each ASA correspond roughly to the State of Oregon's established urban, suburban, rural, and frontier designations. ASA #4 (City of Eugene) contains only three zones, since it has no identified frontier territory, and no portions of the ASA that are expected to have greater than a 45-minute response time. ASA #5 (City of Springfield) contains all four zones with a large frontier territory that could have greater than a 120-minute response time. Response zones are generally described as:

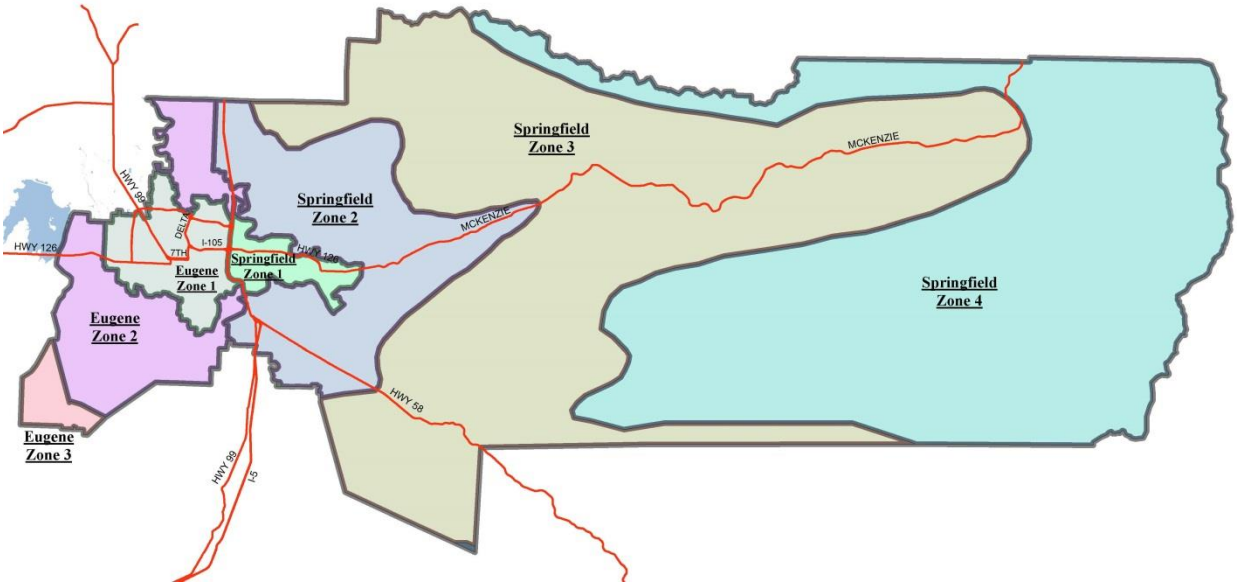
- **Zone 1** includes all territory within Eugene and Springfield's Urban Growth Boundaries (UGBs), which are considered urban.

- **Zone 2** includes territory outside the UGBs to the west approximately to Fern Ridge Reservoir, and to the east approximately to the Marcola area in the Mohawk Valley, to approximately Leaburg in the McKenzie Valley, and slightly past Pleasant Hill in the Highway 58 corridor.

- **Zone 3** includes all territory in the ASAs to the west and east of the zones indicated above, which are considered remote rural, but not qualifying as frontier.

- **Zone 4** includes the eastern-most portion of ASA #5 (Springfield), including the area further up the McKenzie River Highway, and surrounding national forest lands both north and south of the highway, which is considered frontier.

Figure 3.15 ASA #4 and #5 Response Zones



Demand for Ambulance Service

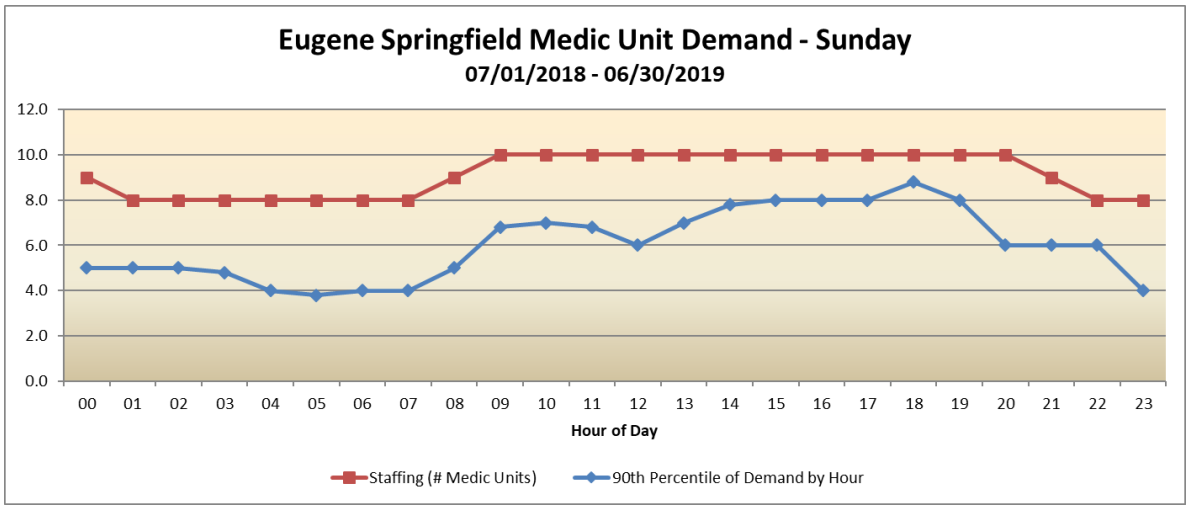
Since the Ambulance Service Area is larger than the fire protection service area, a separate analysis was conducted for ambulance transport. EMS calls are those responded to by engines, engines and medic units together, and medic units only. As shown in the following figures, only a certain percent of these calls results in a transport. EMS calls and ambulance transports comprise a large majority of the total service demands placed on the department. There are relatively fewer staffed resources to handle the total EMS calls and ambulance transport demand generated by the larger ambulance service area because the larger area increases travel time. Figure 3.16 shows the frequency of EMS calls and transports by Fiscal Year. For FY19, the department saw an .25% decrease in medical calls but a 4.7% increase in average number of patient transports per day.

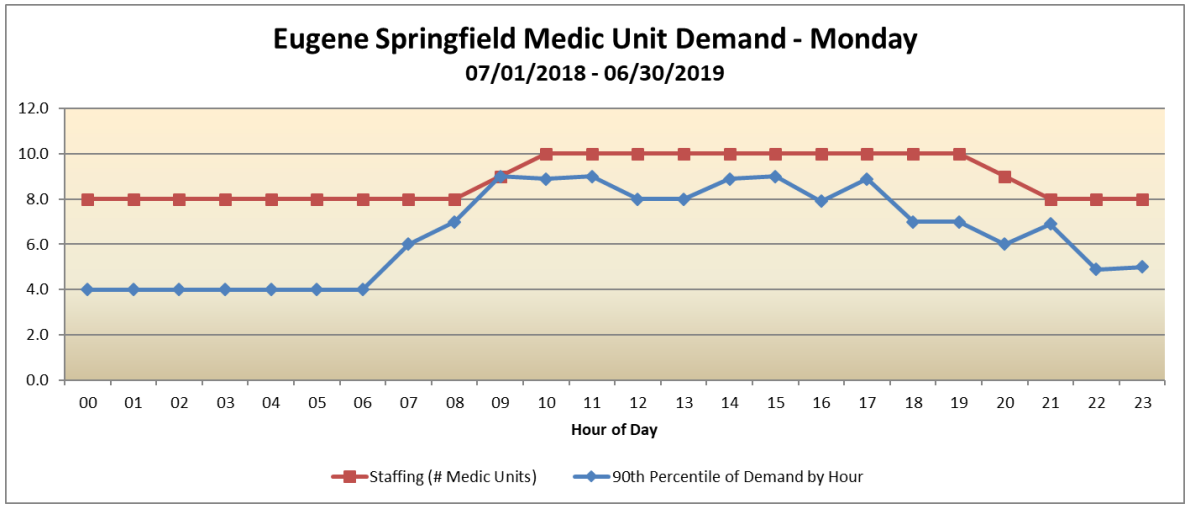
Figure 3.16 Frequency and Percent of Transports

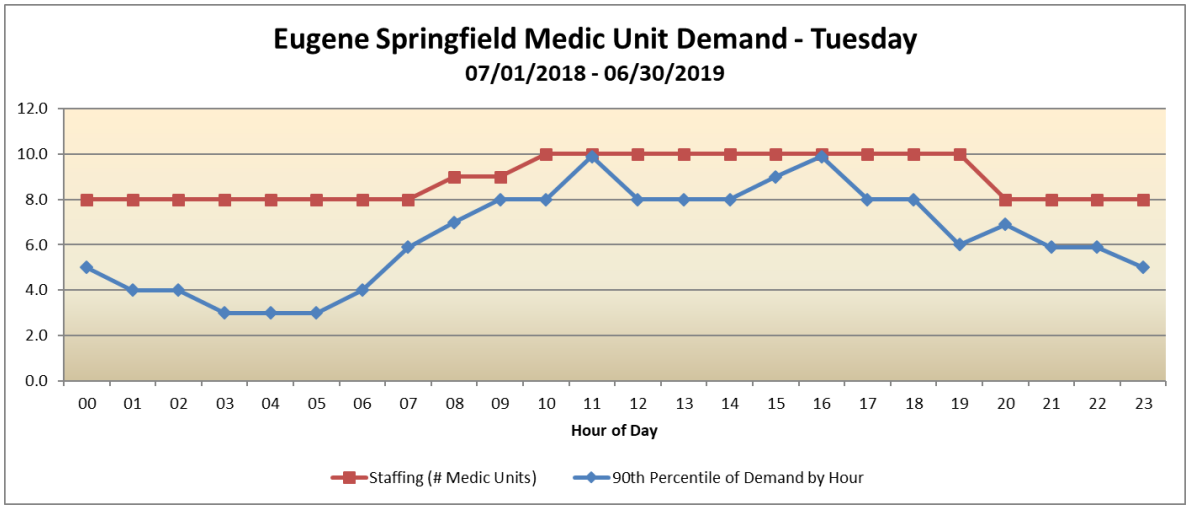
	FY15	FY16	FY17	FY18	FY19
EMS Calls	33,204	34,157	33,922	36,522	36,430
Transports	19,251	19,460	21,498	23,478	24,428
% Transport	57.98%	56.97%	63.37%	64.28%	67.05%
Transport Avg/Day	53	53	59	64	67

To further analyze demand, ambulance calls are displayed using demand charts that compare demand to resources by day of week and time of day. Peak demand is determined by calculating the 90th percentile of all medic unit dispatches and allowing one hour as an average assumption for the amount of time necessary for an ambulance crew to handle a call and become available for another response. The 100th percentile figure is not used because our experience has demonstrated that many calls for service do not require transport, and will therefore, not require a full hour of time to complete. Points above the 90th percentile line represent times when the departments will most likely rely on the combination unit or an automatic aid response from a neighboring transport provider. Medic unit deployment is established based on demand. In the following graphs, the dark purple line with triangles shows staffed ambulances on duty and the red line with squares shows the 90th percentile of incidents based on hour per day.

Figure 3.17 Ambulance Demand Charts






Eugene Springfield Medic Unit Demand - Tuesday
07/01/2018 - 06/30/2019
12.0
10.0
8.0
6.0
4.0
2.0
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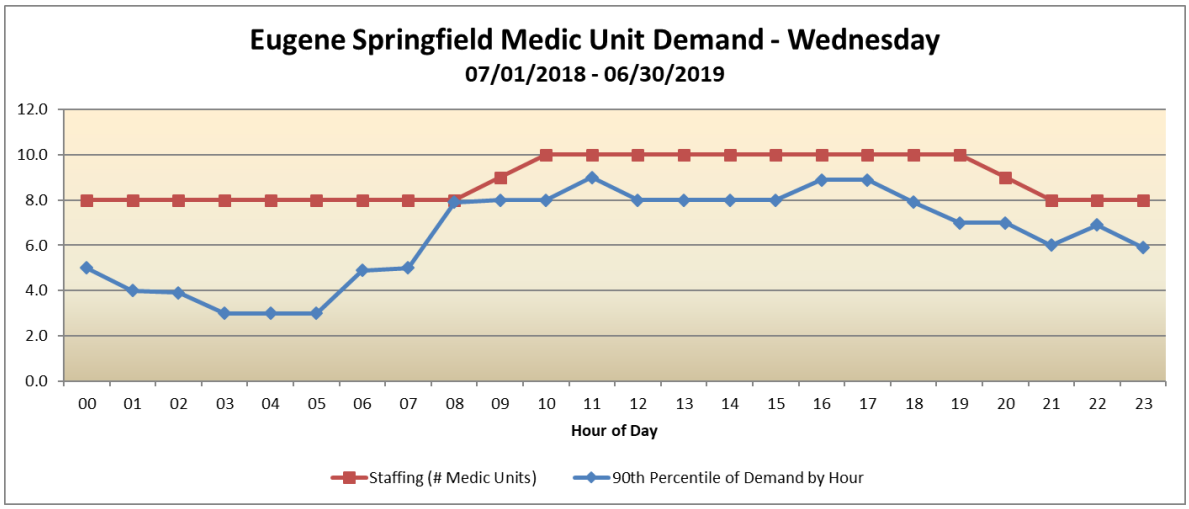
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Hour of Day
Staffing (# Medic Units)
90th Percentile of Demand by Hour


Eugene Springfield Medic Unit Demand - Wednesday
07/01/2018 - 06/30/2019
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2.0
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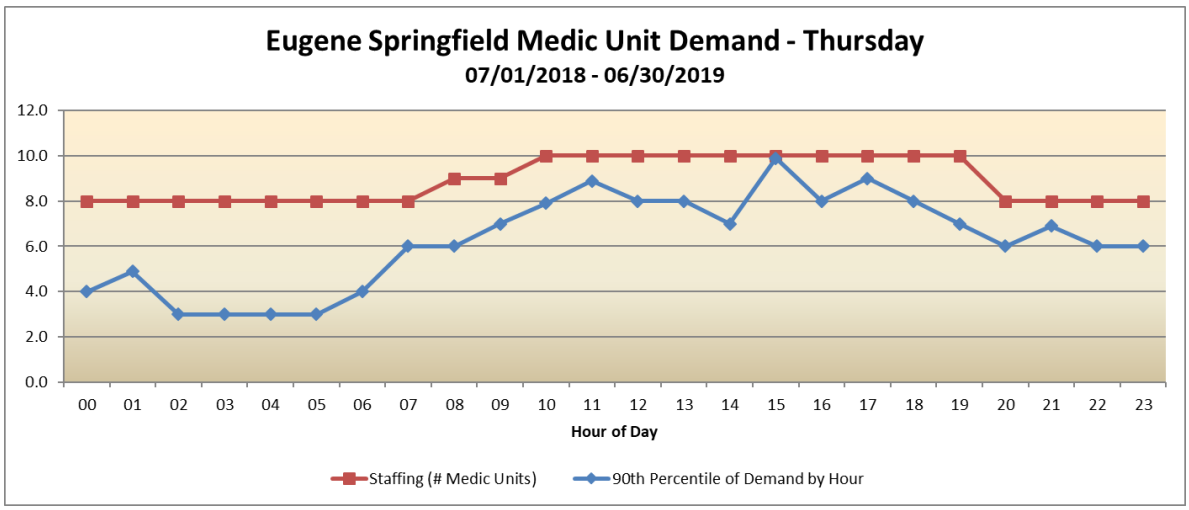
Hour of Day
Staffing (# Medic Units)
90th Percentile of Demand by Hour


Eugene Springfield Medic Unit Demand - Thursday
07/01/2018 - 06/30/2019
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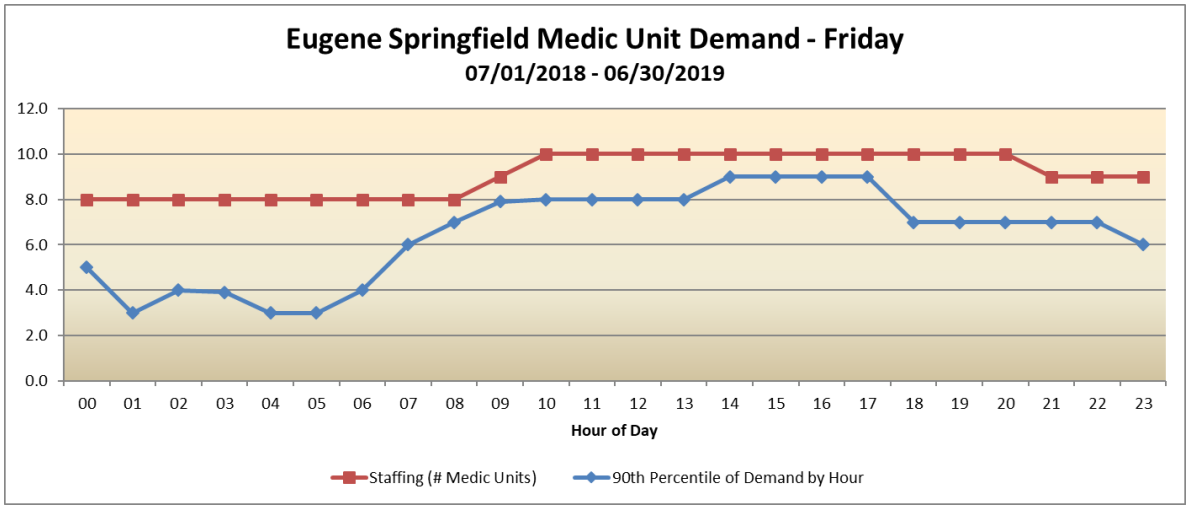
Hour of Day
Staffing (# Medic Units)
90th Percentile of Demand by Hour


