

**RESOLUTION NO. 2016-50**

**RESOLUTION ADOPTING THE FOREST GROVE FIRE & RESCUE  
COMMUNITY RISK ANALYSIS AND STANDARDS OF COVER**

**WHEREAS**, the Fire Department, through the Fire Chief, has prepared a Community Risk Analysis and Standards of Cover according to national standards; and

**WHEREAS**, the Fire Department recommended adoption of the proposed Community Risk Analysis and Standards of Cover to the City Council; and

**WHEREAS**, the Forest Grove City Council finds that the Community Risk Analysis and Standards of Cover is a data-driven, historical review of the Department's performance and provides significant value in establishing performance baselines and benchmarks, subject to periodic review and update.

**NOW, THEREFORE, BE IT RESOLVED BY THE CITY OF FOREST GROVE AS FOLLOWS:**

**Section 1:** The City Council hereby adopts the Forest Grove Fire & Rescue Community Risk Analysis and Standards of Cover, attached as Exhibit A.

**Section 2:** This resolution is effective immediately upon its enactment by the City Council.

**PRESENTED AND PASSED** this 8<sup>th</sup> day of August, 2016.

  
\_\_\_\_\_  
Anna D. Ruggles, City Recorder

**APPROVED** by the Mayor this 8<sup>th</sup> day of August, 2016.

  
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Peter B. Truax, Mayor



# Community Risk Analysis and Standards of Cover



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## **INTRODUCTION/EXECUTIVE SUMMARY**

As the communities we serve grow, leaders continue to struggle with defining appropriate levels of service. The variety of risks and levels of hazards that exist in each community mandate that our department conduct a self-assessment, and design and develop an “all hazards” response system that will meet the needs of the community in a safe, efficient and effective manner. The fire service must continue to strive for consensus on programs that create a standard for minimal level of response in each of the communities we serve.

If resources arrive too late or lack sufficient capabilities, the emergency will continue to escalate, drawing more resources into a losing battle. What emergency response companies must do, if they are to save lives and limit property damage, is arrive within a short period of time with sufficient resources to do the job. To control an emergency before it has reached its maximum intensity requires geographic dispersion of technical assets and cost-effective clustering of service delivery points for maximum effectiveness against the greatest number and types of risk. Matching arrival of resources with a specific point of fire growth or medical problem is one of the greatest challenges currently facing the fire service.

A Standards of Cover consists of decisions made regarding the placement of field resources in relation to the potential demand placed on them by the type of risk and historical needs of the community. The outcome must demonstrate that lives are saved and properties are protected.

This document is a rational and systematic way of looking at the basic service provided by an emergency service agency. The purpose of this document is to provide a system which will assist with:

- *Assessing community fire and non-fire risks;*
- *Defining baseline and benchmark emergency response performance standards;*
- *Planning future station locations;*

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- *Determining apparatus and staffing patterns;*
- *Evaluating workload and ideal unit utilization;*
- *Measuring service delivery performance; and*
- *Supporting strategic planning and policy development relative to resource procurement and allocation.*

The key elements in this Standards of Cover document include:

- *A community risk assessment identifying the fire and non-fire risk common and/or unique to our communities.*
- *A determination of levels of service to be provided to the areas protected by our department.*
- *An analysis of the department's current response capability in terms of time and on-scene performance for personnel and equipment; and*
- *A development of standards describing how department resources shall be allocated and deployed to maximize emergency response effectiveness.*

This document describes and defines a community-based risk analysis and documents historical performance based on call type, risk and population. After evaluating these factors, new performance baselines (how we are currently performing) and benchmarks (where we would like to be) were established and found to be equal to, or in some cases, exceed industry best practice.

Recommendations will be presented to maintain the current level of service and recognize the need to employ a continuous improvement model that will ensure the effectiveness of operational programs.

It is the intent of Forest Grove Fire & Rescue that this document be a "living document" referred to often, reviewed and updated on an annual basis.

## **A. DESCRIPTION OF COMMUNITY SERVED**

### **Legal Basis**

Forest Grove Fire and Rescue (FGFR) is organized as a municipal subdivision of the City of Forest Grove. The City of Forest Grove has an estimated population of 22,419, and a total land area of approximately six square miles. The fire department provides fire suppression, rescue, first response emergency medical services, operations level hazardous materials response, fire prevention, and life-safety services from two fire stations, staffed with a combination of career and volunteer responders.

The Forest Grove Rural Fire District is organized as a Rural Fire Protection District under the provisions of Oregon Statutes. Revenues to support the fire district are obtained from ad-valorem taxes levied by the district or from other sources such as bonds, timber revenues, contracts, or grants. FGFRPD currently encompasses 75 square miles and an approximate population of 4,450.

The district owns capital resources, including fire stations and equipment, but does not provide services directly, but rather by contract with the City of Forest Grove.

The City of Forest Grove is one of the oldest communities in the state of Oregon, originally settled by missionaries in the 1840's. The city was named for the groves of Oregon white oak trees that spread across the upper Tualatin River Valley where these settlements occurred. Today our city is a western suburb in what is referred to as the Portland Metro Area.

Surrounding the City of Forest Grove is the Forest Grove Rural Fire Protection District (FGRFPD). The FGRFPD was established in 1940 as a way of providing fire protection to these areas. The FGRFPD contracts with the City to provide services for their residents, making for a total FGFR service area of approximately 85 diverse square miles.

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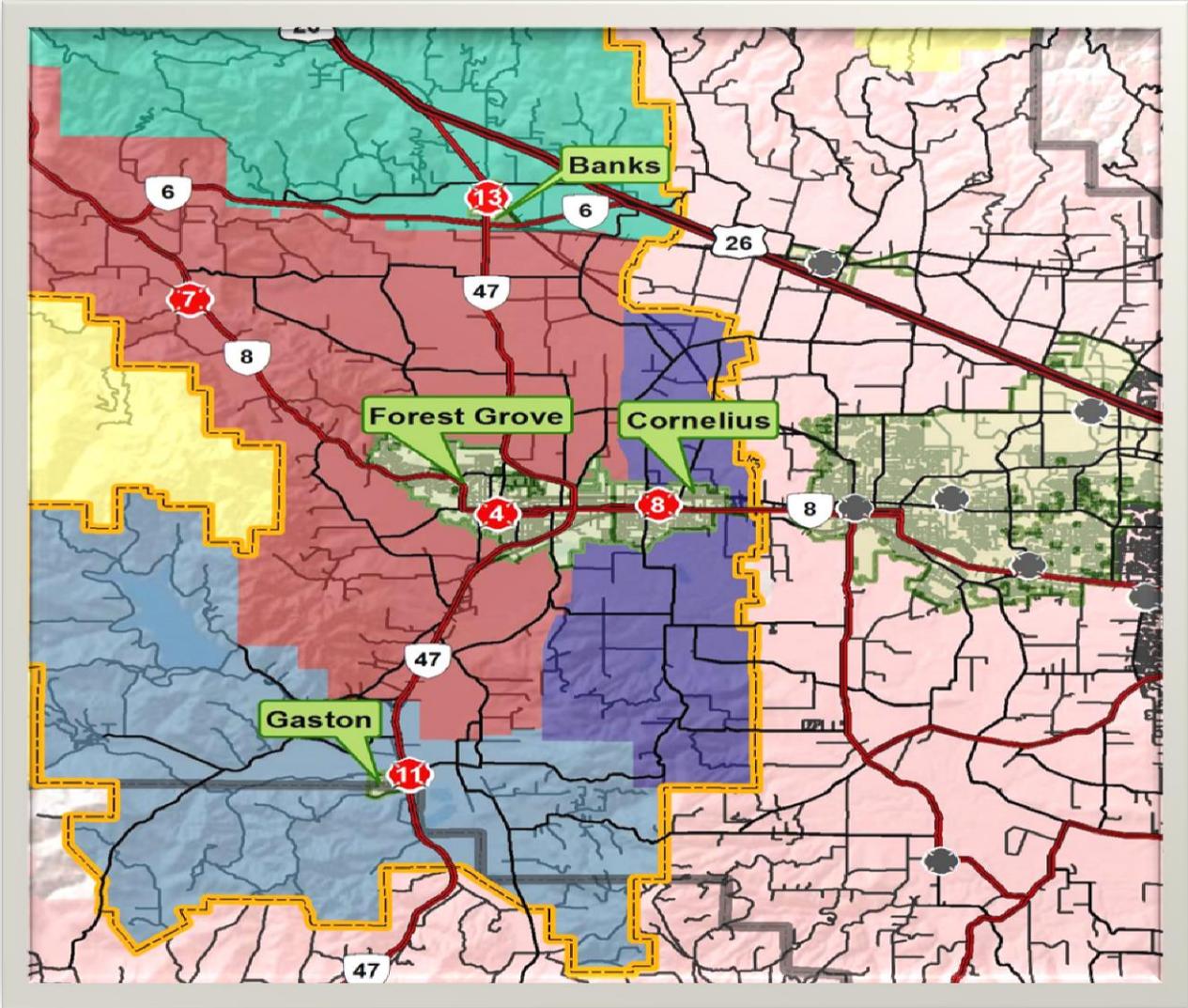
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The City of Forest Grove operates as a “home rule” municipality under the Constitution of the State of Oregon, and operates as a Council-Manager form of government.

Through intergovernmental agreement, Forest Grove provides Fire Chief Services to the City of Cornelius, the Forest Grove and Cornelius Rural Fire Protection District, and the Gaston Rural Fire Protection District. Throughout this document information will be provided for each of these jurisdictions to compare and contrast Forest Grove data.

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## History of the Agency

Firefighting has always existed in the community of Forest Grove, as the original settlers obviously protected each other's properties during the first few decades prior to the incorporation of the City of Forest Grove in 1872. Starting in 1872, there existed separate "fire companies" that were tasked with the work of controlling fires in the city. This "fire company" system was not perfect, and often times the men who worked for these companies spent more time fighting each other



than they did the fires they worked to extinguish. On February 4, 1894, the City Council of Forest Grove established the Forest Grove Fire Department as the official response agency for the city's residents. Over the next forty years, there existed much confusion as to the role of the city's fire department for responses outside of the city limits. With moderate-sized rural communities within a few miles of the city borders, it was natural for the fire department to do its best to provide for these residents as well, but the funding for this service was in question. In 1940 the rural residents voted in favor of forming the Forest Grove Rural Fire Protection District. The newly formed district immediately entered into a contract with the City of Forest Grove to provide fire protection to the surrounding rural communities.

As with most American cities, devastating fires were somewhat common in our earliest days. Based on our records, here is a list of the most significant fires in the history of our fire department.

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- 1914 Fire guts three stories of the Hotel Laughlin. It was rebuilt and lasted until 1957.
- 1919 Two city blocks, and sixteen separate buildings, were destroyed by fire. Included in this downtown conflagration were the United Church of Christ and the City Library.
- 1933 A fast moving fire develops in a Coast Range Mountains logging operation west of the city, eventually spreading to over 311,000 acres. This fire became known as "The Tillamook Burn". Every six years, until the final fire in 1951, devastating fire would burn in the mountains west of Forest Grove. These Tillamook Burn Fires would destroy nearly 713,700 acres of prime timber land and leave a devastated landscape between Forest Grove and the Oregon Coast.
- 1948 The First Christian Church at 19<sup>th</sup> Avenue and Cedar Street was destroyed by a fire. Attempts to rescue the historic church bell from the smoke-filled belfry were unsuccessful. This bell was of symbolic importance to the fire department, as it was the original way that the firefighters were notified that an emergency existed.
- 1948 Part of one city block is destroyed when a fire breaks out in the Kuenzi Meat Market and Hardy Foods Store on Main Street. Firefighters were slowed in their response to this fire because they had to move a large cache of dynamite that was stored inside a back storage room.



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1949 Parts of the Carnation Lumber Company sawmill are destroyed by a rapidly developing fire in the old heavy wooden structures.

1970 Recently purchased by Pacific University, the former Lincoln Junior High School burns. This begins a dangerous decade of fires on campus. Herrick Hall was destroyed by fire in 1973, and Marsh Hall was gutted by flames in 1975.



1975 The Copeland Lumber Yard in downtown Forest Grove is destroyed by a fire that also caused severe injuries to one of our volunteer firefighters when the aerial ladder truck he was working from came into contact with nearby power lines.

1982 The last of the "great downtown fires" burns three businesses along Pacific Avenue.

1988 Valley Warehouse, an expansive food storage facility, burns in the middle of the night causing exploding jars of fruit to launch into the air.

## **Service Milestones**

- 1905            The Department purchases a ladder wagon to respond to the upper stories of buildings.
- 1905            Joseph Lenneville comes from the Midwest and becomes fire chief; he is recognized as the first person in the history of our fire department to have formal firefighting education and training.
- 1912            A new fire hall was built in downtown Forest Grove
- 1920            In the wake of the devastating downtown fire of 1919, a series of fire prevention and inspection programs are initiated where the department begins regular inspections of hazards within businesses, as well as the chimneys of private homes.
- 1921            The first pieces of motorized equipment is purchased from Pulmotor and Chevrolet Trucks, which were converted into two separate hose wagons.
- 1922            College students from nearby Pacific University move into the fire station as “sleepers” who responded on calls when not in class.
- 1924            The department converts a Cadillac 8 chassis into a chemical engine
- 1932            The department organizes its first medical response kits and responds to first aid emergencies as well as fire calls.
- 1934            Our first pumper was purchased for \$150, a 1906 American LaFrance steam powered pumper, from the City of Portland surplus equipment program. This piece of equipment is now fully restored and on display in our museum.

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- 1938 A new fire station was built on Council Street in downtown Forest Grove, which now serves as City Hall
- 1954 The Department hires a full time fire chief and two firefighters, the first employees of the agency. In 1955 a third man would be hired to work Sundays during the summer months.
- 1957 A new fire station was built across the street from the one built in 1938. This new building would last until it was damaged by an earthquake in 1993. This building was replaced in 1995 by our current headquarters station.
- 1967 Full time firefighters begin providing 24-hour response coverage
- 1973 The first paramedic-trained firefighters begin working for the agency, and funding was also set aside to purchase the first sets of hydraulic rescue tools for vehicle accidents.
- 1973 Our all-volunteer fire station in the Gales Creek community opens.
- 1982 A new fire station is built in Gales Creek, allowing the department to move out of the rented garage on school district property.
- 1995 A full time fire inspector is hired
- 1996 Funding is increased to staff each 24 hour shift with four firefighters
- 2003 After successfully passing a public services levy, one additional firefighter is assigned to each 24 hour shift. This is our current service level of five full time firefighters assigned to each of our A, B, and C shifts.

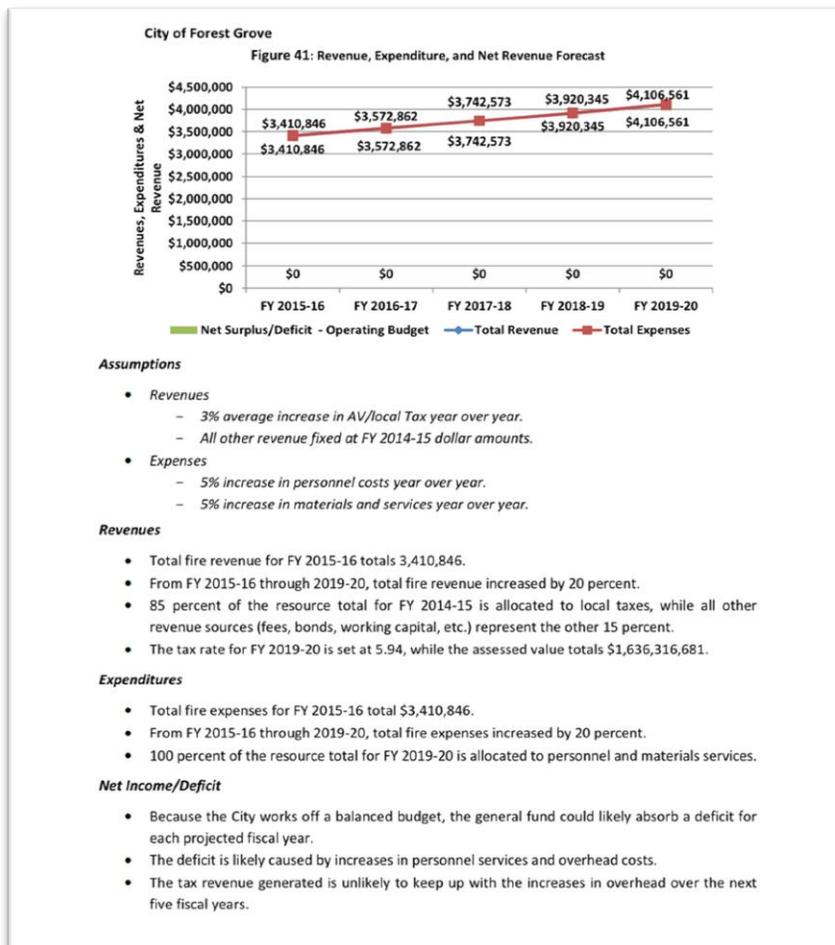
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- 2009            An economic downturn forces the department to eliminate the fire inspector position.
- 2010            An intergovernmental agreement is created with the City of Cornelius for a shared Fire Chief position.
- 2013            A federal grant allows the department to refill the fire inspector position lost in 2009. The position is again funded by the City in 2015 when the grant expires.
- 2014            A federal grant is received that allows the department to hire a staff member dedicated to volunteer recruitment and retention.
- 2015            A Fire Service Cooperative Services study is created for the City of Forest Grove, Forest Grove Rural Fire Protection District, Cornelius Rural Fire Protection District, Gaston Rural Fire Protection District, the City of Cornelius, and Banks Fire District. The study recommends that all departments pursue a merger and consolidation to improve services.
- 2015            An intergovernmental agreement is created with the Gaston Rural Fire Protection District for a shared Fire Chief position.

## Financial Basis

Forest Grove Fire & Rescue is funded through the annual budgets of the City of Forest Grove and the Forest Grove Rural Fire Protection District. Within the City of Forest Grove our funding is mostly provided by the general fund which is a shared fund between Police, Parks & Recreation, Library, and some areas of City Administration. The agreement between the Forest Grove Rural Fire Protection District and the City of Forest Grove calls for sharing of personnel and operating costs based on the call volumes in each of the jurisdictions. In the current 2014-2015 fiscal year, the City funds 86% of personnel and operations and the FGRPD funds 14%. Capital projects such as apparatus and stations are funded through a 50% cost-sharing/ownership formula. The majority of funding for the department comes from property taxes, cigarette taxes, and grants, and the city's



capital improvement project fund, which receives money from a tax on electrical meters. For the 2014-2015 fiscal year the budget was \$3,265,402. The picture to the left is the projected revenues and expenditures to 2019-20 as presented in the 2015 Cooperative Fire Services Study.

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| Components   | Forest Grove Fire  | Cornelius Fire  | Forest Grove Rural Fire  | Cornelius Rural Fire   | Gaston Rural Fire |
|--|--|---|--|--|-------------------|
| <b>Designated fiscal year</b>  | July – June  | July – June   | July – June  | July – June  | July – June       |
| <b>Assessed property value, FY 2014-2015</b>   | \$1,366,044,365  | \$597,357,812   | \$395,166,183  | \$152,482,446  | \$307,863,146     |
| <b>Revised current year general operating fund budget, fire department</b>             | \$4.4 M  | \$1 M   | \$2.8 M  | \$796 K  | \$1.2 M           |
| <b>General fund property tax, city levy – current budget year</b>                      | Fund Dept. through general fund, revenue, prop tax, fees, charges, and overhead. | Fund Dept. through general fund, revenue, prop tax, fees, charges, and overhead.                                    | Fund Dept. through general fund, revenue, prop tax, fees, charges, and overhead. | Fund Dept. through general fund, revenue, prop tax, fees, charges, and overhead. | None              |
| <b>General fund property tax, city/protection district levy, FY 2014-15 (Tax roll)</b> | \$8,112,118  | \$2,379,635   | \$504,469  | \$191,487  | \$542,486         |
| <b>Levy rate (2010-2014 Average)</b>   | \$5.80/thousand<br>\$2.00/thousand equivalent for FD funding                     | \$3.98/thousand<br>\$1.20/thousand equivalent for FD funding, fire levy in 2015 of .487/1000, total now \$1.68/1000 | \$1.37/thousand  | \$1.31/thousand  | \$1.76/thousand   |
| <b>General fund levy collection rate – prior year FY 2013-14</b>                       | \$5.96/thousand  | \$3.98/thousand   | \$1.37/thousand  | \$1.28/thousand  | \$1.76/thousand   |
| <b>Bonds, fire department</b>  | None   | None  | None   | None   | None              |
| <b>Levy rate FY 2014-15</b>  | \$5.94/thousand  | \$3.98/thousand   | \$1.28/thousand  | \$1.26/thousand  | \$1.76/thousand   |
| <b>Other tax levy, public safety</b>   | Charge \$3/mo. For utility bills – 90% goes to police/fire for vehicles.         | None  | None   | None   | None              |

## Area Description

| <b>Area Demographics</b>                           |              |                         |
|--|--------------|-------------------------|
| Agency   | Square Miles | Service Area Population |
| <b>Forest Grove Fire and Rescue</b>                | <b>6</b>     | <b>22,419</b>           |
| <b>Forest Grove Rural Fire Protection District</b> | 75           | 4,450                   |
| <b>Cornelius Fire Department</b>                   | 2            | 12,161                  |
| <b>Cornelius Rural Fire Protection District</b>    | 24           | 2,725                   |
| <b>Gaston Rural Fire Protection District</b>       | 55           | 6,100                   |
| <b>Combined Area</b>                               | <b>162</b>   | <b>47,855</b>           |

### *Topography*

Forest Grove Fire & Rescue provides fire protection and emergency medical response to an area of approximately 85 square miles. Located in the upper Tualatin River and Gales Creek Valleys, and nestled in the eastern slopes of the Oregon Coast Range, Forest Grove is the western most community in the greater Portland Metro Area. The City of Forest Grove makes up about 5.7 square miles of the total 85 square miles that we serve. Our response area offers a wide range of topography. The west edge is located in the foothills of the Oregon Coast Range and is made up of rugged evergreen-forested hillsides with mountain-streams flowing down into the valley below. Within this valley you will find some of the most fertile soils in the Pacific Northwest. This agricultural land has provided farmers with the ability to grow bountiful harvests of everything from grass seeds to berries. Flowing through this valley is the Tualatin River and Gales Creek, as well as many other smaller tributaries that make up the upper Tualatin Valley ecosystem.

