West Pierce Fire & Rescue

Standard of Cover

2015

Proudly serving the communities of
Lakewood, University Place and Steilacoom

Respond Efficiently•Execute Flawlessly•BE NICE!

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COMMUNITY OVERVIEW

West Pierce Fire & Rescue (WPFR), located in Pierce County, Washington, serves the communities of Lakewood, University Place and the Town of Steilacoom, along with some small unincorporated areas. It is located approximately 40 miles south of Seattle and 25 miles north of the state capital, Olympia. The western border is the Puget Sound and Interstate 5 runs through the fire district. WPFR currently employs 203 men and women who provide basic life support, advanced life support, fire suppression, hazardous materials mitigation, special operations, technical rescue, marine rescue and fire dispatch services along with fire prevention, fire and life safety education, and a host of other services.

According to the US Census, as of 2013 the following populations were reported for each of the three municipalities served:

- Lakewood – 59,097
- University Place 32,040
- Steilacoom – 6,122

The total population served is 97,259. Combined, these communities would be the equivalent of the seventh largest city in the state.

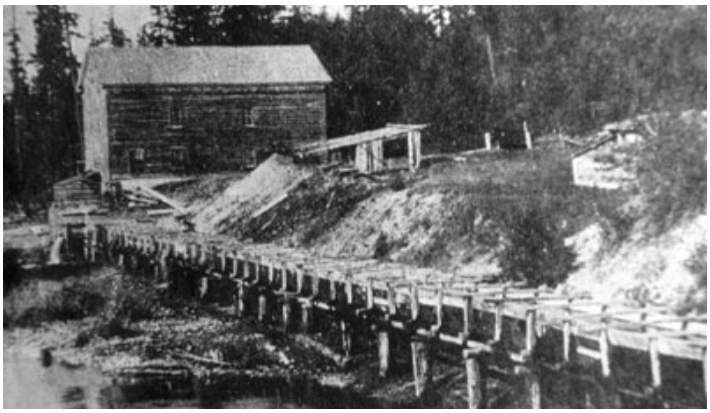
The WPFR community has a wide range of occupancies, which include commercial, institutional, manufacturing, high rise (buildings over 75 feet above ground level), warehouse, as well as single and multifamily residential. In 2014, the assessed value of the fire district was approximately $7.45 billion.

Each of the cities served has its own unique history.

Lakewood History

Lakewood was originally called the Prairie which was 20 square miles of land dotted with small lakes. Prior to the settlers arriving, the land was used by both the Steilacoom and Nisqually Tribes as a gathering spot and a ready source of food. In 1833, the abundant Prairie was chosen by the British as the site of Fort Nisqually. Settlers began to set up farms on the Prairie and one such farm, located at the present site of Western State Hospital, was leased by the U.S. Army in 1849 to serve as a military post following a Native American attack on Fort Nisqually. The new post, named Fort Steilacoom, was used to quell the uprisings. The uprisings continued as the Native Americans fought for land they considered theirs. The Nisqually Tribe's Chief Leschi became a tragic martyr when he was falsely accused of murder as a result of one such uprising. He was hanged on February 18, 1858 in a grove of oak trees near where the Oakbrook Shopping Center now stands.

The decade of the 1850s saw more settlements as the first grist mill (1850), saw mill (1852), and flour mill (1855) were set up by Andrew Byrd at the north end of Lake Steilacoom. Immigrants began arriving in covered wagons in 1853 after Washington became a territory.



Byrd Mill

During the late 1800s, the Prairie began its transformation as homes and roads were built. The Native Americans and settlers were learning to live together, even holding joint celebrations in the summertime.

The Tacoma Country and Golf Club was established in 1894 to attract the rich and famous. It was the first golf club west of the Mississippi and featured trolley transportation from Tacoma to this playground on the Prairie.

In the early 1900s many stately homes were built along the shorelines of the area lakes. Thornewood Castle was built on American Lake between 1909 and 1911 and at the time, considered one of the most beautiful estates in the nation, attracting many illustrious people. Today Thornewood Castle has been renovated into a spectacular bed and breakfast venue.

Thornewood Castle Under Construction

The Tacoma Speedway was built in the early 1900s which included a grandstand built along Steilacoom Boulevard, where Clover Park Technical College stands today. Airplanes found the inner grasslands of the racetrack made a fine landing field just after World War I. Eventually the airstrip was improved and hangars were built as part of the Mueller-Harkins Airport. National air shows were held at the site until World War II.

In 1904, a military presence returned when maneuvers began on the Prairie. It was determined to be an excellent site that met all the requirements of a new post and in 1917, Camp Lewis was built on land donated by Pierce County citizens. McChord Field was developed from the old County Air Field in 1938. These facilities are now combined creating Joint Base Lewis-McChord, one of largest military bases on the west coast.

Present day Lakewood was previously known as the Lakes District, which swelled in population from 3,000 to 17,000 between 1939 and 1949. Lakewood Fire District 2 was formed in 1940, followed by Lakewood Water District in 1943.

A decade later, shopping centers were built. The Villa Plaza Shopping Center was built in 1958. It was later renovated into the Lakewood Mall and has now been further upgraded to the current Lakewood Towne Center. In 1960 the Thunderbird Center, which is now the Oakbrook Shopping Center, was built.

As the area grew, several amenities were added. In 1961, Lakewood General Hospital was built, which has since been demolished and replaced with St. Clare Hospital. In 1967, Clover Park Technical College joined the community college system. Fort Steilacoom Community College was also established in 1967. It occupied a grocery storefront off Bridgeport Way until it moved to its current Farwest Drive location in 1970. The name changed to Pierce College in 1986 and still exists today.

In March of 1995, the Lakewood citizens voted to incorporate. Lakewood officially became a city on February 28, 1996 and is now the second largest city in Pierce County. Today the City of Lakewood is a vibrant community named one of the nation's One Hundred Best Communities for Young People by America's Promise Alliance for five years in a row. *(Reference: Lakewood Historical Society)*

Lakewood City Hall Present Day

University Place History

In the early 1800s, Pierce County was home to the Nisqually, Steilacoom, Squaxin, Puyallup and Muckleshoot Tribes. By the mid-1800s, the area of modern day University Place was beginning to be used for industry. The land where Chambers Bay Golf Course currently sits was first used by the lumber industry, then as a railroad center, and finally as a gravel mine before being reinvented as the world class golf course it is today.

In the early 1890s, the area that is now University Place was chosen as the location for the University of Puget Sound, at the time named Puget Sound University. The school purchased 420 acres for the campus, but financial troubles in 1893 forced them to forfeit the land prior to establishing a campus and the university never made the move to the site. The area retained the name University Place although the university was later built in Tacoma's north end.

Even though the university ended up being located elsewhere, education remained an important part of the community. The University Place School District started in 1894 when the first "school" for seven students operated in a rented, two-room house on the southwest corner of 27th Street and Crystal Springs Road. In 1896, the Lemon's Beach School was built, a one-room wood frame structure that served as the center of the community until 1916. That same year, the University Place School was built at 27th Street and Grandview Drive where the University Place Primary School's playground sits today.

University Place School

Through the mid-1900s, University Place became home to thousands of couples looking for the ideal place to raise their families. One of those couples was Charles and Mary Curran, who developed the Curran Apple Orchard. The orchard became a University Place landmark and today, the seven acre orchard is a City-owned park and the Curran home has been retained as a historical building.

Chambers Bay in University Place

In the early 1990s, community members began discussing incorporation. A movement began pushing for local government and local control. In November of 1994, proponents succeeded in passing a ballot measure which established almost eight square miles of unincorporated Pierce County into the City of University Place, making it the fourth largest city in Pierce County. Today, University Place is a great place to live, work, and play.

In June of 2015, University Place was the host city for the U.S. Open Golf Championship held at Chambers Bay Golf Course.
(Reference: University Place Historical Society, the City of University Place and the University Place School District)

Steilacoom History

Settlers began arriving in Steilacoom in the early 1800s. Prior to their arrival, this area had long been the home of the Steilacoom Tribe, which consisted of roughly 600 people. In the early 1800s, English businessmen opened their trading post, known as Fort Nisqually, which was in the Steilacoom Tribe's territory. Fort Nisqually was located in what is now the City of Lakewood. The Town of Steilacoom grew slowly about six miles away.

In 1851, there were two separate Steilacooms chartered: Port Steilacoom and Steilacoom City. In 1854, the two communities merged into one town, which is the reason some streets do not meet at right angles, as their competing founders saw things in different directions.

Steilacoom Historical Photo

Steilacoom became the first incorporated town in the Washington Territory in 1854. In the 1850s, Steilacoom was one of the few waterfront settlements along the Puget Sound. Steilacoom became a bustling community in the early 1850s before the cities of Tacoma and Seattle even existed.

Steilacoom is a town of many firsts:

- The first brick building north of the Columbia River (which was also the first jail in Pierce County)
- The first school in Pierce County
- The first public lending library in Washington Territory

Welcome to Steilacoom

There were high hopes that Steilacoom would grow into a community like San Francisco when gold was discovered along the Fraser River in British Columbia, but in the end there were better ways of getting to the Fraser. Steilacoom also hoped to be selected as the site for the terminus of the Northern Pacific Railway, but in 1873, Tacoma was chosen. In 1880, the Pierce County seat was transferred from Steilacoom to Tacoma. Business in Steilacoom stalled, so the town gradually evolved into a beach resort and then to its present state as a residential community with historic charm in all corners. The Steilacoom Historic District is on the National Register of Historic Places.
(Reference: Steilacoom official website article by Walter Neary)

Steilacoom Ferry Dock

Population

The communities comprising WPFR contain an area of just over 31 square miles. The 2013 U.S. Census estimates the population served by WPFR is 97,259. The population density is just over 3,000 people per square mile, which according to the Center for Public Safety Excellence, classifies WPFR as a metropolitan department.

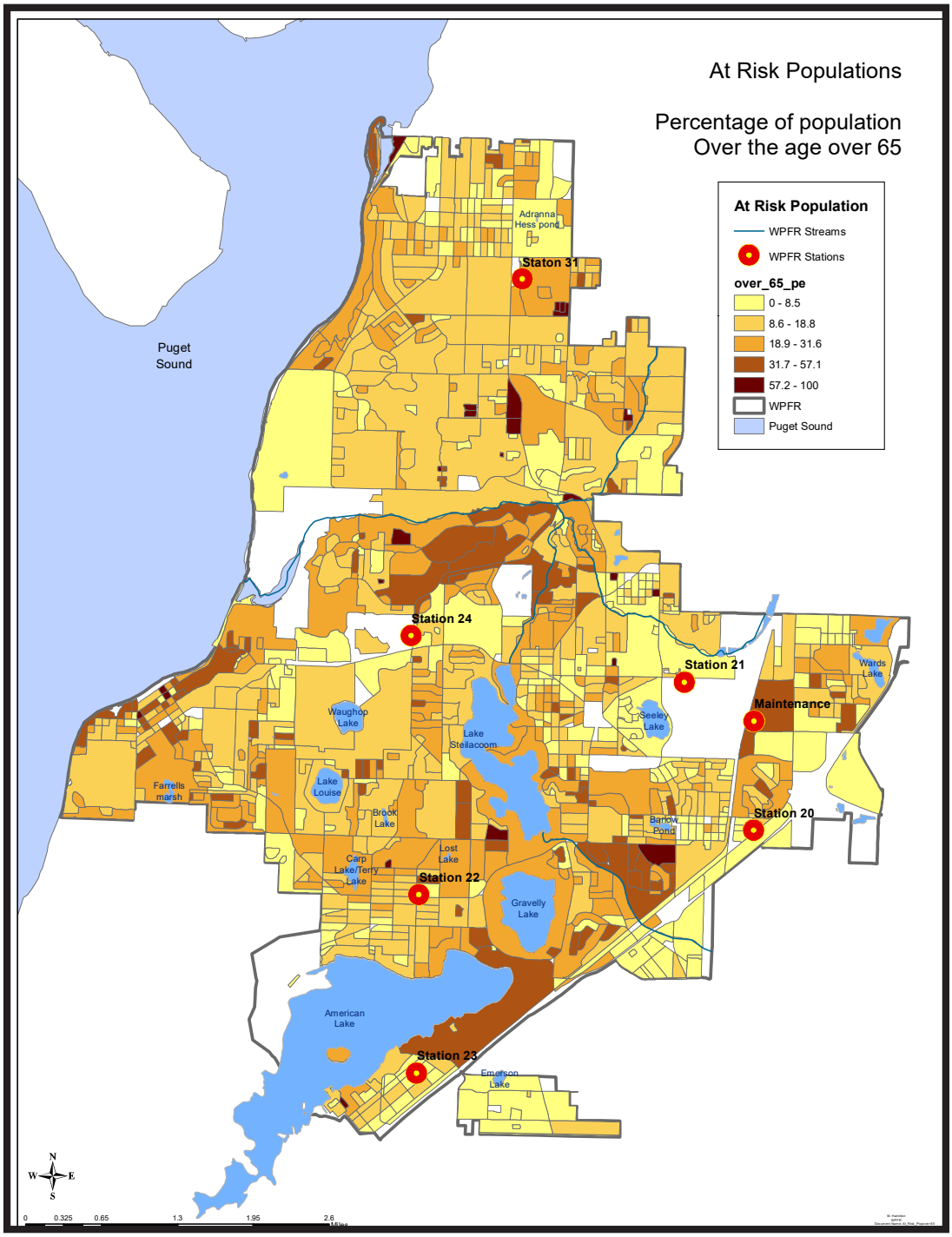
The populations of Lakewood, University Place and Steilacoom all rose slightly as evidenced by the 2000 Census and 2013 Census estimates. The City of University Place had the highest increase from 29,933 in the 2000 Census to 32,040 in 2013 which is a 7.0 percent increase.