Eugene Springfield Medic Unit Demand - Friday
07/01/2018 - 06/30/2019
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6.0
4.0
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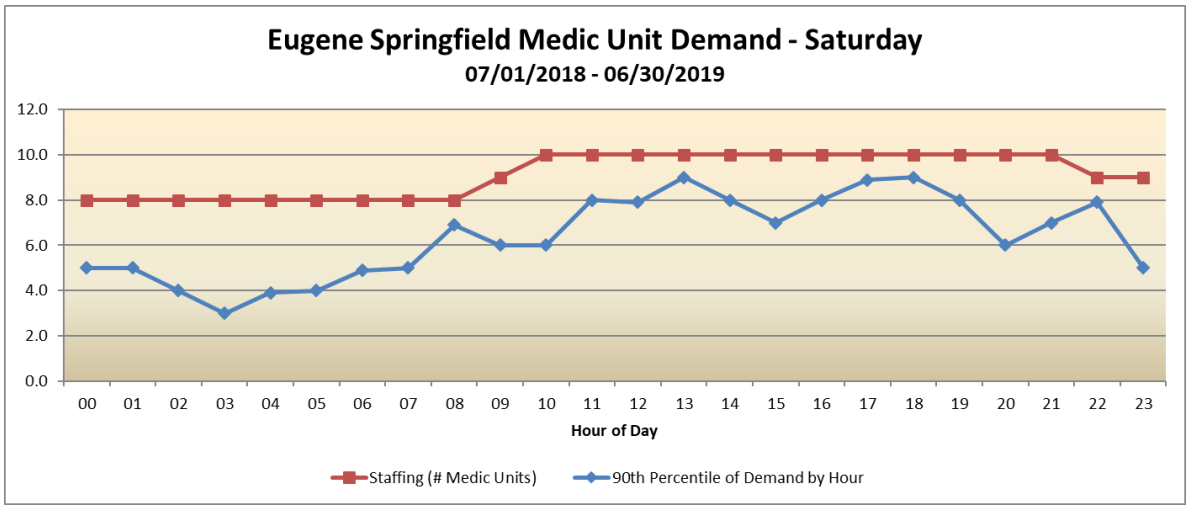
Hour of Day
Staffing (# Medic Units)
90th Percentile of Demand by Hour


Eugene Springfield Medic Unit Demand - Saturday
07/01/2018 - 06/30/2019
12.0
10.0
8.0
6.0
4.0
2.0
0.0
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Hour of Day
Staffing (# Medic Units)
90th Percentile of Demand by Hour

SECTION FOUR: On-Scene Operations and Critical Tasks

On-Scene Operations and Critical Tasks

On-scene operations, identification of critical tasks, and an effective emergency response force are the key elements in determining appropriate staffing levels, the number of companies needed, optimal deployment strategies, and the priority duties to be performed on the fire ground or emergency incident scene. Effective all-hazards fire departments must be able to determine what tasks need to be completed and in what order, the number of personnel needed, and the type of apparatus required to complete the identified tasks to have a positive influence on the outcome of the situation.

On-Scene Operations

The variables of fire growth dynamics, along with property and life risks, combine to determine the fire ground tasks that must be accomplished, and to a certain extent, the order in which they must be accomplished, to preserve life and mitigate loss. Critical tasks are interrelated but can be separated into two basic types: 1) fire control and 2) life safety.

Fire control tasks are those related to applying a fire suppression agent, generally water, on the fire, and removing the products of combustion from an enclosed environment. Life safety tasks are those related to finding trapped, disoriented, or incapacitated victims, and safely removing them from the structure or shielding them from the hazard.

Fire control tasks are generally accomplished by using one of two methods: 1) hand-held hose lines and 2) master streams.

- Hand-held hose lines are mobile and produce water flows up to 250 gallons-per-minute. These are generally used during interior, offensive firefighting activities.

- Master streams are generally used from stationary positions and produce flows up to 1,000 gallons-per-minute or more. They are used primarily during exterior, defensive firefighting activities.

The decision to use either hand lines or master streams depends upon the stage of the fire, the identified threat to life safety and adjoining property, and the specific strategy and tactics employed by the fire Incident Commander (IC) when enough firefighting resources have reached the scene. If the fire is in a growth or pre-flashover stage, firefighters can often make an offensive fire attack into a building by using hand lines to attack the fire and shield trapped victims until they can be safely removed from the structure.

If a fire is in its flashover or post-flashover stage and has extended beyond the capacity or mobility of hand-held hoses, or if the structural damage and the threat of building collapse present a significant risk to the safety of firefighters on scene, the structure may be declared a loss. In this situation, master streams or exterior handlines are positioned to extinguish the fire and keep it from advancing to surrounding exposures.

Life safety tasks assigned are based upon the number of occupants, their location, their status (e.g., awake, unconscious), and their ability to take effective self-preserving action. For example, ambulatory adults need less assistance than non-ambulatory adults or children. The very young and elderly occupants generally require more assistance, which requires greater resource utilization.

The keys to any fire department's success at a fire include a rapid response and efficient fire scene deployment, as well as adequate staffing and coordinated teamwork. These elements are relevant regardless of whether the fire ground tasks are all fire-flow related or a combination of fire flow and life safety.

Before on-scene procedures can be established, the IC must select an initial strategy –Offensive or Defensive, appropriate to the conditions.

- **Offensive Strategy** – This strategy involves an aggressive interior fire attack operation. The top priority with this strategy is to rescue trapped victims. In addition, the offensive strategy is utilized to limit fire spread beyond the area of origin and to reduce fire-related deaths or injuries. This strategy is implemented considering personnel safety, available resources, and the size and scope of the fire. The objective of an offensive attack is to stop the fire and confine it to the area of origin as quickly as possible.

  The offensive attack may also apply to wildland fire where firefighting crews directly attack the head, or front of an advancing fire. Although this can be an effective tactic, this mode of attack also poses an increased element of danger that warrants a higher degree of vigilance by the IC and all crew members.

- Another method of offensive attack (sometimes referred to as a transitional attack) occurs when fire crews begin an initial exterior attack, and quickly transition into a coordinated interior attack. This tactic accommodates the Occupational Safety and Health Administration's (OSHA) Two-In/Two-Out requirements for interior fire attack. The objective is to hold the fire in check from the exterior and then move to the interior to affect total extinguishment. The exterior water application is intended to slow the spread of fire until staffing levels and water supplies are adequate to offensively engage the fire.

  The transitional attack is an effective tactic to employ when the OSHA Two-In/Two-Out rule cannot be met initially. This OSHA requirement dictates that before at least two firefighters can enter into an environment that is deemed immediately dangerous to life and health (IDLH), an additional two firefighters must be on scene, equipped and in position as a potential rescue team.

- **Defensive Strategy** – This strategy generally consists of an exterior attack designed to confine a fire to the structure of origin. No attempts are made to rescue civilian fire victims from the interior of a structure because in these scenarios, the fire has completely overtaken the structure. A "fully involved" structure is one that is at high risk for collapse, and even modern firefighting protective equipment is not sufficient to allow rescuers to safely enter these super-heated environments.

  A defensive attack may also apply to wildland fires when crews are deployed well ahead of a fire and attempt to change the fire's course, remove unburned fuels from the fire's path, or decide which neighborhoods can be saved, as well as to maintain safe escape routes for use by fleeing residents.

Because of its greater potential for saving lives and limiting property damage, the department utilizes aggressive offensive attacks whenever possible. The first objective is to identify the location of the fire and any trapped occupants, and to rescue those victims by removing them from the hazard or removing the hazard from them. The second objective is to contain the fire to the building of origin, floor of origin, or room of origin, and to mitigate the IDLH atmosphere.

Critical Tasks-Firefighting

Critical tasks are those that must be conducted in a timely manner by firefighters at structure fires in order to control the fire prior to flashover, or to extinguish the fire in a timely manner. Fire departments are responsible for assuring that responding companies are capable of performing all of the described tasks in a prompt and proficient manner.

Critical tasks are described below. The allocations assume that emergency crews are committed to those assigned tasks using the worst-case

scenario, and would not be available for re-assignment until after the balance of the response package arrives on scene.

The Central Lane 9-1-1 Communications Center (CLCC) is responsible for answering and screening calls for fire and medical service from the public, establishing the correct initial response, and initiating the response notification referred to as tone-out. The first arriving fire officer on scene may amend the response package once conditions have been assessed. Metro Standard Operating Procedures are used to request additional personnel.

Initial Deployment

The initial fire ground actions begin with the arrival of the first company and continue, sequentially or in parallel, as tasks are completed and additional resources arrive. Actions and needs of the very first arriving personnel on the scene may change based on the situation they are confronted with.

Figure 4.1 Personnel Required for Initial Deployment Tasks

TASK	RESIDENTIAL	COMMERCIAL	HIGH RISE	NON-HYDRANT
Size-Up/Command	1	1	1	1
Pump Ops/Water Supply	1	2	2 – 3	2 – 3
Offensive Fire Attack	2 – 4	2 – 4	6	4
Accountability/Safety	1	1 – 2	2 – 3	1
SUB-TOTAL: Initial Attack Personnel	5 – 7	6 – 9	11 -13	8 – 9

Initial Support

Initial support functions occur slightly after the initial attack functions. The first arriving truck company and additional arriving engine companies or medic units perform these tasks. Initial support functions allow the initial tasks to be carried to completion and reinforced, and are identified in the following table.

Figure 4.2 Personnel Required for Initial Support Tasks

TASK	RESIDENTIAL	COMMERCIAL	HIGH RISE	NON-HYDRANT
Truck Ops: Forcible Entry, Search, Ventilation	3	6	9	3
Rapid Intervention Teams	3	3 – 6	3 – 6	3
Salvage & Overhaul	3	3 – 6	3 – 6	3
Back-up Hose Lines	2	5 – 7	5 – 7	2
Incident Safety Officer	1	1 - 2	2 - 3	1
*Air/Light	1 – 2	1 – 2	2 – 3	1 – 2
**Rehab	1 – 2	2	2	2
SUB-TOTAL: Initial Support	14 – 16	21 – 30	25 – 35	15 – 16
TOTAL PERSONNEL	**19 – 23**	**27 – 39**	**36 – 48**	**23 – 25**
TOTAL FIREFIGHTERS	**17 – 19**	**24 – 35**	**32 – 43**	**20 – 21**

* Function is performed by Logistics staff.
**Function may be performed by Logistics staff or medic unit personnel.

Secondary Support

It should be noted that secondary support functions are not all conducted concurrently, and in some cases more than one task can be accomplished by the same personnel, reducing the overall number of required personnel. Examples of this include the same truck company of three personnel performing forcible entry, ventilation, salvage, and overhaul through the duration of the incident. On the other hand, there may be instances where a second crew needs to relieve the first fire attack crew prior to the task being completed.

Secondary support functions include:

- Salvage (functions which prevent further property damage)
- Overhaul (functions which ensure that the fire is completely extinguished)
- Fire Investigation
- Firefighter rehabilitation
- Breathing air supply, equipment maintenance, and on-scene lighting support

Secondary support functions may be performed by:

- Fire suppression companies reassigned after initial deployment task completion
- Medic unit personnel
- Additional fire suppression companies called to the scene specifically for this purpose

- Deputy Fire Marshal that responds to the scene at the request of an Incident Commander
- Logistics personnel called to provide air re-supply, lighting and rehabilitation

Depending on the type of occupancy (e.g. large commercial or high-rise), 40 or more firefighters may be needed to accomplish the critical tasks necessary to control the incident in a safe, efficient, and effective manner. While it is possible to anticipate what critical tasks must be accomplished in order to extinguish the fire, it is not always possible to predict how many firefighters it will take to accomplish those tasks. Because the fire scene is unpredictable in many ways, the number of personnel and types of equipment necessary to accomplish critical tasks will vary due to numerous factors:

- Notification and overall response time
- Building construction and size
- Extent of fire involvement/time fire has been burning
- Number of occupants
- Condition of occupants
- Exposures
- Environment
- Fire protection systems
- Resources available
- Effect of initial actions
- Special circumstances, such as firefighter injury or equipment failure

Based on experience, knowledge, historical information, and industry standards, the department determines components of an effective response force. Analyzing statistical data, current staffing projections are accurate for the majority of the working fires within the response area.

The need for more personnel may arise on any fire scene at any time. Fire conditions dictate the response needed for any given fire, even if that response exceeds the requirements listed in this document. The department relies on the experience and professional judgment of their company and chief officers to request additional resources early in an incident, whenever their expertise suggests that those resources might be required. Resources can be readily obtained through on-duty staffing, automatic and mutual aid, or callback of off-duty personnel. It is important to front load incidents with as many resources as is prudent. This is because the reflex time to dispatch and wait for additional units to arrive can place on scene crews in danger or equate to critical tasks not being performed.

Critical Tasks-Fire Marshal's Office

The functions of the Fire Marshal's Office (FMO) on an incident are twofold: to conduct a legally defensible cause, origin, and circumstance investigation that can withstand the rigors of a legal courtroom challenge; and in the case where an incident requires fire code enforcement review, interface with the property owner to ensure fire safety laws are followed.

The incident commander has the legal responsibility to determine the cause, origin, and circumstances of a fire or explosion. The incident commander is charged with choosing who will perform the investigation, and in most cases will defer to the FMO. In the case of a fire or explosion that exceeds the training or ability of the responding firefighters to determine the cause and origin, the incident commander calls for a deputy fire marshal (DFM) to conduct the cause, origin and circumstance investigation. Deputy fire marshals receive advanced training in forensic analysis, evidence preservation, and courtroom testimony specific to arson and incendiary fires and are the fire department's designated fire investigators.

Additionally, the incident commander may determine that a fire safety code enforcement consequence is necessary to ensure that a facility involved in an incident is rendered safe for public occupancy. Similarly, a facility may be recognized as having a fire safety system deficiency as a result of the incident or discovered during the incident. In these cases, a deputy fire marshal may be requested to immediately follow up on the incident to ensure required fire safety systems are returned to normal operating conditions or an equivalent level of protection is implemented through the authority of the Fire Marshal. Utilizing a deputy fire marshal for this purpose permits the emergency responders to return to an alert/ready status to respond to other emergencies and can avoid unnecessary business closures.

Critical Tasks-Emergency Medical Services

As previously stated, the department provides EMS first response and ambulance transport services to a large portion of Central Lane County. Because the majority of the call load involves emergency medical service delivery, every department fire company is qualified as an advanced life support (ALS) first response unit and staffed with at least one paramedic. In addition, all ESF metro medic units are either ALS transport equipped and staffed with a minimum of one paramedic, or able to be upgraded to ALS status by using the engine company paramedics.

In order to preserve the more limited ambulance capacity within the local EMS system, engine and truck companies are dispatched on a first-out basis to perform non-emergency patient evaluations. These calls are generally defined as nonspecific medical evaluations and are

indicated when the caller reports no priority symptoms in response to questioning by a trained call taker.

On arrival, the first response engine company assesses the patient, determines the level of intervention needed, if any, and connects the patient with the appropriate level of assistance. These calls often result in patient evaluation and assistance or treatment conducted by the engine company and no ambulance response.

Options for patient intervention include providing medical evaluation and advice to a patient who does not require transport to a medical facility. In some cases, after a field evaluation has determined that no medical intervention is required, the patient is placed in the care of a relative or other appropriate responsible party who will either monitor the situation or transport the patient to a medical facility by private vehicle.

In certain situations, responding crews can access the local Crisis Assistance - Helping Out On The Streets (CAHOOTS) program. This non-emergency service is provided by the City of Eugene in partnership with the White Bird Clinic. It consists of two non-emergency transport units staffed by civilian emergency medical technicians (EMTs) designed to handle mental crisis intervention, intoxicated subjects, and some eligible social service needs. First response engine crews also have the option of requesting an ambulance transport unit if needed, or if CAHOOTS is already committed to another call.

EMS calls for service can require treatment for more than one patient. These calls include vehicle accidents, chemical exposures, construction or industrial accidents, fires, and any other event that occurs with several people involved. Patient conditions range from minor cuts and bruises to life-threatening illnesses or injuries.

In addition to providing additional EMS system capacity, first-response fire companies also serve to augment the two-person ambulance crews at all emergency medical incidents. This is done to expedite life-saving treatment when required, and to ensure that there are enough trained responders on scene to handle the incident safely and effectively.

Below is a table that illustrates the critical tasks, which must be accomplished simultaneously for five separate life-threatening medical scenarios that occur frequently in our area. While some of these tasks can be done by the same person in rapid sequence, it illustrates the fact that it can take between five and eight people to treat and prepare for transport even one critical patient. Most calls involving the examples below requires the department send five personnel, three on the engine and two on the medic unit. However, more personnel may be requested as needed.