These topographical features create unique challenges for our response planning. We are faced with a significant wildland and urban interface risk in our rural areas and along the City borders.

Our major waterways, combined with one of the wettest climates in the United States, regularly causes flooding for the lowest elevations of our response area.

Oregon State Highway 6 travels through our north and west region and through the rugged Coast Range Mountains, where we provide first-responder services. Oregon State Highways 47 and 8 cross through the flatter valley region and create an area where speeds and intersections often result in significant traffic accidents.

Our engines are designed to navigate rural driveways as well as city streets, and our brush rigs are made to be highly maneuverable in rugged terrain.

Over the years we have increased our ability to respond to emergencies by purchasing specialized equipment for high and low angle rescue, confined space and technical rescues, water-rescue incidents, and advanced vehicle extrication.

### ***Climate***

By the definitions of the Koppen Climate Classification System, Forest Grove is considered to have a "Warm-Summer Mediterranean Climate". Located less than 50 miles from the Pacific Ocean, our weather is significantly influenced by the coastal systems that come from offshore, which creates a climate that is generally mild. The average high temperature for Forest grove is 62.4 degrees Fahrenheit, our average low temperature is 42 degrees Fahrenheit. The overall average temperature is 52.2 degrees Fahrenheit. On average 45.53 inches of rain falls on our area every year. All twelve months of the year can have measurable rain with December leading at 8.19 inches, while July brings on average of .43 inches. Parts of our fire district can reach upwards of 1,000 feet above sea level, but the City

of Forest Grove sits at 200 feet. There is an average of 4 inches of snow fall per year.

### ***Population***

Forest Grove Fire & Rescue serves a population of approximately 25,000, with just over 22,000 people residing within the boundaries of the City of Forest Grove, with the remainder living in the rural areas that surround the city. These rural areas have their own identifiable communities centered on settlements from the days of the Oregon Trail. These historic communities include Gales Creek, Glenwood, Verboort, Roy, and Dilley.

Our city is one of the fastest growing cities in Oregon, and currently has a population density of approximately 3,673 people per square mile, which is considered urban. In the rural areas, the population density is approximately 100 people per square mile.

Within the City of Forest Grove the main employers are the private Pacific University, the public Forest Grove School District, and a circuit board manufacturer. In our rural area, the economy is more limited to agriculture and timber harvesting. Within both the city and rural areas a large portion of our residents work in the “The Silicon Forest” high tech industries of Hillsboro and the Portland Metro Area.

### ***Area Development***

Washington County is one of the fastest growing population areas in the entire United States. Since 2010 the population growth rate in our county has been double that of the State of Oregon. Commercial growth in Washington County has exploded since the mid 1990’s, when chip maker Intel expanded their operations. As the central core cities of the Portland Metro Area have moved towards higher density housing, Forest Grove has become a bedroom community for the area. The average commute-to-work

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time for our area is 24 minutes. Between 2000 and 2012 the population of Forest Grove expanded by 24%.

Forest Grove and our surrounding rural communities offer a considerable diversity in housing and neighborhood styles. Within the city limits exists century-old historic homes, modern homes of over 3,000 square feet, starter homes on smaller lots, and single family ranch-style homes on moderately-sized parcels of land. With a large number of university students, as well as a large migrant worker population, our city also has over 120 apartment complexes.

Our downtown core is made up of buildings constructed from the late 1800's until modern times. Most downtown buildings are Type III Ordinary Construction (brick with wood structural members). Our public school system has completed significant upgrades in the last decade. Most of our schools are Type II Non Combustible Construction and are fully protected by fire sprinklers (exceptions being Harvey Clarke, Gales Creek, and Dilley Elementary Schools). On the campus of Pacific University the buildings vary from large wood-frame dorms that are sprinkled, to classic buildings that were first built in the early 1900s. Our industrial centers are much more modern and are typically classified as tilt-up Type II Non-Combustible Construction.

Depending on location, street systems in our response area are maintained by the City of Forest Grove, Washington County Land Use and Transportation, or the Oregon Department of Transportation. Over the years, many of these roads, streets, and highways have been updated to modern standards of pavement and signage. Our City water system is operated by the Forest Grove Public Works Department and follows the city's street network. Water within the City of Forest Grove is supplied from both our own water treatment facility (that receives water from the City of Forest Grove Watershed in the hills near Gales Creek), or the shared Joint Water Commission's treatment center on Fernhill Road. Our system is built to modern standards with a minimum water line diameter of eight inches.

This system is capable of providing 2,000 gallons of water per minute at 20 pounds per square inch of pressure from any fire hydrant. In the rural areas there are designated rural water sources pre-identified.

### ***Demographic Features***

According to the 2010 U.S. Census:

- *Residents in the City of Forest Grove have a median age of 32.7 years*
- *13.9% of our residents are older than sixty-five*
- *28.8% are under eighteen, and the remaining 57.3% are between nineteen and sixty-four years of age.*
- *Forest Grove's population is 23.1% Latino or Hispanic (compared to 11.7% statewide).*
- *The median household income within the City of Forest Grove is \$45,290 per year.*
- *85.4% of the population are high school graduates (Oregon state rates are 89.4%)*
- *22.7% of our residents have earned a Bachelor's Degree (Oregon state rates are 29.7%)*
- *15.9% of our population are below the poverty level.*

## **B. SERVICES PROVIDED**

### **FIRE SUPPRESSION**

Forest Grove Fire & Rescue is staffed with a minimum of four firefighters working a 24-hour shift. Four firefighters are enough to staff one engine company. Our volunteer intern program will occasionally allow us to split our personnel to staff two apparatus daily. Forest Grove Fire & Rescue depends on automatic aid agreements with surrounding departments to assemble an effective response force for all fires and major events.

The department does not have on-duty Battalion Chiefs. On-scene supervision is provided by the Fire Chief, two Division Chiefs, and two volunteer Battalion Chiefs on a rotating schedule. The department maintains a force of volunteers who work as suppression firefighters, chaplains and support volunteers. All support volunteers are trained as Community Emergency Response Team (CERT) members. The department responds to approximately 35 structure fires annually. This number has been stable for the last several years.

### **EMERGENCY MEDICAL**

Forest Grove Fire & Rescue has been providing medical response since 1933, and paramedic-level response since 1973. Medical functions performed by the department are state-of-the-art for prehospital care. Advanced life support is provided by a system of paramedics and emergency medical technicians equipped with the latest in medical equipment, including 12-lead transmission-capable cardiac monitors, video laryngoscopes and advanced airway devices. Over 70% of all requests for service are emergency medical calls.

Ambulance transport is provided by Metro West Ambulance by franchise agreement with Washington County. These ambulances are staffed with at least one paramedic and one emergency medical technician.

## **RESCUE**

Rescue functions include vehicle and machinery extrication, high-angle rope rescue, water and flood rescue, confined space rescue and light structural collapse rescue. First response to emergencies involving technical rescue usually begins by a response from the closest fire unit, with a chief officer and/or technical rescue trailer added when appropriate.

## **HAZARDOUS MATERIALS**

Emergency response to hazardous materials incidents are limited in nature to those tasks defined as core competencies for Operations Level Responders per NFPA 472 "Standards for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction, 2013 Edition." A complement of equipment and supplies such as gas monitors, absorbent material, and oil booms are maintained for hazardous materials mitigation. The department works in cooperation with the Oregon State Fire Marshal's Regional Hazmat Teams for large scale events.

Another resource available to the department is a foam trailer which is housed at Cornelius Fire Station 8, which is capable of suppressing large hydrocarbon fires/vapors from petrochemical spills.

## **WILDLAND**

With a number of rural areas in the Forest Grove Rural Fire Protection District, the surrounding districts, and several significant urban-wildland interfaces in the City, two Type VI brush trucks and one Type III brush truck are maintained by the department, along with two 3000 gallon tenders. The Western Washington County Fire departments of Forest Grove, Cornelius and Gaston maintain more wildland vehicles than any other department in Washington County.

## **FIRE PREVENTION/COMMUNITY OUTREACH**

The department actively participates in a number of fire prevention and community outreach activities throughout the year. Our annual open house during Fire Prevention week each year, brings a large number of families and residents to our facilities to view the equipment, meet the personnel, and view demonstrations on fire safety and general emergency preparedness. In addition, department personnel provide tours, demonstrations and fire prevention talks throughout the communities we serve.

## **FIRE INSPECTION/INVESTIGATION**

The Oregon Fire Code is adopted by Oregon Administrative Rule 837, Division 40, and was last adopted by both the City and Rural District in 2016.

The Oregon Fire Code is a statewide minimum fire code. Local jurisdictions may adopt and amend the Oregon Fire Code with some limitations. By default, all fire protections agencies in Oregon are subject to the fire and life safety rules promulgated by the Oregon State Fire Marshal and the State Fire Marshal has authority over and responsibility for the enforcement of the fire code statewide. However, ORS 476.030 provides that governmental subdivisions may be exempted from the code enforcement statutes, as long as they demonstrate the ability to provide the oversight of regulations generally conforming to the applicable state and national standards.

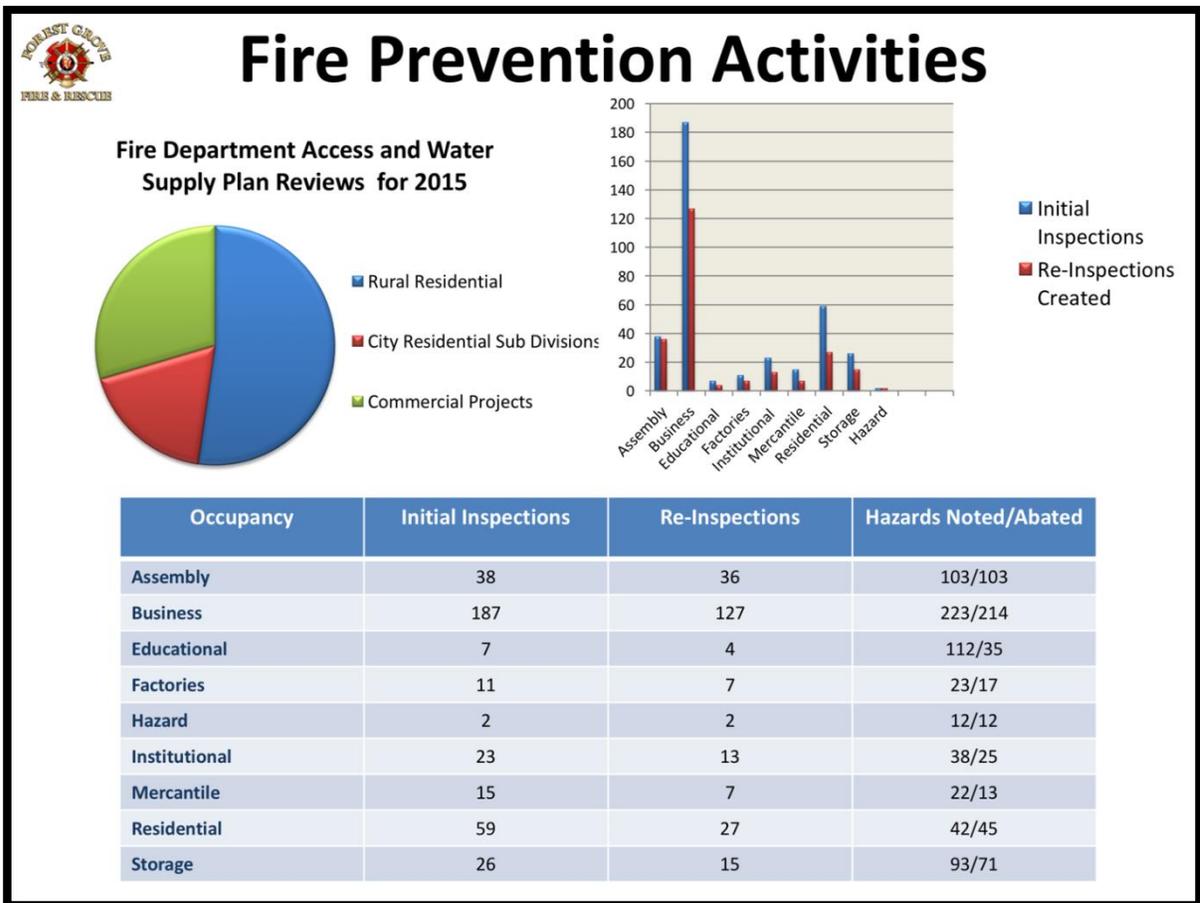
The City of Forest Grove is one of only nine exempt jurisdictions in the state of Oregon, meaning that the city has taken on responsibility for the enforcement of the adopted fire code.

FOREST GROVE FIRE AND RESCUE  
2016 COMMUNITY RISK ANALYSIS AND STANDARDS OF COVER

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The fire code forms the foundation from which the agencies code enforcement activities are conducted.

FGFR has a dedicated fire marshal's position and one inspector on their staff. The fire marshal reviews new construction plans for access and water supply concerns, and is consulted in building permit submissions, but does not complete a fire and life safety plan review. Instead, the review is completed by the city building department. The fire marshal's signature is required for permit issuance. On-going commercial property inspections, to find and eliminate potential safety hazards, are an essential part of the overall fire protection system.



## EMERGENCY MANAGEMENT

The Fire Department is responsible for providing emergency management including preparation, response, mitigation and recovery for disasters that occur in our jurisdiction. The department provides a joint emergency operations center (EOC) for both Cities' and provides training, plans development/review, and community preparedness education to help minimize the costs and recovery time of a disaster in our region. The department maintains a joint mobile command unit, EOC 4, designed for multi-alarm and extended incidents. EOC 4 is a special call resource available to respond to both fire and law enforcement needs.

A disaster or major emergency is characterized as an incident requiring the coordinated response of all government levels to save the lives and protect the property of a large portion of the population.

This Emergency Operations Plan (EOP) is issued in accordance with, and under the provisions of, Oregon Revised Statutes (ORS) Chapter 401, which establishes the authority for the highest elected official of the City Council to declare a State of Emergency.

For the purposes of this plan and consistency with the County and State plans, the Cities' emergency management structure will be referred to generally as the Emergency Management Organization (EMO), which is maintained by the fire department. The EMO will:

- *Coordinate planning activities necessary to prepare and maintain this EOP.*
- *Manage and maintain the EOC, from which City officials can coordinate emergency and disaster response activities.*
- *Coordinate with County and State agencies, as well as other private, nonprofit, volunteer, and faith-based organizations, to*

*integrate effective practices in emergency preparedness and response in a manner consistent with NIMS.*

- *Establish an Incident Command Structure for management of all incidents by all local emergency service agencies.*

Through promulgation of this plan, the Cities have designated Forest Grove Fire & Rescue as the lead agency in the EMO. The Fire Chief, given the collateral title of Emergency Manager, has authority and responsibility for the organization, administration, and operation of the EMO. The Emergency Manager may delegate any of these activities to designees, as appropriate.

The EMO is consistent with NIMS, and procedures supporting NIMS implementation and training for the Cities have been developed and formalized by the Emergency Manager.

## CURRENT DEPLOYMENT

### Forest Grove Fire Station 4

1919 Main Street

Forest Grove



Built in 1995, this station serves as Forest Grove’s main fire station and includes their administrative offices. The facility consists of five apparatus bays of a drive-through configuration, housing three engines, two water tenders, one ladder truck, one medic unit, two brush vehicles, technical rescue trailer, EOC trailer, boat and 2 staff vehicles.

Station 4 includes the fire department’s administrative offices, consisting of six individual offices and one shared office with four work areas. The facility is modern, well designed, and will serve the fire department adequately for the foreseeable future.

|  |   |
|--|---|
| Structure  |   |
| Construction type  | Wood frame and masonry  |
| Date Built   | 1995  |
| Seismic protection/energy audits   | Completed in 2011   |
| Auxiliary power  | Automatic start generator is in place   |
| Special considerations (American with Disabilities Act of 1990 (ADA), mixed gender appropriate, storage, etc.) | Station is ADA compliant, storage is reaching capacity  |
| Square Footage   | 18,000  |
| Training/meetings  | A large training room is present as well as a conference room and Emergency Operations Center |
| Sprinkler system   | Building is fully protected by a fire sprinkler system  |
| Smoke detection  | Building is fully protected by a smoke detection system                                       |
| Security   | Electronic key pad  |

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| <b>Forest Grove Station 4 Apparatus Inventory</b> |                           |             |                     |                  |                         |                      |                      |
|---|---------------------------|-------------|---------------------|------------------|-------------------------|----------------------|----------------------|
| <b>Apparatus Designation</b>                      | <b>Type</b>               | <b>Year</b> | <b>Make/Model</b>   | <b>Condition</b> | <b>Seating Capacity</b> | <b>Pump Capacity</b> | <b>Tank Capacity</b> |
| <b>E421</b>                                       | Engine (Type 1)           | 2008        | Spartan/BME         | Excellent        | 5                       | 1,500 GPM            | 750 Gal              |
| <b>E422</b>                                       | Engine (Type 1)           | 2008        | Spartan/BME         | Excellent        | 5                       | 1,500 GPM            | 750 Gal              |
| <b>E423</b>                                       | Engine (Type 1) (reserve) | 2001        | HME/Central States  | Good             | 6                       | 1,500 GPM            | 1,000 Gal            |
| <b>T4</b>   | Aerial                    | 2001        | HME/Central States  | Good             | 6                       | 2,000 GPM            | 300 Gal              |
| <b>WT4</b>  | Tender                    | 2015        | Spartan             | Excellent        | 2                       | 1,000 GPM            | 3,000 Gal            |
| <b>WT7</b>  | Tender                    | 1991        | Int./Western States | Good             | 2                       | 1,000 GPM            | 3,000 Gal            |
| <b>MED4</b>                                       | Medic                     | 2004        | Int./Horton         | Good             | 3                       | N/A                  | N/A                  |
| <b>HB4</b>  | Brush (Type 3)            | 2015        | HME                 | Excellent        | 4                       | 1000 GPM             | 500 Gal              |
| <b>BR418</b>                                      | Brush (Type 6)            | 2011        | Dodge/Local         | Excellent        | 4                       | 123 GPM              | 400 Gal              |
| <b>TR4</b>  | Tech. Rescue              | 2010        | Millennium Trailer  | Excellent        | N/A                     | N/A                  | N/A                  |
| <b>EOC4</b>                                       | Command EOC               | 2010        | Trailer             | Excellent        | N/A                     | N/A                  | N/A                  |
| <b>B4</b>   | Rescue Boat               | 2008        | Boat                | Very Good        | 4                       | N/A                  | N/A                  |

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**FOREST GROVE FIRE STATION 7**