The City of Lakewood's population increased a modest 1.5 percent from 58,211 in 2000 to 59,097 in 2013, while the Town of Steilacoom increased 1.2 percent from 6,049 in 2000 to 6,122 in 2013.

Population density in WPFR is a compilation of the three cities together. The density in University Place is the highest at 3,697 people per square mile, Lakewood is 3,387 and Steilacoom is 2,933, according to the 2010 Census. This classifies the area served by WPFR as a mostly metropolitan community.

Demographic Features

Age distribution - While the overall size of the population has grown modestly from 2000 to 2010, the makeup of the population has changed significantly. The age distribution of the population is one category where notable change has taken place. In 2000, the population of persons under the age of 18 living in

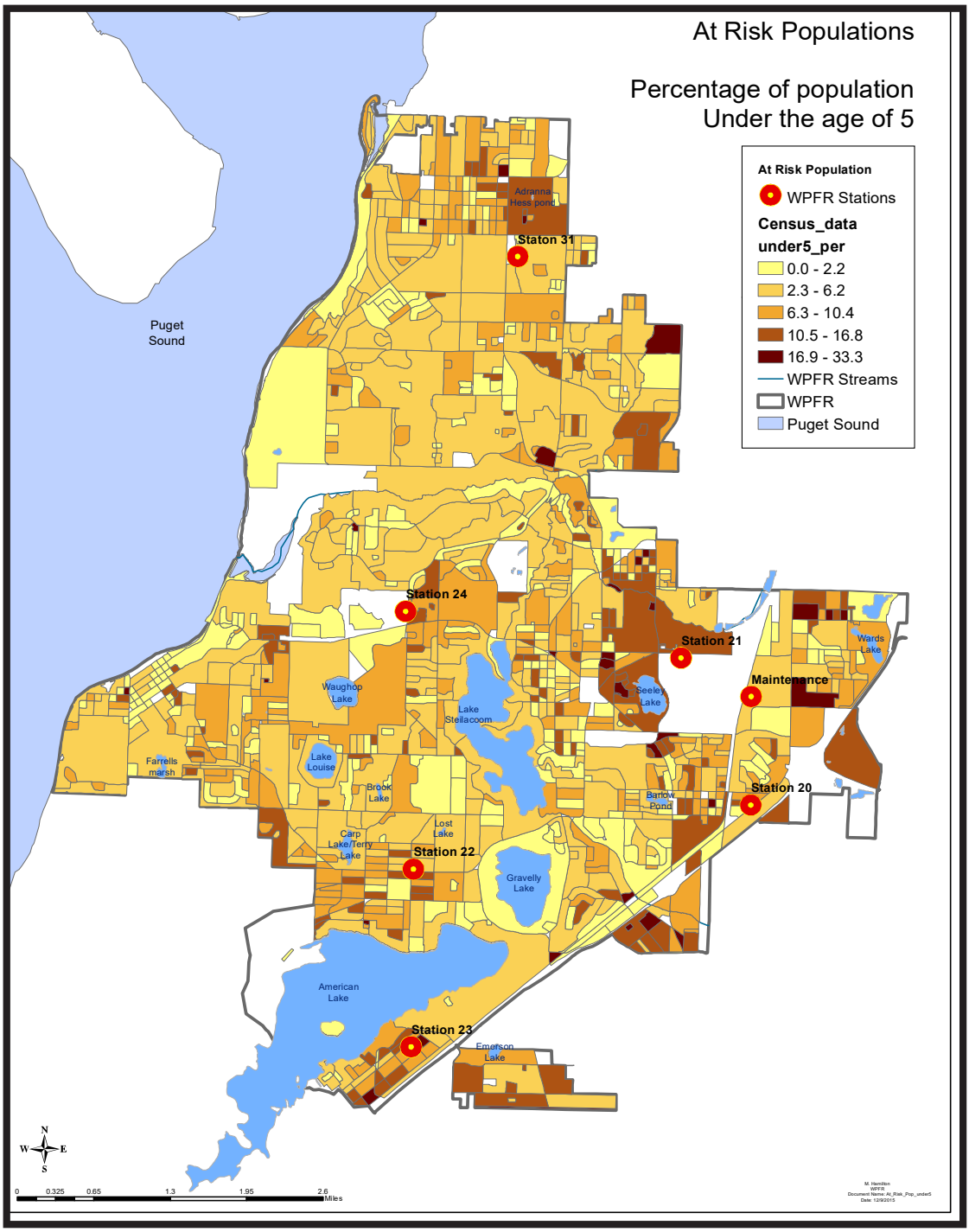


the fire district was 25.4 percent and in 2010 it was just 20.3 percent, which is a 5.1 percent decrease in the number of children and teens living in the fire district. In contrast, the population of people over the age of 65 has increased. In 2000, 13.3 percent of the population in the fire district was over age 65 and in 2010, it was 17.4 percent which is a 4.1 percent increase in this population. According to the Lakewood Comprehensive Plan, "Beyond the Boomer" phenomena, Lakewood has a slightly higher elderly population since it is a highly desirable retirement community for military retirees. In Lakewood, 10 percent of all households consisted of single people aged 65 and over. The increase in the senior population coupled with the fact so many of these seniors live alone is a likely cause for the increase in the number of patient assist calls.

At Risk Populations

There are two segments of the population who are considered "at risk;" those under the age of five and those over the age of 65. According to the 2013 estimates provided by the U.S. Census, 6.3 percent of the WPFR population is under the age of five and 14.3 percent of the population is over the age of 65. These populations place a higher demand on services than the general population due to common incidents associated with their ages.

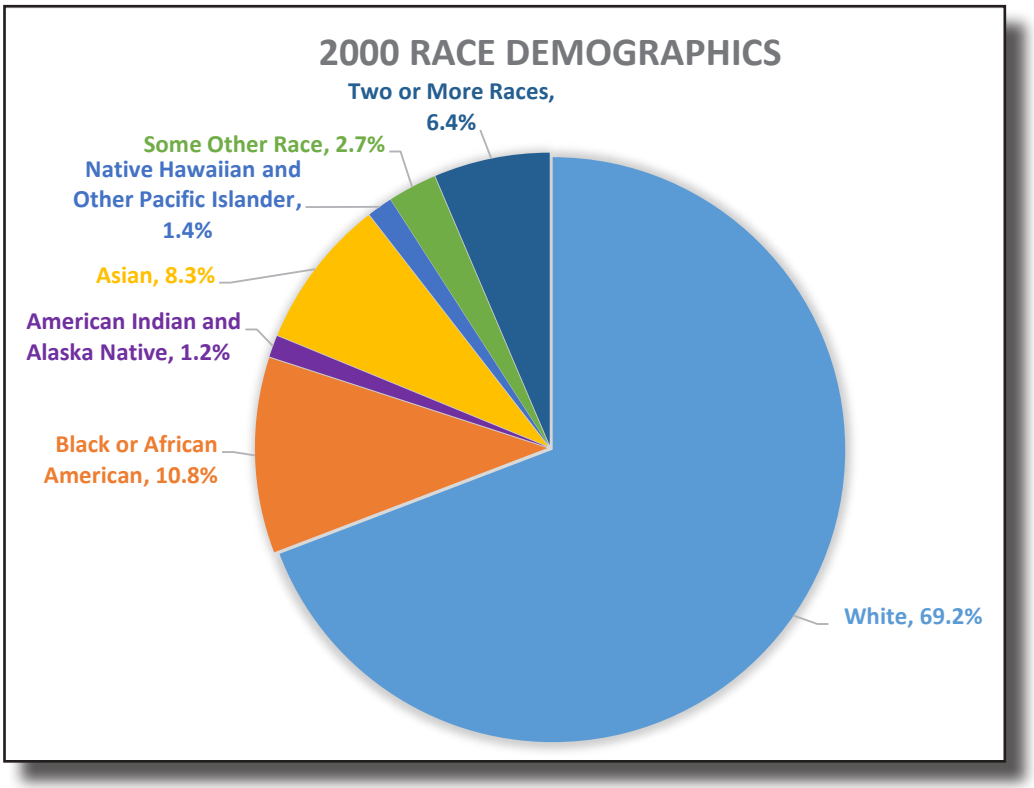
The distribution of the population under five years old is illustrated in the map on page 5. The map shows the areas with higher concentrations of children under the age of five. The distribution of the population in WPFR over 65 is illustrated in the map located on this page.

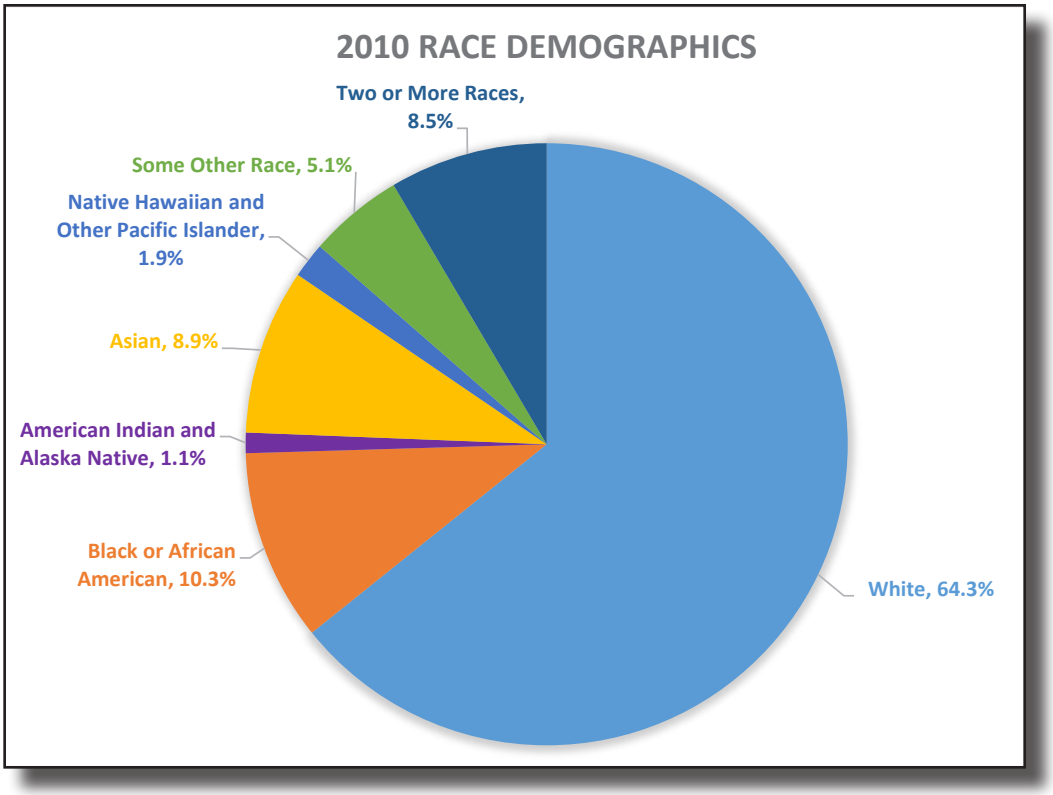


Race

The race demographics in our community have also changed. In 2000, 69.2 percent of the population was white, while in 2010, that number decreased to 64.3 percent. Some other notable changes were to the categories of "two or more races" and "some other race." In 2000, "two or more races" accounted for 6.4 percent of the population and in 2010, it was 8.5 percent. "Some other race" accounted for 2.7 percent of the population in 2000 and 5.1 percent in 2010. These statistics show our community is becoming more diverse each year.