Figure 4.3 Tasks Required for Selected Types of Medical Calls

Critical Tasks	Cardiac Arrest	Stroke	Trauma	STEMI	Sepsis
12-Lead EKG Monitor	X	X	X	X	X
Cardiac Defibrillation	X	n/a	n/a	n/a	n/a
Synchronized Cardioversion	n/a	n/a	n/a	X	n/a
Cardiac Pacing	n/a	n/a	n/a	X	n/a
Airway mgt./Video Laryngoscopy	X	X	X	n/a	X
Rapid Sequence Intubation	X	X	X	n/a	X
End Title CO2 Monitoring	X	X	n/a	n/a	X
CPR	X	n/a	n/a	n/a	n/a
IV/IO/Pharmacology	X	X	X	X	X
Chest Decompression	X	n/a	X	n/a	n/a
Splinting/Bleeding Control/Immob.	n/a	n/a	X	n/a	n/a
Pt. Lifting/Packaging	X	X	X	X	X
Medical Info Collection	X	X	X	X	X

Critical Tasks-Special Operations

The department currently maintains four (4) operational specialties: hazardous materials, confined space rescue, water rescue, and Aircraft Rescue and Fire Fighting (ARFF).

The department utilizes a two-tiered approach to incidents requiring special operations capabilities. Each fire company has personnel trained to the operations or similar level in hazardous materials response, technical rescue, and water rescue, along with limited equipment for these functions. Technical and specialist personnel are available as part of regular fire companies on shift at any given time. These companies respond when dispatched as they would to other emergencies. Upon arrival, they assess whether they can mitigate the emergency with their own resources or if the equipment and expertise of the specialty teams are required.

Hazardous Materials

The Hazardous Materials (Haz Mat) Team is assigned to Fire Station 9 (Valley River). The team operates as one of 14 State of Oregon regional Haz Mat Emergency Response Teams and is approximately 25% revenue-backed by contract with the State. Hazardous materials response and mitigation services are provided on a special call basis to control and mitigate chemical releases. As a regional team, these services are provided to all of Lane County on a primary response basis, and to the rest of the State on a mutual aid response basis to support the other regional

teams. The State reimburses the City of Eugene for Haz Mat responses out of the city limits as well as for training and equipment. Additionally, several department personnel including members of the Haz Mat Team serve on the Lane County Local Emergency Planning Committee (LEPC), for purposes of assisting the community to plan, prepare for, and respond to hazardous releases and incidents.

When an incident presents a hazardous materials spill, release, or exposure requiring skills and equipment beyond the scope of those trained to the Haz Mat Operations level, the department's Hazardous Materials Team is requested.

While enroute, the team communicates by radio and cell phone with the on-scene Incident Commander and various state agencies to begin designing operational priorities specific to the incident. Upon arrival, the Haz Mat Team is designated as the Haz Mat Branch or Group under the Incident Command System (ICS) organizational structure. The Team Leader or Supervisor confers with the Incident Commander to further assess:

- Relevant safety issues and additional resource needs
- Hot, warm, and cold zone designations
- Evacuation and isolation requirements
- Product identification and determination
- Life safety and environmental damage and exposure concerns
- Release mechanism and current status
- Risk/benefit analysis
- Determination of strategy and tactics
- Required notifications

Following this initial briefing with the Incident Commander, the HazMat Team initiates interventions on:

- Reconnaissance
- Developing mitigation plans
- Defensive and/or offensive operations (confine versus contain)
- Debriefing, documentation, and demobilization

General Hazardous Materials Team assignments are as follows:

- Team Leader
- Resource Officer
- Entry Team (2)
- Back-Up Team (2)
- Safety Medical Team

A minimum of one company (3 personnel) is necessary to handle personnel and victim decontamination responsibilities. Additional companies may be used in support roles as needed. These may include:

- Incident Command and Command Staff
- Decontamination support
- Fire suppression standby
- Ventilation
- Scene and perimeter control
- Medical support

Confined Space (CS)

The Confined Space Rescue Team is assigned to Fire Station 8 (Danebo). This station has a heavy rescue apparatus equipped with specialized tools for confined space, high angle, and structural collapse responses. Personnel can be certified in four different disciplines: high-angle rope rescue, structure collapse, below-grade trench rescue, and confined space rescue. Team members maintain advanced certifications for crane/rigging operations, team deployment/logistics management, and air monitoring as well as instruct technical training at the state and national level.

Technical rescue services are provided within the service area, and in some cases, specifically requested by one of the engines, trucks, medic units, or mutual aid departments in need of the services for incident safety. Additionally, industry and governments are required by Oregon Occupational Safety & Health Administration (OSHA) to have a designated confined space rescue team in order to enter certain permit entry confined spaces. The Confined Space Rescue Team functions as the required agency of rescue for each city and several local industries.

Under agreement, training and deployment is coordinated with teams from the Eugene, Springfield, Albany, Corvallis, and Salem fire departments. A cache of heavy rescue equipment is available to meet immediate community needs as well as deployment to other communities.

Upon arrival at an incident scene, the Confined Space Rescue Team is designated as the Rescue Branch or Group under the Incident Command System (ICS) organizational structure. The Team Leader or Supervisor confers with the Incident Commander to further assess:

- Risk/benefit analysis
- Additional resource needs
- Strategy and tactical priorities
- Scene security and control
- Incident documentation
- Air monitoring (confined space)
- Electrical vault or power line concerns
- Fire suppression standby (if applicable)
- Required notifications

Water Rescue Team

The water rescue team conducts surface rescue operations in still and swift water conditions surrounding the metro area. Based out of Gateway #5 and Sheldon #6 stations, the team is equipped with boats and equipment to work in many environments. All team members are trained to the Swiftwater Rescue Technician level. In addition to rescue operations, team members assist Public Works with local river water testing several times a year and conduct multiple public education events. Team members respond to 60-70 calls for service annually. Although the peak water rescue season is from Memorial Day to Labor Day, calls for service are received year-round in area rivers and ponds. The Willamette River accounts for most of the team's calls for service. Boat launch site options include:

- Aspen Street and West D Street (Springfield, upstream and just east of Eugene)
- Alton Baker Park
- Belt Line Bridge
- Celeste Campbell in Skinner Butte Park
- East Hillcrest Drive
- Valley River Center

The team provides surface boat-based rescue only. Personnel are certified in swift water rescue and maintain state certification for Rescue Boat Operators.

On arrival, the Water Rescue Team is designated as the Water Rescue Branch or Group under the Incident Command System organizational structure. The Team Leader or Supervisor confers with the Incident Commander to:

- Locate witnesses
- Establish last seen point
- Analyze risk/benefit
- Secure and control the scene
- Determine boat launch / no-launch
- Maintain upstream and downstream safety during the rescue

Aircraft Rescue and Fire Fighting (ARFF)

ARFF is a special service that provides emergency response from Fire Station 12 (Airport) located on airport grounds. Station 12 (Airport) is staffed with one company officer and one engineer. To support the airport crew, additional ARFF trained personnel are assigned to surrounding fire stations (Stations 7, 8, 9, or 11), which are the second-in units in an aircraft emergency response. In addition to aircraft rescue and firefighting services, ARFF personnel respond to airport structural fires, fire alarms, hazardous materials and fuel spills, and first response for emergency medical calls for service. They also perform terminal fire extinguisher inspections, quarterly FAA fuel inspections of aircraft fuel facilities, and fire extinguisher training for all tenants at the airport.

Upon notification of an aircraft incident, the Aircraft Rescue and Fire Fighting Team provides immediate response from the airport fire station, as well as response from nearby fire stations to staff back-up ARFF apparatus. Initial duties include:

- Establish initial incident command
- Establish radio contact with FAA Air Traffic Control, and if possible, the pilot
- Determine nature and extent of emergency
- Determine resources needed and deployment
- Tactics and strategy considerations
- Risks, life hazards, deployment options, and command considerations
- Provide initial fire suppression and containment
- Establish escape paths for passengers and crew members
- Request additional resources as needed
- Coordinate actions of additional resources as they arrive
- Prioritize and accomplish goals as resources allow:
    - Rescue
    - Extrication
    - EMS, Triage, Treatment, and Transportation of victims
    - Water supply
- Maintain overall scene control until relieved by the appropriate federal agency.

Establishment of an Effective Response Force

Once critical tasks have been identified and defined, an effective emergency response force can be established. This force is defined as the number of personnel and amount of equipment that must reach an incident in a specific response zone within the response time goal. An effective response force must be trained and equipped to handle a variety of fire, rescue, special hazard,

and emergency medical incidents, shortly after they are reported. In order to accomplish this, companies and units must be located close enough to the incident to arrive within the prescribed response time for the full assignment of companies according to the risk level of the structure, situation, or event.

A minimum effective initial response force has been determined based on fire flow capabilities, critical fire ground tasking, rapid emergency medical intervention, and adequate and capable special rescue and hazard mitigation functions (see response packages under Call Types and Effective Response Force below).

In areas without fire hydrants, the standard response assignment is supplemented with water tenders to meet the anticipated needs for water supply. Likewise, for specialty functions such as wildland fire response, aircraft rescue and firefighting, or special rescue considerations, response packages are modified or augmented to include special equipment and/or trained personnel.

Apparatus Types

Fire Engines – The department currently staffs twelve (12) NFPA 1901 compliant triple combination pumper apparatus. These are apparatus equipped with a fire pump, hose complement, and water tank. Fire engines are also designated as Type I engines and are given a Class-A designation by the Insurance Services Office (ISO).

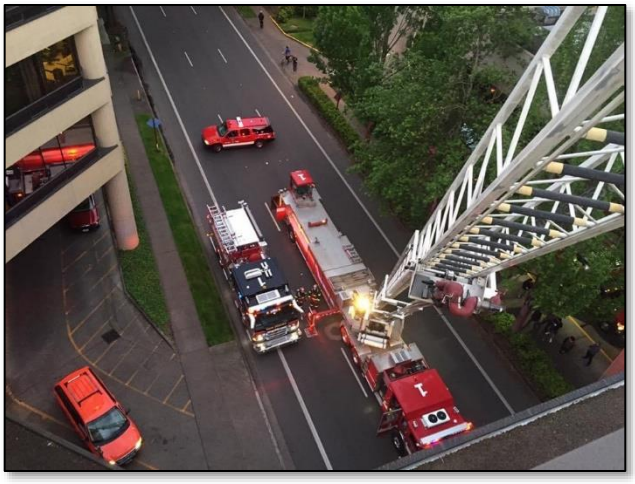
Minimum staffing consists of three personnel: one company officer who oversees the company, one engineer/apparatus operator, and at least one firefighter. At least one crewmember on each unit is a paramedic. Each fire company serves dual roles as fire suppression and first response advanced life support (ALS) unit.

The role of the engine company during fire suppression efforts is to provide fire hoses, associated appliances, and a fire pump suitable for firefighting purposes.

Engine/Ladders – The department currently staffs two (2) quad-type suppression apparatus, which serve the same function as fire engines, but are also equipped with a 75-foot apparatus-mounted ladder and carry more ground ladders than a standard engine.

Minimum staffing consists of three personnel: one company officer who oversees the company, one engineer apparatus operator, and at least one firefighter. At least one crewmember on each unit is a paramedic. Each fire company serves dual roles as fire suppression and first response advanced life support (ALS) unit.

Truck/Tower/Aerial - The department currently staffs three (3) ladder truck companies, employing two different types of apparatus. The first is a 100' straight ladder carried on a tractor-trailer, tillered aerial apparatus. The second type has 100' ladder topped with an elevating rescue platform. The primary role of the truck company during fire suppression efforts is to provide forcible entry, vertical and positive pressure ventilation, search and rescue, salvage and overhaul, elevated work above ground level on ladders, and/or elevated master streams for defensive firefighting operations.



The tillered truck is staffed with three personnel; one company officer who oversees the company, and two engineers (one assigned to the cab and the other assigned to the tiller). The platform trucks are staffed with at least three personnel, one company officer who is in charge of the company, one engineer apparatus operator, and at least one firefighter. A minimum of one crewmember on each unit is a paramedic. Each fire company serves dual roles as fire suppression and first response advanced life support (ALS) unit.

Brush Engines – The department houses four Type III brush engines: three in Eugene's hillside neighborhoods at Fire Station 13 (University), Fire Station 15 (South Hills), and Fire Station 10 (Bailey Hill), and one located in Springfield at Fire Station 16 (Thurston). for rapid deployment to rural interface areas. Brush engines are staffed as needed by on-duty engine companies for rapid deployment to rural interface fires.

The role of the brush engine is to access and fight fire in the wildland urban/rural interface zones. Brush engines are smaller units than Type I engines, equipped with all-wheel drive, higher ground clearance, and carry hose loads more suited for wildland firefighting applications.

Water Tenders – The department deploys three 3,000-gallon water tenders, utilized in non-hydrant response areas. These resources support structure fire and natural cover fire operations. Water tenders are deployed at Fire Station 2 (Whiteaker), Fire Station 11 (Santa Clara), and Fire Station 5 (Gateway), and are staffed as needed by the engine company at those locations based on call type.

Water tenders are equipped with telescoping fixed-mounted master stream nozzles. These nozzles can flow in excess of 750 gallons per minute. Deployment of this heavy master stream can be of value during fires that require a rapid and mobile application of large volumes of water. The water tender apparatus also carries aqueous film forming foam (AFFF) concentrate. This foam concentrate, when used in conjunction with foam educating master stream nozzles, can generate 3,000 gallons of foam solution using only the water and foam concentrate carried on the apparatus.

The water tenders are used as an ancillary resource at the Eugene Airport. In addition to the supplemental 3,000 gallons of mobile water available on each water tender, the foam component is of particular benefit during aircraft emergencies. On occasion, when larger-than-usual commercial aircraft are scheduled to land at the Eugene Airport, the Federal Aviation Administration (FAA) may upgrade the Aircraft Rescue and Fire Fighting (ARFF) index. The department is equipped to meet this upgraded status by deploying one or more water tenders to meet the additional water and foam flow requirements. Water tenders may also be used during scheduled maintenance of ARFF apparatus.

Aircraft Rescue & Fire Fighting (ARFF) Units – The department deploys two ARFF apparatus with one of the two staffed 24/7. ARFF units are uniquely configured, each having a 1500 gallon water tank and a 210 gallon foam tank designed for aircraft rescue and firefighting deployment.

Minimum staffing consists of two specially trained firefighters: one company officer who oversees the company and one engineer who is the apparatus operator. Additionally, crews assigned at stations located near the airport are also ARFF trained and provide backup to the designated ARFF crew.

The primary role of the ARFF Company is to remain at the Airport and be available for aircraft rescue and firefighting responses, as per Federal Air Regulations, Part 139.

Medic Units (Ambulances) – The primary role of the medic unit is the treatment and transport of the sick and injured within county designated ambulance service areas. Personnel assigned to ALS medic units are trained as firefighters, which helps augment the overall firefighting force. BLS ambulances are single role personnel and are not trained in fire suppression. All medic units carry a full complement of advanced life support (ALS) equipment and are licensed and designated by the State of Oregon as ALS ambulances. A fire suppression paramedic can accompany a BLS ambulance during transport to upstaff the unit to become an ALS ambulance. If this occurs, the fire suppression company is out of service until transport is complete.

Eugene Springfield Fire currently deploys:

- 7 – 24-hour ALS Type I ambulances staffed with at least one paramedic and one EMT-Intermediate.

- 1 – 24-hour basic life support (BLS) Type I ambulance staffed at a minimum with two EMTs.
- 2 – 12-hour BLS Type I ambulances staffed at a minimum with two EMTs.
- 2 – ALS Type I ambulances that can be deployed during peak activity using a fire suppression company that includes at least one paramedic.
- 7 – Reserve Type I ambulances that can be deployed using fire suppression companies or call back personnel in the event of a mass casualty incident (MCI) or special event for medical standby.

Eugene Springfield Fire currently contracts with Mid-Valley Ambulance for certain categories of non-emergency medical transports. Mid-Valley Ambulance currently deploys:

- 2 – 24-hour BLS Type II ambulances staffed with a paramedic and an EMT.
- 2 – 12-hour BLS Type II ambulances staffed with a paramedic and an EMT.

Eugene Springfield Fire currently contracts with Life Flight for critical care transport via air and ground. Life Flight currently deploys:

- 1 – helicopter staffed with a pilot, nurse, and medic.
- Personnel available to facilitate CCT via ground ambulance.

Call Types and Effective Response Force

With critical tasks determined and an effective response force defined, identifying dispatch call types and their commensurate response packages including numbers and types of units deployed on the initial response is required. Below are current response packages that are automated in the dispatch system:

Public Service

- 1 Engine Company or 1 Truck Company

Non-Emergency Medical Check Patient

- 1 Engine Company, 1 Truck Company or 1 Medic Unit
  If a fire company and medic unit are equal distance from a call, the fire company is dispatched to maintain the availability of the smaller ambulance resource base.