**GALES CREEK SUBSTATION**



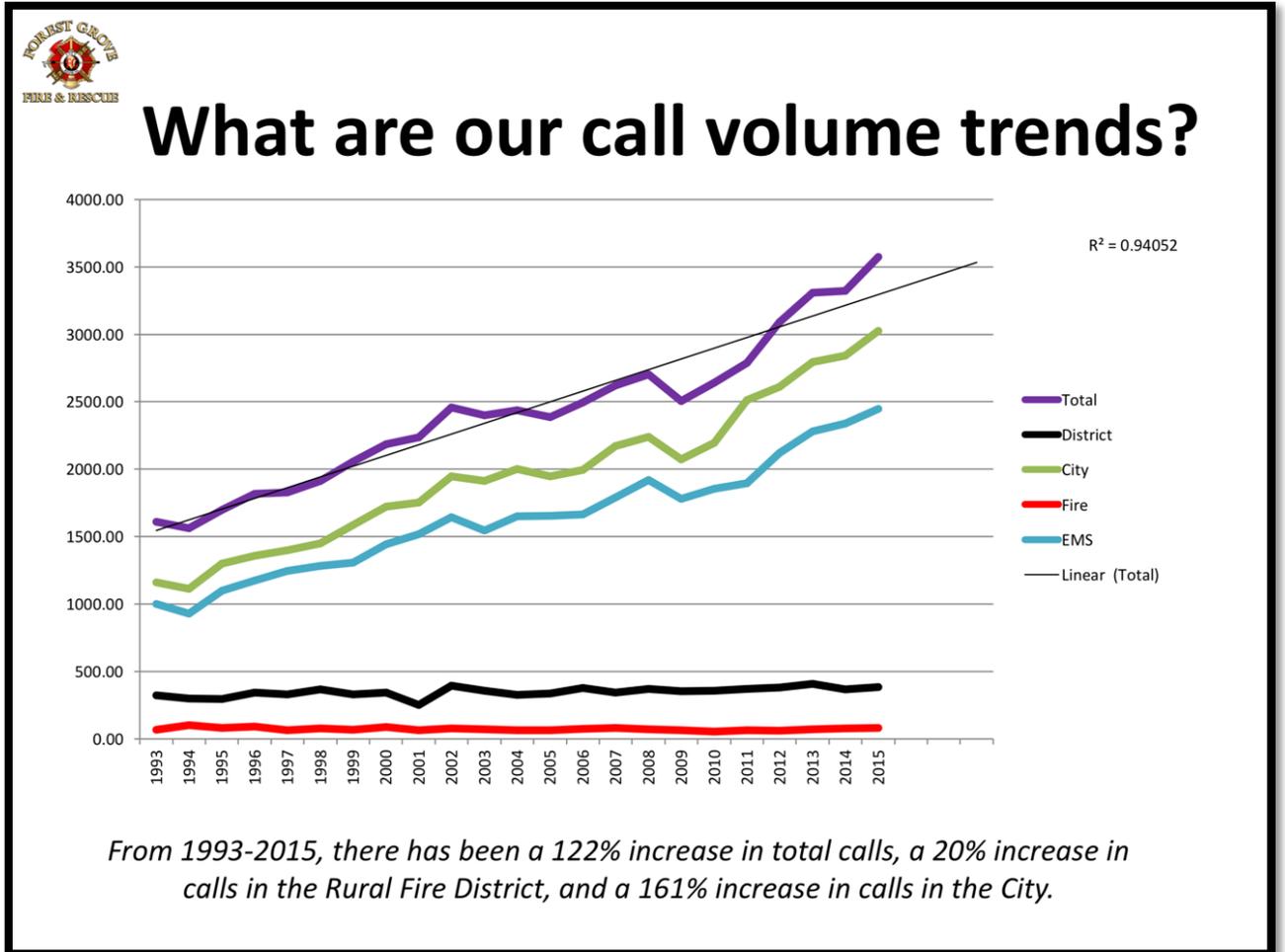
The Gales Creek Station is a six-bay sub-station, housing one engine and one brush truck. The facility is configured for volunteer use only and does not include residential quarters. However, a small kitchen is present along with a bed in an office area in the front of the station.

|                                  |   |
|----------------------------------|---|
| Construction type                | Steel clad, steel frame   |
| Date Built                       | 1982  |
| Seismic protection/energy audits | None other than when originally designed  |
| Auxiliary power                  | Automatic start generator is in place   |
| Square Footage                   | 1,800   |
| Sprinkler system                 | Station is not protected by a fire sprinkler system; residential house is protected by sprinkler system |
| Smoke detection                  | Smoke and heat detection system is in place and monitored off-site                                      |
| Security                         | Electronic key pad, monitored alarm, video surveillance.  |

**Forest Grove Station 7 Apparatus Inventory**

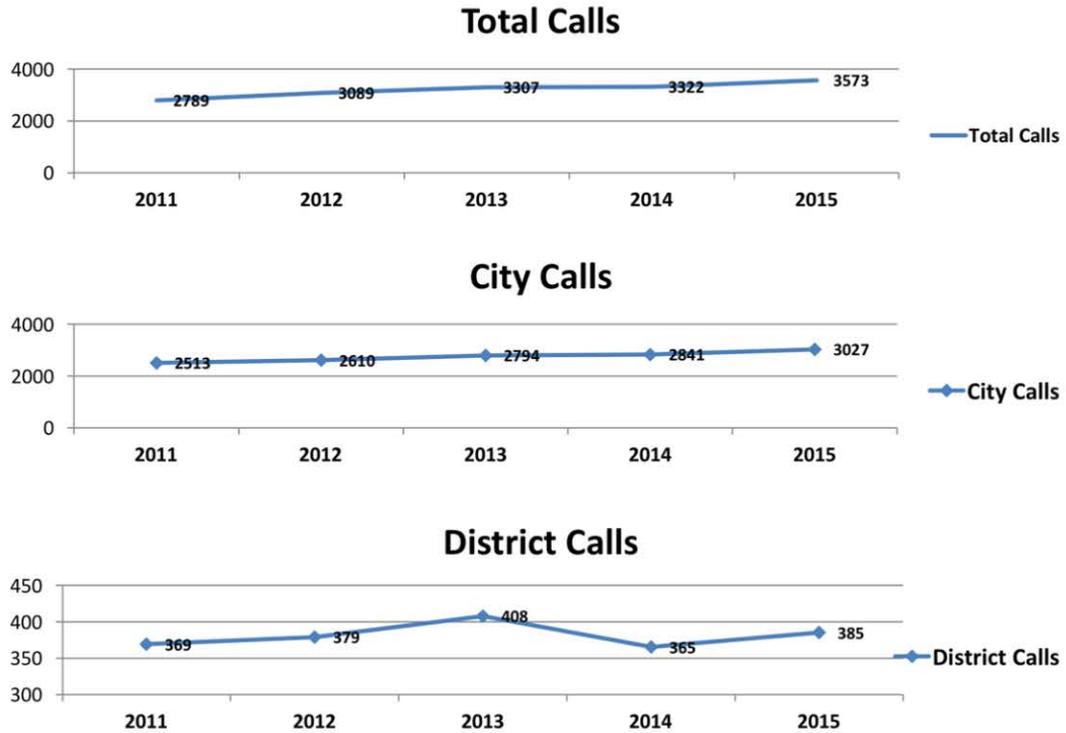
| Apparatus Designation | Type            | Year | Make/Model | Condition | Seating Capacity | Pump Capacity | Tank Capacity |
|-----------------------|-----------------|------|------------|-----------|------------------|---------------|---------------|
| <b>E427</b>           | Engine (Type I) | 2005 | HME/BME    | Good      | 4                | 1,200 GPM     | 875 Gal       |
| <b>BR417</b>          | Brush (Type VI) | 2011 | Dodge      | Excellent | 4                | 123 GPM       | 400 Gal       |

## COMMUNITY RESPONSE HISTORY





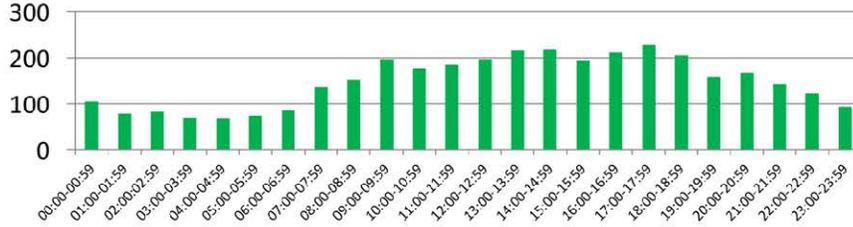
# How many calls did we run?



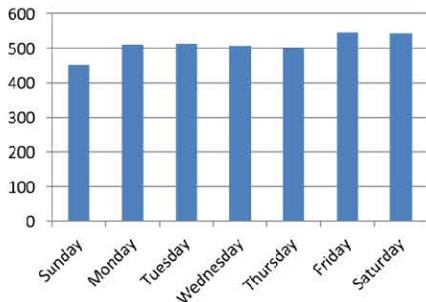


# When do our calls occur?

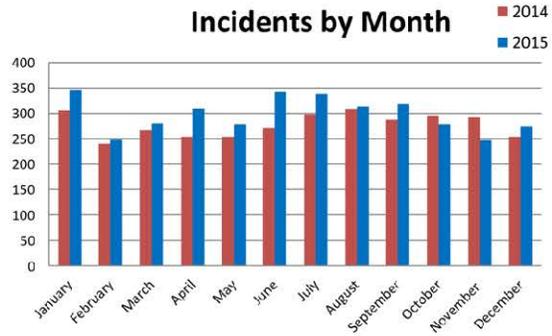
Incidents by Hour



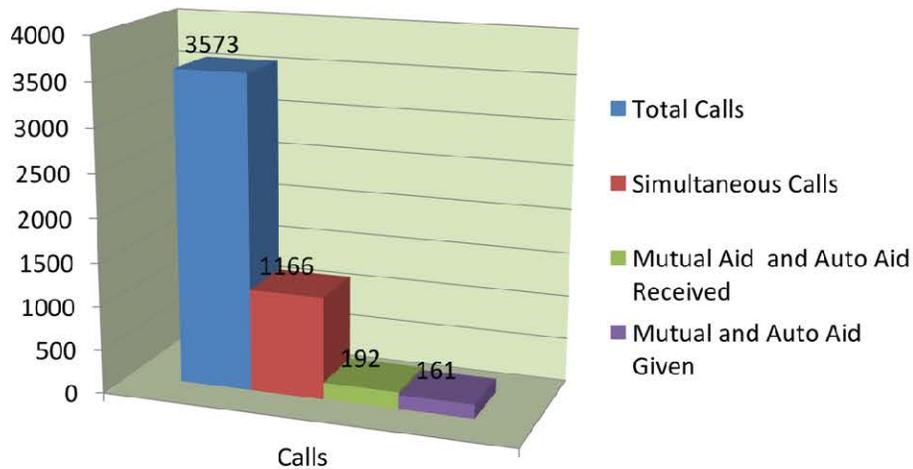
Incidents by Day of Week



Incidents by Month



# Simultaneous Calls and Mutual Aid (2015)

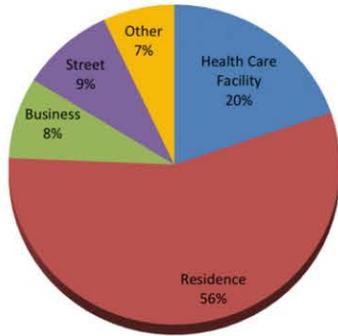


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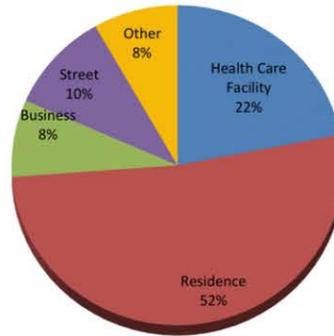


# Where are we going?

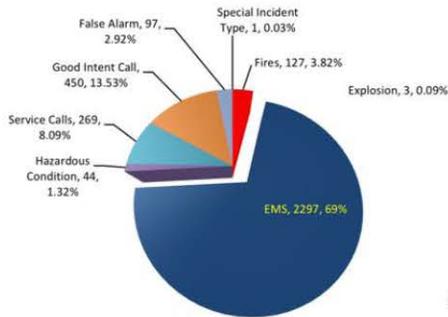
2014



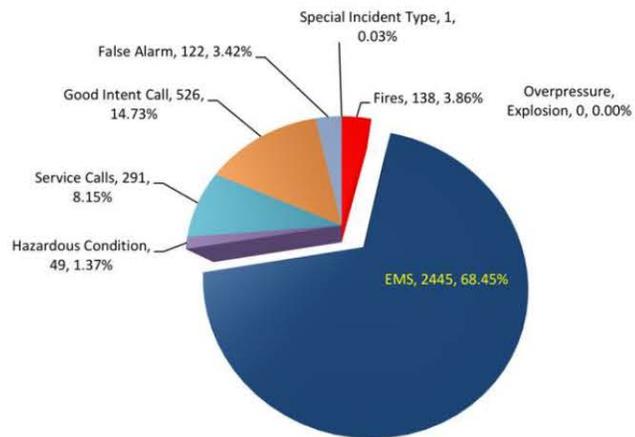
2015



# What type of calls did we get called for?



2014 Incident Types



2015 Incident Types

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## Fire Losses (2015)

| FIRES IN STRUCTURES BY<br>FIXED PROPERTY USE (OCCUPANCY)   | NUMBER OF<br>INCIDENTS | # Civilian Fire Casualties |          | EST. PROP. DAMAGE     |
|--|------------------------|----------------------------|----------|-----------------------|
|  |                        | DEATHS                     | INJURIES |                       |
| Private Dwellings (1 or 2 family), including mobile homes (FPU 419)  | 26                     | 0                          | 0        | \$788,900.00          |
| Apartments (3 or more families) (FPU 425)  | 3                      | 0                          | 0        | \$0.00                |
| Hotels and Motels (FPU 449)  | 0                      | 0                          | 0        | \$0.00                |
| All Other Residential (dormitories, boarding houses, tents, etc.) (FPU 400, 439, 459-499)  | 2                      | 0                          | 0        | \$0.00                |
| <b>TOTAL RESIDENTIAL FIRES (Sum of lines 1 through 4)</b>  | <b>31</b>              | <b>0</b>                   | <b>0</b> | <b>\$788,900.00</b>   |
| Public Assembly (church, restaurant, clubs, etc.) (FPU 100-199)  | 1                      | 0                          | 0        | \$0.00                |
| Schools and Colleges (FPU 200-299)   | 1                      | 0                          | 0        | \$500.00              |
| Health Care and Penal Institutions (hospitals, nursing homes, prisons, etc.) (FPU 300-399)   | 0                      | 0                          | 0        | \$0.00                |
| Stores and Offices (FPU 500-599)   | 2                      | 0                          | 0        | \$100,000.00          |
| Industry, Utility, Defense, Laboratories, Manufacturing (FPU 600-799)  | 2                      | 0                          | 0        | \$200,000.00          |
| Storage in Structures (barns, vehicle storage garages, general storage, etc.) (FPU 800-899)  | 2                      | 0                          | 0        | \$0.00                |
| Other Structures (outbuildings, bridges, etc.) (FPU 900-999)   | 1                      | 0                          | 0        | \$0.00                |
| <b>TOTAL FOR STRUCTURE FIRES (Sum of lines 5 through 12)</b>   | <b>40</b>              | <b>0</b>                   | <b>0</b> | <b>\$1,089,400.00</b> |
| Fires in Highway Vehicles (autos, trucks, buses, etc.) (IT 131-132, 136-137)   | 5                      | 0                          | 0        | \$5,700.00            |
| Fires in Other Vehicles (planes, trains, ships, construction or farm vehicles, etc.) (IT 130, 133-135, 138)                                    | 1                      | 0                          | 0        | \$0.00                |
| Fires outside of Structures with Value Involved, but Not Vehicles (outside storage, crops, timber, etc.) (IT 140, 141, 161, 162, 164, 170-173) | 47                     | 0                          | 0        | \$300.00              |
| Fires in Brush, Grass, Wildland (excluding crops and timber), with no value involved (IT 142-143)  | 25                     | 0                          | 0        | \$500.00              |
| Fires in Rubbish, Including Dumpsters (outside of structures), with no value involved (IT 150-155)   | 7                      | 0                          | 0        | \$0.00                |
| All Other Fires (IT 100, 160, 163)   | 4                      | 0                          | 0        | \$11,600.00           |
| <b>TOTAL FOR FIRES (Sum of lines 13 through 18)</b>  | <b>129</b>             | <b>0</b>                   | <b>0</b> | <b>\$1,107,500.00</b> |
| Rescue, Emergency Medical Responses (ambulances, EMS, rescue) (IT 300-381)   | 2445                   | 0                          | 0        | \$0.00                |
| False Alarm Responses (malicious or unintentional false calls, malfunctions, bomb scares) (IT 700-746)   | 122                    | 0                          | 0        | \$0.00                |
| Mutual Aid Responses Given   | 116                    | 0                          | 0        | \$10,000.00           |
| Hazards Materials Responses (spills, leaks, etc.) (IT 410-431)   | 26                     | 0                          | 0        | \$0.00                |
| Other Hazardous Responses (arcing wires, bomb removal, power line down, etc.) (IT 440-482, 400)  | 23                     | 0                          | 0        | \$0.00                |
| All Other Responses (smoke scares, lock-outs, animal rescues, etc.) (IT 200-251, 500-699, 800-911)   | 818                    | 0                          | 0        | \$0.00                |
| <b>TOTAL FOR ALL INCIDENTS (Sum of lines 19 through 24)</b>  | <b>3679</b>            | <b>0</b>                   | <b>0</b> | <b>\$1,117,500.00</b> |

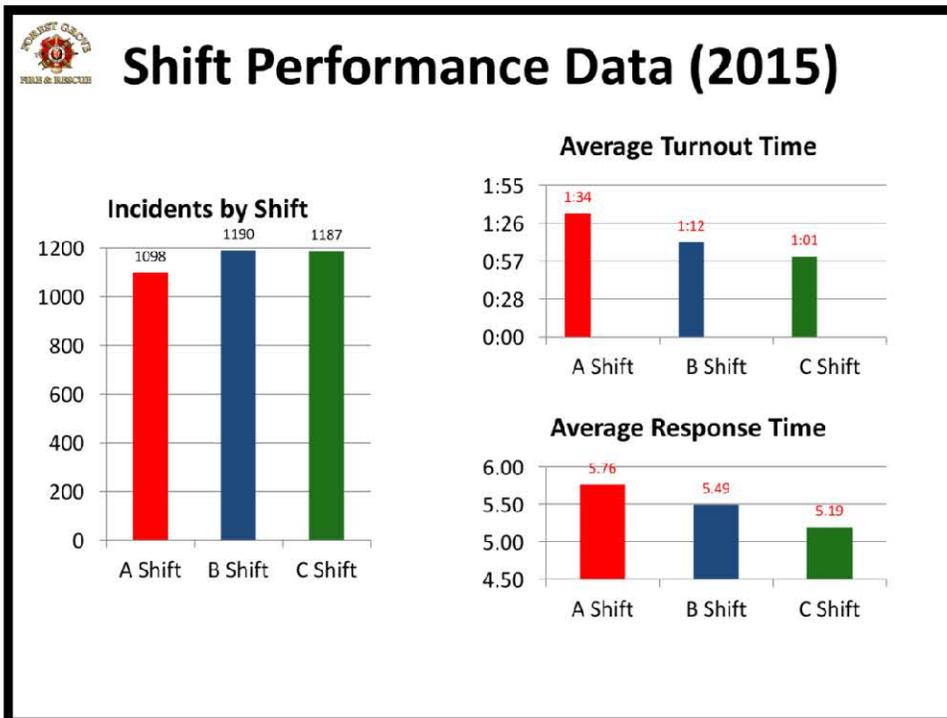
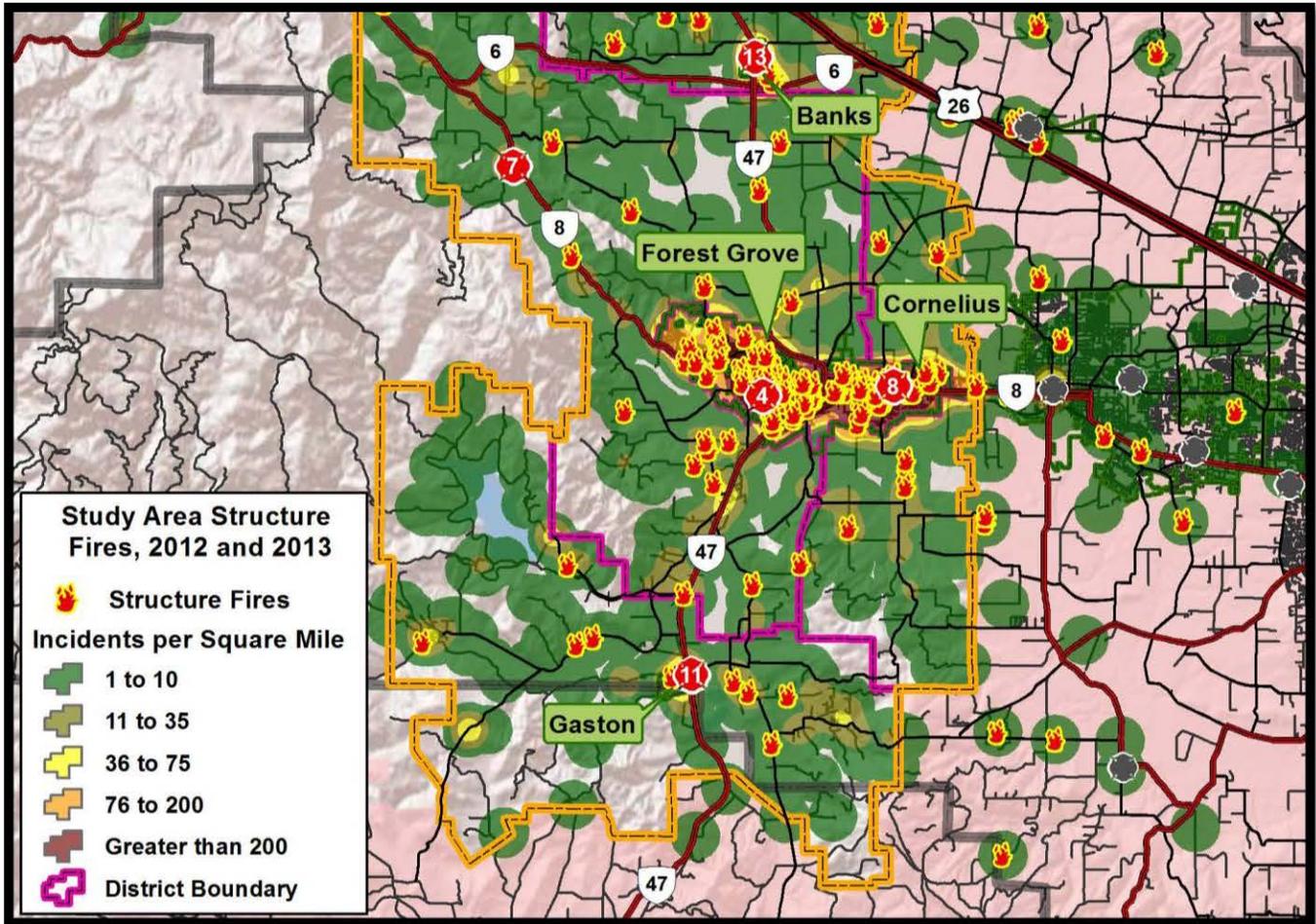