Lakewood has a much higher level of diversity than University Place or Steilacoom. Ethnically diverse populations are at greater risk for incidents due to language barriers and cultural differences.



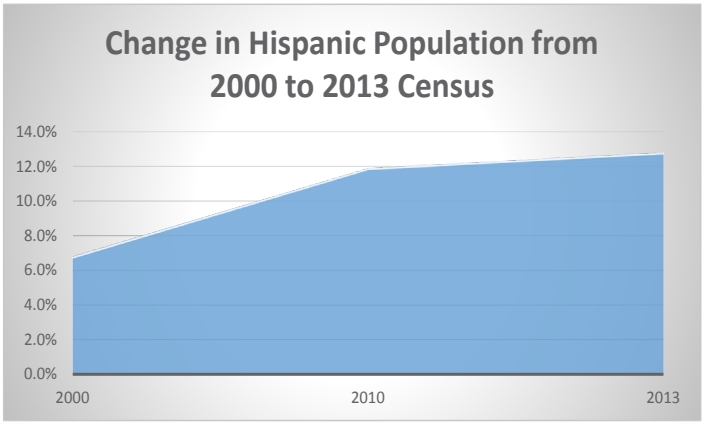


Foreign Born

As of 2013, an estimated 14.7% of the WPFR population was foreign born. In Lakewood, 76.3% of the population spoke English only, while in University Place it was 85% and in Steilacoom 86.3%. In Lakewood, the most prevalent non-English language spoken was Spanish, while in University Place and Steilacoom it was the Asian and Pacific Island languages. This is an important concern as a language barrier can sometimes delay effective communications when calling 911.

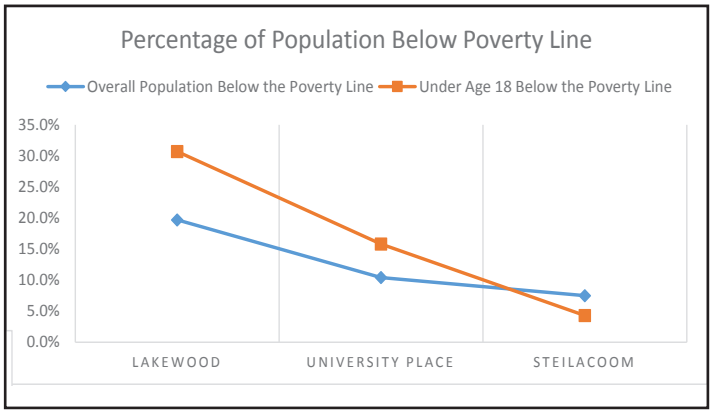
Hispanic or Latino

One of the most significant changes from the 2000 U.S. Census to the 2010 U.S. Census is the percentage of people who are Hispanic or Latino. In 2000, 6.8 percent of the WPFR population was Hispanic compared to 11.9 percent in 2010 and the 2013 estimates show this population at 12.8 percent. This population has nearly doubled from 2000 to 2013. This trend looks to continue when the statistics for children are considered. In Lakewood, 33.1 percent of children under the age of 18 are of Hispanic or Latino origin and in University Place that number is 10.2 percent.

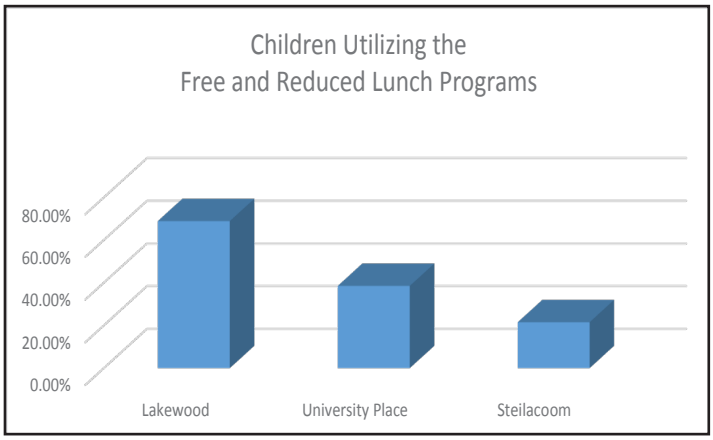


Income

The income levels vary significantly between the three cities. In Lakewood, the median household income is $43,362, while in University Place it is $57,591 and Steilacoom is $59,161. The percentage of the overall population below the poverty line in Lakewood is 19.7 percent, University Place is 10.4 percent, and Steilacoom is 7.5 percent. These percentages change for those who are under the age of 18. In Lakewood, 30.7 percent of those under 18 fall below the poverty line, while in University Place it is 15.8 percent, and Steilacoom is 4.3 percent. (U.S. Census, 2009-2013 American Community Survey 5-Year Estimates)

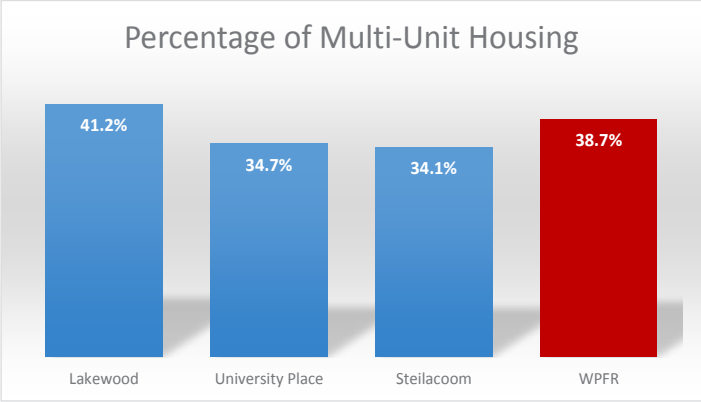


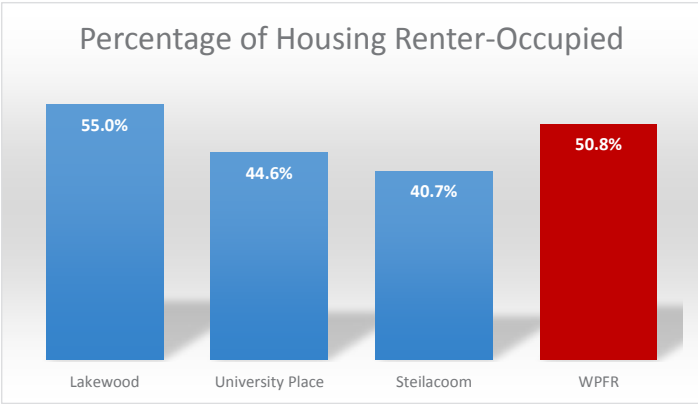
The percentage of children on the Free and Reduced Lunch Program is another indicator of income levels. As of May 2015, in Lakewood, 68.9 percent of children utilize this program. University Place is nearly half that at 38.5 percent and Steilacoom is at 21.5 percent. *(Reference: OSPI Washington State Report Card)*



Housing Characteristics

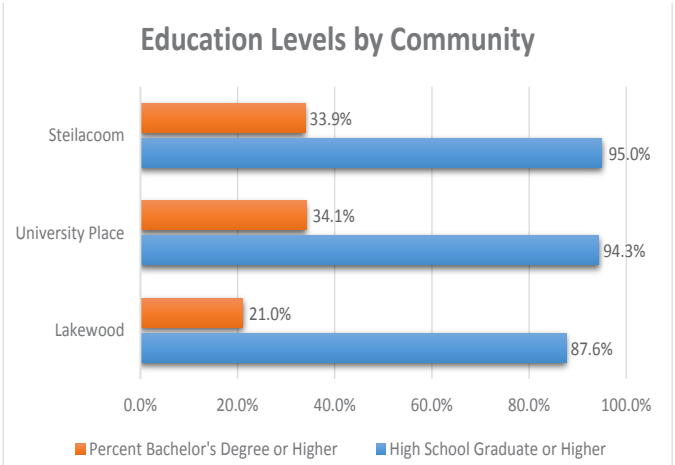
There are a total of 43,114 housing units throughout WPFR and 39,840 are occupied. Of those, 57.2 percent are single family homes, 38.7 percent of them have two or more units and 4.1 percent are mobile homes, boats, RV's, vans, etc. Lakewood has the highest percentage of multi-family units in Pierce County at nearly 41 percent, University Place is fourth with 35 percent and Steilacoom is not far behind at 34 percent.
Just over 50 percent of the housing units in WPFR are renter-occupied. The housing stock in the District is considered aging as over 62 percent of the housing was built prior to 1980. Lakewood has a higher percentage of housing in the low income and extremely low income classifications than other cities in Pierce County. In fact, 64 percent of Lakewood's housing stock is either in the low or extremely low income category. The City of Lakewood's goal in its Comprehensive Plan is to provide more middle and upper income housing. University Place is just the opposite, as there are few homes affordable to low and moderate-income families.





Education

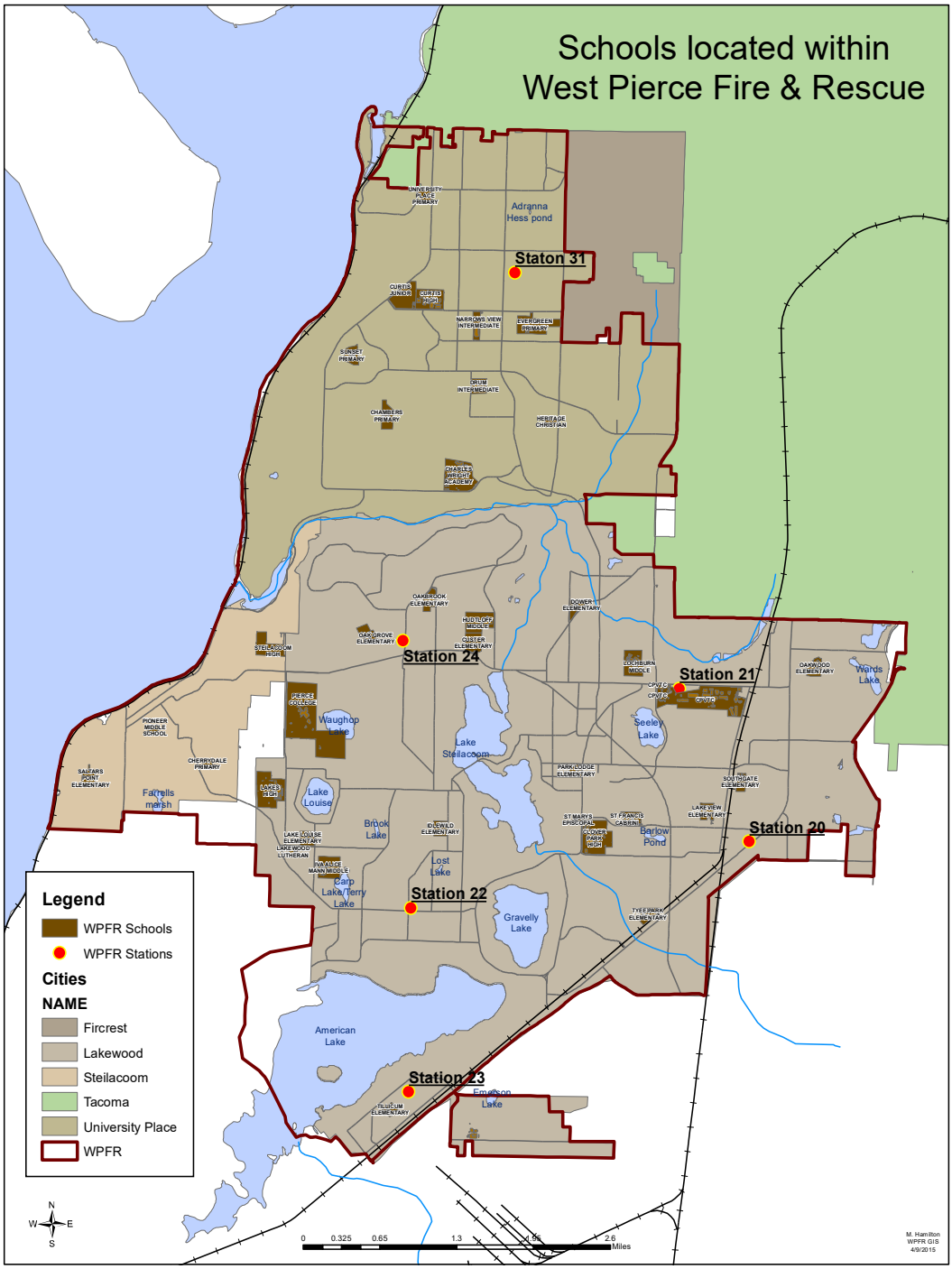
Education levels vary amongst the three communities. In Lakewood, 87.6 percent of the population has a high school diploma or higher and 21 percent has a bachelor's degree or higher. In University Place, those numbers are 94.3 percent and 34.1 percent respectively. In Steilacoom, 95 percent are high school graduates or higher and 33.9 percent have a bachelor's degree or higher.