Emergency Medical

- 1 Engine Company or 1 Truck Company, 1 Medic Unit

Emergency Medical – Cardio-Cerebral Resuscitation (CCR)

- 2 Engine Companies, 1 Medic Unit, 1 Chief Officer

Motor Vehicle Accident

- 1 Engine Company, 1 Truck Company, 1 Medic Unit

General Rescue

- 1 Engine Company, 1 Truck Company, 1 Chief Officer, 1 Medic Unit

Water Rescue

- On-duty Water Rescue Team, 2 Engine Companies, 1 Medic Unit, 1 Chief Officer

Structural Collapse Rescue

- On-duty Confined Space Team, 1 Engine Company, 1 Truck Company, 1 Medic Unit, 1 Chief Officer

Confined Space Rescue

- On-duty Confined Space Team, 1 Engine Company, 1 Truck Company, 1 Medic Unit, 1 Chief Officer

High Angle Rescue

- On-duty Confined Space Team, 1 Engine Company, 1 Truck Company, 1 Medic Unit, 1 Chief Officer

Fire Alarm Activation

- 1 Engine Company or 1 Truck Company
  (If a truck company is the closest fire unit, it responds Code-3 and one engine company responds Code-1 as the trucks do not have a fire pump, water tank, or hose compliment.)

Fire Alarm Activation – High-Rise (6 or more stories)

- 2 Engine Companies, 1 Truck Company, 1 Chief Officer

Fire – Non Structural

- 1 Engine Company

Fire – Small Structures (<5,000 sq. ft.)

- 4 Engine Companies, 1 Truck Company, 2 Chief Officers, 1 Medic Unit

Fire – Large Structures (>5,000 sq. ft.)

- 4 Engine Companies, 2 Truck Companies, 2 Chief Officers, 1 Medic Unit

Fire – High-Rise and High-life Hazard Structures

- 5 Engine Companies, 2 Truck Companies, 2 Chief Officers, 2 Medic Units
  (Automatic 2nd alarm assignment is activated if smoke is showing on arrival.)

Fire – Natural Cover Fire (October 16th through June 14th)

- 1 Engine Company or 1 Brush Engine or 1 Water Tender

Fire – Natural Cover Fire (June 15th through October 15th)

- 2 Engine Companies, plus 1 Chief Officer
  A Brush Engine or Water Tender may be dispatched in lieu of one engine company or as an additional resource.

Airport Response – Small Aircraft

- 1 ARFF Unit, 1 Engine Company, 1 Chief Officer, 1 Medic Unit

Airport Response – Large Aircraft

- 1 ARFF Unit, 1 Truck Company, 1 Engine Company, 2 Water Tenders, 1 Chief Officer, 1 Medic Unit

Automatic Aid, Move-Up, and Mutual Aid

Within the existing interagency system, there are two basic types of aid agreements: Automatic Aid and Mutual Aid. These aid agreements are used to augment existing resources.

Automatic Aid

Automatic aid is a formal agreement between two agencies where one or both parties are dispatched and respond automatically into a portion of the other party's jurisdiction. Under an automatic aid agreement, no request is required for assistance within the boundaries of the agreed-upon area. Automatic aid agreements currently exist with:

- Lane Fire Authority to the north and west (including Santa Clara area) for fire suppression, water tender support, ambulance response.
- McKenzie Fire & Rescue to the east for fire suppression, and medical response.

Additionally, Eugene and Springfield operate under an integrated 3-Battalion System, with two battalions in Eugene and one battalion in Springfield. Units automatically provide suppression and rescue services as a single unified and branded response force where the closest units respond throughout the system without regard to jurisdiction.

Medic Unit Move-Up

As part of the integrated response system, the department utilizes an automatic move-up procedure for those instances when only one medic unit remains available in the metro area. This procedure delineates the standby zone that the remaining unit must respond to and remain in position until dispatched to a call, or other units become available.

Mutual Aid

Mutual aid is a formal agreement between two or more agencies to respond into each other's jurisdiction, upon request, when the requesting agency's resources have been depleted or are projected to be depleted. Under most mutual aid agreements, the requesting party receives resources only if the providing agency can meet the request without depleting its own resources below an acceptable level. Under Lane County Code, a mutual aid agreement between ambulance service providers has this additional provision: "By mutual aid agreement, an ambulance service provider may respond to another provider's Ambulance Service Area (ASA). This plan does not apply to an ambulance that is passing through an ASA." (Lane County Code 18.020)

The department also has mutual aid agreements for fire protection with all Lane County fire departments and districts. These agreements are established through the Lane County Fire Defense Board. Additionally, the department, like all Oregon fire service jurisdictions, has a

mutual aid agreement through the Oregon State Governor's Office, and managed by the Oregon State Fire Marshal's Office, under the Oregon State Emergency Conflagration Act. When invoked, this act provides resources from within the state, and in some cases from other states. The cost of response is reimbursed by the State of Oregon.

SECTION FIVE: Service Level Goals

Service Level Goals

The department's adopted response time standards are stated in this section. These standards are based on the risk analysis of the service areas, the critical task analysis, historical performance, NFPA standards such as NFPA 1710, and in the case of ambulance response time standards, the Lane County Code. These are considered a reasonable response based on the level of risk in the community. The standards provide measures of the service levels provided in the designated areas.

The Standards of Coverage is intended to recognize local authority, available resources, risk, and community expectations. It is the individual communities through their elected officials that determine local standards. By economic decisions with respect to taxation and budgeting, the communities purchase a level of fire and life safety service that is consistent with perceived needs, risks, and available resources. While these decisions may be influenced by such factors as insurance ratings prepared by the Insurance Services Office (ISO), the level of protection available in any community is a local decision that should be made only after rigorous study of local needs and available resources. It will continue to be the department's practice to deploy resources capable of effectively and efficiently mitigating calls for service.

Response Time Goals, All Emergency Incidents

Local response time goals are as follows for all emergency responses.

- Call processing: 2 minutes or less for 80% of all calls.*
- Turnout: 2 minutes or less for 80% of all calls.
- Travel time for first arriving unit in Risk Area A: 5 minutes or less for 80% of all calls.
- Travel time for first arriving unit in Risk Area B: 9 minutes or less for 80% of all calls.

*Central Lane Communication Center (CLCC) is responsible for this metric.

Response Time Goals, Structure Fires

In addition to the times specified for first arriving unit to all calls stated above, the department has established the following goals for initial response arriving to structure fires. For purposes of these goals, Risk Areas A and B are combined, due to the low number of structure fires occurring in Risk Area B.

- Travel time for all units needed for effective initial response to arrive on scene: 10 minutes or less for 80% of calls.
- Travel time for 15th person on scene: 11 minutes or less for 80% of calls.

Response Time Goals, Ambulance Transport

Based on Lane County Code, the following are adopted response time goals for emergency ambulance transport service within assigned Ambulance Service Areas.

- Call processing: 2 minutes or less for 80% of all emergency calls for ambulance transport.
- Turnout time: 2 minutes or less for 80% of all emergency calls for ambulance transport.
- Response time (includes turnout time and travel time): Less than 10 minutes for 90% of all emergency calls in Zone 1 (urban).
- Response time (includes turnout time and travel time): Less than 20 minutes for 90% of all emergency calls in Zone 2 (suburban).
- Response time (includes turnout time and travel time): 45 minutes or less for 90% of all emergency calls in Zone 3 (rural).
- Response time (includes turnout and travel time): 4 hours and 30 minutes or less for emergency calls in Zone 4 (frontier).

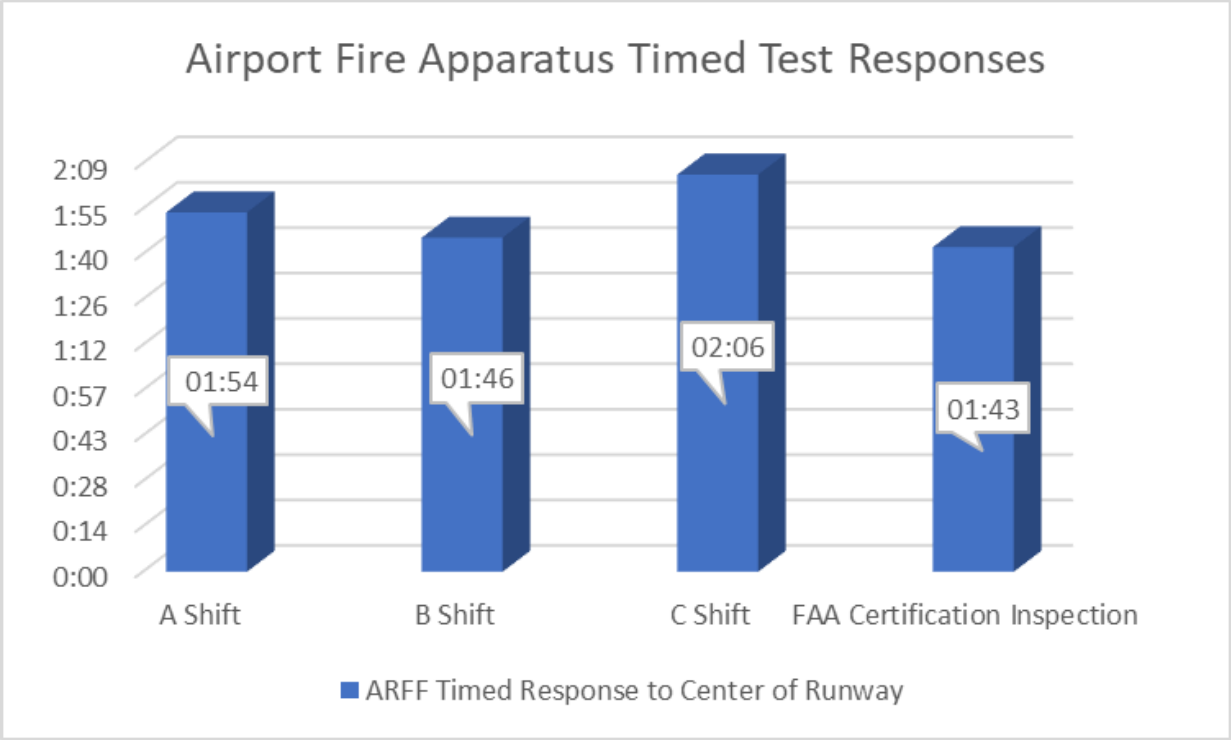
City of Springfield – Additional Standards

Springfield City Council's adopted Strategic Plan includes two response time standards: 1) percentage of fire calls responded to under 5 minutes and 2) the percentage of medical responses by an ambulance under 8 minutes within Springfield city limits. The goal is 80% for fire responses and 90% for medical responses.

Response Time Goals, Eugene Airport

The department has adopted the following goal for aircraft rescue and firefighting response at the Eugene Airport. ARFF response goal is based on the Federal Aviation Administration's (FAA) Regulation Part 139.319(i) (2), the governing regulatory authority. The goal is measured based on the ability to respond to the mid-point of the farthest runway within three (3) minutes. The FAA evaluates the department annually ensuring this goal is met.

Figure 4.3 Tasks Required for Selected Types of Medical Calls



SECTION SIX: Time and On-Scene Performance

The rapid and effective performance of highly coordinated assigned tasks is the hallmark of a successful emergency response force. Time and on-scene performance expectations are the target indicators established for measuring the operational elements including individuals, crews, and work units that comprise the department's response-ready resources.

Performance standards reflect goals highlighted in Section Five as well as components of essential competencies established by the National Fire Protection Association (NFPA), the Federal Aviation Administration (FAA), the American Heart Association (AHA), the National Association of Emergency Medical Technicians (NAEMT), and Oregon Occupational Safety and Health Administration (OR-OSHA).

Time Points and Intervals – The Cascade of Events

Over the years, response time data have been analyzed by the fire service industry using a variety of methods. In order to standardize the terminology used by departments around the United States and Canada, the Commission for Fire Accreditation International, Inc. (CFAI) has developed the following set of definitions used for describing individually recognized components of response time. These elements can be appropriately viewed as an interrelated cascading sequence of events, consisting of a series of points in time separated by intervals. The department has adopted the following definitions, which are consistent with those given by CFAI.

- **Event Initiation** – the point at which events occur that may ultimately result in an activation of the emergency response system. Precipitating events can occur seconds, minutes, hours, or even days before a point of awareness is reached. It is rarely possible to quantify the point at which event initiation occurs.

- **Emergency Event Awareness** – the point at which an individual or technological sentinel (e.g., smoke or heat detector) becomes aware that conditions exist which require an activation of the emergency response system.

- **Alarm** – the point at which awareness triggers an effort to notify the emergency response system. An example of this is the transmittal of a local or central alarm to a designated public safety answering point (PSAP).

- **Notification** – the point at which an alarm or call for assistance is received by the PSAP. This transmittal may take the form of an electronic or mechanical notification process to the point at which a call is received and answered within the jurisdictional PSAP.

- **Call Processing Time -** The time interval from when the alarm (911 call) is answered at the PSAP until response information begins to be transmitted to emergency response facilities and units.

- **Turnout Time** – the interval between the activation of station and/or crew alerting devices and the delivery of specific dispatch information to emergency personnel, and the time when the responding crew notifies the dispatcher that the company is en route. During the turnout interval, crews immediately cease all other activities, don appropriate protective clothing, determine the location of the call, board and start the appropriate response vehicle. The en route notification to dispatch is made when all personnel are aboard the apparatus, and the vehicle begins traveling toward the call location.

- **En Route** – the point at which the responding unit signals the dispatcher that they are responding to the call for service or traveling toward the hospital or other appropriate receiving facility. On calls in which a patient is transported, there are two en route times: en route to the call and en route to the medical receiving facility.

- **Travel Time** – the interval that begins at the time of the en route notification and ends when the responding unit notifies the dispatcher that it has arrived on scene.

- **Arrival (On-scene) Time** – the point at which the first responding unit arrives on scene or the transport unit arrives at the receiving facility. Arrival is determined by actual physical arrival at the address or location of the emergency. Arrival time also include stage time, which is when an apparatus is staged or standing by near the incident location.

- **On-Scene Interval** – the interval which begins at the arrival time on scene and ends with one of the following situations: 1) the official termination of the incident; 2) the point when an ambulance is en route transporting the patient to a receiving facility; or 3) when one or more units have completed the response assignment and are made available to respond to other requests for service. This time interval can be lengthy and may include a variety of fire ground and emergency incident activities. Other factors to consider are access problems associated with campuses, malls, complexes, high-rise buildings, rural locations, and other incidents where a significant amount of area or terrain must be traversed in order to reach the patient or specific location of the incident.

- **Transport Time** – the second travel time interval for a medical transport call, which begins at the termination of on-scene time and ends upon arrival at the hospital or other designated medical receiving facility.

- **Drop Time** – on a medical transport call, the interval, which begins upon arrival at the receiving facility and ends when the ambulance crew has alerted the dispatcher that the unit is restocked, cleaned, and ready to respond to another call for service.

- **Termination of Incident** – the point at which the designated incident commander notifies the dispatcher that the assignment has been completed and the units assigned are available to respond or otherwise committed.
- **Task Time** – the total time interval from dispatch through termination of the incident. It reflects the period of time response resources are committed and unavailable for other service requests.
- **Response Time** – includes the elements of responding to an incident that are directly under the control of the responding agency (i.e., turnout time plus travel time).

Time Methodology Description

There are two basic components to a performance standard: 1) measurable task (e.g., response time), and 2) level of performance. This is normally stated in terms of an average or a percentage (fractile) of the amount of such tasks that fall at or below the desired level (e.g., 80%).

Performance can be measured in several ways, including average (mean), fractile, and median (center value). While average times have some utility, they are not wholly useful measures of performance unless coupled with measures that describe the shape of the performance curve, such as variances or standard deviation. Two fire departments can report the same average response time, yet the two communities receive vastly different services. For example, City A, with a 4-minute average response time, could have response times falling somewhere between 3 and 5 minutes. City B, with the same 4-minute average response time, could have a few calls with a response time of less than one minute and some calls with a response time of 10 minutes or longer. Thus, the use of averages has the effect of concealing, rather than clearly demonstrating, true response performance for an agency. While no single measure tells the entire story, Eugene Springfield Fire has chosen to use fractile measures in performance standards because they represent the large majority of tasks completed in specific timeframes and give a good indication of the level of service our communities can expect to receive.

The following definitions will help complete the analysis picture:

- **Average** – Also known as the mean, it is calculated by adding all of the times and dividing by the total number of incidents.

- **80^{th} and 85^{th} Percentiles** – These are the interval times in 80% and 85% of all incidents respectively.

Exception Reporting

Several factors that are beyond the department's direct control may adversely affect emergency response times. When calculating response time performance, calls that appear, after review, to be exceptions or outliers within the data curve are removed. Examples of exceptions or outliers are:

- Calls initiated as "Code 3" but unit slowed to "Code 1" while en route.
- Calls clearly miscoded by dispatch where this results in invalid data.

The Human Factor

Accurate measurement of time points and intervals described above would require instantaneous and precise communication by response personnel and data entry by dispatch personnel. However, on some calls, this is not the case because members of either group may be performing two or more tasks at one time, or because simple human error has occurred, resulting in a delay or omission of a status report or of data entry. Any such case would have the effect of lengthening, and not ever of reducing, the time interval preceding it.