## EMS Calls: (2015)

| PROVIDER'S PRIMARY IMPRESSION     | # PATIENTS  | % of TOTAL |
|-----------------------------------|-------------|------------|
| Not Applicable                    | 432         | 33.6%      |
| Abdominal pain / problems         | 119         | 9.2%       |
| Airway obstruction                | 13          | 1.0%       |
| Allergic reaction                 | 9           | 0.7%       |
| Altered level of consciousness    | 103         | 8.0%       |
| Behavioral / psychiatric disorder | 37          | 2.9%       |
| Cardiac arrest                    | 17          | 1.3%       |
| Cardiac rhythm disturbance        | 9           | 0.7%       |
| Chest pain / discomfort           | 83          | 6.4%       |
| Diabetic symptoms (hypoglycemia)  | 31          | 2.4%       |
| Hyperthermia                      | 3           | 0.2%       |
| Hypovolemia / shock               | 4           | 0.3%       |
| Obvious death                     | 5           | 0.4%       |
| Poisoning / drug ingestion        | 19          | 1.5%       |
| Pregnancy / OB delivery           | 2           | 0.2%       |
| Respiratory distress              | 72          | 5.6%       |
| Respiratory arrest                | 1           | 0.1%       |
| Seizure                           | 29          | 2.3%       |
| Stroke / CVA                      | 21          | 1.6%       |
| Syncope / fainting                | 37          | 2.9%       |
| Traumatic injury                  | 238         | 18.5%      |
| Vaginal hemorrhage                | 3           | 0.2%       |
| <b>TOTAL # of PATIENTS:</b>       | <b>1287</b> |            |

| MEDICATION                          | # TIMES ADMINISTERED |
|-------------------------------------|----------------------|
| 0.9% Sodium Chloride (Ns)           | 4                    |
| Adenosine                           | 2                    |
| Albuterol Sulfate                   | 19                   |
| ALPS 1A and 1B                      | 1                    |
| Amiodorone (Cardarone)              | 1                    |
| Aspirin (ASA)                       | 58                   |
| Dextrose 10%                        | 1                    |
| Dextrose 10% (D10)                  | 1                    |
| Dextrose 50% (D50)                  | 15                   |
| Dipherhydramine (Benadryl)          | 3                    |
| DuoNeb (0.5 Atrovent/3.0 Albuterol) | 1                    |
| Epinephrine 1:10,000                | 43                   |
| Epinephrine 1:1000                  | 4                    |
| Etomidate                           | 4                    |
| Fentanyl                            | 90                   |
| Glucagon                            | 3                    |
| Glucose, Oral                       | 8                    |
| Lidocaine                           | 1                    |
| Midazolam                           | 9                    |
| Naloxone (Narcan)                   | 7                    |
| Nitroglycerin                       | 11                   |
| Not Applicable                      | 1                    |
| Ondansetron (Zofran)                | 39                   |
| Other                               | 3                    |
| Oxygen                              | 24                   |
| Oxygen (non-rebreather mask)        | 9                    |
| Oxygen by Mask                      | 3                    |
| Oxygen by Nasal Cannula             | 51                   |
| Oxygen by Positive Pressure Device  | 1                    |
| Sodium bicarbonate                  | 1                    |
| Succinylcholine                     | 5                    |
| Vasopressin                         | 6                    |
| Vecuronium                          | 3                    |

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## **C. COMMUNITY EXPECTATIONS AND PERFORMANCE GOALS**

Forest Grove Fire and Rescue has traditionally provided an “all-hazards” response. Through community surveys, the Department has consistently been ranked as one of the highest services provided by the City of Forest Grove to the community.

### **Performance Expectation Goals**

#### ***Mission Statement***

“Everything we do, we do for the people and the communities we proudly serve. With education and training, we prevent harm. With rapid and professional response, we protect lives and property. Through the desire to serve and courage to act, we are the model of a successful fire and rescue agency for the State of Oregon. Prevent, Protect, Serve”

#### ***Vision Statement***

To be the leading fire and rescue agency in Oregon by setting the standard of excellence in training, prevention, protection, and service for all people and communities who call upon us in a time of need.

#### ***Value Statement***

We achieve our mission and vision by building upon our core values and being loyal to our duty to serve. We work with a continued focus in the direction of leadership and excellence. Our defining core values include Professionalism, Teamwork, Leadership, Compassion, Integrity, and Service Excellence. We hold ourselves accountable to these values.

### Professionalism

We believe our professionalism defines who we are. We believe in honor, competency, integrity and outstanding public service to the community. We strive to be positive role models for future generations of firefighters and continue the legacy of service excellence.

### Teamwork and Leadership

We believe all individuals have the capacity to lead, and our organization values leadership at all levels. Our lives depend on a well-functioning team of people. Teamwork and shared leadership are integral to our organization. We seek out and value the opinions of our members.

### Compassion

We believe in caring for our community members who are suffering from significant events in their lives, and with mercy and compassion, we do all that is possible to assist in stabilizing the situation.

### Integrity

We believe in living by moral and ethical principles. We understand the trust placed in us by the public and our colleagues is integral to the performance of our duties. We are honorable to our profession and we inspire each other to maintain trustworthiness and openness in all our activities.

### Service Excellence

We believe the pursuit of excellence and demonstrated high professional standards are critical to our work. To ensure the best possible service to our community, we do all we can to meet the needs of our neighbors through a committed, competent, and well trained, efficient agency.

## Community Service Expectations

In 2010-11 Forest Grove Fire & Rescue held “external stakeholder” meetings as part of their strategic planning process. These meetings were held with elected officials and members of the Public Safety Advisory Commission (PSAC) and the public-at-large. The purpose of this meeting was to gain a better understand of the community’s expectations of their fire department.

### Top 5 Expectations

1. Fast Response
2. Training
3. Professional personnel
4. Adequate staffing
5. Quality equipment

*Our department takes 1,120 calls every day. Do you know how many of the calls the public expects perfection on? 1,120. Nobody calls the fire department and says, 'Send me two dumb-ass firemen in a pickup truck.' In three minutes they want five brain-surgeon decathlon champions to come and solve all their problems.”*

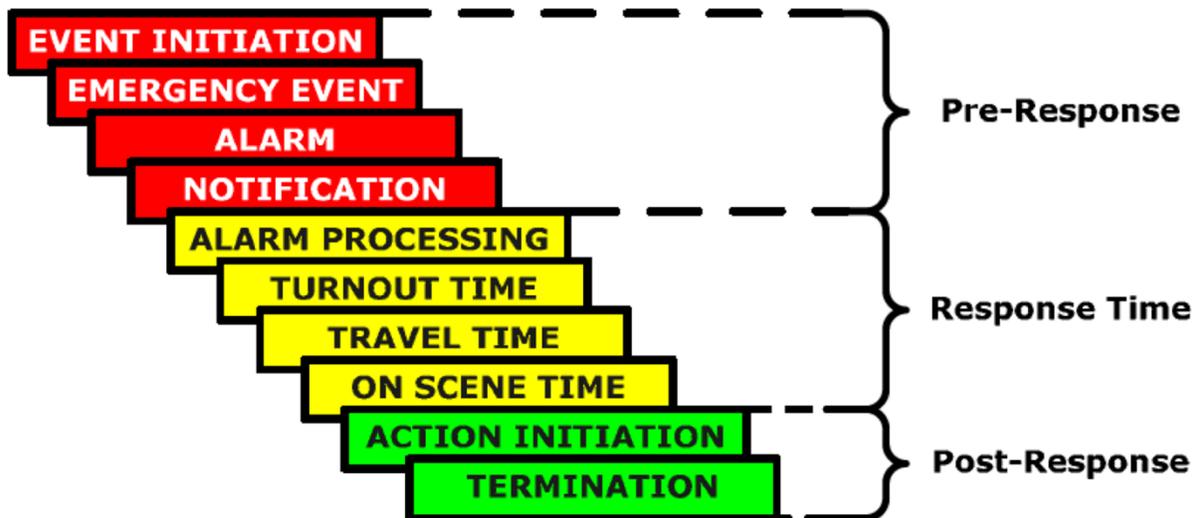
*— John Eversole, Chief, Chicago Fire Department*

### Top 5 Areas of Concern

1. Fiscal responsibility
2. Staffing to meet response needs
3. Response times
4. Future planning
5. Training

## ELEMENTS AND CONTINUUM OF EMERGENCY RESPONSE TIME

An emergency response time continuum is composed of a number of different elements which are key factors in determining the response time as indicated above. The following graphic illustrates this continuum along with a description of the points evaluated.



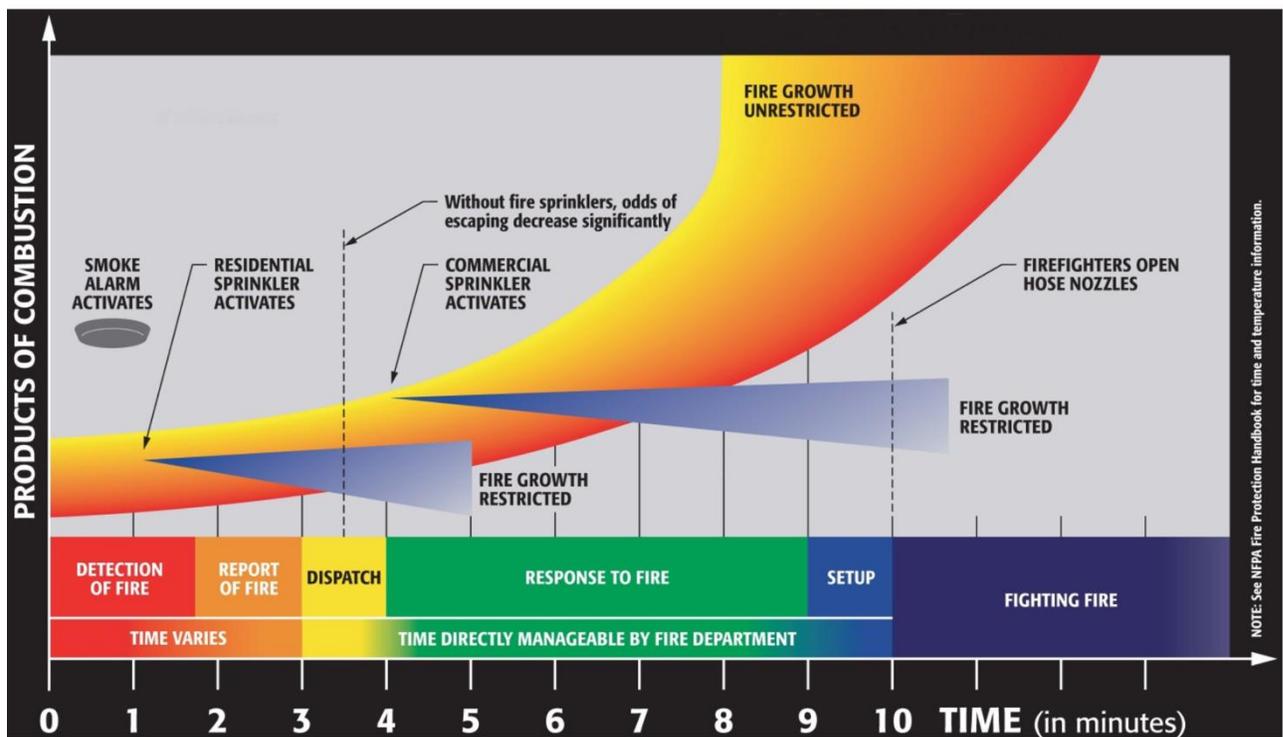
- *Event initiation – the event initiation occurs when factors combine to ultimately result in the activation of an emergency response system. Precipitating factors can occur in seconds, minutes, hours or even days before a point of awareness is reached.*
- *Emergency event – the emergency event begins at this point when the need for an emergency response system is recognized. These identifiers may include an individual that recognizes or witnesses a need for an emergency response or an electrical or mechanical system such as a smoke or heat detector.*
- *Alarm – an alarm begins when the emergency response system is activated such as when 911 is initiated by someone in need or*

*when a local or central alarm is transmitted to a receiving agency.*

- *Notification – notification begins when a dispatcher receives the call or alarm.*
- *Alarm processing – defined as the interval of time between the notification of alarm to the fire department dispatcher and the receipt of the alarm by the emergency responders. This is the first point at which the actual recording of the time begins in the response time continuum.*
- *Turnout time – turnout time is from the start of the alert tones in the stations until units indicate they are responding to the call.*
- *Travel time – this is the point at which the units indicate they are responding to the incident until they arrive at scene. Travel time can be affected by the location of apparatus within the municipality, weather, traffic, and time-of-day.*
- *On-Scene time – On-scene time is the point at which the responding unit arrives at the emergency and ends the recording of the total response time.*
- *Total Response Time – this is the total of dispatch, turnout, and travel time.*
- *Initiation of action – this is the point at which the operations to mitigate the incident begin. Actions may include size-up, resource deployment or when patient contact is initiated.*
- *Termination of Incident – this is the time as which the emergency units have completed the assignment and are available to respond to another request for service.*

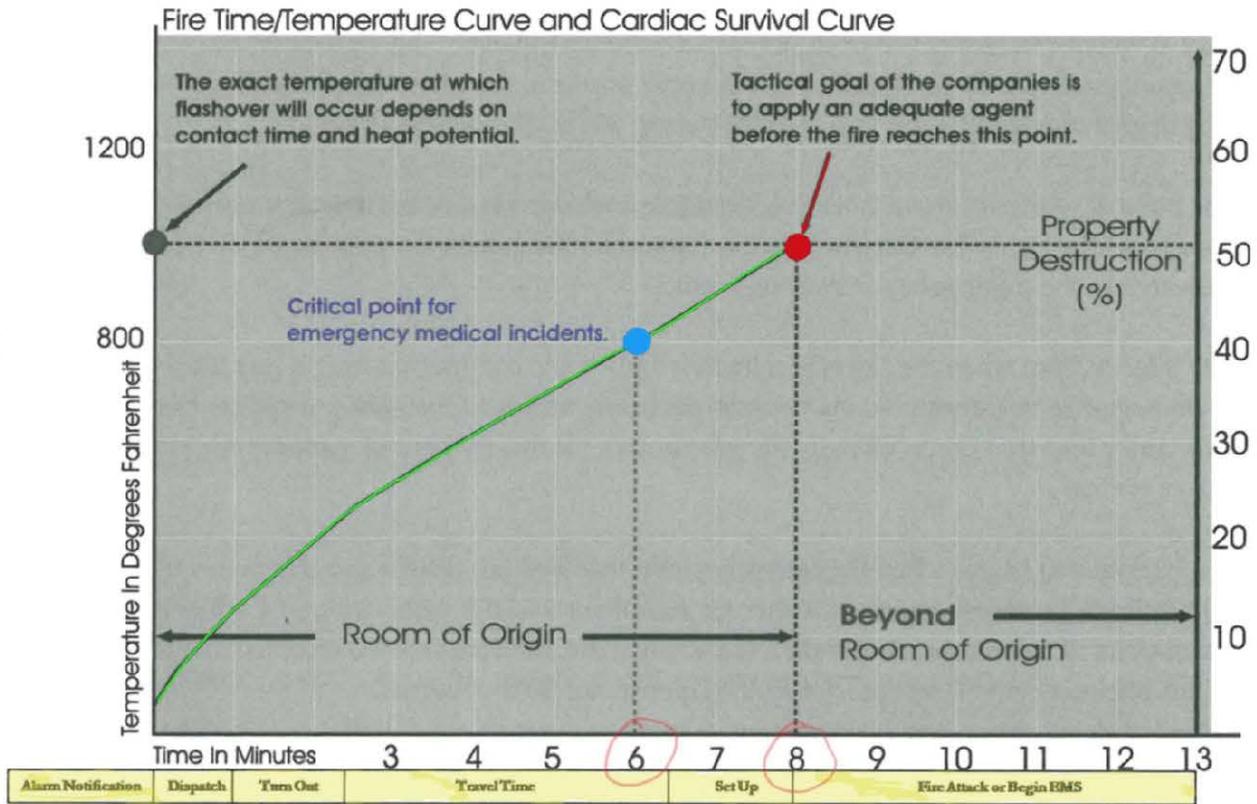
## IMPORTANCE OF EMERGENCY RESPONSE CONTINUUM

Having a system in place to document and analyze an emergency response time not only provides a metric for the department to measure its response time based on nationally recognized trends, but it also provides a method to determine when the department will be able to intervene and mitigate the effects of the emergency. The following graphics illustrates the stages of a fire and how it relates to the response time continuum. The ability of the department to intervene in a timely fashion is predicated on the proper distribution of apparatus, and having enough resources to effectively and safely mitigate the incident.