Schools

There are three school districts serving the children within the boundaries of West Pierce Fire & Rescue. Clover Park School District is the 26th largest public school district in Washington State and the fourth largest of the 15 in Pierce County. It encompasses 68 square miles in the western end of the county, serving the Lakewood and Joint Base Lewis-McChord communities. The Clover Park School District enrolls over 12,000 students of very diverse backgrounds. Just over 36 percent of the students are white, 30 percent are Hispanic or Latino, 12 percent are African American, 12 percent are two or more races, 4 percent are Asian American, 4 percent are Pacific Islander, and less than one percent are Native American. Nearly 70 percent of the students are approved for free or reduced lunches and the graduation rate is nearly 76 percent. *(Reference: Clover Park School District Annual Report 2014)*

The University Place School District encompasses approximately 10 square miles and serves all of University Place and a small portion of Tacoma. The University Place School District enrolls just over 5,600 students. The student population consists of just over 52 percent white students, nearly 13 percent are Hispanic or Latino, 9 percent are Asian, just over 9 percent are African American, nearly 16 percent are two or more races, under 1 percent Pacific Islander and 1 percent Native American. Nearly 39 percent of the students qualify for the free and reduced lunch program and the graduation rate is nearly 90 percent. *(Reference: OSPI Washington State Student Report Card)*



The Steilacoom Historical School District is the oldest school district in Pierce County and serves the communities of Steilacoom, DuPont, Anderson Island and portions of Lakewood and unincorporated Pierce County. The Steilacoom Historical School District enrolls just over 3,000 students. Nearly 55 percent of the students are white, nearly 14 percent are Hispanic or Latino, just over 8 percent are Asian, nearly 8 percent are African American, 2 percent are Pacific Islander, under 1 percent are Native American and just over 13 percent are two or more races. Only 21.5 percent of the children qualify for the free and reduced lunch program and the graduation rate is nearly 94 percent. *(Reference: OPSI Washington State Student Report Card)*

In comparison to the entire State of Washington, each school district served by WPFR is more diverse. The statewide statics show 58 percent of the children are white, 21 percent are Hispanic or Latino, just over 7 percent are Asian, over 4 percent are African American, 1 percent are

Pacific Islander, nearly 2 percent are Native American and nearly 7 percent are two or more races. The statewide graduation rate is nearly 79 percent and the only school district within WPFR just under this rate is Clover Park. The University Place and Steilacoom Historical School Districts are well above the state graduation rates.

There are also three large private schools located in the Fire District; Charles Wright Academy is a pre-Kindergarten through 12th grade school that enrolls approximately 650 students. St. Frances Cabrini enrolls nearly 200 students and Heritage Christian enrolls just under 200 students. Both serve children from pre-Kindergarten through 8th grade. These schools are located throughout the fire district as shown on the map on page 10.

Colleges

Pierce College Ft. Steilacoom Campus enrolls nearly 6,500 students each year and has 1,130 employees. There are 22 Associate Degree programs, 43 professional certifications offered and 64 programs of study. The Pierce College campus is approximately 140 acres located at 9401 Farwest Drive in Lakewood. Instruction is conducted out of seven different buildings, the largest being the Cascade Building in the center of campus. There are two additional buildings; one is an animal barn and the other is a maintenance yard.

Pierce College Campus

Clover Park Technical College offers 40 programs in aerospace, advanced manufacturing, health sciences, human services, business, hospitality, science, technology, engineering, transportation and trades. This campus offers 56 degrees and 56 certificates in a variety of career fields. Instruction is conducted out of 21 seperate buildings, the largest being the automotive trades building.

The Lakewood campus enrolls approximately 7,300 students and employs just over 400 faculty and staff. This campus is located at 4500 Steilacoom Boulevard SW and runs from Lakeview Avenue SW to Lakewood Drive SW.

Clover Park Technical College

Governance

West Pierce Fire & Rescue was formed in 2011 through a merger of Pierce County Fire District 2 (Lakewood Fire Department), formed in 1941 and Pierce County Fire District 3 (University Place Fire Department), formed in 1944. The District provides service to the cities of Lakewood and University Place. The District continues to operate as Pierce County Fire District 3 under the name of West Pierce Fire & Rescue (WPFR). In late 2012, WPFR entered into a contract with the Town of Steilacoom to provide the town's fire protection and emergency medical services. The District operates under the Revised Code of Washington (RCW) Title 52 and is a municipal corporation as defined by law in the State of Washington pursuant to RCW 41.24.010, operating as a junior taxing district. This means the District operates separately from the cities of Lakewood and University Place. When both cities were formed, measures were placed on the ballot to annex into the existing fire districts instead of each city creating their own fire department.

There are currently five citizens from the District elected to the Board of Fire Commissioners, who serve six-year terms. This Board has fiscal responsibility of the District and establishes rules and policies governing all aspects of the department as determined by RCW 52.14. This Board of Fire Commissioners appoints a Fire Chief to oversee day-to-day operations.

Funding

The Fire District is funded utilizing the following sources:

Tax Assessments - Each of the tax assessments are based on a property's assessed value (AV). The Pierce County Assessor-Treasurer's Office determines the AV of properties on an annual basis using current market value trends. All property is physically inspected at least once every six years.

- Regular Levy – statutory limit of $1.50 per $1,000 of AV
- Emergency Medical Services (EMS) Levy – statutory limit of $0.50 per $1,000 of AV (voters in West Pierce approved a permanent EMS levy)
- Maintenance and Operations Levy – voter approved and requires a super majority to pass; 60 percent approval and validation against the previous general election

The AV is used to calculate the taxes to be paid by a property owner. Taxes are calculated by multiplying the local tax rate by each $1,000 of assessed value. For WPFR:

- The Regular Levy is $1.50 per $1,000
- The EMS Levy is $.50 per $1,000
- For a home valued at $200,000 the calculation would be; ($200,000/$1,000) X $2.00 = $400 annually

The Maintenance and Operations (M & O) Levy works a bit differently. The dollar amount requested by the District is used to establish a rate per $1,000 once certified AV's are known. For example, the 2015 Maintenance and Operations Levy generated $11,174,138. With an AV for the District of $7,854,339,147, the calculated rate per $1,000 was $1.4226.

- The calculation looks like this; $11,174,138/(($7,854,339,147)/$1,000)) = $1.4226.
- For a home valued at $200,000 the calculation would be; ($200,000/$1,000) X $1.4226 = $284.52 annually.

In 2015, the owner of a $200,000 home would pay the Fire District a total of $684.86 annually, or approximately $57 per month.

- The Regular Levy = $300.00
- The EMS Levy = $100.00
- The M & O Levy = $284.52
- Total Annual Taxes = $684.52

Additional Revenue Sources – The District has additional sources of revenue including the following:

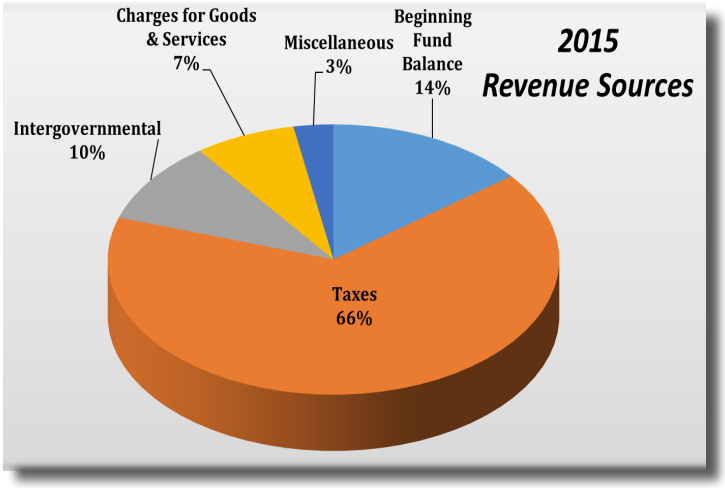
- EMS Transport Fees – Transport fees are the charges associated with emergency medical responses when the District treats and provides hospital transportation for the patient. WPFR is often asked why transports are billed when an EMS Levy is in place. While it's true citizens pay $0.50 per $1,000 of AV for an EMS Levy; this tax revenue does not fully fund the District's EMS program. EMS transport fees assist in mitigating the costs not covered by the EMS levy. The District does utilize an EMS membership program for District property owners, which allows for their EMS Levy dollars to pay for any outstanding balance not paid by their medical insurance provider.

- Fire Protection Contracts – State agencies are exempt from property tax. Per RCW 52.30.020, these agencies shall contract with the Fire District for fire protection services. In 2015, the District's fire protection contracts include: Department of Social and Health Services (Western State Hospital), Pierce County, Pierce College, Pierce Transit, Clover Park School District, Clover Park Technical College, Washington State Department of Transportation, Department of Fish and Wildlife, and the University Place School District.

- Other Contracts – The District maintains a contract for fire protection with the Veteran's Administration for the American Lake V.A. Campus, which is located outside of the Fire District boundary. There are also contracts in place with the Lakewood Water District and Tacoma Public Utilities for fire protection. The City of Lakewood contracts with WPFR for Fire Marshal services. Fire District 13 (Brown's Point) contracts with the District to maintain their fleet of vehicles and Tacoma Fire Department contracts for pump testing on their fire apparatus.

- In 2012, WPFR entered into a long-term agreement with the Town of Steilacoom to provide emergency response services. The contract is for five years with an option for five additional years.

The following chart depicts the percentage of revenue for each category. Property taxes, which include the Regular Levy, EMS Levy and the M & O Levy make up the majority of revenue for the Fire District. The intergovernmental category includes contracts such as the school district, colleges and Western State Hospital. Charges for goods and services include transport fees, the contract with Steilacoom and the City of Lakewood. The beginning fund balance is the amount of money carried over from the prior year. These monies are budgeted for and are necessary to sustain operations until the tax revenues arrive in May.



Growth, Redevelopment and Land Use

All three communities served by WPFR are extensively developed, mature communities. Most future growth will occur as the result of urban infill and redevelopment of existing properties. Current commercial development patterns are largely representative of typical suburban sprawl, with little in the way of a recognizable downtown core to tempt citizens to get out of the car, stroll and linger. Both Lakewood and University Place have plans in place to control this sprawl and develop a thriving downtown area. *(Reference: Lakewood and University Place Comprehensive Plans)*

Land Use

Lakewood, University Place and Steilacoom all have different types of land use designations. The following include the types of land use in each city.