Response Time Performance Tables

Response times for fiscal year 2015 through fiscal year 2019 are shown on the figures beginning on the following page. The times shown are Code 3, emergency response calls. The first set of tables reflects response times for first arriving apparatus to all areas. As previously identified, Risk Area A includes the city limits, River Road Water District, Glenwood Water District, and Rainbow Water District. Risk Area B includes calls within the remaining contract rural fire protection districts: Bailey- Spencer, Willakenzie, Zumwalt, and Eugene Rural Fire District #1.

It is important to note that in the following tables, turnout time plus travel time does not necessarily equal response time because each mean is derived from a different group of calls. In other words, the calls within a certain percentile for turnout time may not be the exact group of calls that were within the same percentile for travel time.

Figure 6.1 Emergency Response Times to All Areas

FY19 (July 1, 2018 – June 30, 2019)					
		Processing	**Turnout**	**Travel**	**Response**
Eugene Springfield	**80th Percentile**	00:02:49	00:02:15	00:06:19	00:07:57

FY18 (July 1, 2017 – June 30, 2018)					
		Processing	**Turnout**	**Travel**	**Response**
Eugene Springfield	**80th Percentile**	**00:02:45**	**00:02:17**	**00:06:11**	**00:07:51**

FY17 (July 1, 2016 – June 30, 2017)					
		Processing	**Turnout**	**Travel**	**Response**
Eugene Springfield	**80th Percentile**	**00:02:49**	**00:01:54**	**00:06:35**	**00:07:54**

FY16 (July 1, 2015 – June 30, 2016)					
		Processing	**Turnout**	**Travel**	**Response**
Eugene Springfield	**80th Percentile**	**00:02:52**	**00:01:51**	**00:05:57**	**00:07:26**

Figure 6.1 continued on following page.

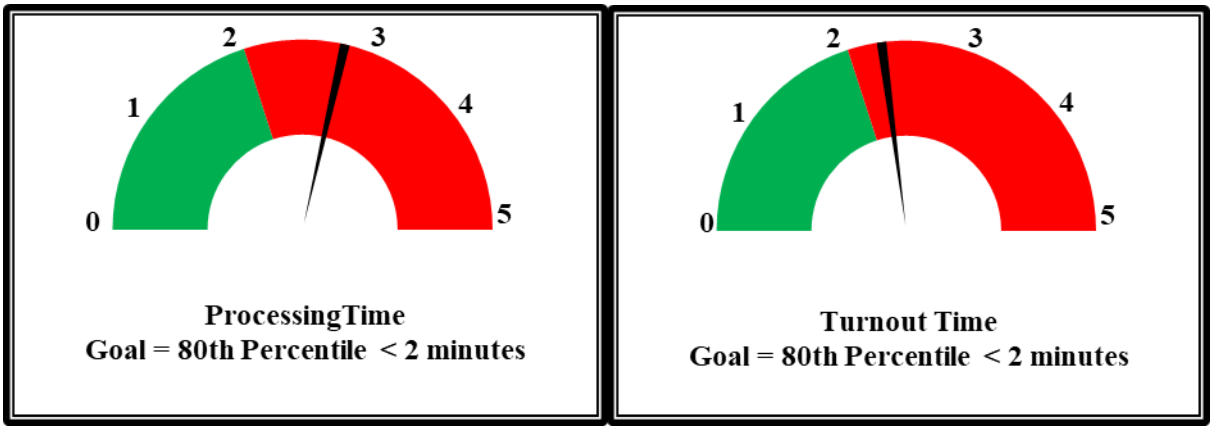
FY15 (July 1, 2014 – June 30, 2015)					
		Processing	Turnout	Travel	Response
Eugene Springfield	80th Percentile	00:02:52	00:01:54	00:06:00	00:07:36

Response times do not include processing time.

FY19 Performance

As posted in Section Five, goals associated with all calls in all areas are as follows. If the indicator is in the green, the department is meeting the goal noted on the graphic. If the indicator is in the red, the department is not meeting the goal noted on the graphic. As shown, the department's turnout time is slightly in excess of the stated goal.

To address this issue, the department is continuing to research alerting technology that will eliminate turnout time delays due to audible station alerting procedures that can take up to 45 seconds on emergency calls. The new system is compliant with *NFPA 1221*, *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems*, and offers the ability to pre-alert the first-due station and to dispatch crews simultaneously. It is projected that this technology will assist the department in reaching and maintaining the set goal of 2 minutes.



Data for FY19

Figure 6.2 Emergency Response Times to Risk Area A Calls

FY19 (July 1, 2018 – June 30, 2019)					
		Processing	**Turnout**	**Travel**	**Response**
Eugene Springfield	**80th Percentile**	00:02:49	00:02:15	00:06:15	00:07:53

FY18 (July 1, 2017 – June 30, 2018)					
		Processing	**Turnout**	**Travel**	**Response**
Eugene Springfield	**80th Percentile**	00:02:45	00:02:17	00:06:06	00:07:47

FY17 (July 1, 2016 – June 30, 2017)					
		Processing	**Turnout**	**Travel**	**Response**
Eugene Springfield	**80th Percentile**	00:02:49	00:01:54	00:06:31	00:07:50

FY16 (July 1, 2015 – June 30, 2016)					
		Processing	**Turnout**	**Travel**	**Response**
Eugene Springfield	**80th Percentile**	00:02:52	00:01:51	00:05:54	00:07:22

FY15 (July 1, 2014 – June 30, 2015)					
		Processing	**Turnout**	**Travel**	**Response**
Eugene Springfield	**80th Percentile**	00:02:52	00:01:54	00:05:56	00:07:32

Response times do not include processing time.

FY19 Performance Risk Area A

As posted in Section Five, goals associated with all calls in Risk Area A are as follows. If the indicator is in the green, the department is meeting the goal noted on the graphic. If the indicator is in the red, the department is not meeting the goal noted on the graphic.

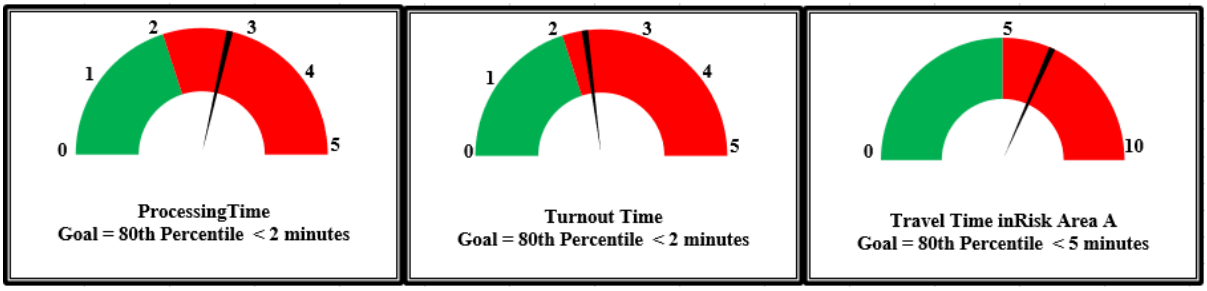


Figure 6.3 Emergency Response Times to Risk Area B Calls

FY19 (July 1, 2018 – June 30, 2019)					
		Processing	**Turnout**	**Travel**	**Response**
Eugene Springfield	**80th Percentile**	00:03:04	00:02:22	00:09:45	00:11:24

FY18 (July 1, 2017 – June 30, 2018)					
		Processing	**Turnout**	**Travel**	**Response**
Eugene Springfield	**80th Percentile**	00:02:52	00:02:16	00:09:36	00:11:10

FY17 (July 1, 2016 – June 30, 2017)					
		Processing	**Turnout**	**Travel**	**Response**
Eugene Springfield	**80th Percentile**	00:02:58	00:01:55	00:09:22	00:11:04

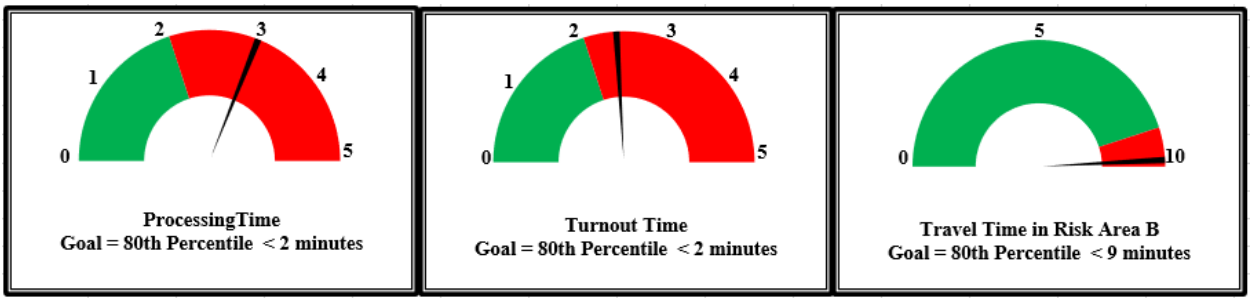
FY16 (July 1, 2015 – June 30, 2016)					
		Processing	**Turnout**	**Travel**	**Response**
Eugene Springfield	**80th Percentile**	00:02:57	00:01:56	00:09:10	00:10:32

FY15 (July 1, 2014 – June 30, 2015)					
		Processing	**Turnout**	**Travel**	**Response**
Eugene Springfield	**80th Percentile**	00:03:04	00:02:01	00:09:22	00:10:59

Response times do not include processing time.

FY19 Performance Risk Area B

As posted in Section Five, goals associated with all calls in Risk Area B are as follows. If the indicator is in the green, the department is meeting the goal noted on the graphic. If the indicator is in the red, the department is not meeting the goal noted on the graphic.



Ambulance Emergency Response Times

The ambulance emergency response timetables also include on-scene time, transport time, drop time, and overall task time. While there are not specifically established goals for these intervals, they are shown here as a measure of the timely completion of tasks associated with these calls, as well as the time it takes these units to return to available status.

Figure 6.4 Ambulance Emergency Calls to All Areas

FY19 Ambulance Emergency Calls to All Areas (July 1, 2018 - June 30, 2019)							
	Turnout	**Travel**	**Response**	**On-Scene**	**Transport**	**Drop**	**Task**
Average	0:01:34	0:08:57	0:10:31	0:11:01	0:13:55	0:18:49	0:54:16
90th Percentile	0:03:03	0:16:08	0:17:38	0:17:31	0:22:25	0:32:33	1:14:45
80th Percentile	0:02:28	0:12:49	0:14:18	0:14:39	0:18:27	0:25:23	1:04:55

FY18 Ambulance Emergency Calls to All Areas (July 1, 2017 - June 30, 2018)							
	Turnout	**Travel**	**Response**	**On-Scene**	**Transport**	**Drop**	**Task**
Average	0:01:42	0:09:05	0:10:47	0:10:59	0:14:02	0:17:04	0:52:52
90th Percentile	0:03:16	0:16:20	0:18:02	0:17:31	0:22:22	0:27:53	1:10:22
80th Percentile	0:02:37	0:12:58	0:14:35	0:14:31	0:18:31	0:22:09	1:02:14

FY17 Ambulance Emergency Calls to All Areas (July 1, 2016 - June 30, 2017)							
	Turnout	**Travel**	**Response**	**On-Scene**	**Transport**	**Drop**	**Task**
Average	0:01:31	0:09:20	0:10:50	0:10:51	0:14:16	0:16:37	0:52:34
90th Percentile	0:02:51	0:16:53	0:18:21	0:17:24	0:22:47	0:25:49	1:09:28
80th Percentile	0:02:15	0:13:08	0:14:37	0:14:32	0:18:48	0:20:36	1:01:47

FY16 Ambulance Emergency Calls to All Areas (July 1, 2015 - June 30, 2016)							
	Turnout	**Travel**	**Response**	**On-Scene**	**Transport**	**Drop**	**Task**
Average	0:01:32	0:08:14	0:09:46	0:10:57	0:14:08	0:16:13	0:51:04
90th Percentile	0:02:48	0:14:42	0:16:17	0:17:21	0:22:19	0:23:49	1:07:19
80th Percentile	0:02:14	0:11:17	0:12:53	0:14:26	0:18:38	0:19:08	0:59:51

FY15 Ambulance Emergency Calls to All Areas (July 1, 2014 - June 30, 2015)							
	Turnout	**Travel**	**Response**	**On-Scene**	**Transport**	**Drop**	**Task**
Average	0:01:30	0:08:13	0:09:44	0:10:47	0:14:09	0:15:55	0:50:34
90th Percentile	0:02:49	0:14:52	0:16:26	0:16:56	0:22:00	0:23:29	1:06:56
80th Percentile	0:02:13	0:11:25	0:12:57	0:14:08	0:18:24	0:18:50	0:59:02

Figure 6.5 Ambulance Response Times by Zone

FY19 Q1 Ambulance Emergency Response Time by Response Zone						
Response Time Goal (90%)	Total Calls	Total Calls that meet Lane Code Emergency definition*	Number of Calls Meeting Exception Requirements	Total Number of Emergency Calls	Number of Calls Within Goal Time	Percent of Calls within Goal Time
Zone 1 - Less than 10 minutes	6664	1741	1	1740	1636	94%
Zone 2 - Less than 20 minutes	292	158	0	158	145	92%
Zone 3 - 45 minutes or less	164	78	0	78	71	91%
Zone 4 - Up to 4 hours 30 min	5	0	0	0	0	N/A

FY19 Q2 Ambulance Emergency Response Time by Response Zone						
Response Time Goal (90%)	Total Calls	Total Calls that meet Lane Code Emergency definition*	Number of Calls Meeting Exception Requirements	Remaining Calls	Number of Calls Within Goal Time	Percent of Calls within Goal Time
Zone 1 - Less than 10 minutes	7162	2043	11	2032	1888	93%
Zone 2 - Less than 20 minutes	280	138	2	136	122	90%
Zone 3 - 45 minutes or less	145	82	3	79	72	91%
Zone 4 - Up to 4 hours 30 min	1	0	0	0	0	N/A

FY19 Q3 Ambulance Emergency Response Time by Response Zone						
Response Time Goal (90%)	Total Calls	Total Calls that meet Lane Code Emergency definition*	Number of Calls Meeting Exception Requirements	Total Number of Emergency Calls	Number of Calls Within Goal Time	Percent of Calls within Goal Time
Zone 1 - Less than 10 minutes	6996	4179	52	4127	4056	98%
Zone 2 - Less than 20 minutes	258	136	1	135	131	97%
Zone 3 - 45 minutes or less	149	78	1	77	75	97%
Zone 4 - Up to 4 hours 30 min	0	0	0	0	0	N/A

FY19 Q4 Ambulance Emergency Response Time by Response Zone						
Response Time Goal (90%)	Total Calls	Total Calls that meet Lane Code Emergency definition*	Number of Calls Meeting Exception Requirements	Total Number of Emergency Calls	Number of Calls Within Goal Time	Percent of Calls within Goal Time
Zone 1 - Less than 10 minutes	6593	1801	11	1790	1781	99%
Zone 2 - Less than 20 minutes	268	140	1	139	140	101%
Zone 3 - 45 minutes or less	153	86	1	85	84	99%
Zone 4 - Up to 4 hours 30 min	0	0	0	0	0	N/A

*Lane County Code Chapter 18.015 Definitions: Emergency Calls: 911 call placed in good faith where the caller believes a time-sensitive medical emergency has occurred. The medical emergency is triaged through a State recognized Emergency Medical Dispatch (EMD) protocol to assign a response to the incident according to the criteria the ASA has in place regarding emergency driving protocol. Response Time: The length of time between the notification of each provider and the arrival of each provider's emergency medical service unit(s) at the incident scene.

FY19 Performance

For FY19, Zone 1, 2 and 3 response times all met the response time goal of 90%. This is largely the result of Lane County Code making allowances for an advanced EMT or paramedic who arrives first on a fire engine to "reset the clock" on this metric. ESF requires each fire engine to be staffed with at least one paramedic, which provides a high level of emergency medical care as quickly as possible, notwithstanding potential ambulance delays.

Challenges to meeting response time goals in the Eugene/Springfield area include the following:

- In Zone 1, first response fire apparatus are dispatched Code 3 to medical calls. Medic units are dispatched based on type of call. For lower acuity alpha and bravo calls, the medic unit is dispatched Code 1 for the safety of responders and the general public. For these calls, the medic unit response time makes up the total reported times and not the first response fire apparatus.
- The two hospital facilities capable of supporting advanced care are both located in Springfield, lengthening ambulance travel time for Eugene-based units and reducing time available in assigned response areas.
- Increased call volume has also reduced time available in assigned response areas resulting in medic units responding from locations further away from incidents.
- New development has brought more congestion to an aging street network and a proliferation of traffic calming devices in the community slows emergency response.

Response Time Performance – Structure Fires

For response to a structure fire, the standard stated in Section Five is based upon the time it takes to assemble a fire suppression force of 15 personnel, based on NFPA 1710. In conservatively developing this measure for the department, the time for 15 personnel to arrive on scene was calculated even though for structure fire incidents, the department dispatches an initial response of 19 personnel (see figure 8.2). The following tables show actual response performance for structure fires for the department during fiscal years 2015-2019.