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**Fire Time/Temperature Curve and Cardiac Survival Curve**

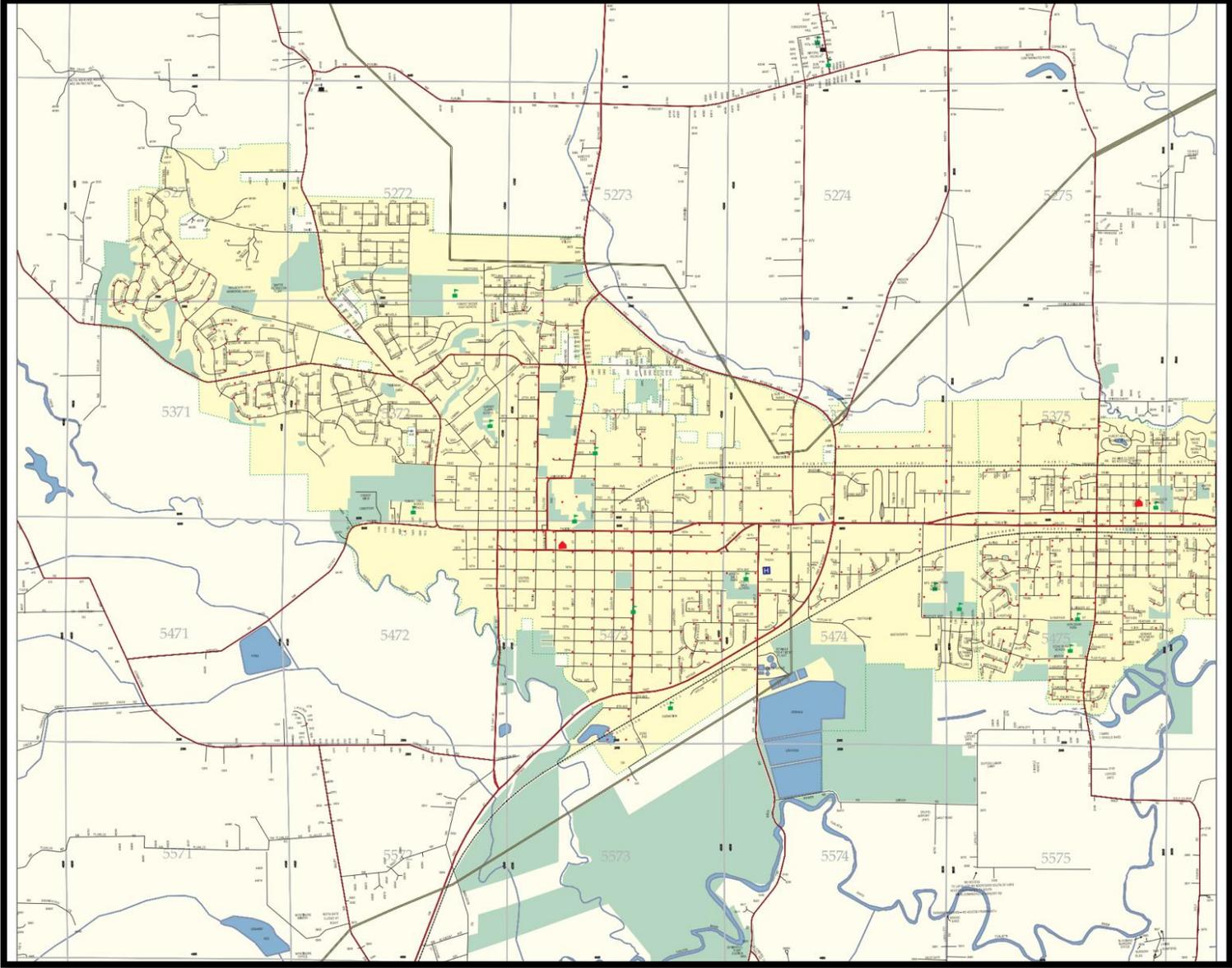


**Table A.5.2.2.1(b) Fire Extension Home Structure Fires, 2006–2010 Rate per 1000 Fires**

| Flame Spread  | Rate per 1000 Fires |                   |                              |
|---|---------------------|-------------------|------------------------------|
|   | Civilian Deaths     | Civilian Injuries | Average Dollar Loss per Fire |
| Confined fires or contained fire identified by incident type*                     | 0.000               | 10.29             | \$212                        |
| Confined fire or flame damage confined to object of origin                        | 0.65                | 13.53             | \$1,565                      |
| Confined to room of origin, including confined fires and fires confined to object | 1.91                | 25.32             | \$2,993                      |
| Beyond the room but confined to floor of origin                                   | 22.73               | 64.13             | \$7,445                      |
| Beyond floor of origin  | 24.63               | 60.41             | \$58,431                     |

## FIRE MANAGEMENT ZONE

Fire Management Zones (FMZ) are defined as geographic areas of a jurisdiction that is classified to one or more risk categories. For purposes of this document the FMZ have been designated using existing run cards utilized by the department and the Washington County Consolidated Communications Agency (WCCCA). Below is a FMZ map for Forest Grove.



## **D. COMMUNITY RISK ASSESSMENT**

An All-Hazards approach to Risk Assessment was completed through a comprehensive analysis of the communities' hazards. This three-part process looks at the area risk potential and evaluates risks specific to the area served by the department.

- *Community risks are past events and potential occurrences that will not only affect the Fire District but also our surrounding partners.*
- *Fire Department risk are risks specific to the Fire Department boundaries. These are outlined by the CFAI as Structural Fires, Emergency Medical Incidents and Special Operations Emergencies.*
- *Target hazards are defined as significant hazards; those that can strain fire department response capability.*

### **COMMUNITY RISK**

#### *Risk Assessment Methodology*

The Hazard Analysis identifies the relative risk posed to the City by each of the hazards and threats described below, in order to ensure that high priority hazards are addressed in the hazard mitigation planning, emergency response, and recovery procedures. Each natural and technological/human-caused hazard is scored using a formula that incorporates four independently weighted rating criteria (history, vulnerability, maximum threat, and probability) and three levels of severity (low, moderate, and high). For each hazard, the score for a given rating criterion is determined by multiplying the criterion's severity rating by its weight factor. The four rating criteria scores for the hazard are then summed to provide a total risk score for that hazard. Note that while many hazards may occur together or as a

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consequence of others (e.g., dam failures cause flooding, and earthquakes may cause landslides), this analysis considers each hazard as a singular event.

| <b>Hazard Analysis Matrix for the Cities of Cornelius and Forest Grove</b>   |                                     |                                      |                                    |                                    |             |
|--|-------------------------------------|--------------------------------------|------------------------------------|------------------------------------|-------------|
| Hazard   | Rating Criteria with Weight Factors |                                      |                                    |                                    | Total Score |
|  | History <sup>1</sup><br>(WF=2)      | Vulnerability <sup>2</sup><br>(WF=5) | Max Threat <sup>3</sup><br>(WF=10) | Probability <sup>4</sup><br>(WF=7) |             |
| <i>Score for each rating criteria = Rating Factor (High = 10 points; Medium = 5 points; Low = 1 points) X Weight Factor (WF)</i>   |                                     |                                      |                                    |                                    |             |
| Hazardous Materials  | H                                   | H                                    | H                                  | H                                  | <b>240</b>  |
| Health Emergency   | H                                   | H                                    | H                                  | H                                  | <b>240</b>  |
| Severe Weather   | H                                   | H                                    | H                                  | H                                  | <b>240</b>  |
| Utility Fail/Resource Shortage   | H                                   | H                                    | H                                  | H                                  | <b>240</b>  |
| Earthquake   | M                                   | H                                    | H                                  | M                                  | <b>195</b>  |
| Flood  | H                                   | H                                    | M                                  | H                                  | <b>190</b>  |
| Volcano/Ash  | L                                   | M                                    | M                                  | L                                  | <b>107</b>  |
| Fire   | H                                   | L                                    | L                                  | H                                  | <b>105</b>  |
| Transportation/Industrial  | H                                   | L                                    | L                                  | H                                  | <b>105</b>  |
| Civil Disorder/Terrorism   | M                                   | L                                    | L                                  | M                                  | <b>60</b>   |
| <b>Notes:</b> <ol style="list-style-type: none"> <li>History addresses the record of previous major emergencies or disasters. Weight Factor is 2. Rating factors: high = 4 or more events in last 100 years; medium = 2-3 events in last 100 years; low = 1 or 0 events in last 100 years.</li> <li>Vulnerability addresses the percentage of population or property likely to be affected by the average occurrence of a hazard. Weight Factor is 5. Rating factors: high = more than 10% affected; medium = 1%-10% affected; low = less than 1% affected.</li> <li>Maximum Threat addresses the percentage of population or property that could be affected in a worst case incident. Weight Factor is 10. Rating factors: high = more than 25% could be affected; medium = 5%-25% could be affected; low = less than 5% could be affected.</li> <li>Probability addresses the likelihood of a future hazard occurrence within a specified period of time. Weight Factor is 7. Rating factors: high = one incident likely within a 10-35 year period; medium = one incident likely within a 35-70 year period; low = one incident likely within a 75-100 year period.</li> </ol> |                                     |                                      |                                    |                                    |             |

## BUILDING RISK

### *Risk Assessment Methodology*

In order for a fire department to properly determine the programs, services, force strength and station locations necessary for its community's protection, it is necessary to complete an in-depth community risk assessment. Forest Grove Fire & Rescue has chosen to utilize the community risk assessment model recommended by the Commission on Fire Accreditation International.

This risk assessment uses risk, hazard and value evaluation software to collect and analyze data regarding the identification and assessment of structure risks within our response area. This software provides a means of scoring each building in the area being assessed and placing it into a risk category. The final result of this assessment is called an Occupancy Vulnerability Assessment Profile (OVAP) score. The following components are used to develop the OVAP score:

| <b>Component class</b> | <b>Criteria</b>   |
|------------------------|---|
| <b>Building</b>        | <i>Property use, size and height, access, occupancy type, square footage, exposure separation</i> |
| <b>Life Safety</b>     | <i>Occupant load, occupant mobility, alarm systems, fire protection systems</i>                   |
| <b>Risk</b>            | <i>Fire code enforcement, human activity, fire event history</i>                                  |
| <b>Consequences</b>    | <i>Capacity to control fire, hazards in building, fire load</i>                                   |
| <b>Water Demand</b>    | <i>Fire flow, availability of fire flow, fire sprinklers</i>                                      |
| <b>Value</b>           | <i>Property Value</i>   |

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Once the OVAP score is determined for a building it is placed in one of four (4) risk categories. Those categories, along with their OVAP Score ranges are explained below.

| <b>Category</b>    | <b>OVAP Score Range</b>   |
|--------------------|---|
| <b>Maximum</b>     | <p><b>60+</b></p> <p><i>A building categorized as Maximum Risk will be significant in size, not have built in fire protection and alarm systems, require a large amount of water to contain a fire and have a potential for a high life loss due to existing and non-conforming exiting. These buildings will have an irreplaceable or major financial or social impact on the community if lost. A key factor that places a building in this category is inadequate water availability for fire suppression operations at the site of this building. An example of a building categorized as Maximum would be as follows: An older, multi-story, non-reinforced masonry building considered to have historical significance. This building would have no fire protection or alarm system, poor exiting, and a marginal water supply for firefighting operations.</i></p> |
| <b>Significant</b> | <p><b>40-59</b></p> <p><i>A building categorized as Significant Risk will be substantial in size and have the potential for life and property loss. The potential for life loss varies between those occupants in the immediate area to threatening the lives of all of the people in the building. The financial impact to the community created by this level can be high due to loss of jobs and/or loss of tax revenue. These buildings usually have built-in fire protection and alarm systems. Examples of Significant Risk buildings include common hallway apartments, warehouses, office complexes, moderate to large sized retail stores, hospitals, medical buildings, and older downtown buildings that have retrofitted their buildings with fire protection systems.</i></p>  |

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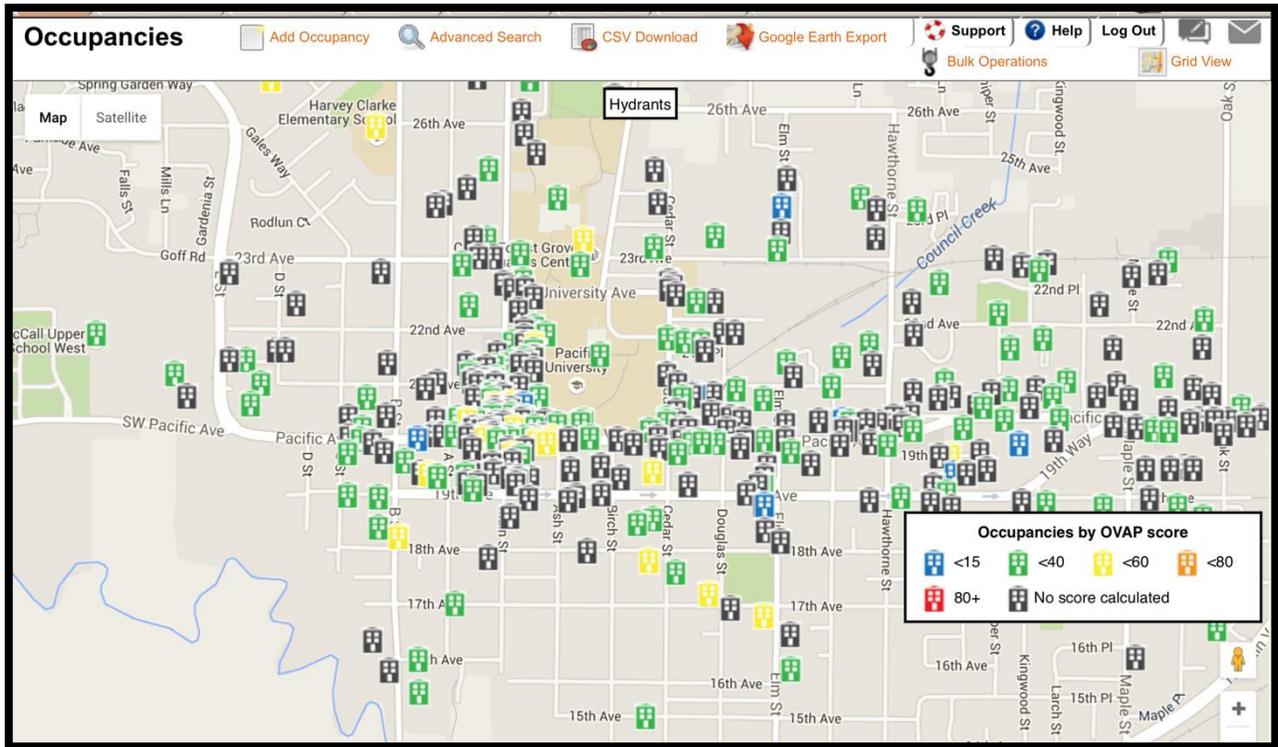
|                 |  |
|-----------------|--|
| <b>Moderate</b> | <p><b>15-39</b><br/>Buildings categorized as Moderate Risk are average in size and can present a potential for a high life loss but are usually limited to threatening only the immediate occupants of the structure. The financial impact due to the loss of this structure has an impact on the occupants or owners and not the surrounding properties. Examples of these buildings vary widely with the most typical in this class being a single family residence. Smaller apartment buildings are also included in this category</p>      |
| <b>Low</b>      | <p><b>&lt;15</b><br/>Buildings categorized as Low Risk have a very limited exposure. They are small structures that are not normally occupied by people. They also generally have a reduced amount of fire load, require small amounts of water to extinguish, have limited potential to spread to other buildings, and have little financial impact to the owners or the community. An example of a building in the Low Risk category would be a carport, shed, or out building with limited potential for spreading to nearby buildings.</p> |

In 2014, FGFR began using the VISION® fire risk assessment model. Currently, all code-enforced occupancies are being assessed using this hazard assessment and model with a summary of findings identified in the table below. As the table illustrates, no Maximum Risks have been identified in the city, less than 8.72%% of the occupancies are of Significant Risk, and over 86.6% of all code-enforced occupancies are of a Moderate Risk level.

### Hazard Statistics

| Risk Level                  | OVAP Score | # of Occupancies | %      |
|-----------------------------|------------|------------------|--------|
| Maximum                     | 60 +       | 0                | 0.00%  |
| Significant                 | 40 - 59    | 28               | 8.72%  |
| Moderate                    | 15 - 39    | 278              | 86.60% |
| Low                         | 0 - 14     | 15               | 4.67%  |
| Average Score               | 30.90      | -                | -      |
| # of complete OVAP scores   |            | 321 (41%)        |        |
| # of incomplete OVAP scores |            | 460 (59%)        |        |

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## TARGET HAZARDS

### *Risk Assessment Methodology*

Target hazards are defined as significant hazards; those that can strain fire department response capability. It is suggested that a well-constructed assessment of risk is the essential first step towards management of these hazards.

Forest Grove Fire & Rescue has developed the following operational definition to establish the criteria for target hazard structures;

*Any structure which requires a higher-than-normal degree of pre-fire planning so that department operations will have an effective plan to address an emergency at the facility. These include, but are not limited to, the following occupancy classifications, according to the 2009 International Fire Code:*

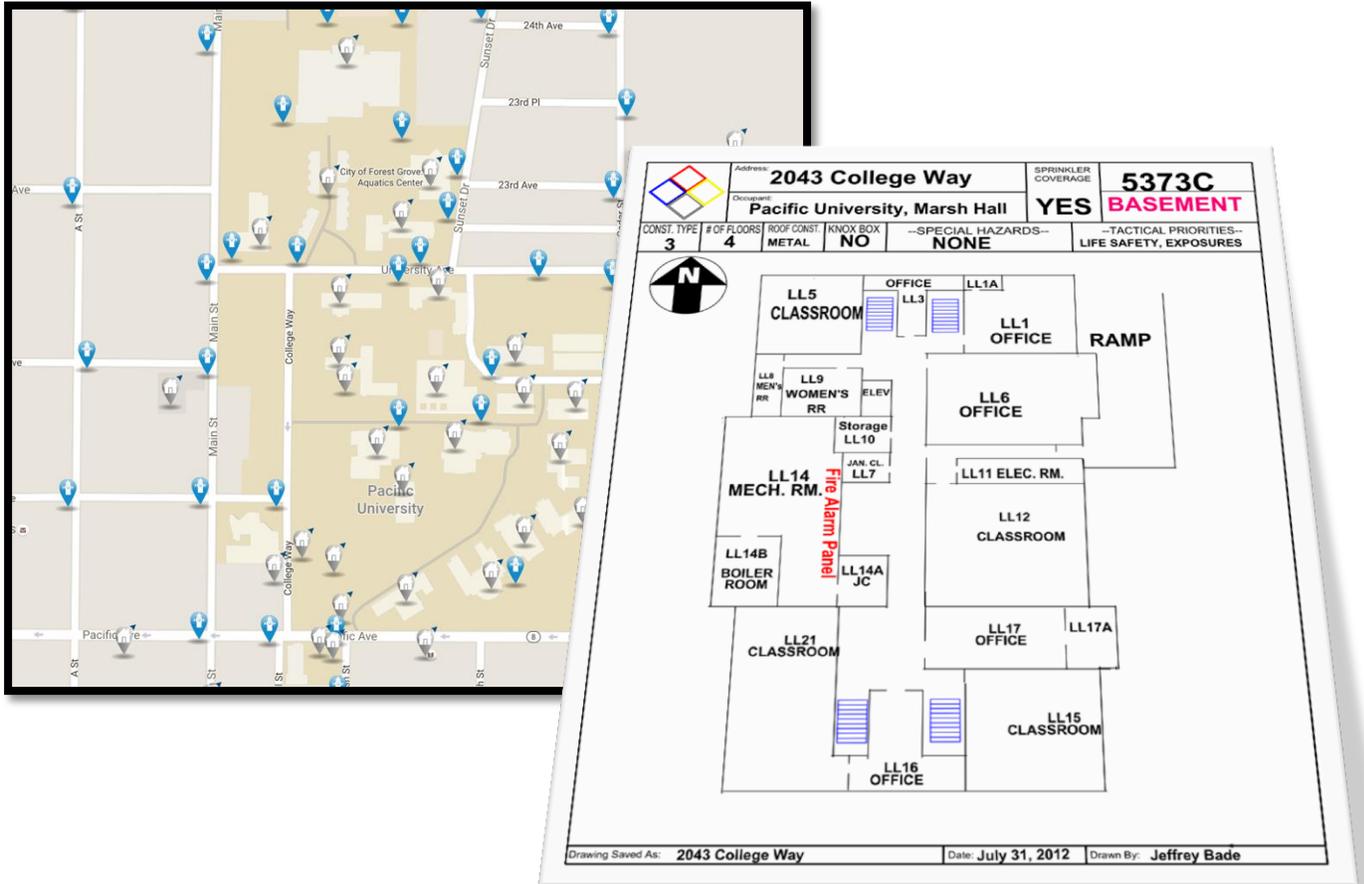
- *Assembly Group A, where the occupant load is greater than 50 persons.*
- *Educational Group E, where the purpose is for six or more persons at any one time for educational purposes through the 12<sup>th</sup> grade.*
- *Factory Industrial Group F, where the purpose is assembling, disassembling, fabricating, finishing, manufacturing, packaging, repair or processing operations;*
- *High Hazard Group H, where the manufacturing, processing, generation or storage of materials constitute a physical or health hazard;*
- *Institutional Group I, where people are cared for or live in a supervised environment, having physical limitations because of health or age, are harbor end for medical treatment or other care or treatment, or in which people are detained for penal or correctional purposes or in which the liberty of occupants is restricted;*
- *Mercantile Group M, where the display and sale of merchandise, involves the stock of goods, wares or merchandise incidental to such persons and is accessible to the public;*
- *Residential Group R, where more than four dwelling units are contained within the structure; and*
- *Storage Group S, where the storage of combustible and non-combustible materials occurs.*

The fire department has decided on what should be considered a target hazard, then identified them, gathered useful data for each target hazard, and developed pre-incident plans. Forest Grove Fire & Rescue has identified 194 target hazards, and completed pre-plans for greater than 90% of them. These pre-plans are available to all first-responders using Active 911 response software that displays the response location and an icon of the pre-incident pre-plan for the

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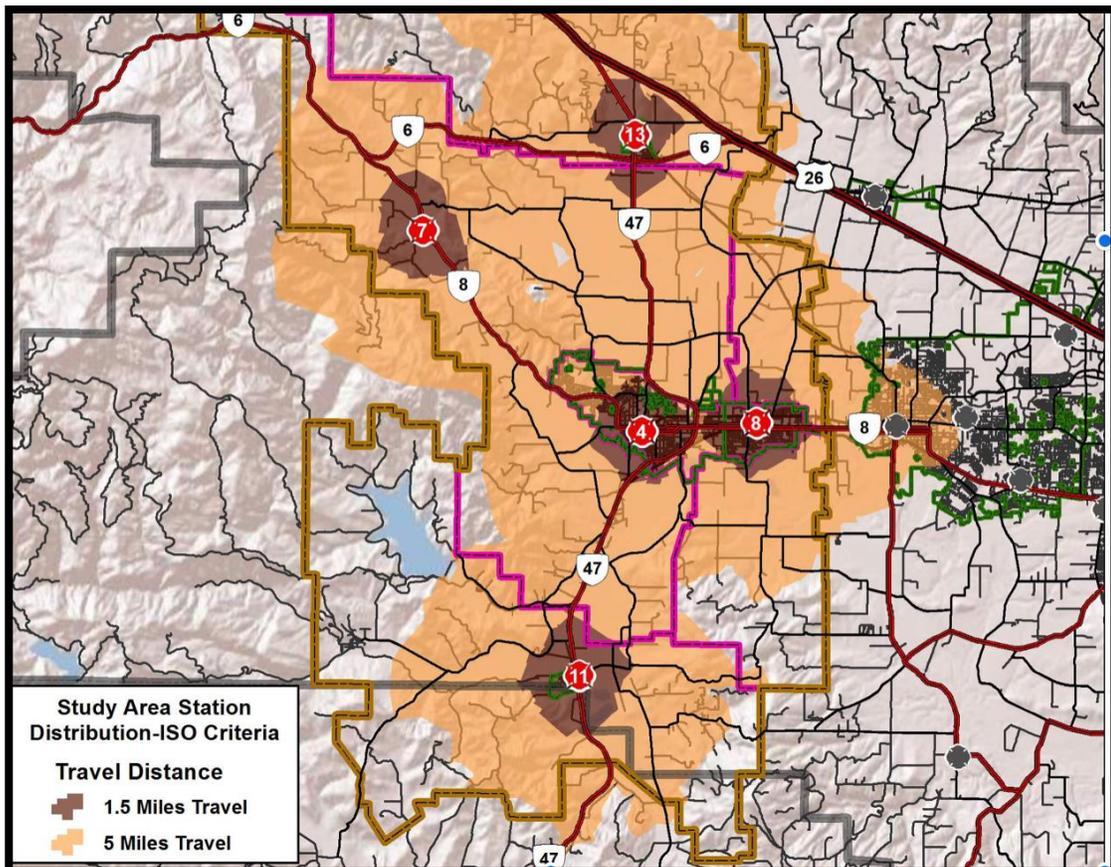
structure. Our incident pre-plan program meets the requirements of NFPA 1620 "Standard for Pre-Incident Planning," 2015 Edition.