Lakewood

Air Corridor 1 and 2 – The Air Corridor areas are affected by Joint Base Lewis-McChord (JBLM) McChord Field aircraft operations. The potential risk to life and property from hazards associated with military aircraft operations within the Air Corridor necessitate control of the intensity, type and design of land uses within the designation, with uses tailored to limit the number of persons placed at risk.

Arterial Corridor – Provides an environment for an essentially residential neighborhood while permitting the development of low-intensity, non-nuisance business uses.

Central Business District – The primary retail, office, social, urban residential, and government center of Lakewood. The Central Business District (CBD) is intended to attract significant numbers of additional office and retail jobs as well as new high density housing. The plan anticipates the properties within the CBD will be developed into 75 percent commercial and 25 percent residential uses.

Corridor Commercial – The commercial corridors along I-5, South Tacoma Way, Pacific Highway, and Union Avenue are examples of Lakewood's dominant pattern of strip commercial development.

High Density Multi-Family – This designation combines urban design elements to enhance the living environment through integration into central or neighborhood business districts. Urban design elements stress pedestrian orientation and connections, security, transportation and integration of housing.

Industrial – Provides for regional research, manufacturing, warehousing, concentrated business/ employment parks, and other major regional employment uses.

Lakewood Station District – This is the multi-modal commuter hub of Lakewood and the southern terminus of Sound Transit's commuter rail service. This District will accommodate a dense mix of office, retail, and high-density residential uses supported by direct regional transportation access.

Military Lands – The portions of the federal and state military installations within the City.

Mixed Residential – This designation provides for a moderate increase in density using a variety of urban housing types and designs including small-lot single-family homes, townhouses, duplexes and small apartment buildings.

Multi-Family – Incorporates a combination of urban design elements to enhance the living environment while integrating the housing into a neighborhood or neighborhood business district.

Neighborhood Business District – A concentrated mix of activities, including retail and other local services, residential and some office use. These districts are expected to provide commercial services, as well as residential units in the upper floors of some buildings.

Open Space and Recreation – Provides public open spaces and recreational uses such as state and municipal parks, preserves, and trails as well as privately owned facilities such as golf courses, Lakewold Gardens and cemeteries. The cities of Lakewood and University Place are working together to develop the Chambers Creek Canyon for limited, passive recreational uses.

Public and Semi-Public Institutional – Large and moderate scale governmental uses, special districts, and semi-institutional uses that allows for the specialized needs of providing public services to all areas of Lakewood.

Residential Estate – This designation provides for large, single-family lots in specific areas where a historic pattern of large residential lots and extensive tree coverage exists. This designation preserves the historic identity these "residential estates" contribute to the community, along with protecting the environment along the lakes and creeks.

Single-Family – This designation provides for single-family homes in support of established residential neighborhoods. This is the most common designation within the City of Lakewood.

University Place

Community Commercial – These areas include general retail, restaurants, personal services, professional offices, and multi-family dwellings.

Light Industrial - Business Park – This designation includes light and clean industries, storage and warehousing, automotive repair, contractor yards, limited retail, restaurants, offices and entertainment uses, public and private parks, community and cultural services, administative government and safety services, and public transportation services.

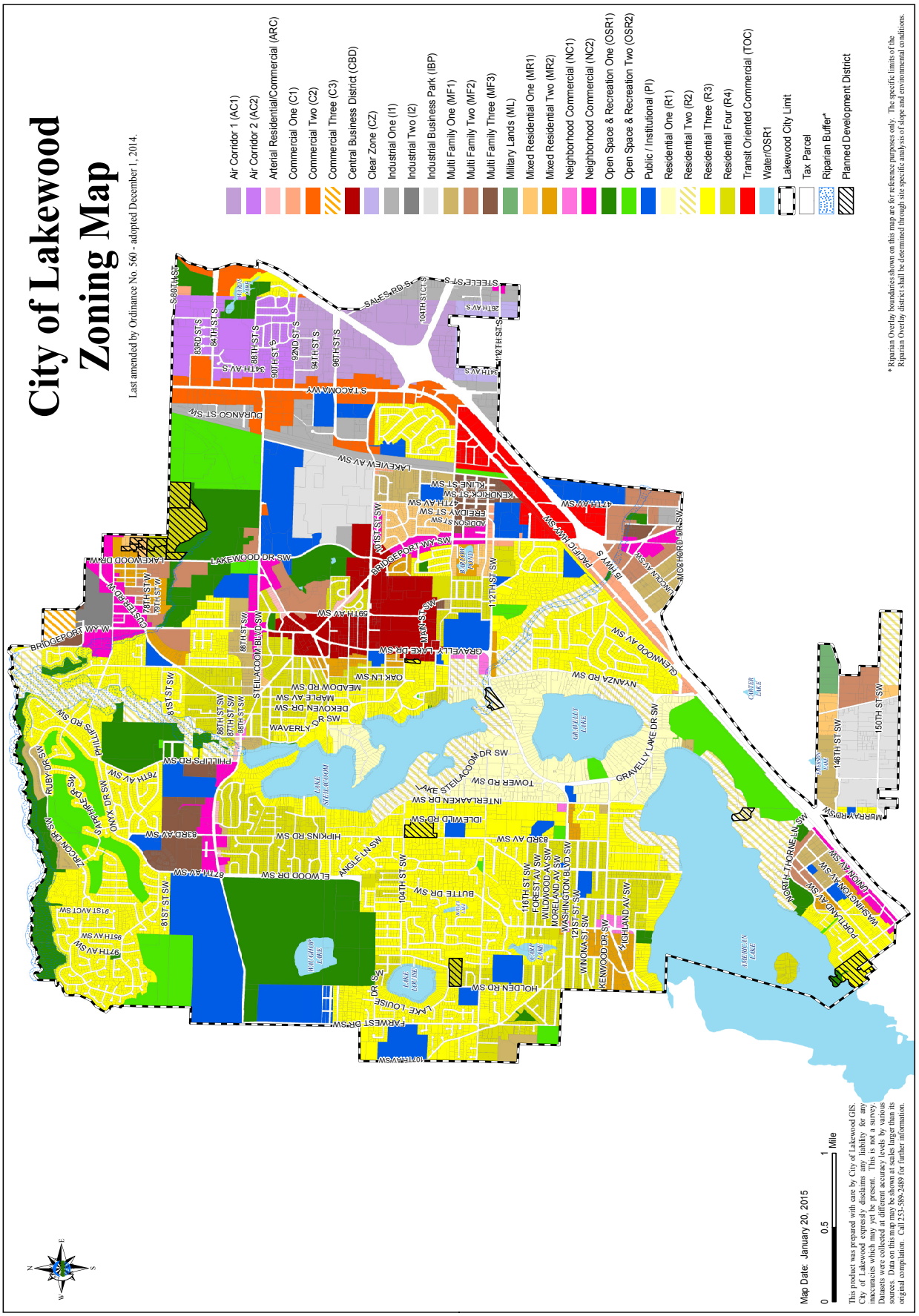
Low Density Residential – Single-family residential neighborhoods comprise a significant percentage of the City of University Place's land area. Uses in these areas are restricted to single family homes, duplexes, accessory dwelling units, adult family homes, schools, home-based day care, assisted living and nursing homes, religious assembly, public parks, community and cultural services, and minor utility distribution facilities.

Mixed Use – Developments that include a mix of retail, personal services, offices, and residential uses are encouraged in this designation. Uses allowed include redevelopment of multi-family housing, attached single-family dwellings, nursing homes and assisted living facilities, day care, religious assembly, professional offices, general retail, personal services, restaurants, small food stores, lodging, family entertainment businesses, public and private parks, community and cultural services, and administrative government and safety services.

Mixed Use Maritime – This designation supports the operation of marinas, yacht clubs with boat moorage and related facilities and activities. The designation accomodates mixed use development that may include a variety of water-oriented commercial, transportation and light industrial uses, and moderate density residential uses.

Mixed Office Use – This designation serves as a transition zone providing separation between more intense commercial activites and residential areas. Uses allowed include redevelopment of multi-family housing, single-family housing, nursing homes and assisted living facilties, day care, religious assembly, professional offices, limited retail uses, public parks, community and cultural services, and administrative government services.

Moderate Density Residential – Higher density residential is located along major arterials and transit routes, close to shopping, public facilities and services. Uses allowed in these areas include multi-family housing, single-family housing, adult family homes, nursing homes and assisted living facilites, schools, public and private parks, community and cultural services, home-based day care, and religious assemblies.


City of Lakewood
Zoning Map
Last amended by Ordinance No. 560 - adopted December 1, 2014.
Air Corridor 1 (AC1)
Air Corridor 2 (AC2)
Arterial Residential/Commercial (ARC)
Commercial One (C1)
Commercial Two (C2)
Commercial Three (C3)
Central Business District (CBD)
Clear Zone (CZ)
Industrial One (I1)
Industrial Two (I2)
Industrial Business Park (IBP)
Multi Family One (MF1)
Multi Family Two (MF2)
Multi Family Three (MF3)
Military Lands (ML)
Mixed Residential One (MR1)
Mixed Residential Two (MR2)
Neighborhood Commercial (NC1)
Neighborhood Commercial (NC2)
Open Space & Recreation One (OSR1)
Open Space & Recreation Two (OSR2)
Public / Institutional (PI)
Residential One (R1)
Residential Two (R2)
Residential Three (R3)
Residential Four (R4)
Transit Oriented Commercial (TOC)
Water/OSR1
Lakewood City Limit
Tax Parcel
Riparian Buffer*
Planned Development District
* Riparian Overlay boundaries shown on this map are for reference purposes only. The specific limits of the Riparian Overlay district shall be determined through site specific analysis of slope and environmental conditions.
Map Date: January 20, 2015
0
0.5
1 Mile
This product was prepared with care by City of Lakewood GIS. City of Lakewood expressly disclaims any liability for any inaccuracies which may yet be present. This is not a survey. Datasets were collected at different accuracy levels by various sources. Data on this map may be shown at scales larger than its original compilation. Call 253-589-2489 for further information.

Neighborhood Commercial – These are compact centers that provide a mix of neighborhood scale retail shopping, personal services, banks, professional offices, public parks, community and cultural services, administrative government and safety services, and service stations that serve the daily need of the portion of the city where they are located.

Town Center – This serves as a focal point for the City and provides a sense of community and civic pride. This center includes the Civic Building, City Hall, West Pierce Fire & Rescue headquarters station and Homestead Park. Public facilities and services, retail stores, personal services, professional offices, restaurants and some entertainment uses are encouraged. This area also includes high density housing with a minimum density of 20 dwelling units per acre with no maximum density.