We have included response times for all structure fires and have indicated the travel time for the last-arriving unit of the initial dispatch. This is generally the period of time it takes to assemble an effective initial response force. Many structure fire responses do not actually require the full 15-personnel response. A response of fewer than 15 personnel would usually occur when first-arriving crews determine during their initial size-up that the fire does not require the full first alarm response resources and cancel, or return, some of the responding crews. More detail about on-scene operations is provided in Section Four. For the following tables, travel time for the 15th person to arrive only include structure fire incidents where 15 or more personnel were needed not all structure fires as used in the other measurements.

Figure 6.6

Risk Areas A and B were not separated in these tables due to the low number of structure fires in Risk Area B.

FY19 Structure Fires				
Call Processing 80th Percentile	Turnout 80th Percentile	1st Arriving 80th% Travel Time	Last Arriving 80th % Travel Time	Arrival of 15th Person 80th %
00:01:47	0:03:15	0:04:28	0:10:21	0:09:35

FY18 Structure Fires				
Call Processing 80th Percentile	Turnout 80th Percentile	1st Arriving 80th% Travel Time	Last Arriving 80th % Travel Time	Arrival of 15th Person 80th %
00:01:40	0:02:12	0:04:13	0:10:52	0:08:06

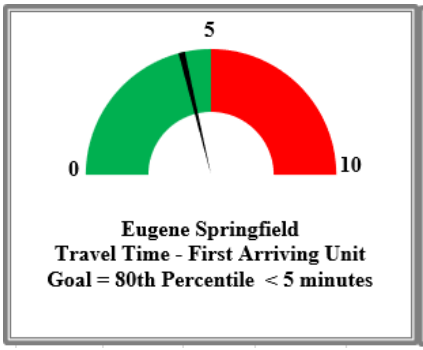
FY17 Structure Fires				
Call Processing 80th Percentile	Turnout 80th Percentile	1st Arriving 80th% Travel Time	Last Arriving 80th % Travel Time	Arrival of 15th Person 80th %
00:01:45	0:01:58	0:04:19	0:10:56	0:08:25

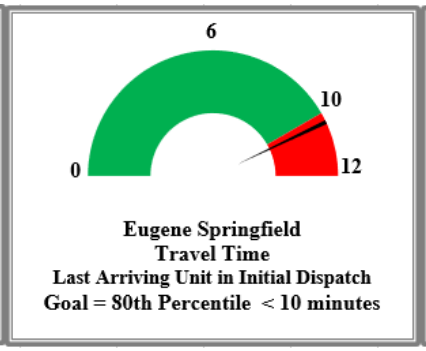
FY16 Structure Fires				
Call Processing 80th Percentile	Turnout 80th Percentile	1st Arriving 80th% Travel Time	Last Arriving 80th % Travel Time	Arrival of 15th Person 80th %
00:01:30	0:01:59	0:04:10	0:11:07	0:07:40

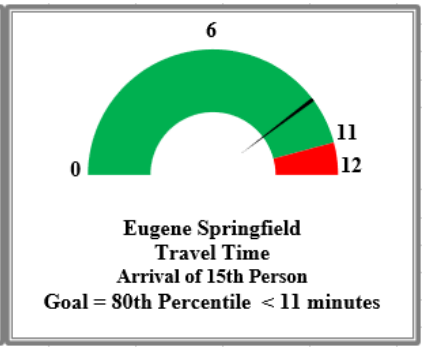
FY15 Structure Fires				
Call Processing 80th Percentile	Turnout 80th Percentile	1st Arriving 80th% Travel Time	Last Arriving 80th % Travel Time	Arrival of 15th Person 80th %
00:01:54	0:02:02	0:04:01	0:10:49	0:07:34

FY19 Performance

As shown below, structure fire incident response is meeting goals on initial arrival and the time required to get 15 persons on scene. The last arriving unit statistics show that improvement can be made. There are several noteworthy issues that might be impacting this data. For example, increased call volume can have apparatus (particularly medic units) far out of their normally assigned area. This in conjunction with increased traffic calming devices and traffic density can have a marked negative impact on response time.







SECTION SEVEN: Distribution of Resources

The term distribution describes resource locations needed to ensure a rapid initial response to emergencies. Distribution is measured by the percentage of the jurisdiction covered by the first-in response company within adopted response time goals.

This view of the response system analyzes fire and EMS resource deployment in terms of a static placement of resources and their theoretical response potential. By taking this theoretical view of the system, it is possible to determine whether or not response standards can be met from existing infrastructure with current staffing levels when all companies and units are in quarters and available for emergency response.

The department uses a variety of factors to determine optimal locations for fire stations including pertinent national standards including NFPA, the Insurance Services Office (ISO), and the American Heart Association, covering both response time (how fast) and deployment standards (how many and type of resources needed on scene). Site Locator Studies using geospatial analysis have been conducted for the department by the Lane Council of Governments (LCOG). Additionally, time-and-distance studies are performed to measure actual distances and travel times across the service area. The results help the department determine response areas and response order.

The department's current fire station positioning provides for an efficient distribution of the available emergency response resources. In developing this infrastructure, the goal was to balance elements that comprise a favorable fire station site configuration and three additional areas of consideration that the departments apply when selecting station locations. These are:

- **Placement** - Geographic spacing between fire stations that consider natural and human-made obstacles or barriers and provides for coverage efficiency, balanced with depth of coverage through limited response zone overlap.

- **Response Routes** - Proximity and access to multi-directional transportation corridors, sized appropriately for fire apparatus and referred to as run streets.

- **Property Acquisition** - Availability, lot size, and the cost of suitable sites within the parameters of factors noted above.

Currently, the department operates out of 16 fire stations divided into three geographically defined districts: Battalion One (central), Battalion Two (west), and Battalion Three (east), see map 2.1. Staffing minimums are represented below as the minimum number of personnel assigned to each company or unit per shift.

Battalion One (central):

Fire Station 1 – Downtown Station – 1320 Willamette Street

Battalion Chief 1	(1)
Engine 1	(3)
Truck/Aerial 1	(3)
Medic 1	(2)
Medic 71	(staffed by 2 BLS Technicians)

Fire Station 6 – Sheldon Station – 2435 Willakenzie Road

Engine/Ladder 6	(3)
Medic 76	(staffed by 2 BLS Technicians)
Water Rescue (WR)1	(staffed by WR Team Members)

Fire Station 9 – Valley River Station – 697 Goodpasture Island Road

Engine 9	(3)
HazMat 9	(staffed by Engine 9 crew)

Fire Station 13 – University Station – 1695 Agate Street

Engine 13	(3)

Fire Station 15 – South Hills Station – 80 E. 33rd Avenue

Engine 15	(3)
Brush 15	(staffed by Engine 15 crew)

Battalion Two (west):

Fire Station 2 – Whiteaker Station – 1725 W. 2nd Avenue

Battalion Chief 2	(1)
Engine 2	(3)
Truck/Tower 2	(3)
Medic 2	(2)
Water Tender 2	(staffed by Engine 2 or Truck 2 crew)

Fire Station 7 – Bethel Station – 4664 Barger Drive

Engine 7	(3)

Fire Station 8 – Danebo Station – 500 Berntzen Road

Engine/Ladder 8	(3)
Confined Space	(staffed by on-duty personnel for routine calls, off duty call back for larger incidents)

Heavy Rescue 8 (staffed by Engine 8 crew and call back personnel)

Fire Station 10 – Bailey Hill Station – 2002 Bailey Hill Road

Engine 10 (3)
Medic 10 (2)

Fire Station 11 – Santa Clara Station – 111 Santa Clara Avenue

Engine 11 (3)
Medic 11 (2)
Water Tender 11 (staffed by Engine 11 crew)

Fire Station 12 – Airport Station – 90711 Northrup Drive

Airport 1 (2)
Airport 2 (staffed by 2nd arriving qualified fire company)
Disaster Trailer (deployed by airport operations)

Battalion Three (east):

Fire Station 3 – 28th Street Station – 1225 N. 28th Street

Battalion Chief 3 (1)
Truck/Tower 3 (3)

Fire Station 4 – 5th Street Station – 1475 N. 5th Street

Engine 4 (3)
Medic 4 (2)

Fire Station 5 – Gateway Station – 2705 Pheasant Street

Engine 5 (3)
Medic 5 (2)
Medic 75 (staffed by 2 BLS Technicians)
Water Rescue (WR) 5 (staffed by WR Team Members)

Fire Station 14 – 48th Street Station – 4765 Main Street

Engine/Ladder 14 (3)
Water Tender 14 (staffed by Engine 14 crew)

Fire Station 16 – Thurston Station – 6853 Main Street

Engine 16 (3)
Medic 16 (2)
Brush 16 (staffed by Engine 16 crew)

Support Services (1715 W. 2nd Ave)

Logistics Facility

ALL Truck (staffed by Logistics)
MCI Trailer (staffed by call back personnel)

SECTION EIGHT: Concentration of Resources

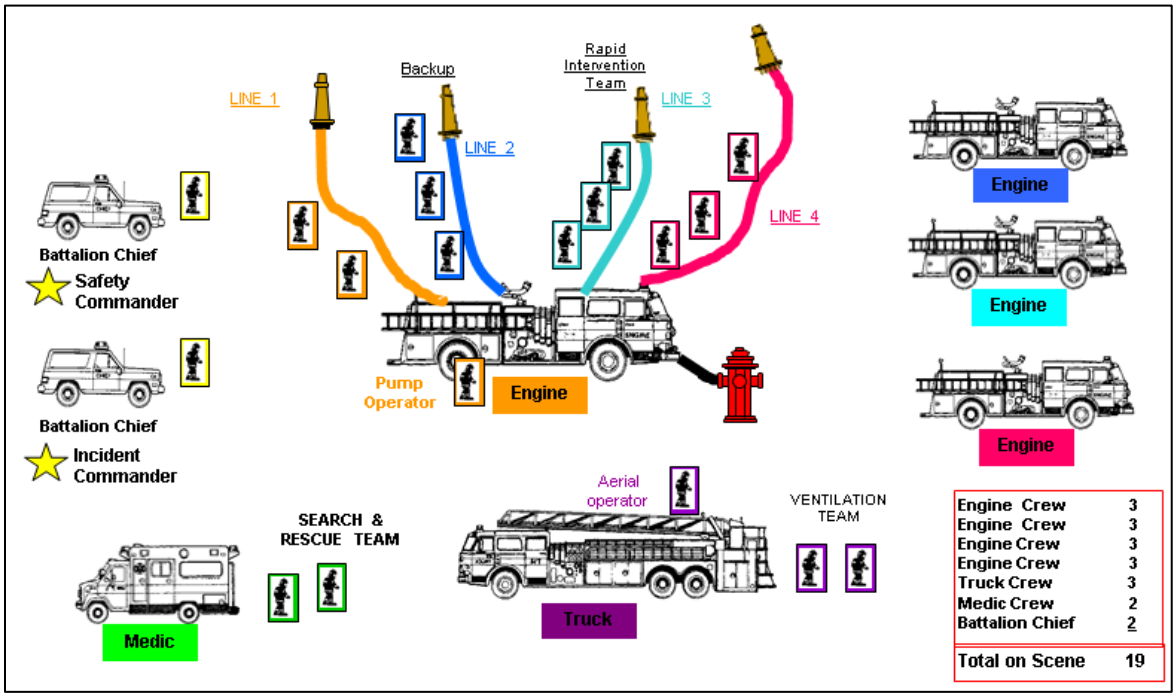
Concentration refers to the spacing of multiple resources in proximity in order to assemble an initial effective response force within prescribed timeframes. An initial effective response force is one that has been deemed capable of stopping the escalation of a fire emergency, stabilizing a medical scene, affecting a rescue, and successfully mitigating an incident. Analysis of unit concentration must consider the substantial reliance of all of the region's fire and medical service organizations on mutual and automatic aid. This refers to mixed jurisdiction response packages that may comprise 1st, 2nd, 3rd, or 4th (general) alarm assignments.

The existing concentration of resources is set to meet the NFPA 1710 goal of providing an effective initial response force despite the incident ultimately warranting such a response. Locally, ESF has adopted a fire response package to deploy 19 firefighters for structure fires (see Figure 8.2). The initial package for structure fire response is comprised of the following:

Figure 8.1 Structure Fire Response Package

TYPE OF COMPANIES/UNITS	NUMBER OF COMPANIES/UNITS	NUMBER OF FIREFIGHTERS
Engines	4	12
Truck	1	3
Medic Unit	1	2
Chief Officer	2	2
Total	**8**	**19**

Figure 8.2 Initial Attack: 19 on-Scene



The safety of the public and firefighters should remain a priority when apportioning additional resources and planning for the future. With the ever-increasing challenges posed by rising costs and revenues that are not keeping pace, the desire is to achieve efficiency while still meeting safety standards. As population rises and calls for service continue to increase, adding units to existing infrastructure is one method for increasing concentration of resources. Adding additional units increases the operational safety factor as well as expands coverage, service delivery, and response reliability. It also serves to decrease response times. The department's ability to concentrate resources is increased due to automatic and mutual aid agreements that provide for mixed jurisdiction response packages (see Section Four). In addition, there is the concept of deploying additional resources during periods of peak activity to increase concentration and response reliability, while decreasing response times.

SECTION NINE: Response Reliability

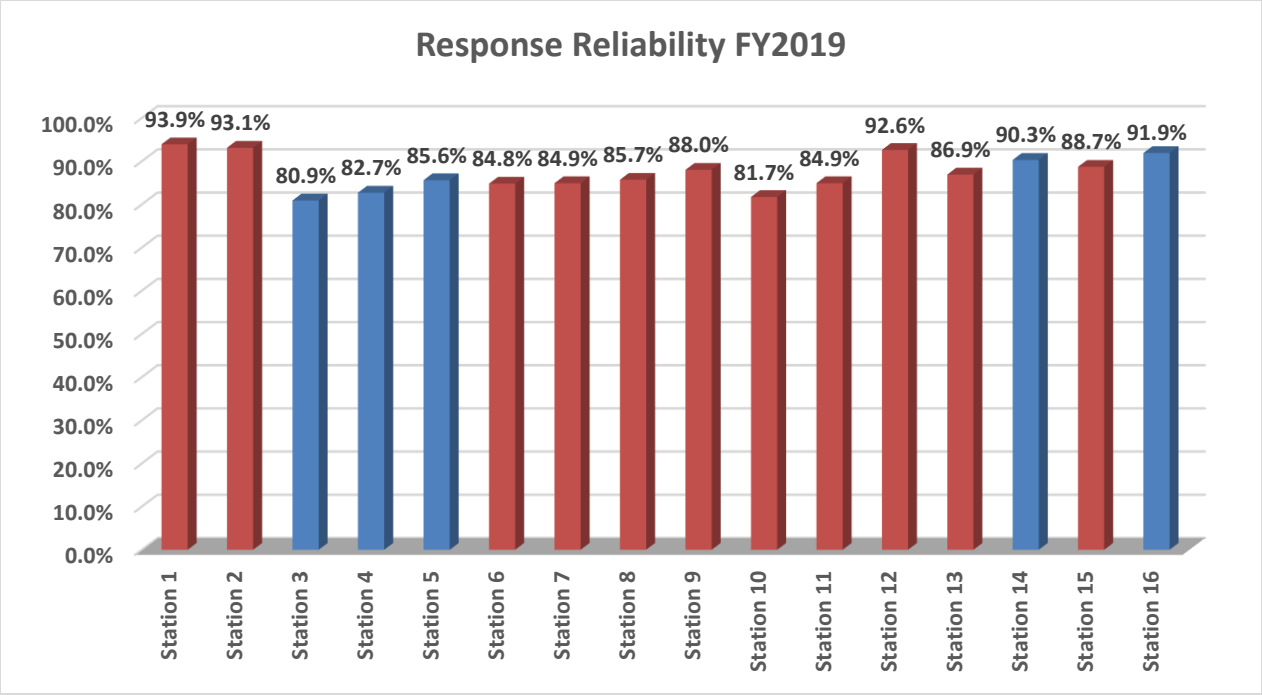
Response reliability is the probability that the resources assigned to an area will be available to respond from within the area when an emergency occurs. Response reliability would be 100% if every company were available in their designated area when a fire or emergency call is received. However, in reality there are times when the first-in company is on a call, out of area, or otherwise unavailable. This requires that a later-due company in the predetermined response order be assigned. If the later-due company is too far away, the call cannot be handled within the desired response time.

As the number of emergency calls per day, training demands, and other activities increase, so does the probability that the first-in company will be out of area or unavailable when a call is received, resulting in decreased response reliability.

Response reliability figures alone are not an entirely accurate measurement of the overall reliability of the system. The system includes dynamically deployed response resources, and units respond outside their normal first-due area covering for units temporarily assigned elsewhere, on other calls, and at training, etc. The primary purpose of measuring response reliability is to show where call volume is significant enough to indicate a need for a greater concentration of resources. Industry-wide, actual response time is a far superior measure of the effectiveness of the entire system.

Figure 9.1 shows response reliability data from across all 3 battalions in FY19. This data illustrates that units were able to respond to calls in their first due area at a rate of 80% or greater throughout the system. Red bars indicate stations within the City of Eugene and blue bars indicate stations within the City of Springfield.

Figure 9.1 Response Reliability



SECTION TEN: Performance Measurement and Quality Assurance

Organized response to emergencies is performed in a stressful and inherently unpredictable environment. Critical decisions must often be made quickly, without the benefit of complete information, or a methodical risk-benefit analysis. Given this fact, it is expected that errors will sometimes occur. The department consistently seeks to use performance measures as opportunities to learn how to improve service and adjust policies and procedures accordingly.