## E. HISTORICAL PERSPECTIVE AND SUMMARY OF SYSTEM PERFORMANCE

### Resource Distribution Factors

The Insurance Services Organization (ISO) is a national insurance industry organization that evaluates fire protection for communities across the country. A jurisdiction's ISO rating is an important factor when considering fire station and apparatus distribution, as it can affect the cost of fire insurance for fire district individuals and businesses. To receive maximum credit for station and apparatus distribution, ISO recommends that all "built upon" areas in a community be within 1.5 road miles of an engine company. Additionally, a structure should be within five miles of a fire station to receive any fire protection rating for insurance purposes. In the figure below, we examine fire facility distribution by distance over the existing road network.

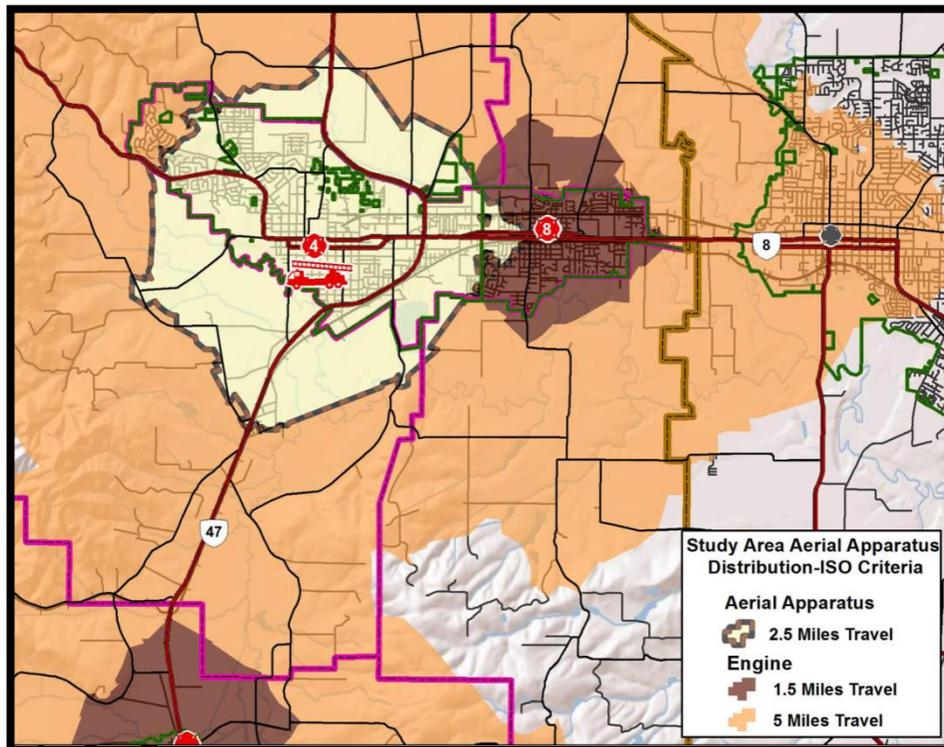


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Based on the ISO rating criteria, fire stations are appropriately located throughout the area. Approximately 90 percent of the road network in the area is within five miles travel of a fire station. Generally, the ISO 1.5 miles travel distance applies to municipal areas such as Forest Grove, Cornelius, Banks, and Gaston. The fire stations in these communities provide adequate coverage. The current fire station locations are deemed appropriate under current service demand and service delivery standards. One area of exception is the northwest corner of Forest Grove, known as Forest Gale Heights. As additional anticipated construction occurs in the northern area of Forest Grove, an additional station will need to be built in the near future to meet current response time and effective firefighting force standards.

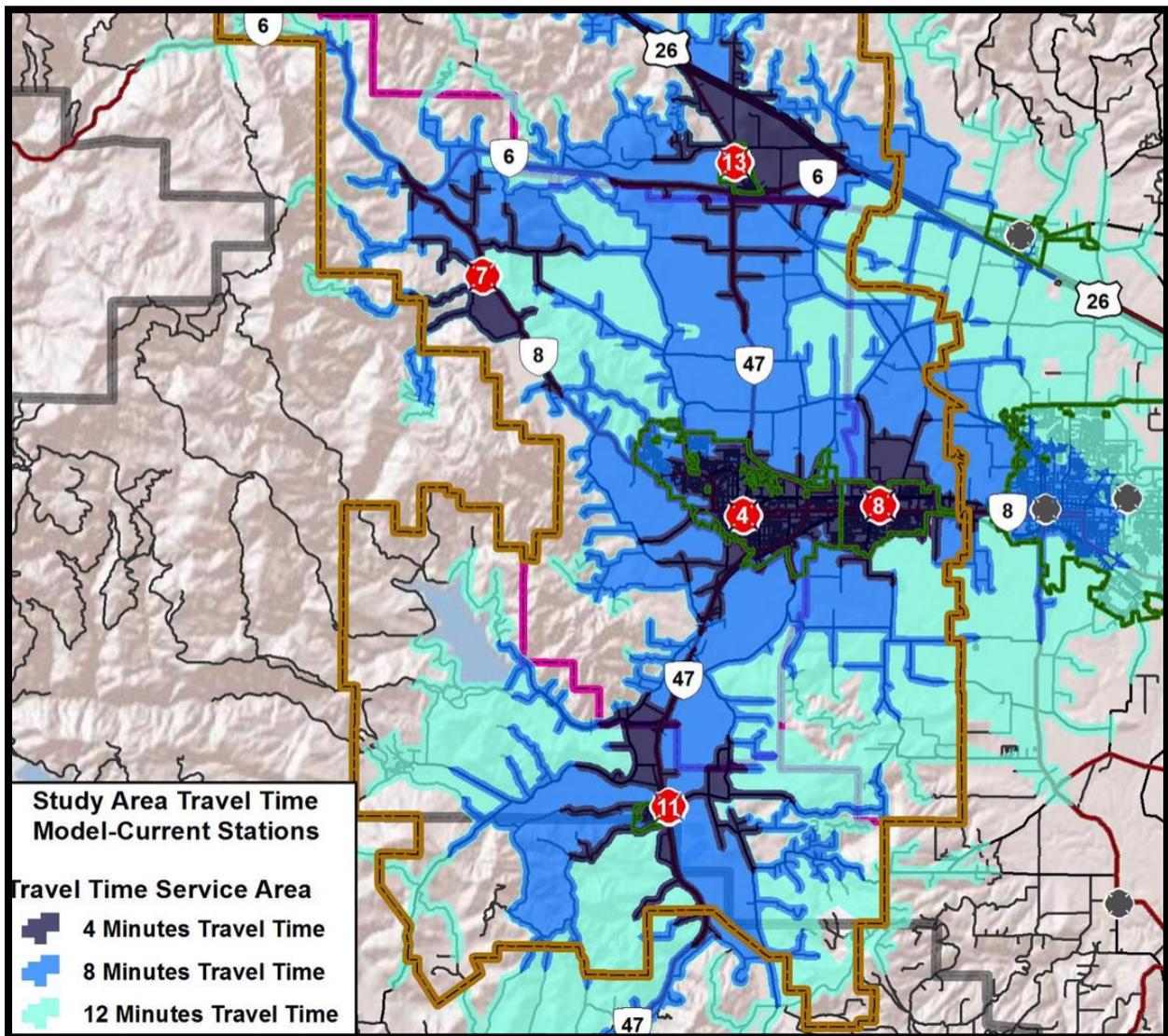
Similar to the 1.5 mile engine company criteria, ISO recommends that aerial apparatus be placed at 2.5 mile intervals in areas with buildings over six stories in height. Forest Grove Fire and Rescue staffs an aerial apparatus at Station 4 in Forest Grove. The next figure demonstrates the 2.5 mile service area for this aerial apparatus.



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ISO criteria are only one of many factors to consider when deploying fire department resources. The ISO criteria are primarily concerned with the geographic coverage of a service area and only address fire suppression. Equally as important, especially to all hazard fire agencies, is the time required to respond to a call for service and whether resources are located to serve the greatest amount of service demand within a jurisdiction's service area.

The following analysis demonstrates travel time over the existing road network. Travel time is calculated using the posted speed limit and adjusted for negotiating intersections and turns.



Based on the travel time study, area apparatus are capable of reaching nearly all (97 percent) of historical service demand in eight minutes travel time. Approximately 87 percent of the 2012 and 2013 service demand is within 4 minutes travel of a fire station within the study area.

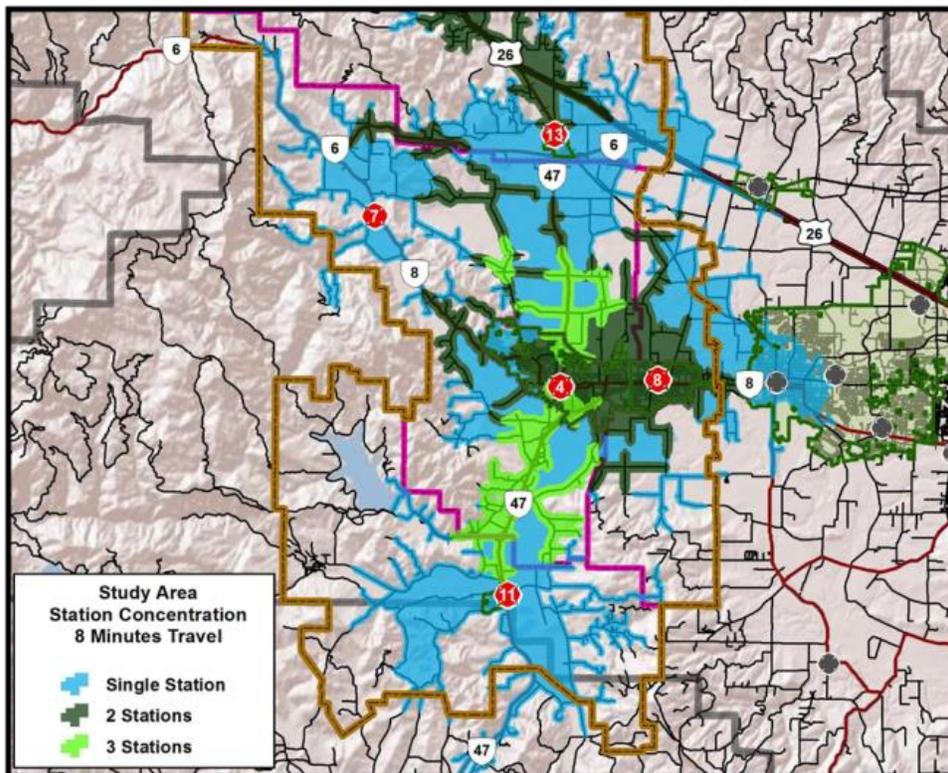
***Service Demand Coverage by Agency, 2012 and 2013***

|      | <b>4 Minutes</b> | <b>8 Minutes</b> | <b>12 Minutes</b> |
|------|------------------|------------------|-------------------|
| CFD  | 91%              | 98%              | 100%              |
| FGFR | 86%              | 98%              | 100%              |
| GFD  | 42%              | 74%              | 95%               |

This figure summarizes the percentage of each agency’s service demand within four, eight, or twelve minutes travel of their respective fire stations.

## Resource Concentration Factors

Standard firefighting procedures call for the arrival of the entire initial assignment (sufficient apparatus and personnel to effectively deal with an emergency based on its level of risk, referred to as Effective Response Force) within a specified amount of time. This is to ensure that enough people and equipment arrive soon enough to safely control a fire or mitigate any emergency before there is substantial damage or injury. In this analysis, we examine the participating agencies' ability to assemble multiple resources from across the area. The following figure uses the eight-minute travel time model to illustrate the portions of the study area within 8 minutes travel of 2 or more of the area fire jurisdictions. It should be noted that the department cannot assemble an Effective Response Force for most fire suppression calls without response from surrounding jurisdictions. The cities of Forest Grove and Cornelius are entirely within 8 minutes travel of two or more jurisdictions. The next figure depicts the count of



stations within 8 minutes travel time in the area.

## **CRITICAL TASK ANALYSIS**

Once the community risk assessment process is completed, an evaluation of the equipment and personnel resources required to mitigate these situations is necessary. With any given type of incident, there are critical tasks that must be performed by personnel in order to ensure that the event is properly and safely terminated. In order to properly assign resources and personnel based on the type of incident, the department creates “run cards” which designate the apparatus and resources that are dispatched for specific types of calls.

The following sections of this critical task analysis are structured around the categories of incidents defined by the department and the resources dispatched to each of these call types. As you will notice, the critical task analysis takes into consideration only those resources which are dispatched on the initial assignment or 1<sup>st</sup> alarm. If the incident expands beyond what can be handled by these initial resources, additional apparatus is identified in the run cards used by the department and WCCCA.

The second section of the critical task analysis identifies the minimum number of trained personnel required to complete the identified critical task. The metric for this variable is referred to as the “effective response force.” As you will note, different types of incidents require different numbers of personnel.

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| <b>EFFECTIVE RESPONSE FORCE – STRUCTURE FIRE, ROOM/CONTENTS, TASK FORCE, URBAN HYDRANTED</b> |           |  |                  |
|--|-----------|--|------------------|
| Unit   | Crew Size | Task   | Personnel Needed |
| 1 <sup>st</sup> Due Engine   | 3         | Size-up, establish command, water supply, primary attack             | 3                |
| 2 <sup>nd</sup> Due Engine   | 3         | Backup attack line, protect exposures, ingress/egress, search/rescue | 3                |
| 1 <sup>st</sup> in Truck   | 3         | Rescue, Access, Ventilation, Utilities, Salvage, Overhaul            | 3                |
| 1 <sup>st</sup> Due Chief  | 1         | Incident Command   | 1                |
| <b>Total Responding</b>  | <b>10</b> |  | <b>10</b>        |

| <b>EFFECTIVE RESPONSE FORCE – STRUCTURE FIRE, URBAN/HYDRANTED, 1<sup>ST</sup> ALARM</b> |           |  |                  |
|---|-----------|--|------------------|
| Unit  | Crew Size | Task   | Personnel Needed |
| 1 <sup>st</sup> Due Engine  | 3         | Size-up, establish command, water supply, primary attack             | 3                |
| 2 <sup>nd</sup> Due Engine  | 3         | Backup attack line, protect exposures, ingress/egress, search/rescue | 3                |
| 3 <sup>rd</sup> Due Engine  | 3         | Rapid Intervention Team (RIT)  | 3                |
| 1 <sup>st</sup> in Truck  | 3         | Rescue, Access, Ventilation, Utilities, Salvage, Overhaul            | 3                |
| 1 <sup>st</sup> Due Chief   | 1         | Incident Command   | 1                |
| 2 <sup>nd</sup> Due Officer   | 1         | Safety Officer   | 1                |
| <b>Total Responding</b>   | <b>14</b> |  | <b>14</b>        |

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| <b>EFFECTIVE RESPONSE FORCE – RESIDENTIAL FIRE, NON-HYDRANTED, 1<sup>ST</sup> ALARM</b> |           |  |                  |
|---|-----------|--|------------------|
| Unit  | Crew Size | Task   | Personnel Needed |
| 1 <sup>st</sup> Due Engine  | 3         | Size-up, establish command, water supply, primary attack             | 3                |
| 2 <sup>nd</sup> Due Engine  | 3         | Backup attack line, protect exposures, ingress/egress, search/rescue | 3                |
| 3 <sup>rd</sup> Due Engine  | 3         | Rapid Intervention Team (RIT)  | 3                |
| 1 <sup>st</sup> in Tender   | 2         | Water supply   | 2                |
| 2 <sup>nd</sup> in Tender   | 2         | Water supply   | 2                |
| 1 <sup>st</sup> Due Chief   | 1         | Incident Command   | 1                |
| 2 <sup>nd</sup> Due Officer   | 1         | Safety Officer   | 1                |
| <b>Total Responding</b>   | <b>17</b> |  | <b>17</b>        |

| <b>EFFECTIVE RESPONSE FORCE – BRUSH FIRE 1<sup>ST</sup> ALARM</b> |           |  |                  |
|---|-----------|--|------------------|
| Unit  | Crew Size | Task                                       | Personnel Needed |
| 1 <sup>st</sup> Due Engine (TYPE III)                             | 3         | Size-up, establish command, primary attack | 3                |
| 2 <sup>nd</sup> Due Engine (TYPE VI)                              | 2         | Primary attack                             | 2                |
| 3 <sup>rd</sup> Due Engine (TYPE VI)                              | 2         | Primary attack, overhaul                   | 2                |
| 1 <sup>st</sup> in Tender   | 2         | Water supply                               | 2                |
| 1 <sup>st</sup> Due Chief   | 1         | Incident Command                           | 1                |
| 2 <sup>nd</sup> Due Officer                                       | 1         | Safety Officer                             | 1                |
| <b>Total Responding</b>   | <b>11</b> |  | <b>11</b>        |