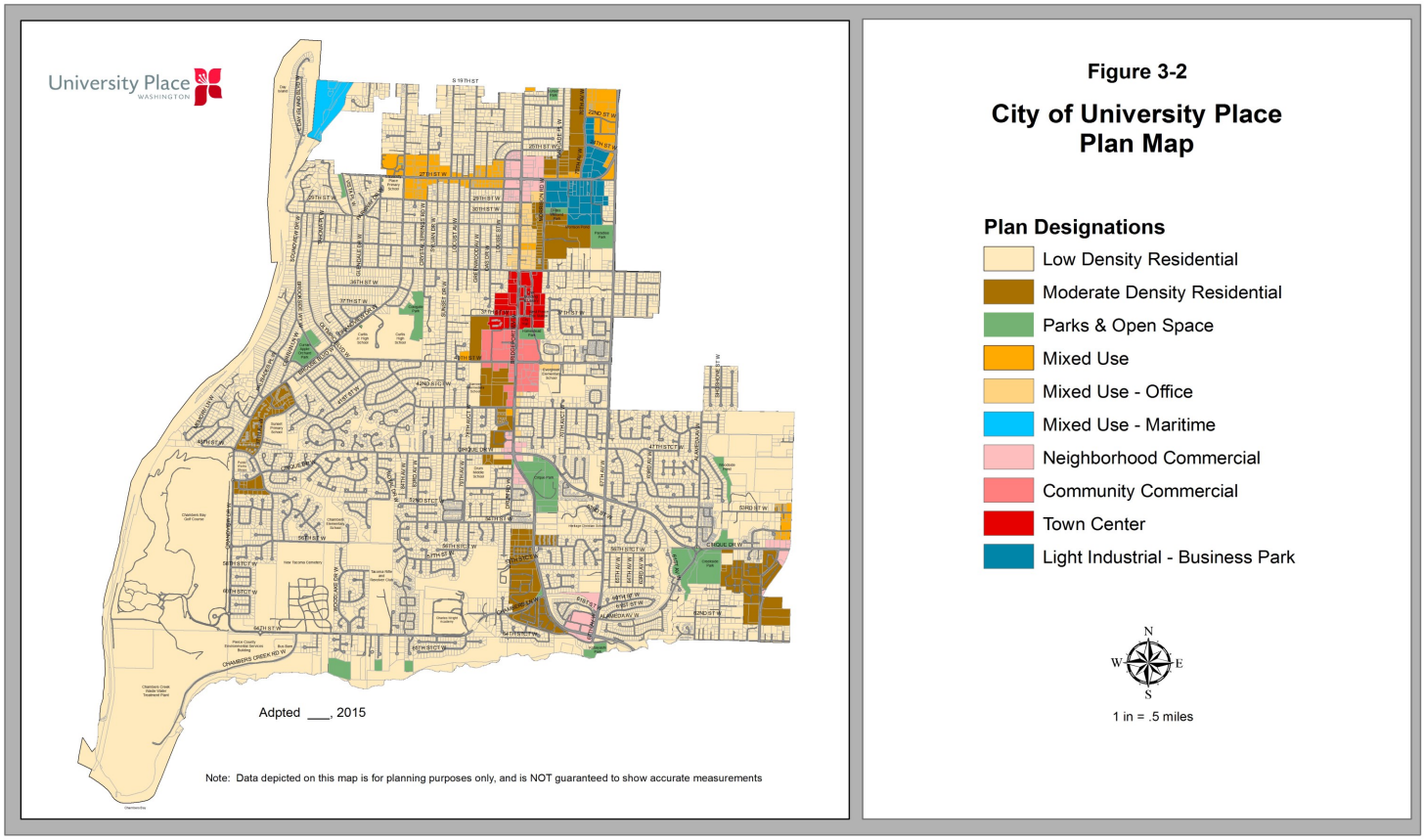
Steilacoom

Commercial and Housing – These areas are characterized by a mix of commercial and residential uses.

Commercial and Recreation – There are three areas along the shoreline designation for mixed commercial and recreational use. Commercial enterprises in these areas should be compatible with waterfront activities.

Housing and Open Space – Much of this land is in large parcels that may be subdivided in the future.

Industrial – The future of this area has been the subject of much discussion. No definite plans for the site have been proposed, but future use may include non-industrial uses.

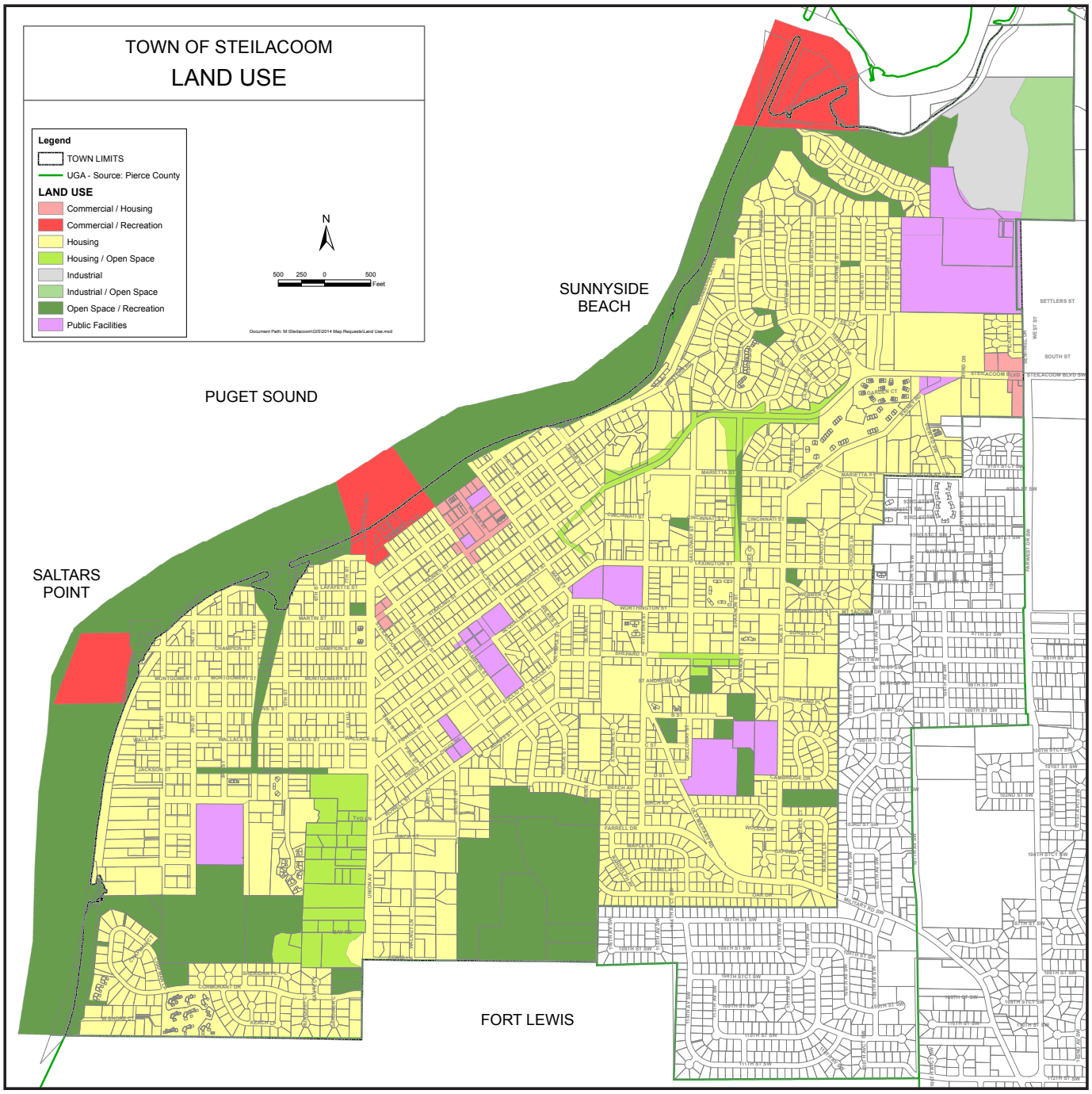


Industrial and Open Space – A small area near Chambers Creek is currently zoned for industry and is surrounded by open space. The open space provides a natural buffer between the industrial use and surrounding residences.

Open Space Areas – Open space areas include mature or dense native vegetation and shoreline or wetland features. Open space areas often provide functions such as wildlife habitat, drainage or stormwater retentions and natural areas that provide a visual break from surrounding urban development.

Open Space and Recreation – Most of these areas are owned by the Town or the Steilacoom Historical School District.

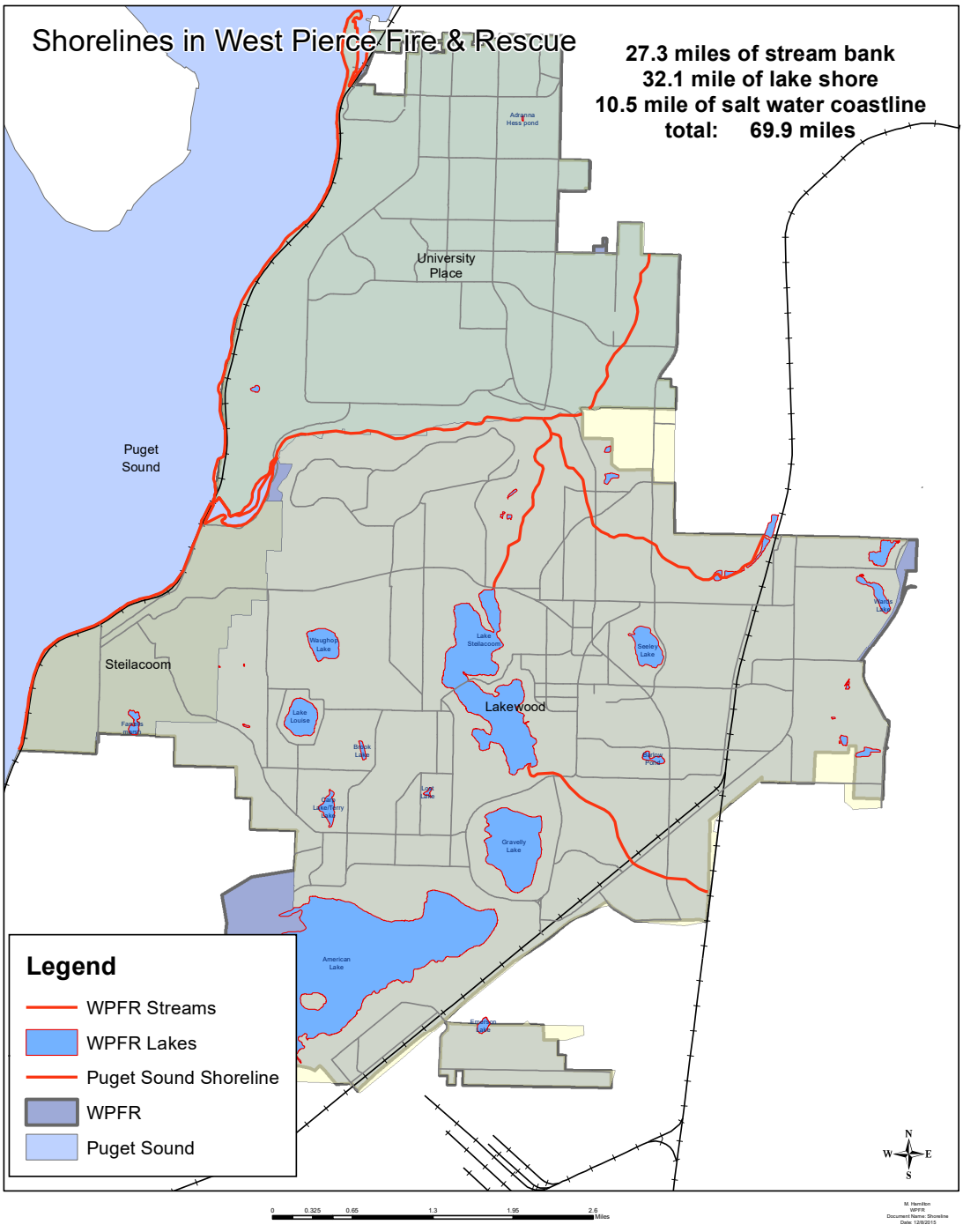
Public Facilities – These include facilities such as schools, libraries, and Town–owned buildings.



Topography

WPFR is located on the Puget Sound about 40 miles south of Seattle and 25 miles north of Olympia. Interstate 5 runs through the District and Joint Base Lewis-McChord makes up most of the eastern border. The response area covers nearly 31 square miles. Lakewood is just over 20 square miles, University Place is roughly 8.5 and Steilacoom is just over two.

Lakes and Other Bodies of Water - There are several lakes in the jurisdiction, which cover 9.3 percent of the District in water, not including the Puget Sound or streams. The District contains nearly 70 miles of shoreline: eight miles of Puget Sound shoreline and over 61 miles of freshwater shoreline which includes all of the lakes and both sides of any creeks or streams.



Several creeks and streams in the area create a seasonal flood risk within the community. Approximately 4 percent of the area in the District is at risk of a flood and most of these areas are near these creeks, which can experience fluctuating water levels.