The department conducts a comprehensive array of performance measurement and quality assurance programs at the individual, work unit, division, and department levels. These begin with our recruitment and selection procedures and expand into all functions of the two organizations. Programs include regular, structured training, evaluation, analysis, and special performance reviews conducted in an ongoing manner.

Fire Suppression and Rescue Operations

All current and new emergency response personnel are required to meet and maintain a high standard of professional knowledge and ongoing certification and training.

The minimum requirements for consideration as a firefighter include the following:

- High school diploma or equivalent

- Two (2) years of experience or training in firefighting, emergency medicine, or related fields
- Be at least 18 years of age
- No felony or Class A misdemeanor conviction in the last 24 months
- A valid Oregon driver license
- Possess certification as a Paramedic through the State of Oregon or National Registry.

In addition, candidates for line positions must successfully complete the Candidate Physical Ability Test (CPAT), background check, and psychological evaluation.

An individual hired as a firefighter receives 14 weeks of hands-on and classroom training before assignment to a fire crew as a probationary firefighter. The probationary period continues for an additional nine months focusing on firefighting and emergency medical skills. Probationary firefighters must pass a series of written and practical tests during their probation period.

To be considered for promotion to engineer, firefighters complete the Engineer Development Program. The program requires the firefighter to complete intense self-study curriculum and pass four written and practical examinations covering the full range of duties and responsibilities assigned to the engineer position. The program requires a minimum of 200 hours to complete and normally takes 12 to 15 months.

For promotion to the rank of Captain (company officer), individuals are first required to be NFPA certified as a Fire Officer 1. The candidate then applies and is accepted to the ESF Officer Development Program. This 9- to 12-month course that consists of at least 300 hours of study, with at least three accountability points, combined written and field examinations.

To be considered for promotion to Battalion Chief, an individual must achieve Fire Officer 2 certification from NFPA, complete specified course work and projects, and have a minimum of three years of experience as an officer.

Emergency response personnel are required by the Oregon Department of Public Safety Standards and Training (DPSST) to complete 60 hours minimum of fire suppression recertification training per year, which is audited by DPSST in two-year cycles, and are also required to stay current with all existing and new protocols and procedures. Further, those possessing a Paramedic certificate are required to complete 48 hours of continuing education/professional development every two years.

Quality Assurance

Fire

On an ongoing basis, an integral component of quality assurance is the use of post-incident reviews that focus on major incidents, incidents involving fatalities or serious injury, unique operational situations, or multi-agency responses.

Post-incident evaluations consider the following criteria:

1. System strengths or weaknesses
2. Factors driving decisions
3. Standard Operating Procedures
4. Apparatus and equipment effectiveness
5. Education and/or training needs
6. Building construction factors
7. Unusual circumstances
8. Human factors that contributed to the problem

Emergency Medical Services

A Quality Assurance Program has been in place for the analysis of emergency medical services that the department provides. It is department policy to regularly participate in activities that lead to the development and maintenance of high-quality patient care and customer service, as well as activities that seek to improve the overall level of care.

Key components of the program include:

1. Peer review
2. Chart review
3. Direct observation
4. Physician advisor instruction and review

Incident Reporting and Analysis

Data gathering and analysis of the information determines the effectiveness of service delivery and assists the department in planning for future demand as well as the effectiveness of current service delivery

Effective data analysis relies on the following:

1. The use of the National Fire Incident Reporting System (NFIRS) to standardize reporting format for incidents.
2. Training staff to NFIRS standards.
3. Quality Assurance Program for fire incident reports.

Central Lane Communications Center

The quality improvement program for 9-1-1 Center operations currently includes call triage and dispatch for both emergency medical and fire calls. Dispatch contracts include performance measures which are reported quarterly. Targeted in-service training addresses performance and state certification requirements. Internally, various committees and review panels meet regularly to discuss ways to improve dispatch and suggest changes. These include the Medical Dispatch Review Committee and EMD Steering Committee, which review suggestions submitted from line paramedics regarding real calls and situations.

Emergency Medical Dispatch (EMD)

The 9-1-1 Center uses a software-based triage protocol called Medical Priority Dispatch System (MPDS), implemented in 2002. This system was originally developed by Dr. Jeff Clawson of Salt Lake City, Utah, and is now used worldwide. MPDS includes an integrated quality assurance (QA) system and data program. These together allow for the measurement of a broad range of QA issues, such as adherence to specific EMD instructions. This QA package forms the data basis for much of the ongoing in-service training program.

Department of Public Safety Standards and Training (DPSST)

DPSST is mandated by the Office of Emergency Management (OEM) to set standards for call takers, the entry-level position in the 9-1-1 Center. Prior to beginning work in the center, they attend a Basic Telecommunications Academy (BTA). The BTA requires 80 hours of classroom instruction. This is followed by a 40-hour DPSST-required EMD class with EMD certified instructors. At the conclusion, trainees are required to pass a test with a minimum score of 75%.

In addition to the BTA/EMD academy, new personnel complete an agency-specific Advanced Telecommunicators' Academy (ATA) for an additional 160-200 hours. This training is geared to provide essential job knowledge. At the conclusion of the ATA, trainees are again tested and must attain a 70% passing score. Once in the center, personnel begin field training and evaluation program (FTEP) training. The state has continuing education requirements for recertification.

Communications Field Training and Evaluation Program (FTEP)

The Central Lane 9-1-1 Communications Center has used FTEP since 1993. Communications center personnel are overseen by a certified FTEP coach as part of their training for four different positions within the operation. All personnel are required to reach and maintain a minimum acceptable rating for a 40-hour period before a written exam for 'solo status' is administered. During FTEP training, trainers rate the trainees' work performance against a published set of standards, and Daily Observation Reports are completed. Finally, an End-of-Phase Report is completed by the responsible shift supervisor. At the end of phase training, the trainee takes a test and is required to attain a passing score of 70%.

Fire Dispatch - Performance Standards

Beginning in 1998, the Lane County Fire Defense Board requested the adoption of a set of standards for all 9-1-1 Center personnel relating to fire and EMS dispatching services. These standards were formally adopted on March 15, 2000. Performance measures reported quarterly to the fire dispatch users include:

- Call answer to call entry time: The time the phone is answered to the time when the call is entered into CAD.

- Receive to dispatch time: The time when a call is entered into CAD, to the time the call is toned out for dispatch.

- Accuracy in providing EMD: How often call takers precisely follow EMD instructions when on the phone with a caller.

- Accuracy in dispatching protocol: How often dispatchers follow exact policy or procedure.

SECTION ELEVEN: Historical Analysis and Future Planning

Moving forward, the department will continue to analyze data in order to answer several questions concerning service improvement, including:

- Is the department meeting response time goals? If not, why not?
- Are concentrations effective and cost-efficient for areas served?
- Have there been significant changes in the risk and demand that might indicate a need to increase or otherwise modify staffing?
- Are the current ambulance transport resources sufficient with regard to call volume, call type, and funding mechanisms?

ESF can use several resources to assist with answering these questions. To start, it is important to recognize changes that have occurred historically within the department and community.

Historical Narratives

The Lane Council of Governments conducted a comprehensive Fire Station Location Study for Eugene in 1990, and updated the study in 1993 and 1998. This information was useful in identifying areas that were underserved, based on response times and travel distances from existing fire stations in Eugene.

The findings of these studies and the associated analysis eventually led to the fire redeployment projects of the 1990s. Those projects, in turn, resulted in the relocation of three Eugene fire stations and the addition of one new facility, which allowed for the redeployment and enhancement of existing emergency response resources to improve coverage throughout the service area.

However, it was assumed, for purposes of the study, that any area in which more than 50% of the calls were reached in 4 minutes or less had adequate coverage. Today we have a clearer definition of standards of coverage. As stated in Section Five of this report, our corresponding goal, based on more recent and more detailed analysis, is a travel time of five minutes or less to at least 80% of emergency calls in Risk Area A.

Additionally, Springfield added a fifth fire station in the Gateway area in 1997, in response to increased development and service demands in that area. A Standards of Coverage study performed by Emergency Services Consulting, Inc. (ESCI), in April 2007, showed that while Springfield's current fire station locations and coverage areas are adequate for the time being, changes would be required in the near future. ESCI recommended the relocation of Fire Station 4 from 1475 Fifth Street to a location closer to downtown Springfield (ideally in the downtown core) to better serve the annexed areas of Springfield located across the river in Glenwood. Additionally, ESCI recommended the relocation of Fire Station 14 at 4765 Main Street to a location farther southeast to support planned development in the Jasper/Natron area.

Over the years, the metro service area has experienced continued increase in traffic volume and congestion which, along with traffic calming projects, slows emergency response. This aspect is discussed in greater detail in Section Three.

The reality of emergency resources is that the number of calls for service has risen dramatically, while the total number of personnel and companies have remained relatively static for more than 30 years, as illustrated in Figures 11.1 and 11.2. From 1981 (when the department assumed responsibility for ambulance transport) until 2018, the number of annual calls for service has risen from 4,291 to more than 44,000. This is an increase of 942%. In that same time period, the number of response personnel has increased only 24%, and response personnel per 1000 population has *decreased* 26%.

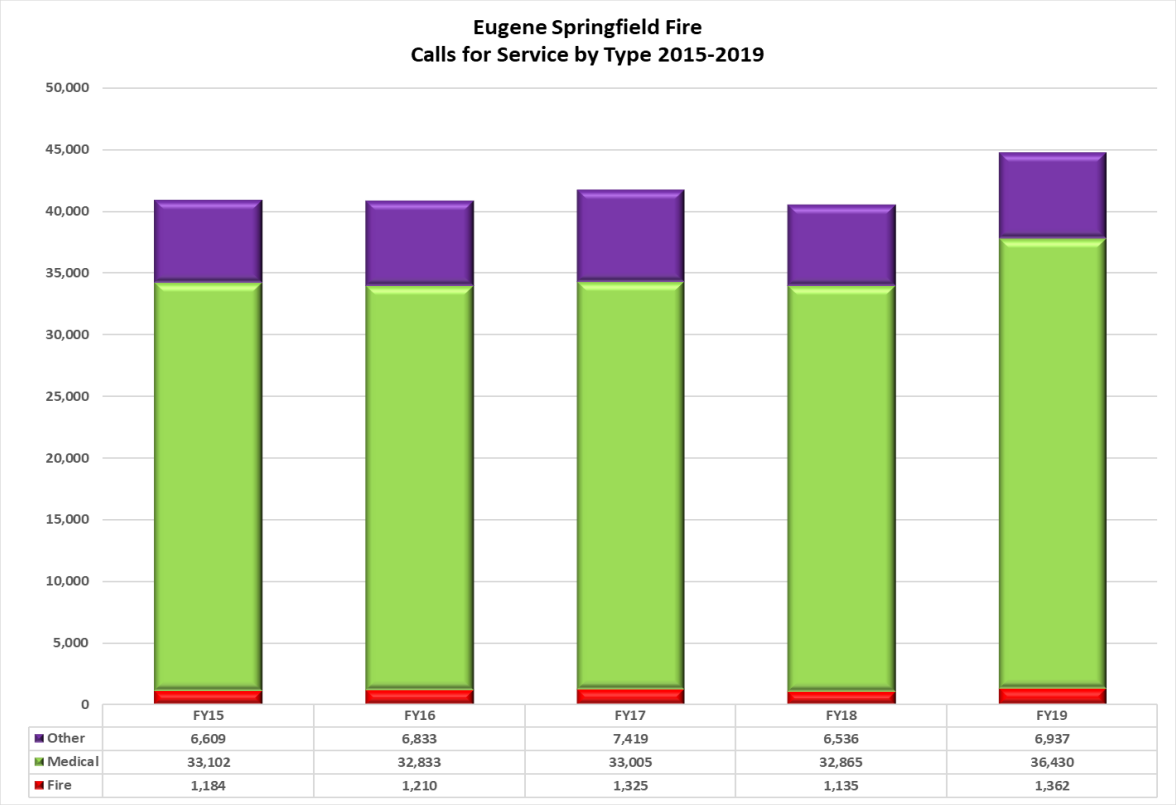
Figure 11.1
Comparison of Staffing, Population, and Calls for Service

Year	Population*	Total Calls	Response Personnel**	FF Per 1000 Population	Shift Staffing	Calls per FF/Medic
1981	147,724	4,291	200	1.3539	58	21.46
1990	157,352	11,221	212	1.3473	61	52.93
2015	239,717	36,593	248	1.0346	68	147.55
2019	250,335	44,729	249	0.9947	70	179.63
% Change 1981-2019	69.46%	942.39%	24.50%	-26.53%	20.69%	737.26%

***1981 and 1990 - Population is for the cities ONLY, 1981 population is from 1980 Census data – 2015/2019 - Population is for cities + contract districts**

****Response personnel includes 24-hour line firefighters and battalion chiefs. It does not include 28 Basic Life Support technicians, as they are not 24-hour line firefighters. Position added is the Battalion Chief of Logistics and Safety**

Figure 11.2 Call Volume Growth



Historic Assessment of Effective and Cost-Efficient Coverage and Community Risk

Historic assessments have indicated that concentrations are cost-efficient, in that there are no areas with unnecessarily redundant coverage. However, there are areas where coverage is less effective than it could and should be, and greater analysis should be completed in these areas:

1. The South Hills area in Eugene presents some inherent response time challenges with its steep terrain and winding street patterns with limited connectivity. This is a particular concern due to high fire danger in the wildland/urban interface during the dry summer months.

2. The West Eugene area continues to develop and generate more calls for service. Calls have longer response times due to the greater distance from the nearest stations into those portions of the city. This could indicate the need for procurement of property for a new fire station in that area.

3. In the northern part of Eugene, increasing construction and traffic congestion have become a concern in terms of travel time for emergency response.

4. As the Jasper-Natron area of southeast Springfield develops, areas farthest out will present response time challenges. When this area is built-out, relocation of a fire station closer to the area will be considered to meet response time objectives.

While these areas present localized challenges, it should be noted that changes in the service area and increases in call volume, no matter where they occur, have a systemic effect on the entire response network and decrease response reliability. The resulting impact is an overall slower response time performance throughout the service area as resources are spread thin.

In comparing staffing and deployment over the past thirty years (see figure 11.2), there has not been a significant change in total numbers or deployment concepts of personnel. However, community fire risk has significantly increased due to the community becoming a denser, more urbanized environment, the use of ultra-lightweight engineered construction methods, and the change in building contents. The use of polyurethane foam, plastics, and synthetic materials results in increased speed and intensity of fire development. The combination of these three factors point to the need for development of new strategies such as reducing response times to fires, increasing staff to match need in the core downtown areas, advocate for modification of the building codes to include the broad application of active fire suppression systems in all construction, and creation of a robust public education outreach program for existing occupancies that do not have sprinklers.

The greatest change in the increased demand for services has been the large increase in the number of EMS calls, while the number of fire calls has remained constant but relatively static. The demand of calls defined as “other” has also increased. This includes all types of calls other than fires and medical responses, and can largely be attributed to the overall increase in the population being served. The department has absorbed this increase by using existing resources more efficiently and by simply running more calls during a tour of duty.

The increased demand for ambulance services has driven Eugene and Springfield to subcontract with a private provider, Mid Valley Ambulance (MVA), for non-emergency medical transports. Subcontracting non-emergency calls not only improves the overall system capacity, but also allows firefighter staffed medic units to respond to a greater percentage of emergent calls while reducing the demand on those resources for non-emergent transports. As demand continues to increase, further expansion of this tiered-response approach should be expected.

The measure of firefighters per 1,000 population served is often stated as a reasonable comparison of fire departments and their relative staffing levels. However,

the methods used to calculate this ratio can vary considerably, so national department-to-department comparisons may not be accurate or useful. In addition, this measure does not consider other important variables such as area served and community risk. What is useful, however, is calculating this ratio for a single community and its department over time to show changes in relative staffing strength.

Challenges with the Ambulance Transport Fund

In order to continue to provide consistent high-quality public safety services, the department must successfully meet challenges presented by a growing community with high expectations and shifting demographics. Ambulance transport funds, supported primarily through user fees and enterprise programs, are not adequate to sustain the service long-term. Chronic underfunding of federal and state social service systems has led to increased non-traditional call load. As the agency of last resort, fire and ambulance resources are more frequently responding to help community members with issues not traditionally classified as fire or medical emergencies.

A clear trend can be seen where service obligations are quickly outstripping the available resource base. This is especially true for the ambulance transport system. Although there are a number of contributing factors to the current financial situation, the deficit is primarily attributable to the reduced levels of reimbursement the cities receive from Medicare (federal) and Medicaid (state) for qualifying patient transports. These decreases have been phased in by the federal government since the passage of the *Balanced Budget Act of 1997*, which shifted much of the financial burden for covered patient transports from the federal government to local providers. The problem was then exacerbated with the *Medicare Modernization Act of 2003*, which further reduced reimbursements. These changes are the primary contributing factors to the system's current financial dilemma.

To place this situation in perspective it is important to understand that Medicare and Medicaid transports, along with Medicare HMO-covered transports, account for about 80% of the system's current business, and that Medicare covered transports do not reimburse enough to cover the cost of the transport. In fact, the federal government and HMO capitated payments pay only about a quarter of the standard fee for service, and federal law does not allow the cities to bill patients beyond what is allowable under Medicare and Medicaid.