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| <b>EFFECTIVE RESPONSE FORCE – EMS CALL/MVA<br/>CODE 3<br/>(NO ENTRAPMENT OR BARIATRIC)</b> |           |   |                  |
|--|-----------|---|------------------|
| Unit   | Crew Size | Task  | Personnel Needed |
| 1 <sup>st</sup> Due Engine   | 3         | Patient care, stabilization, documentation and history, patient movement  | 3                |
| Medic Unit   | 2         | Transport   | 2                |
| <b>Total Responding</b>  | <b>5</b>  |   | <b>5</b>         |
|  |           | <b>INCREASE BY ONE ENGINE AND ONE MEDIC FOR EACH ADDITIONAL CRITICAL PATIENT OR EVERY 2 NON-CRITICAL PATIENTS</b> |                  |

| <b>EFFECTIVE RESPONSE FORCE – EMS CALL, CODE 3, CARDIAC<br/>ARREST/MAJOR TRAUMA</b> |            |   |                  |
|---|------------|---|------------------|
| Unit  | Crew Size  | Task  | Personnel Needed |
| 1 <sup>st</sup> Due Engine  | 3          | Patient care, airway, venous access, medications, advanced cardiac monitoring | 3                |
| 1 <sup>st</sup> Due Rescue  | 2          | CPR, patient movement, documentation and history                              | 2                |
| Chaplain  | 1          | Family support  | 1                |
| Medic Unit  | 2          | Medical transport   | 2                |
| 1 <sup>st</sup> Due Chief   | 1          | Helicopter Landing Zone (ONLY IF USED)  | 1                |
| <b>Total Responding</b>   | <b>8-9</b> |   | <b>8-9</b>       |

| <b>EFFECTIVE RESPONSE FORCE – VEHICLE ACCIDENT<br/>(WITH ENTRAPMENT)</b> |             |   |                  |
|--|-------------|---|------------------|
| Unit   | Crew Size   | Task  | Personnel Needed |
| 1 <sup>st</sup> Due Engine   | 3           | Size-up, establish command, triage, extrication   | 3                |
| 2 <sup>nd</sup> Due Engine   | 3           | Patient care and movement   | 3                |
| 1 <sup>st</sup> Due Chief  | 1           | Incident Command  | 1                |
| 2 <sup>nd</sup> Due Chief  | 1           | Helicopter Landing Zone (ONLY IF USED)  | 1                |
| Medic Unit   | 2           | Medical transport   | 2                |
| <b>Total Responding</b>  | <b>9-10</b> |   | <b>9-10</b>      |
|  |             | <b>INCREASE BY ONE ENGINE AND ONE MEDIC FOR EACH ADDITIONAL CRITICAL PATIENT OR EVERY 2 NON-CRITICAL PATIENTS</b> |                  |

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| <b>EFFECTIVE RESPONSE FORCE – TECHNICAL RESCUE<br/>(HIGH ANGLE/CONFINED SPACE/COLLAPSE)</b> |           |   |                  |
|---|-----------|---|------------------|
| Unit  | Crew Size | Task  | Personnel Needed |
| 1 <sup>st</sup> Due Engine  | 3         | Size-up, establish command, Primary Rescue/Lowering Team, Patient Care                  | 3                |
| 2 <sup>nd</sup> Due Engine  | 3         | Patient packaging, Backup, Air Monitoring   | 3                |
| Technical Rescue  | 2         | Rigger for mechanical advantage system, safety officer, Supplied Air                    | 3                |
| 1 <sup>st</sup> Due Chief   | 1         | Incident Command  | 2                |
| 2 <sup>nd</sup> Due Chief   | 1         | Safety Officer, Helicopter Landing Zone (ONLY IF USED)                                  | 1                |
| Medic Unit  | 2         | Patient transport   | 2                |
| <b>Total Responding</b>   | <b>12</b> |   | <b>12</b>        |
|   |           | <b>MAY REQUIRE ADDITIONAL MUTUAL AID TECHNICAL RESCUE TEAMS DEPENDING ON COMPLEXITY</b> |                  |

| <b>EFFECTIVE RESPONSE FORCE – WATER/FLOOD RESCUE</b> |           |   |                  |
|--|-----------|---|------------------|
| Unit   | Crew Size | Task  | Personnel Needed |
| 1 <sup>st</sup> Due Engine                           | 3         | Size-up, establish command, determine access  | 3                |
| Boat 4   | 2         | Search and rescue   | 2                |
| 1 <sup>st</sup> Due Chief                            | 1         | Incident Command  | 1                |
| Medic Unit   | 2         | Patient transport (if needed)   | 2                |
| <b>Total Responding</b>                              | <b>8</b>  |   | <b>8</b>         |
|  |           | <b>MAY REQUIRE ADDITIONAL WATER RESCUE TEAMS DEPENDING ON SWIFTWATER/COMPLEXITY</b> |                  |

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| <b>EFFECTIVE RESPONSE FORCE – HAZARDOUS MATERIALS<br/>RELEASE (1<sup>ST</sup> ALARM)</b> |              |   |                     |
|--|--------------|---|---------------------|
| Unit   | Crew<br>Size | Task  | Personnel<br>Needed |
| 1 <sup>st</sup> Due Engine   | 3            | Size-up, establish command, fluid control/air monitoring, establish perimeter | 3                   |
| 2 <sup>nd</sup> Due Engine   | 3            | Isolate, deny entry, evacuations  | 3                   |
| 1 <sup>st</sup> Due Chief  | 1            | Incident Command  | 1                   |
| 2 <sup>nd</sup> Due Chief  | 1            | Safety Officer  | 1                   |
| Medic Unit   | 2            | Medical support   | 2                   |
| <b>Total Responding</b>  | <b>10</b>    |   | <b>10</b>           |
|  |              | <b>MAY REQUIRE REGIONAL HAZMAT TEAM<br/>RESPONSE FROM TVFR</b>                |                     |

## Response Reliability Factors

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

In the figure below, we examine 2012 and 2013 incidents to find the frequency that the jurisdiction is handling multiple calls in our service areas. This is important because the more calls occurring at one time; the more stretched available resources become leading to extended response times from more distant responding available apparatus.

### ***Concurrent Incidents, 2012 and 2013***

|      | Single Incident | 2 Incidents | 3 Incidents | 4 Incidents |
|------|-----------------|-------------|-------------|-------------|
| CFD  | 96.8%           | 3.1%        | 0.1%        | 0.0%        |
| FGFR | 88.7%           | 10.8%       | 0.4%        | 0.0%        |
| GFD  | 97.4%           | 2.6%        | 0.0%        | 0.0%        |

With the greatest service demand FGFD displays the highest percentage of concurrent incidents. GFD demonstrates the lowest percentage of simultaneous incidents. The percentage of concurrent incidents experienced in both the overall study area and the individual agencies does not appear to be excessive; and is similar to that of comparable areas with a like amount of service demand.

Unit hour utilization (UHU) describes the amount of time that a unit is not available for response because it is already committed to another incident. The larger the number, the greater its utilization and the less available it is for assignment to subsequent calls for service. UHU rates are expressed as a percentage of the total hours in a year. The

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following figures display the amount of time primary response apparatus were committed to an incident in 2013.

| FGFR Unit Hour Utilization 2013 |                |       |
|---------------------------------|----------------|-------|
| Apparatus                       | Time Committed | UHU   |
| E421                            | 722:41:15      | 8.25% |
| E422                            | 245:35:59      | 2.80% |
| E423                            | 58:01:03       | 0.66% |
| E427                            | 17:17:25       | 0.20% |
| MED4                            | 117:02:07      | 1.34% |
| T4                              | 32:51:02       | 0.38% |
| WT4                             | 160:36:32      | 1.83% |
| WT7                             | 32:11:48       | 0.37% |

Engine 421 displays the highest utilization rate for any apparatus. Note that staff vehicles, utility vehicles, and specialty apparatus (tender, boat, Hazmat, etc.) with a utilization rate of less than 0.15 percent (approximately 13 hours annually) are not displayed in the figures above.

The CPSE Standards of Cover document and other studies indicate that UHU rates in the range of 25 to 30 percent for fire and EMS apparatus can lead to personnel burnout issues and can negatively affect response performance. While Current UHU rates in the area are not approaching the levels mentioned, it is notable that engine 421 and 422 alternate as first responding units due to a significant workload and service demand (as staffing allows).

## **F. PERFORMANCE MEASUREMENT**

### **FIRE SERVICE INDUSTRY STANDARDS**

There are numerous industry standards and suggested best practices in the Fire Industry. While we have not adopted any of these standards or best practices, they do have an impact and an influence on District business and deployment.

**National Fire Protection Association** – NFPA 1710 and NFPA 1720 (discussed later).

### **Insurance Services Office (ISO)**

The Fire Suppression Rating System (FSRS) considers three main areas of a community's fire protection program:

*Fire Alarm* - The acceptance and transmission of incidents from WCCCA to our responders.

Ten percent of a community's overall score is based on how well the fire department receives and dispatches fire alarms. Field representatives evaluate:

- The communications center, including the number of operators at the center.
- The telephone service, including the number of telephone lines coming into the center.
- The listing of emergency numbers in the telephone book.
- The dispatch circuits and how the center notifies firefighters about the location of the emergency.

### *Fire Department*

Fifty percent of the overall score is based on the fire department. ISO reviews the distribution of fire companies throughout the area and checks that the fire department tests its pumps regularly and

inventories each engine company's nozzles, hoses, breathing apparatus, and other equipment. ISO also reviews the fire company records to determine:

- Type and extent of training provided to fire company personnel.
- Number of people who participate in training.
- Firefighter response to emergencies.
- Maintenance and testing of the fire department's equipment.

### *Water Supply*

Forty percent of the overall score is based on the community's water supply. This part of the survey focuses on whether the community has sufficient water supply for fire suppression beyond daily maximum consumption. ISO surveys all components of the water supply system, including pumps, storage and filtration. They observe fire-flow tests at representative locations in the community to determine the rate of flow the water main provides. They also review the condition and maintenance of fire hydrants. Last, the distribution of fire hydrants (no more than 1000 feet from the representative locations) is counted.

### **Occupational Safety and Health Administration**

*Applicable sections of the Code of Federal Regulations (CFR) 29, Part 1910, Occupational Safety and Health Standards.*

### **National Institute of Standards and Technology**

*Report on Residential Fireground Field Experiments, April 2010*

*Report on EMS Field Experiments, September 2010*

**Center for Public Safety Excellence, Commission on Fire Accreditation International**

*CFAI Standards of Cover, 6<sup>th</sup> Edition*

*CFAI Fire & Emergency Service Self-Assessment Manual, 9<sup>th</sup> Edition.*

**PERFORMANCE MEASURES**

Following a comprehensive review of the department's historical response performance and an analysis of the distribution, concentration, and reliability of emergency response resources, the department was able to develop appropriate performance objectives and measures.

This section establishes benchmark and baseline performance objectives and measure for EMS and fire suppression programs in direct relation to the population densities (urban and rural).

Performance objectives are qualitative goal statements that generalize the intended outcome of a program in words rather than numbers.

Performance measures are the quantitative numerical representation of activities that help evaluate whether goals are met.

Benchmark refers to a standard by which something can be measured, and is also representative of industry best practices.

Baseline refers to the assessment and measurement of current service delivery practices related to a benchmark.

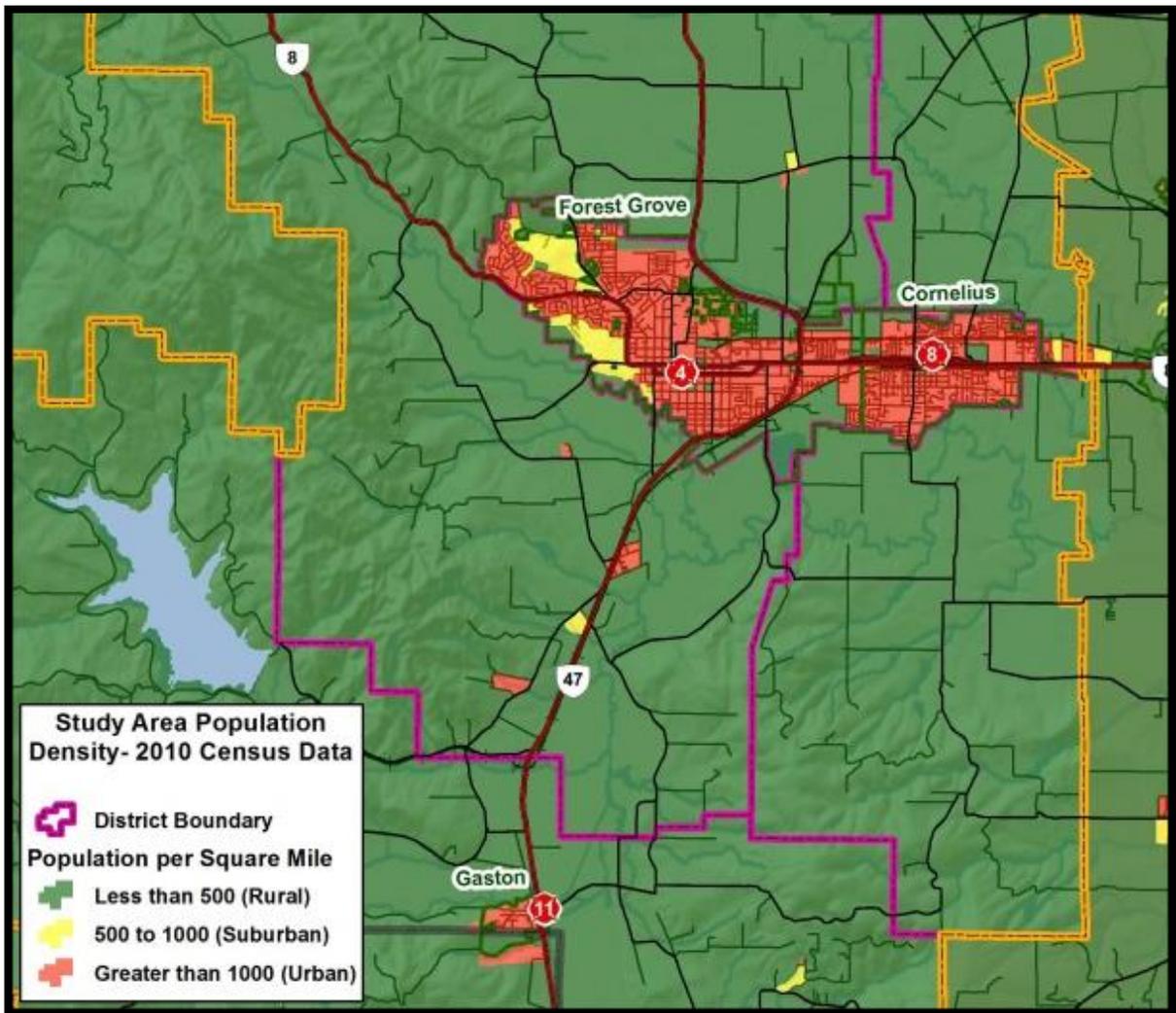
The Commission on Fire Accreditation International (CFAI) publishes a manual titled "Fire & Emergency Service Self-Assessment Manual" (9<sup>th</sup> Edition). The mission of the CFAI is to "assist fire and emergency service agencies throughout the world in achieving excellence in self-assessment and accreditation in order to provide continuous quality

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improvement and enhancement of service delivery to their communities.” This Standard of Cover was written using the best practices and format provided by CFAI.

Based on the demographics of the City of Forest Grove, the response area covered by Forest Grove Fire & Rescue has been divided into two types; urban (within the City limits) and rural (outside the City limits). Those areas in the Forest Grove Rural Fire Protection District greater than 8 miles from the nearest staffed fire station are classified as remote.



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The National Fire Protection Association has developed two consensus standards. NFPA 1720 titled "Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments," (2014 Edition). This standard contains the minimum benchmarks to address functions and outcomes of fire department emergency service delivery, response capabilities, managing resources and systems, and addresses the strategic and system issues involving the organization, operation, and deployment of a fire department.

**Forest Grove Fire & Rescue best meets the description of a "combination department" in section 3.3.15.1 of NFPA 1720:**

- *3.3.15.1 Combination Fire Department. A fire department having emergency service personnel comprising less than 85 percent majority of either volunteer or career membership.*

Table 4.3.2, "Staffing and Response Time" of NFPA 1720 established the various Demand Zones which are based on the demographics of the specific areas. Our department meets the description of a "combination department" in section 3.3.15.1.

| <b>NFPA 1720 Staffing and Response Times</b> |                     |                      |                      |                       |
|--|---------------------|----------------------|----------------------|-----------------------|
| <b>Zone</b>                                  | <b>Demographics</b> | <b>Minimum Staff</b> | <b>Response Time</b> | <b>Meet Objective</b> |
| Urban  | >1000 people        | 15                   | 9                    | 90%                   |
| Suburban                                     | 500-1000            | 10                   | 10                   | 80%                   |
| Rural  | <500                | 6                    | 14                   | 80%                   |
| Remote                                       | Travel >/- 8 mi     | 4                    | Dep. On Distance     | 90%                   |

**BENCHMARK: The NFPA 1720 benchmark is:**

- For urban communities is to assemble 15 firefighters in 540 seconds (9 minutes) from time of dispatch, 90% of the time.
- For rural communities, the benchmark is to assemble 6 firefighters in 840 seconds (14 minutes) from time of dispatch 80% of the time.

**BASELINE: Forest Grove Fire and Rescue has historically been able to achieve:**

- 15 firefighters on scene 90% of the time in 13 minutes 38 seconds within the City.
- For rural communities, the department achieves 6 firefighters on scene in 840 seconds (14 minutes) 86% of the time.

## NFPA 1710 Comparison

While NFPA 1710 is **not the adopted** standard for our department, we include the benchmark and baseline comparison for future consideration.

### First Arriving Unit, 2015

| Incident Type  | Response Zone | Alarm Processing |               |               |                     | Turnout       |               |               |                     |
|----------------|---------------|------------------|---------------|---------------|---------------------|---------------|---------------|---------------|---------------------|
|                |               | FGFR Baseline    | TVFR Baseline | CFAI Baseline | CFAI/NFPA Benchmark | FGFR Baseline | TVFR Baseline | CFAI Baseline | CFAI/NFPA Benchmark |
| EMS            | Urban         | 01:59            | 01:59         | 01:30         | 01:00               | 01:30         | 01:40         | 01:30         | 01:00               |
| EMS            | Rural         | 01:59            | 01:59         | 01:30         | 01:00               | 01:30         | 01:40         | 01:30         | 01:00               |
| Structure Fire | Urban         | 01:43            | 01:43         | 01:30         | 01:00               | 03:30         | 02:10         | 01:30         | 01:20               |
| Structure Fire | Rural         | 01:30            | 01:30         | 01:30         | 01:00               | 03:30         | 02:10         | 01:30         | 01:20               |

### First Arriving Unit, 2015

| Incident Type  | Response Zone | Travel Time    |               |               |                     | Total Response Time |               |               |                     |
|----------------|---------------|----------------|---------------|---------------|---------------------|---------------------|---------------|---------------|---------------------|
|                |               | FGFR Baseline  | TVFR Baseline | CFAI Baseline | CFAI/NFPA Benchmark | FGFR Baseline       | TVFR Baseline | CFAI Baseline | CFAI/NFPA Benchmark |
| EMS            | Urban         | 5:10           | 05:35         | 05:12         | 04:00               | 08:30               | 08:49         | 05:12         | 06:00               |
| EMS            | Rural         | 7:10<br>16:02* | 09:01         | 13:00         | 10:00               | 11:50<br>18:45*     | 12:05         | 06:30         | 12:00               |
| Structure Fire | Urban         | 05:16          | 05:01         | 05:12         | 04:00               | 9:15                | 08:18         | 05:12         | 06:00               |
| Structure Fire | Rural         | 10:08          | 09:35         | 13:00         | 10:00               | N/A                 | 15:38         | 06:30         | 12:00               |

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## Effective Response Force, 2015

| Incident Type  | Response Zone | Alarm Processing |               |               |                     | Turnout       |               |               |                     |
|----------------|---------------|------------------|---------------|---------------|---------------------|---------------|---------------|---------------|---------------------|
|                |               | FGFR Baseline    | TVFR Baseline | CFAI Baseline | CFAI/NFPA Benchmark | FGFR Baseline | TVFR Baseline | CFAI Baseline | CFAI/NFPA Benchmark |
| EMS            | Urban         | 01:59            | 01:59         | 01:30         | 01:00               | 01:30         | 01:40         | 01:30         | 01:00               |
| EMS            | Rural         | 01:59            | 01:59         | 01:30         | 01:00               | 01:30         | 01:40         | 01:30         | 01:00               |
| Structure Fire | Urban         | 01:43            | 01:43         | 01:30         | 01:00               | 03:30         | 02:10         | 01:30         | 01:20               |
| Structure Fire | Rural         | 01:30            | 01:30         | 01:30         | 01:00               | 03:30         | 02:10         | 01:30         | 01:20               |

## Effective Response Force, 2015

| Incident Type  | Response Zone | Travel Time    |               |               |                     | Total Response Time |               |               |                     |
|----------------|---------------|----------------|---------------|---------------|---------------------|---------------------|---------------|---------------|---------------------|
|                |               | FGFR Baseline  | TVFR Baseline | CFAI Baseline | CFAI/NFPA Benchmark | FGFR Baseline       | TVFR Baseline | CFAI Baseline | CFAI/NFPA Benchmark |
| EMS            | Urban         | 5:10           | 05:32         | 05:12         | 04:00               | 8:30                | 08:48         | 08:12         | 06:00               |
| EMS            | Rural         | 7:10<br>16:02* | 09:01         | 13:00         | 10:00               | 08:30               | 12:05         | 16:00         | 12:00               |
| Structure Fire | Urban         | 09:55          | 13:00         | 10:24         | 08:00               | 13:38               | 18:08         | 13:24         | 10:20               |
| Structure Fire | Rural         | N/A            | 15:19         | 18:12         | 14:00               | N/A                 | 17:59         | 21:12         | 16:20               |

*Turnout Times determined by ERS Report 1654*

*Total Response Time determined by ERS Report 1641*

*Travel Times determined by ERS Report 1653*

*Note: Rural Response times may include 2013-15 to gather sufficient data for analysis.*

*N/A = not enough data*

*\*Gales Creek area, which has a significantly longer travel time.*

*TVFR Baselines from TVFR 2015 Standards of Cover*

*Effective Response Force is measured by manual review of all working task force and 1<sup>st</sup> alarms since 2013, when new records management system was implemented.*

## **CURRENT LEVELS OF SERVICE**

### **BASELINE FIRE SUPPRESSION (NFIRS 111, 120, 121)**

Baseline objectives are based on total response times that include call processing time, dispatch time, turnout time and travel times for responding apparatus and personnel. Event times for 2014-2015 were used in determining service level objectives.