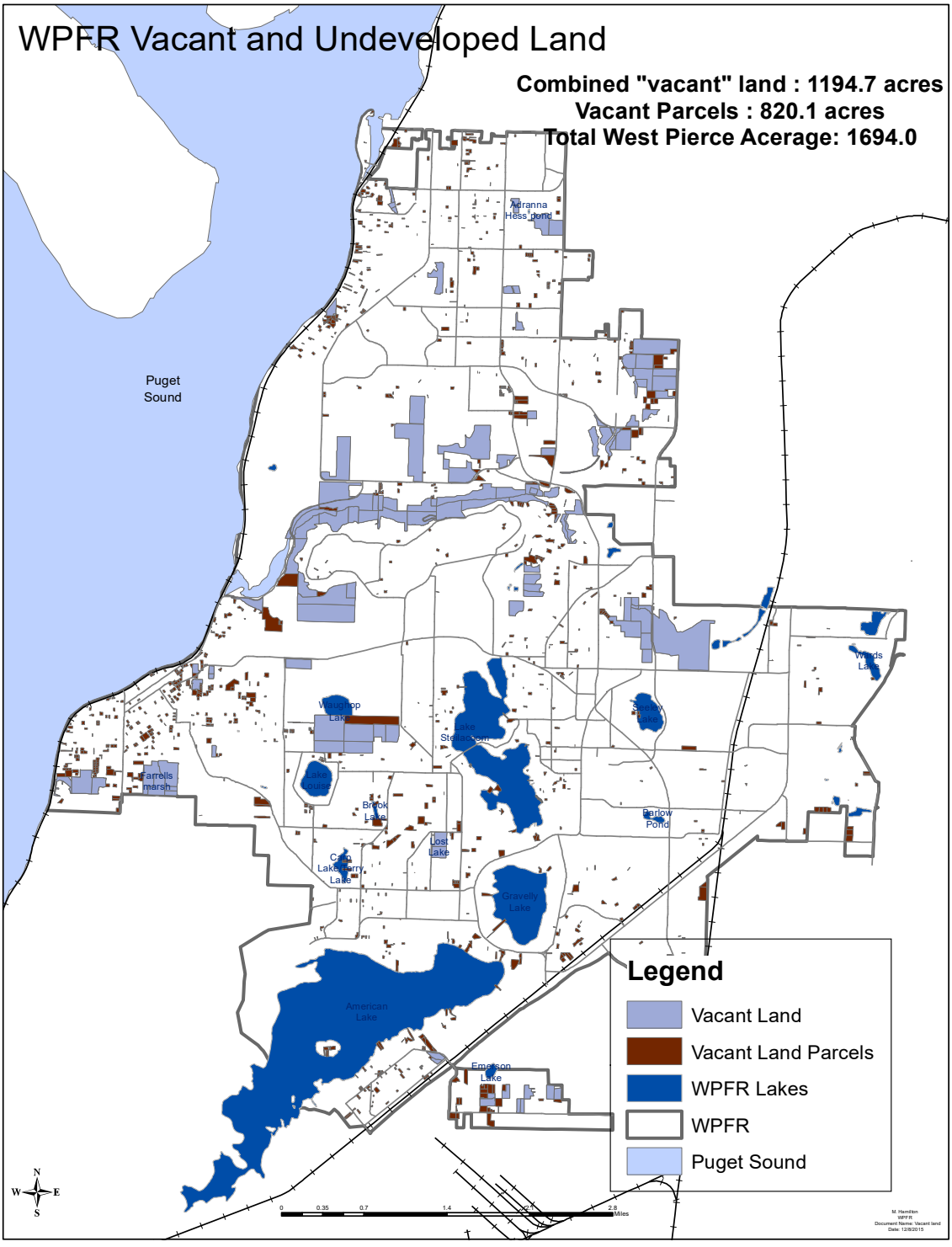
Elevation - The District ranges in elevation from sea level to a high point of 480 feet above sea level near the Park Royal/Westcliffe neighborhoods in University Place. Steep slopes descend on the west along the Puget Sound and on the south along Chambers Creek Canyon. These steep graded areas are susceptible to slope failure and an increased risk of damage during an earthquake. Steilacoom neighborhoods are found on 5-15 percent slopes, though severe slopes (up to 70 percent)

are found in the Madrona Park and Chambers Creek areas.

Access - Some areas in the District may be difficult to access in a major disaster due to the fact there is only one point of ingress and egress. Day Island and Sunset Beach are examples in University Place, while the Tillicum, Woodbrook and Springbrook neighborhoods are examples in Lakewood.

Undeveloped Lands - A mere 6 percent of the land in WPFR is undeveloped. Development has reduced the probability of wildland fires in the jurisdiction, but it significantly increases the risk of other types of fires and medical calls. *(Reference: City of Lakewood Comprehensive Plan, City of University Place Comprehensive Plan, City of Steilacoom Comprehensive Plan)*

Although the land in the Distric is mostly developed, there are still many wooded areas. In fact, 7 percent of the land is vacant and wooded while another 20 percent is wooded residential. Vacant land is not the same as undeveloped land. Vacant land includes area parks, which are also considered developed. Many of the trees are very tall and can have a significant impact during major weather events such as wind storms because they may fall, creating damage to homes, cars, power lines, roads, etc.



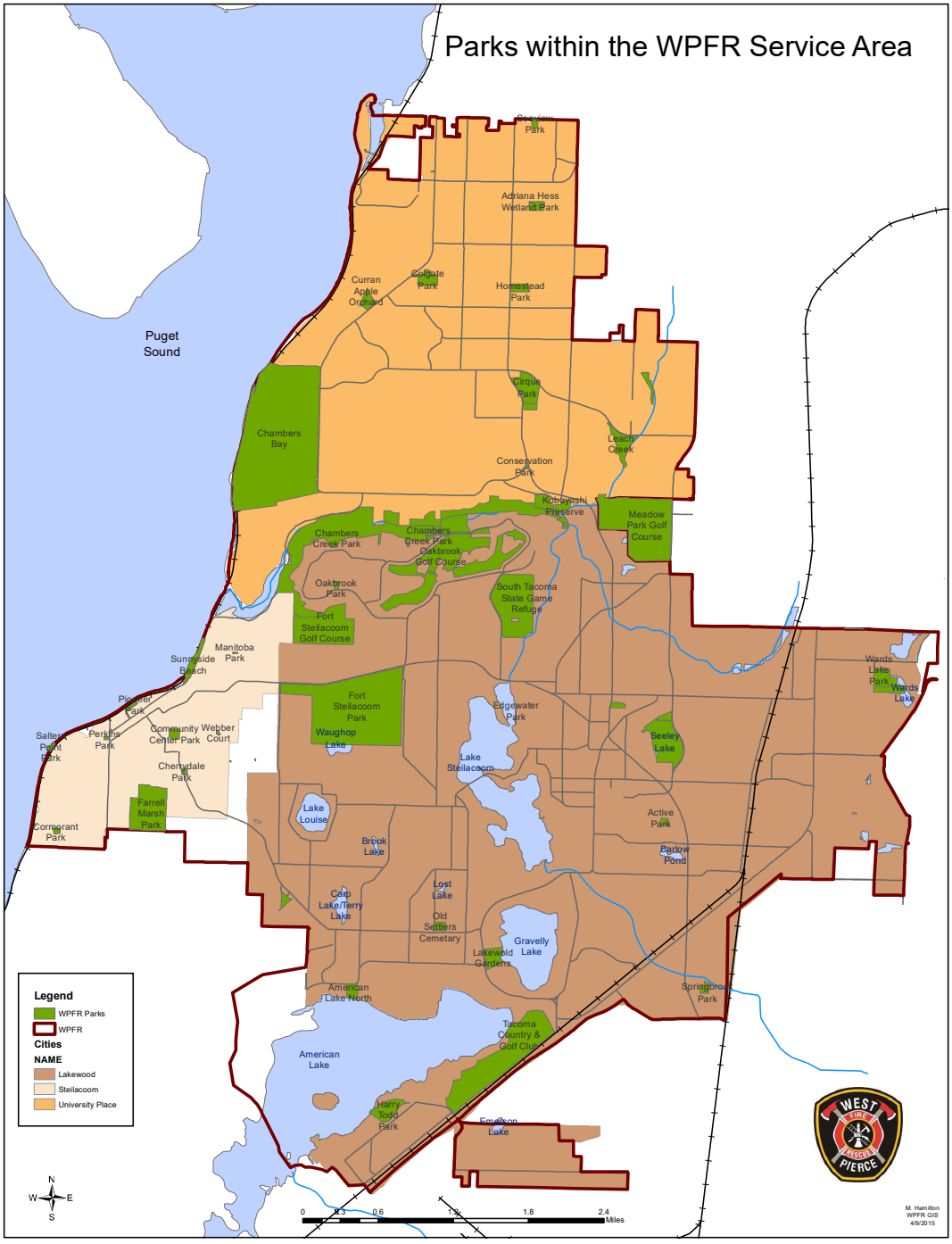
Climate

The weather conditions in Lakewood, University Place and Steilacoom are very temperate. The weather is mild with summertime temperatures in the 70's and winter averages in the 40's. Rainfall for the area is approximately 39 inches per year with approximately two-thirds of the rain falling between October and March. Measurable precipitation occurs an average of 146 days per year. It rarely gets cold enough to snow, with an average of just two days per year with an inch or more of snow.

The average wind speed is nearly 10 mph for the entire year. April is the windiest month with average wind speeds between 25 and 30 mph. WPFR is vulnerable to severe storms (wind/snow/ice), which occur mostly in the winter months. *(Reference: City of Lakewood Hazard Identification and Vulnerability Assessment, University Place Comprehensive Plan and USA.com)*

Parks

Parks are an important part of a vibrant and healthy community. They contribute to the vitality of the community, encourage economic development, create a neighborhood identity and improve the quality of life for the citizens. In WPFR, there are a total of 38 parks in use and several lots slated to be parks in the future. Lakewood has a total of 14 parks, while University Place and Steilacoom each have 12. The largest park in the district, at 950 acres, is Chambers Bay in University Place, which includes Chambers Bay Golf Course, home of the 2015 U.S. Open. Fort Steilacoom Park in Lakewood is the second largest park at 340 acres. *(Reference: City of Lakewood website and Chambers Bay website)*



Water Supply and Distribution

WPFR is serviced by three separate water purveyors. Lakewood Water District serves the City of Lakewood. The Town of Steilacoom has its own water system, but the water currently comes from Lakewood Water District. Tacoma Water provides service to the City of University Place.

- *Lakewood Water District* – Established in 1943 by a vote of the citizens. They serve a population of 61,000. It currently has 16,834 water connections, 248 miles of pipe, 13 water tanks and 31 wells.
- *Steilacoom Water* – The Town of Steilacoom provides water to their 6,070 residents. They have over 1,800 metered connections and over 32 miles of pipe.
- *Tacoma Water* – Established in 1893 by a vote of the citizens, it provides water service to approximately 91,500 residential customers, 5600 commercial and industrial customers and an estimated population of 302,392. Their distribution system encompasses an area of approximately 117 square miles and contains nearly 1,366 miles of pipe. The City of University Place is just one portion of their service area.

The City Municipal Codes of Lakewood and University Place require there be no more than 700 feet between fire hydrants. Additionally, no point of a building should exceed a 500 foot hose lay, which is why many large commercial structures have additional hydrants located throughout the site. Unfortunately, there are several buildings throughout the jurisdiction built prior to these requirements and in those instances, there may not be enough hydrants or fire flow to adequately protect the property.

Economy

It is important to think of the fire service in terms of what is saved in the community and the economic impact of those efforts. Statistics show only 2 percent of the calls WPFR responds to are fires. Even though this seems like a small amount it equates to nearly one fire each day. Just one destructive fire can have a negative impact on the economy. Providing sufficient resources to a fire in a timely manner may make a significant difference in minimizing the economic losses.

Lakewood and University Place are the second and fourth largest cities in Pierce County respectively. The largest industries in the community are the service industries, retail, United States Army and Air Force, state and local government, school system and healthcare.