ESF also provides transport service to patients who are either uninsured or underinsured, and unable to privately pay for their transport costs. These calls create a level of bad debt, which frequently requires the cities to initiate collection efforts. Uncollectible debt affects our ability to cover the overhead costs of our system.

Joint Elected Officials Task Force

A Joint Elected Officials Task Force met in 2009 and again in 2011 to study the financial shortfall of the ATF and develop possible solutions. Several of those recommendations below have been acted upon in some capacity:

1. **Jurisdictions remain prepared to allocate a level of general fund support as necessary for the continued high-quality provision of this core service.**

The cities of Eugene and Springfield have both allocated general fund dollars to support the ATF. As the funding gap widens, the ask for general fund assistance will likely be greater. It was the belief of the 2011 task force that a combination of fees for service, FireMed membership fees, and an independent ambulance taxing authority should be the long-term solution.

2. **Eugene and Springfield City Councils authorize initial steps toward merger of their fire departments.**

As noted throughout this document, the functional consolidation of the two fire departments has been completed, although a full merger into a single entity under one defined form of governance has not been clearly defined. The recommendation made by the task force of a new service district (general fire service district including ambulance service) has not yet been approved by either city council.

3. **Exploration begins immediately of more sustainable public funding options**.

Ideas that surfaced included a fire district, health district/county service district, and a local option levy. There has not been a strong push to adopt one specific model.

4. **Marketing of FireMed subscriptions be enhanced and expanded in an effort to generate additional revenues to lessen reliance on general fund tax support.**

Additional money was allocated into advertising and marketing after this recommendation was made. Efforts to enhance marketing, including modifying the logo and website access, did not result in a precipitous increase in revenue. In fact, overall memberships declined or held flat. In late FY20, the department has contracted out the administration of the FireMed program to LifeFlight which has a broader marketing base and call center. Results will be determined over the next fiscal year.

5. **Lane County Board of Commissioners act immediately to reconfigure the boundaries of the county's Ambulance Service Areas (ASA) so as to provide for an urban-rural split between Eugene and Lane Rural Fire & Rescue (now Lane Fire Authority).**

ASA boundaries were indeed reconfigured at the request of the task force. The ASA for Lane Rural Fire Rescue, now Lane Fire Authority, was extended to the south and west, which served to keep (at the time) Eugene Fire ambulances in the metro area more frequently, and decreased the reliance on metro resources to provide transport services in rural parts of the county on the west side.

6. **Work proceed as rapidly as possible regarding provision of a regional mobile health care system, featuring tiered levels of response (and cost) available to patients depending on the nature of the emergency with a report to elected officials by the end of calendar year 2010.**

Work in this arena has focused on the development of non-emergency transportation resources in the Eugene/Springfield area. The task force recognized the inadequacy with a one-size-fits-all paramedic response to the changing landscape of our community

prehospital needs. Adopted non-emergency transport options have included implementation of a fire department based Basic Life Support (BLS) System (as previously mentioned, BLS units are staffed by EMTs and offer a lower tier option of transport), a private non-emergency ambulance contractor, wheelchair transport vehicles, and work site primary provider Med Express. The goal is to match the most appropriate resource to the needs of the prehospital customer. Non-emergency providers have assumed the majority of the interfacility transports (hospital to hospital or skilled care facility to hospital), return transports (hospital to skilled care facility), and out of area transports. Further work in this area should include analysis of a community paramedic model, expansion of CAHOOTS services, and quick response units to handle lower acuity 911 calls in core areas.

7. **That public ambulance service provider agencies continue to lobby the Oregon Legislature and U.S. Congress for larger-scale, long term solutions.**

   The Ground Emergency Medical Transport (GEMT) Supplemental Payment Program was established in Oregon with the passage of Oregon House Bill 4030 (2016). This program provides additional Federal reimbursement via the Oregon Health Authority to eligible providers who furnish qualifying emergency ambulance services to Medicaid recipients. The supplemental payment covers the gap between the total allowable costs and the total reimbursements received for providing services. Due to staff hiring delays and promulgation of administrative rules at the State level, funding was first made available to ESF in FY20 for reimbursement years FY18 and FY19. ESF was eligible for approximately $1.5 million per year which requires a 20% match from the Cities.

Community Growth, Infrastructure, and Correlating Protection Needs

Continuing annexation activity, required for new development, is extending Risk Area A in the northern and western portions of Eugene and the northern and eastern portions of Springfield, increasing service demands. Multi-story building development in the northeast portion of Eugene and northwest portion of Springfield suggests the need for the addition of a ladder truck.

Overall, ongoing community growth is placing new burdens on established Urban Growth Boundaries. As a result, there is less land available for development and the cities are beginning to experience increasing density of development and infill. This encourages high-density, high-rise, and medium-rise construction, which creates unique stresses on fire and EMS agencies, as it takes additional time and resources to organize sufficient firefighting and emergency medical forces on the upper floors of tall structures.

In turn, urban development brings with it a corresponding increase in traffic congestion. More vehicles share an aging and overburdened street network. The proliferation of enhanced traffic control systems/techniques, the construction of narrower streets, and the addition of traffic calming devices all serve to reduce overall response and reliability capabilities of emergency resources. This means that it will take longer for outlying fire and EMS crews to respond back into core areas of the cities. Consequently, inner city crews must have an enhanced ability to provide hazard mitigation, reducing their dependence on additional resources from outlying fire

stations.

Conclusion

Future analysis will need to be undertaken for ESF to project its ability to meet local standards as well as initial alarm assignment capability stated in NFPA 1710. This analysis should look at growth and development on a metropolitan level and planning for station locations that will optimize response capability, taking into account factors of greater density, increased call volume, shifting demographics, and other risks.

As explained throughout this report, the department has taken, and will continue to take, every reasonable measure to support an adequate level of service for our communities. Thanks to the support of elected leaders, voters, fire redeployment projects, relocation of resources, local option tax levies, and effective asset management, Eugene Springfield Fire has been able to maintain quality service levels throughout the department's history. It is essential to continually evaluate deployment models, training methods, operating procedures, and other aspects of the service with a view toward maximizing protection and minimizing loss. Following the vision built by our citizens and the councils that represent them, ESF will continue to exemplify our motto of courage, honor, and service to our communities.

Appendix
Terminology Glossary and Acronyms

(Adopted with changes from CFAI)
(Note: contains industry standard terms which may or may not have been used in this document.)

Acceptable Level of Risk: The amount or level of risk set through adoption of public policy through law, regulation, or level of service. To deem acceptable, risk is gauged against a benchmark or standard that has been deemed adequate for the jurisdiction.

Accepted Risk: The portion of a problem that is beyond the agency's ability to cope with the consequences and are accepted within the community as a potential loss.

Accreditation: A process by which an association or agency evaluates and recognizes a program of study or an institution as meeting certain predetermined standards or qualifications.

Adequate: Providing what is needed to meet a given objective without being in excess.

Advanced Life Support (ALS): A sophisticated level of pre-hospital care that builds upon basic life support procedures, and includes the use of invasive techniques such as advanced airway management, cardiac monitoring and defibrillation, intravenous therapy and the administration of specified medications, to save a patient's life.

AHJ: Authority Having Jurisdiction

Alarm Processing Time: The elapsed time from the receipt of an alarm by the 9-1-1 communications center and the notification of specific companies that are to respond.

Airport Rescue and Fire Fighting Apparatus: Specialized vehicles capable of immediate fire suppression using foam and other extinguishing agents.

Apparatus: Fire suppression or medical vehicle such as engine, ladder, truck, or medic unit.

Assumption: A situation or condition, which must be considered as existing if the organization, is forced to operate in a specific manner and over which the organization does not exercise any control.

Baseline: The current measurement of performance in an organizational context; a usually initial set of critical observations of data used for comparison or a control. The activities that are currently in place to achieve the organization's goals and objectives.

Basic Life Support (BLS): A primary level of pre-hospital care, which includes the recognition of life threatening conditions and the application of simple emergency lifesaving procedures, including the use of adjunctive equipment, aimed at supporting life.

Benchmark: A benchmark is defined as a standard from which something can be judged. Searching for the best practice will help define superior performance of a product, service, or process.

CAAS: Commission on Accreditation of Ambulance Services.

Community Risk Assessment: The evaluation of fire and other risks taking into account all pertinent facts that increase or decrease hazard in order to define standards of coverage. (See Occupancy Risk Assessment)

Concentration: Spacing of multiple resources arranged so that an initial effective response force can arrive on scene within the time frames outlined in the on-scene performance expectations.

Confined Space/Trench Rescue: All rescues that meet OSHA's definition of confined space in which special breathing apparatus, shoring, explosion proof lighting, and atmospheric monitoring are necessary.

Cost Benefit: Term used to express the value of a component of a system. It is expressed usually as a ratio of cost, expenditure, or to a benefit, a saving of some type. Cost benefit can be measured in either soft or hard currency descriptions.

CCR: Cardio-Cerebral Resuscitation

Critical Incidents: A method of evaluation based on specific examples of above or below average performance.

Deployment: The strategic assignment and placement of agency resources such as fire companies, fire stations, and specific staffing levels for those companies.

Dispatch Time: The portion of response time that begins when the dispatcher receives an alarm and ends when the dispatcher assigns the proper companies to respond to the emergency.

Dollar Value of Total Fire Loss: The assessed value of improvements lost as a result of fire. This is not the replacement value.

Effective Response Force: The minimum amount of staffing and equipment that must reach a specific emergency zone location within a maximum prescribed travel or driving time and is capable of initial fire suppression, emergency medical services, and/or mitigation.

Emergency Operations Center: A central location where those in authority congregate to allow for exchange of information and conduct face-to-face coordination in the making of decisions. The center, often referred to as the EOC, provides for centralized emergency management in major natural disaster and other emergencies.

EMS: Emergency Medical Services.

Engines: Basic fire fighting vehicle equipped with a pump capable of supplying a minimum of 500 gallons per minute, fire hose, and a water tank.

Evaluation: Analysis and comparison of actual performance versus prior plan and stated goals and objectives. The systematic and thoughtful collection of information and decision making. Evaluation consists of having criteria, collecting evidence, and making judgments.

Fire Company: Assigned personnel, apparatus, and equipment.

Fire Confined to Structure: Responses to fire calls where the fire is contained to the structure or structures that were involved when the responding unit first arrived at the scene.

Fire Crew: Personnel assigned to an apparatus.

Fire Out on Arrival: Fire calls in which the fire that initiated the call is extinguished when the responding unit arrives at the scene.

Fire Spread Beyond Structure: Fire calls where the fire first spreads beyond the structure or structures that were involved when the responding unit arrived at the scene.

Fire Pre-Plan: Plan developed to identify hazardous building information and owner information, used during emergency incidents to determine the best course of mitigating an emergency.

Fire Flow Available: The amount of water available for firefighting on a continuous basis. The highest demand upon the water distribution system.

Fire Flow Delivered: The amount of water that can be delivered at the scene of an emergency. It is a combination of three factors: pump capacity available, hose and nozzle configurations, and staffing levels.

Fire Flow Required or Estimated: The quantity of water that should be available for a period of two to three hours at a minimum pressure of 20 psi in a water distribution system.

Fire Protection Environment: The conditions, circumstances, and influences under which a fire protection system must operate. It includes the population, the geographical area, land use, occupancy factors, weather conditions, structural and nonstructural physical situations, financial, political, legislative, and regulatory criteria.

First-Due Area: The portion of a jurisdiction that each response company has been assigned to be the first unit to arrive at the scene of an emergency. Usually the first-in company is responsible for most activities in that area.

First Responder: A term used for the person who is trained and/or certified to be the first to arrive at a scene of a specific type of emergency, i.e. EMS or hazardous materials.

Heavy Extrication: Rescues of persons trapped in road, rail, air, and water vehicles, which require specialized tools and training.

Insurance Services Offices (ISO): A for-profit national organization that evaluates public fire protection and provides rating and classification information to insurance companies for a fee. Some insurers use this rating to set basic premiums for fire insurance.

IAFC: International Association of Fire Chiefs.

IAFF: International Association of Fire Fighters.

IFSTA: International Fire Service Training Association.

ISFSI: International Society of Fire Service Instructors.

Jurisdiction: A population area wherein there is clearly defined responsibility, based on statutory authority, to provide fire and/or emergency medical services. Also called authority having jurisdiction or AHJ.

Ladder Truck: Vehicles that carry a variety of equipment such as ladders, forcible entry tools and rescue equipment.

Level of Service: The resources needed to meet the stated service level objective(s). Level of service is defined only in terms of what is provided and not in terms of effectiveness or of quality.

Median Age of Population: The median age of the population as reported in the most recent census.

Median Age of Residential Structures: The median age of residential structures as reported in the most recent census.

Median Household Income: The median household income as reported by the U.S. Bureau of Labor Statistics for the most recent period reported.

Minimum Staffing per Unit: The minimum number of personnel assigned to staff each type of apparatus or vehicle.

NFPA: National Fire Protection Association.

NFPA Standards: Standards published by the NFPA through the consensus process setting a recognized level of standard for fire service related dimensions, services, installations, vehicles, or equipment specification.
Non-Transport: Responses in which no individuals are transported to a medical facility.

Number of Population by Age: The number of persons in each category within the service area as reported in the most recent census.

Occupancy: The classification given to a building in accordance with a specific building code.

Occupancy Risk Assessment: An assessment of the potential severity of a specific structure in relation to the fire agency's ability to handle the types and severity of emergencies within that structure. Occupancy risk assessment often includes classifying these risks into categories. (See Risk Categories)

Performance Indicator: The desired level of achievement toward a given objective and the ability to demonstrate doing a particular task as specified in the Accreditation process.

PSAP: Public Safety Answering Point.

Resource Exhaustion: Resource exhaustion occurs when a system is out of resources for both initial response and to maintain an area-wide effective response force.

Response: A response to an incident regardless of the number of units or personnel required to respond.

Response Reliability: The probability that the required amount of staffing and apparatus that is regularly assigned will be available when a fire or emergency call is received, i.e. the percentage of time that all response units are available for a dispatch. When a response unit is unavailable, the response time to an emergency in their first due area will be longer, because a more distant unit will have to respond to the call. Response reliability is a statement of the probability that an effective response force may not be provided when a call is received.

Response Time: The total amount of time that elapses from the time that call is dispatched until the responding unit is on the scene of the emergency and prepared to control the situation. Response time is composed of several elements.

Risk: Exposure to a hazard based on the probability of an outcome when combined with a given situation with a specific vulnerability. The level of risk can be described as the probability of a specified loss over a given period of time. All structures, for example, are subject to destruction by fire; however, individual structures vary considerably as to the possibility of loss as a result of their construction, contents, and built-in protection.

Risk Categories:

> **Maximum/Worst Risk** - Occupancies classified as maximum risk will be of substantial size and contain a concentration of properties that present a very high risk of life loss, loss of economic value to the community or large loss damage to property in the event of fire. These risks frequently affect the need for the fire department to have multiple alarm capability and have an adequate assessment of their ability to concentrate resources.

High Hazard Risks - Built-up areas of substantial size with a concentration of property presenting a substantial risk of life loss, a severe financial impact on the community or unusual potential damage to property in the event of fire.

Special Risks - These are areas that require a first due response over and above that appropriate to the risk. These areas should be treated as special risks, and given an appropriate predetermined response.

Moderate Risk - Built-up areas of average size, where the risk of life loss or damage to the property in the event of a fire in a single occupancy is usually limited to that occupancy. In certain areas, such as small apartment complexes, the risk of death or injury may be relatively high. The moderate/typical risks are often the greatest factor in determining fire station locations and staffing due to the frequency of emergencies in this category. To assure an equitable response and to provide adequate initial attack/rescue capability to the majority of incidents, the typical risk is often used in determining needed resources.

Low Risk - Small commercial structures that are remote from other buildings, detached residential garages and outbuildings.

Remote and Isolated Rural Risks - Areas may be classified as remote/isolated rural risks if they are isolated from any centers of population and contain few buildings; for example, rural land with no occupied structures or recreational areas.

Residential Single Family Dwelling Unit: One family unit - house.

Square Miles Served: Number of square miles contained within the boundaries of the service area.

Staffing: The level of personnel assigned to perform the anticipated emergency tasks of a specific fire company for the risk identified in a given district or community. The number of personnel required to perform multiple emergency operations functions such as fire suppression versus EMS or hazardous materials operations.

Standardization: Standardization is a process by which a product or service is assessed against some standard, performance, or quality.

Standard Operating Procedures (SOP): A term used to describe written direction provided to personnel in a manual format.

Transport: Responses that result in one or more persons being transported to a medical facility.

Travel Time: The portion of response time that is utilized by responding companies to drive to the scene of the emergency. Travel time begins when assigned fire companies begin to actually drive to the emergency.

Turnout Time: The portion of response time when fire companies are donning personal protective clothing and boarding their apparatus. The time begins once the companies have been given their assignments and ends when they begin travel time.

Water Rescue: The rescue of persons trapped in rivers, lakes, pools, or flood control waterways.

Eugene

SPRINGFIELD
OREGON