The first arriving apparatus will have the ability to pump a minimum of 1250 GPM from a Type I engine with a minimum of three firefighters in the urban areas, and be capable of providing initial incident command and initial actions for fireground operations in accordance with department policy and procedures.

For 90 percent of fire responses, the total response time of the first arriving apparatus arrives within:

- *8 minutes and 30 seconds in URBAN areas (FMZ 5271, 5272, 5371, 5372, 5373, 5374, 5472, 5473, 5474)*
- *11 minutes and 45 seconds in RURAL areas, 18 minutes and 45 in the Gales Creek FMZs.*

### **BASELINE EMS (NFIRS 321)**

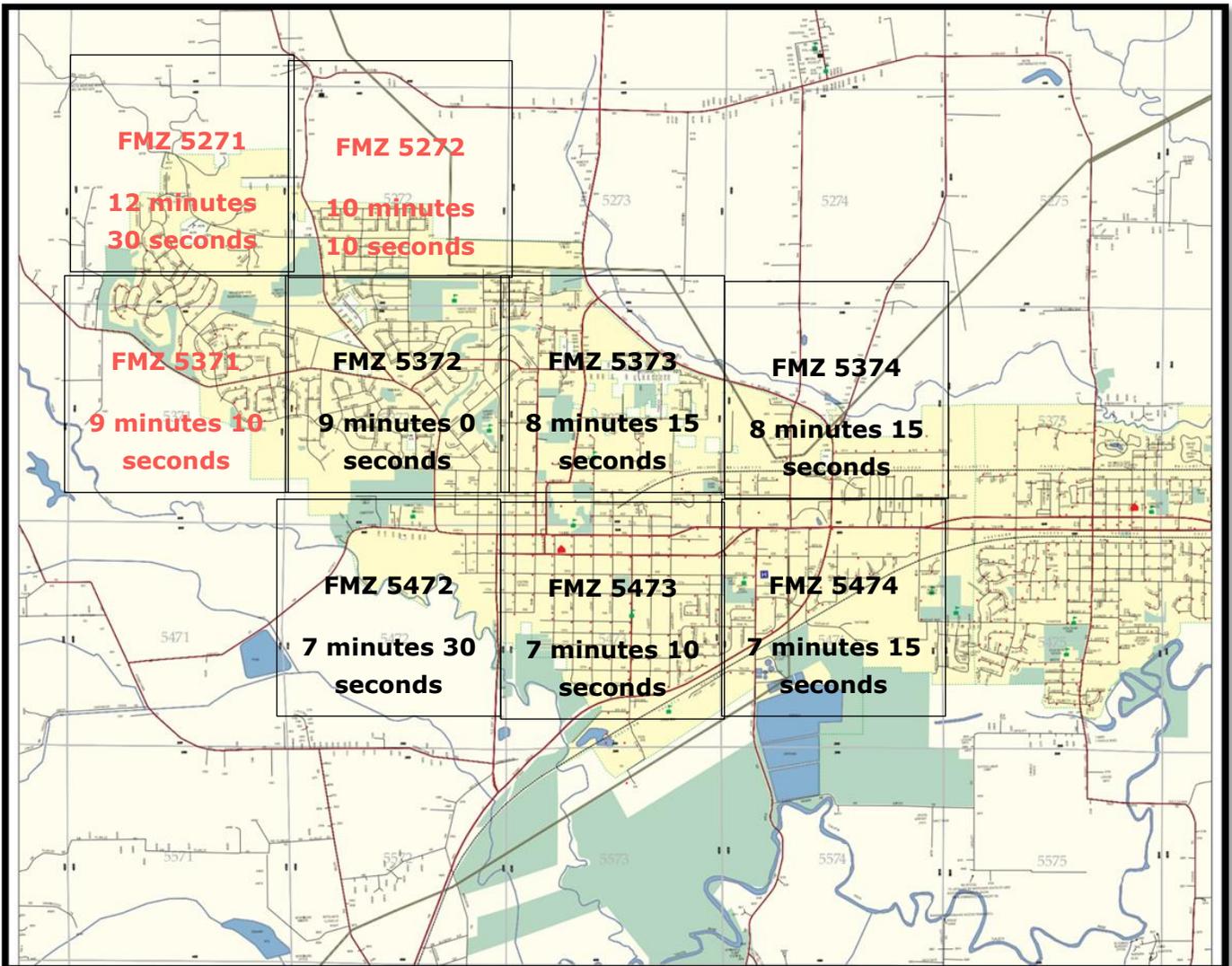
For 90 percent of EMS responses, total response time of the first arriving apparatus arrives within:

- *8 minutes and 25 seconds in URBAN areas (FMZ 5271, 5272, 5371, 5372, 5373, 5374, 5472, 5473, 5474)*
  - *See chart below for individual FMZ response times.*
- *14 minutes and 28 seconds in RURAL communities*

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The first arriving unit is staffed with two firefighter personnel (minimum of one is a paramedic 90% of the time) and is capable of providing advanced life support and treatment for a one or two patient medical incident while providing for the safety of victims and responders in accordance with department policy and procedures.



## **About the Data – Exception Reporting**

The department continues to make improvements not only to its data reliability, but also its ability to validate the data which it depends on for decision making. Part of that process has been a detailed, step-by-step approach to verify and validate some of the fundamental components which emergency response performance statistics are predicated.

That validation process has been successful in identifying some of the inconsistencies in the data entry, collection, reporting, and synthesis issues faced by many agencies dealing with autonomous business structures and multiple data entry and reporting processes.

Specifically, some of the bureaucratic structures that affect data reporting are current GIS limitations, the Washington County Ambulance Service Area Agreement, WCCCA Fire Dispatch, and even our own records management system, Emergency Reporting Software.

In order to ensure accurate system analysis, data used for performance measurement must be “cleaned” prior to analysis. Various exceptions are utilized for data reporting in order to take a realistic look at emergency response performance. Exceptions may be defined somewhat differently depending upon the nature of the data report queried. For example, EMS calls where “staging” was initiated, such as suicide attempts and injuries from assaults, are typically not used in data analysis since they are considered Code 1, or non-emergent. The intent of data cleaning is to pare down the emergency responses for analysis to those which actually show a start-to-finish emergency response, thereby giving an accurate indication of system performance.

Other examples of data exceptions include weather-related extremes, which impede normal response modes such as heavy snow accumulation, flooding, or dense fog.

### **Exceptions to Response Times**

The response time standard will be applied to all Code 3 (emergency) calls with the following exceptions:

- *Calls when apparatus is staged*
- *Calls occurring during inclement weather (ice and snow)*
- *Dispatch errors or address changes after dispatch*
- *Cancelled enroute or downgraded calls*
- *Restricted access; unimproved roads, impassible bridges, gates*

### **Why Fractal Reporting?**

Fractal reporting is a methodology by which response times are sorted from least to greatest, and a "line" is drawn at a certain percentage of the calls to determine the percentile (for the purposes of our industry, the 90<sup>th</sup> percentile is used most often). The point at which the "line" crosses the 90<sup>th</sup> percentile is the fractal time performance.

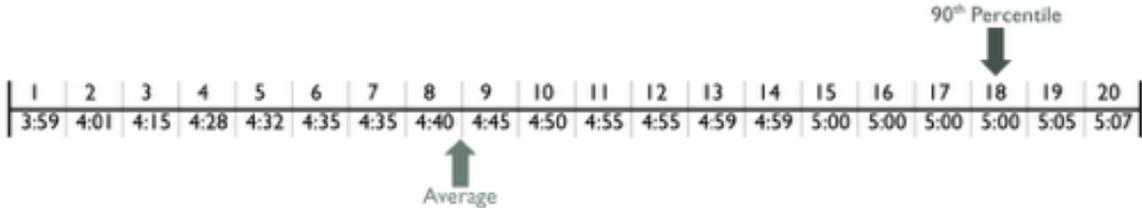
Averaging calculates the response time by adding all the response times together and then dividing the total number of minutes by the total number of responses. Unfortunately, measuring and reporting average response times is inadvisable because one-half of the public may receive the required response time, while the other half do not.

For example: The graph on the next page represents the response times of 20 emergency incidents for a fire department. This fire department has set a travel time objective of 5 minutes at the 90<sup>th</sup> percentile. The agency analyzes their 20 incidents to determine their actual performance at the 90<sup>th</sup> percentile. When the line is drawn, it is drawn at the 18<sup>th</sup> incident. In the example, the performance at the 90<sup>th</sup> percentile is 5 minutes, or in other words, 90% of the incidents

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were responded to in 5 minutes or less. Given this same set of incidents, a department could report their average travel time is 4 minutes and 44 seconds. But the statement only represents just less than 50% of the total incidents...what about the other 50%?

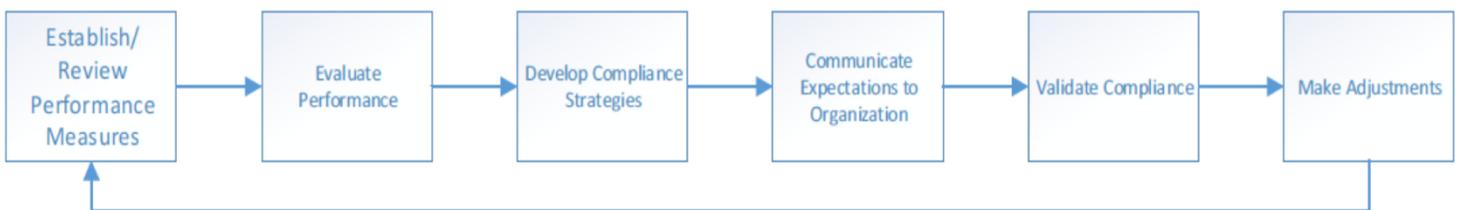


## G. COMPLIANCE METHODOLOGY

Compliance methodology requires that service level objectives and performance measures are evaluated and efforts are made to reach and maintain the established levels. Maintenance of effort refers to the resources and energy put forth by the organization to ensure any benefits derived from the Standards of Cover process are maintained at this level or at an improved level.

### COMPLIANCE MODEL

Compliance is best achieved through a systematic approach. This is best identified using a six-phase compliance model.



#### PHASE I – ESTABLISH/REVIEW PERFORMANCE MEASURES

The initial development of the Standards of Cover document established performance measures, however ongoing evaluation of the document and the metrics developed to measure its effectiveness should be implemented on a pre-determined basis. Each time these measures are reviewed, the following should be considered:

- *Service provided*
- *Levels of services provided*
- *Levels of risk exposed to*
- *Performance measures identified*

## PHASE II – EVALUATE PERFORMANCE

The performance objectives and measurements defined in the previous section are applied to the actual service provided. A comprehensive evaluation of these performance indicators needs to be performed at various levels of the organization and community:

- *System level*
- *Unit level*
- *Effective Response Force level*

## PHASE III – DEVELOP COMPLIANCE STRATEGIES

The result of a completed SWOT analysis, in addition to the data collected during the review process, can assist in identifying issues and solutions. Consideration should be given to the following areas:

- *Action items to address deficiencies*
- *Resources that should be reallocated*
- *Alternative methods of service delivery*
- *Budget estimates as necessary*
- *Maximization of existing resources*

The compliance strategies that are developed in this step serve as a foundation for creating an action plan to address the shortcomings identified.

## PHASE IV – COMMUNICATE EXPECTATIONS TO ORGANIZATION

Once the action plan has been created, it is important to communicate the expectations for service improvement to the entire organization and the public. The following are methods for providing this information:

- *Explain the method of measuring compliance to personnel who are expected to perform the services*
- *Provide feedback in Monthly and Annual Report of performance*

If the action plan requires a change in policies and/or procedures, training shall be conducted to ensure compliance and understanding of the new process.

#### PHASE V – VALIDATE COMPLIANCE

Develop and deploy verification tools that can be used to identify the effectiveness of the changes. Evaluations are completed after every major event, in monthly reports and annual reports, and at various levels of the organization (system level, unit level, etc.)

#### PHASE VI – MADE ADJUSTMENTS AND REPEAT PROCESS

Review the program on a monthly and an annual basis to ensure that changes which have been made are effective and facilitating a positive improvement in the level of service provided by the department. Make any adjustments to deficiencies identified and return to Phase I of the compliance methodology to begin the evaluation process from the beginning.

## **H. OVERALL EVALUATION AND CONCLUSION RECOMMENDATIONS**

A comprehensive evaluation of the entire delivery system is necessary in order to bring together the performance objectives and measures developed to this point. The process of the evaluation step is to ensure that the following items are addressed:

- *Identification of Delivery System Strengths and Weaknesses*  
After the completion of the SWOT analysis all areas of performance that need attention can be summarized into issues and solution. Each issue should be considered and alternative methods identified.
- *Identification of Delivery System Opportunities and Threats*  
Continuing with the SWOT analysis, additional items are identified and alternative solutions identified.
- *Conclusion/Recommendations*  
After all variables are identified, recommendations should be documented as to the methods and processes that will be used to correct the issues identified.

The overall evaluation of the delivery system is performed utilizing this standards of cover document and the department's strategic plan. This overall evaluation should be conducted at the conclusion of each year and documented in the annual report to enable the department to compare the delivery system with consistent metrics.

## Conclusion

- Forest Grove Fire and Rescue is dependent on the surrounding communities to assemble the concentration of an Effective Response Force for most fire suppression and critical EMS events.
- The current distribution of a single station located in the downtown core has led to significantly extended response times to the Forest Gale Heights area and the northern fire response zones where most future residential development is expected.
- The current call volume trends clearly demonstrate a trending increase which is increasing response times and workload, and decreasing reliability.
- The projected revenue is unlikely to meet future expenses for *current* fire department operations.
- A second station will need to be built within the next 3-6 years to decrease travel time to the northern fire management zones, to increase reliability and to increase concentration. There is currently no funding set—aside for station construction in the City budget. Station construction costs will probably require a voter-approved bond.
- A second station will require the hiring of 6-9 additional firefighters.

## Recommendations

- Implement the recommendations in the 2015 Cooperative Fire Services Study. The first phase of this (presented in October 2015) is the establishment of a Fire Authority.
- Begin a strategic planning process that incorporates a future station deployment plan and increased staffing.

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- Continue monitoring system performance utilizing the standards of cover.

## **GLOSSARY OF TERMS**

**Alarm:** A signal or message from a person or device indicating the existence of a fire, medical emergency or other situation that requires emergency service response. In some jurisdictions this may be referred to as an “incident” or “call for service.”

**Alarm Handling Interval:** The interval between the first ring of the 9-1-1 telephone at the dispatch center and the time station alert devices are activated. (C-COM has established a performance standard of 75 seconds for total alarm (call) processing time.)

**Arrived: (on scene)** Physically on location at address, wheels stopped (may be followed with additional info such as “looking for patient, standby for size-up, unable to locate reported incident, etc.”).

**Available: (unit available for service)** Personnel and apparatus immediately available for response and monitoring dispatch.

**Baseline:** The current measurement of performance in an organizational context; usually an initial set of critical observations or data used for comparison or a control. The activities that are currently in place to achieve the organization’s goals and objectives. Clackamas Fire baselines are established at 90 percent of current performance.

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

**Call Processing Interval:** Public Safety Answering Point (PSAP) call receipt to dispatch time.

**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.

**Defibrillator:** A device that discharges an electrical current to restore organized electrical activity to cardiac muscle tissue.

**Effective Response Force (ERF):** The minimum amount of staffing and equipment that must reach a specific emergency zone location within a maximum prescribed total response time and is capable of initial fire suppression, EMS and/or mitigation. The ERF is the result of the critical tasking analysis conducted as part of a community risk assessment.

**Dispatch time:** The time responding unit was notified/toned by dispatch.

**Emergency Incident:** A specific emergency operation.

**Emergency Operations:** Activities of the fire department relating to rescue, fire suppression, emergency medical care, and special operations, including response to the scene of the incident and all functions performed at the scene.

**Enroute time (responding) :** Personnel on apparatus, clothed, seat-belted, apparatus wheels turning.

**Fire Management Zone (FMZ):** A geographic area of a jurisdiction.

**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 due company is responsible for most activities in that area.

**Fractal:** A term used to measure fractions of data, that added together, creates a whole. Used to support total response time which is composed of several elements such as alarm processing time, turnout time, travel times and can include notification and dispatch time.

**In Quarters (station):** Unit in station or on fire station property.

**Incipient Stage:** The initial or beginning stage of a fire that can be controlled or extinguished by portable fire extinguishers, Class II standpipe or small, 1.75 inch hand line hose systems.

**Initial Attack:** Firefighting efforts and activities, which occur in the time increment between the arrival of the fire department on the scene of a fire and the tactical decision by the incident commander that the resources dispatched on the original response will be insufficient to control and extinguish the fire, or that the fire is extinguished.

**Mutual Aid:** A written policy or contract to allow for the deployment of personnel and equipment to respond to an alarm in another jurisdiction. This is part of the written deployment criteria, for response to alarms, as dispatched by a communication center. Also, aid given or received by neighboring agencies, under agreement.

**On-Scene Time:** The point in time when the responding company physically arrives at the emergency scene. This point in time is confirmed by the company officer pressing the MDC "arrive" button as well as verbal confirmation via the mobile radio.

**Out of Service:** (apparatus problem) Unit out of service for mechanical, water, or equipment problem.

**Pre-alert:** When a dispatch pre-alert is used, the address and nature of the call is given as a means to assist companies in lowering turnout time while dispatcher finishes collecting additional information, at which time the call is toned out and all information is given.

**Public Safety Answering Point (PSAP):** Any facility where 911 calls are answered, either directly or through re-routing.

**Receipt of Alarm:** The point where sufficient information is known to the dispatcher and has been transmitted to applicable units for deployment to the emergency.

**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 dispatch. This is a function of the average amount of time that a fire unit is unavailable for dispatch because they are already committed to another response. 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.

**Service Level Objectives:** Statements of performance unique to a given jurisdiction. These statements should be developed by the agency based upon nationally recognized standards and practices for fire and ancillary services. The service level objectives should be written based upon a community's specific profile, which includes both existing and future risk levels. The community risk profile should examine the makeup of occupancies, types of uses, what the probability/consequences are of anticipated incidents and the historical response trends and patterns.

**Total Response Time:** The time interval from the receipt of the alarm at the primary PSAP to when the first emergency response unit is initiating action or intervening to control the incident.

**Travel Time:** Time interval that begins when a unit is en route to the emergency and ends when the unit arrives at the scene. This can generally be interpreted as from wheels rolling to wheels stopped.

**Turnout Time:** The time interval that begins when the emergency response facilities (ERFs) and emergency response units (ERUs) notification process begins by either an audible or visual annunciation or both and ends at the beginning point of travel time. For staffed fire

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stations the benchmark is 80 seconds for fire and special operations response and 60 seconds for EMS response, for 90 percent of events.

Unit Dispatched to Arrival: (See Travel Time and Total Response Time)

Urban Response Areas: Describes fully developed areas with population density greater than 2,000 per square mile with a significant number of buildings and closely gridded street networks. Urban zones have limited open space, manufacturing facilities, industrial, and mid-and low-rise buildings. Core areas including transportation hubs are typically designated urban. Both incorporated cities of Milwaukie and Oregon City are considered urban response areas as well as some unincorporated areas within the Fire District.

With patient (patient contact time): In physical or verbal contact with patient, able to begin assessment and/or treatment.

Zero Times: Indicates incidents that reflect a zero or blank duration on the CAD sheet or incident report. Examples of a zero response time would be when a fire unit happens upon a motor vehicle accident and notifies dispatch they are on scene, thus the dispatch, responding, and arrival times are identical. Another example would be when an EMS patient walks into a fire station.