Largest Employers

The 10 largest employers by city include the following as noted by the Tacoma/Pierce County Economic Development Board:

University Place

- University Place School District
- Franciscan Health System
- Fred Meyer Stores
- West Pierce Fire & Rescue
- Soundcare, Inc.
- Whole Foods
- Pierce County Government
- Charles Wright Academy
- Kemper Sports
- Safeway Stores

Lakewood

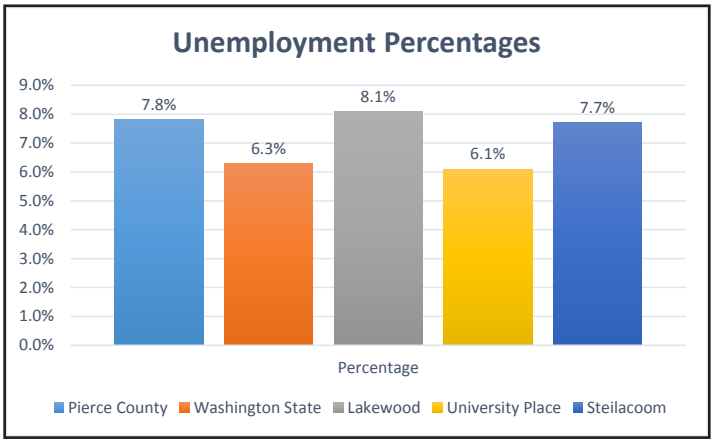
- Joint Base Lewis-McChord
- Clover Park School District
- Western State Hospital
- Camp Murray
- Pierce College
- St. Clare Hospital/Franciscan
- Pierce Transit
- McLane Northwest
- Aacres WA, LLC
- Clover Park Technical College

Steilacoom is a much smaller residential community and therefore does not have many employers. The Steilacoom Historical School District is the largest

employer in the community. Some other employers include restaurants, gas station/convenience stores, professional offices and several small shops. *(Reference: Steilacoom Comprehensive Plan)*

Unemployment Rates

As of March 2014, Lakewood's unemployment rate was 8.1 percent, which was higher than Pierce County (7.8 percent), Washington State (6.3 percent) and the United States (6.7 percent). This is largely due to the impoverished neighborhoods of Springbrook, Tillicum, and Woodbrook, where the average unemployment rate is 25 percent. In contrast, the City of University Place had an unemployment rate of 6.1 percent for the same period and the City of Steilacoom was 7.7 percent. *(Reference: City of Lakewood, http://www.homefacts.com)*



Transportation

There are several modes of transportation within WPFR, which include Interstate 5, roadways, bus service, rail lines, waterways, trails, and bicycle lanes. In Lakewood, nearly 73 percent of the population works outside their place of residence. In University Place that number is nearly 88 percent and in Steilacoom it is almost 93 percent. With so many citizens travelling out of the area to work and nearly 90 percent of those utilizing their personal vehicles for travel, the highways and roadways are very important in the communities. *(Reference: US Census 2009-2013 estimates)*

Highways – Two major highways, Interstate 5, and State Route 512 run through WPFR. Interstate 5 runs from the Mexican Border to the Canadian Border, passing through Lakewood. State Route 512 runs east to west starting in Puyallup and terminating in Lakewood. A significant number of vehicles travel these highways each day. Weather conditions play a major factor in the ability of traffic to flow safely through the District, as does the time of the day and week.

In 2013, the average daily vehicle count on Interstate 5 at milepost 119, located near the Steilacoom/DuPont Road, just south of the District, was 120,000 with approximately 10 percent (12,000) of those vehicles being large trucks. The peak truck volumes near this exit were from 9 a.m. to 1 p.m. At Milepost 131, just north of the Fire District at 56th Street, the average daily vehicle count was 188,000 with approximately 8 percent (15,040) being large trucks. The peak truck volumes near this exit were from 8 a.m. to 11 a.m. Of the large trucks on Interstate 5, approximately 3 percent are transporting a hazardous material and an additional 3 percent are transporting "super heavy" loads. A recent review of the "heavy truck" collision data for Pierce County indicated 11 percent of the collisions occurred in Lakewood which amounted to an average of 45 "heavy truck" crashes per year. This means WPFR responds to nearly one collision involving a "heavy truck" on Interstate 5 each week. Since 2011, the average number of collisions WPFR responded to on the highways, including both

Crash on Interstate 5 (2011)

Interstate 5 and State Route 512, is 151 per year, or nearly three collisions per week.

Roadways – This includes all of the surface streets within the District including major arterials, secondary arterials, collectors and neighborhood streets. Thousands of trips per day are made on the major arterials through the District. WPFR data shows overall, the number of collisions responded to on these roadways have increased by 15 percent between 2011 and 2015. *(Reference:WPFR MVA report CAD)*

The City of Lakewood has many natural obstacles, such as, American Lake, Gravelly Lake, and Lake Steilacoom, which constrict the flow of traffic between the east and west halves of the city to a few arterial connections. Road improvements have not kept pace with increasing traffic volumes, nor are there many realistic alternatives to driving, since the bicycle and pedestrian networks do not provide safe links throughout the community. The City of Lakewood's Comprehensive Plan discusses the planned improvements to the road network, including more bike and pedestrian networks and easier access to public transportation. Hopefully these improvements will result in decreased traffic incidents.

In Steilacoom, traffic counts and collision rates have remained stable since 2011. Only one major arterial showed increased traffic counts, which was on Old Military Road.

Soon after incorporation, the City of University Place began making improvements to the roadways, such as installing medians, roundabouts, curbs, gutters, sidewalks and bike lanes. These changes have not only improved the multi-modal function and aesthetics of the street, but have also lowered accident rates in areas where the improvements were made. A summary of the histories at intersections with the highest number of incidents showed a nearly 58 percent reduction in collisions from 1996 to 2013. *(Reference: City of University Place Comprehensive Plan)*

Rail – Burlington Northern Sante Fe (BNSF) is the major commercial railroad in the country. There are two sets of track running through the District; one travels along the Puget Sound on the western border, the other travels through Lakewood along Interstate 5 until it gets to the Lakeview neighborhood, where the track turns and runs along the west side of South Tacoma Way.

In 2015, an average of 30 commercial trains ran through the District each day, which contain a variety of materials. Peak commercial train volumes for BNSF were in 2006 and decreased following the recession. The volumes have steadily increased since then, but have not reached the levels seen in 2006.

Railroads are classified as "Common Carriers" in the United States. This means BNSF is required by Federal Law to transport any legal commodity, including any hazardous materials in accordance with DOT regulations. BNSF transports consumer commodities, grain and agricultural commodities, low-sulfur coal, and industrial goods such as petroleum, chemicals, housing materials, food and beverages. Hazardous materials account for approximately 5 percent of this rail traffic.

Trains vary in size from a merchandise train, which is about 20 cars or more to a unit train of grain that could be 125 cars or more.

Passenger and commuter trains also travel through the District, using the same tracks as the commercial trains. According to the latest posted schedule, Amtrak runs 10 trains through the area each day;

Chambers Bay Train Derailment (2011)

equally split between northbound and southbound. In 2014, there were 125,984 total passengers getting on or off the train in Tacoma which is the nearest station to WPFR. This comes to an average of 345 Amtrak passengers getting on and off the train each day. There are many additional passengers who travel through the area and do not get off at stops near the District.

The Sounder commuter train has its southernmost station in Lakewood. There are six trains going northbound to Seattle each day and six trains going southbound to Lakewood. Average daily weekday ridership on these trains is just over 300 passengers.

Sounder Train

Bus – Bus service throughout the District is provided by Pierce Transit. There are seven fixed routes that travel through Lakewood, University Place and Steilacoom. Monday through Friday, a total of 158 buses travel through the community starting at 5:30 a.m. until approximately 9:30 p.m. On Saturday, there are 110 buses, starting at 6:15 a.m. until approximately 8:30 p.m. Sundays have the least amount of bus traffic with 67 buses. *(Reference: www.piercetransit.org)* Sound Transit provides regional bus service for commuters travelling from Pierce to King County. There are 47 of these buses stopping in Lakewood every weekday and 34 on weekends.

Waterways – WPFR has several waterways to protect. There is approximately eight miles of Puget Sound shoreline and nearly 62 miles of freshwater shoreline, which includes all ten lakes and both sides of any creeks or streams. The lakes are used for recreation including boating, fishing, swimming, etc. In 2012, WPFR received a grant to purchase the Endeavor Fire Boat, which is moored at Narrows Marina on the Puget Sound. Endeavor is a regional asset, so not only does it provide protection to the WPFR shoreline, but also to the entire South Puget Sound region.

The Puget Sound is utilized, not only for recreation, but also delivers prosperity to the region through the Port of Olympia and the Port of Tacoma. Adequate protection of this waterway is important not only for WPFR, but the region as a whole. The Port of Tacoma is a top ten U.S. container port. In 2013, it imported and/or exported 160,419 auto units, 2.7 million short tons of grain, 74.6 million board feet of logs, and much more. The value of international trade through this port is approximately $48.7 billion and the value of domestic trade is estimated at $3 billion. The Port of Olympia exports logs to Japan and imports fracking sand from China. If there are any interruptions at either of these ports, the impact to the local and national economy is significant. *(Reference: Port of Olympia via phone call and Port of Tacoma website)*

Narrows Marina Fire (2015)

History of West Pierce Fire & Rescue

The history of WPFR cannot be told without first telling the histories of Lakewood Fire District 2 and the University Place Fire Department. The histories show two separate departments sharing a common border, operating similarly and duplicating many services. From 1990-2010, several Pierce County fire departments were consolidating to improve efficiencies and find economies of scale. In 2009, the University Place and Lakewood chiefs began discussing the benefits of merging the departments. Following a vote of Lakewood Fire District 2 voters, the merger became official on March 1, 2011.

Lakewood Fire District 2

Lakewood Fire District 2 was formed in 1940, by a vote of the citizens. The original Fire Chief was Luke J. Caraway, followed by Chester Wallace. Bruce White, the third Fire Chief in Lakewood, was appointed on November 1, 1944 and remained for nearly 30 years until 1972. In 1944, there were only two salaried employees and all others were volunteers. Chief White placed a high level of importance on public relations and customer service, knowing public support and the involvement of the community was crucial to any new fire department.

The 1950s was a period of growth and annexation for Lakewood Fire District 2. Surrounding communities would send a letter to the Board of Fire Commissioners asking to be included in the District, meaning these areas would have fire protection. The requests would be considered carefully before allowing any annexation. Due to the growth caused by annexation, along with an increase in population, it was necessary to build four new fire stations. In 1954, voters approved a $200,000 bond to build four fire stations and purchase three new fire engines. Currently, only one of these stations remains in the same location; Station 23 at 14505 Grant Avenue in the Tillicum neighborhood. In 1959, the District had 50 personnel; 35 volunteers and 15 salaried.

The 1960s was an era of increased fire prevention efforts in Lakewood. A home inspection program was created in the late 1950s and by the early 60s there was a goal to inspect 1,500 homes per year. These home inspections were geared toward educating citizens about life safety hazards and not to place blame or issue citations. In addition to these home visits, several articles were written in the local papers about fire safety and a film was produced at Clover Park Vocational School about the dangers of fire and how they can be prevented.

Lakewood Station Tour (Early 1950's)

The 1970's was a time of arson fires, change and growth. Several large scale arson fires took place and many were the result of competing criminal elements. The perpetrators were caught and served many years in prison for their crimes. Not all of the fires in this era were the result of the criminal conspiracy, as some were accidental. During this incredibly busy time the District found it necessary to increase its staffing and improve the fleet of fire apparatus. Unfortunately, the fire department budget was in crisis. As a solution, then Fire Chief Chet Rolly, along with the Board of Fire Commissioners, put the first maintenance and operations levy on the ballot. On November 5, 1974, the Lakewood citizens passed the first Maintenance and Operations Levy by a margin of more than 70 percent.

The fire service began to change in the 70s as firefighters started to provide emergency medical and rescue services, in addition to traditional firefighting. Many of the firefighters starting taking first responder

courses; some became Emergency Medical Technicians (EMT's) and some became Paramedics. The Hurst tool or "Jaws of Life" was purchased for Lakewood Fire District 2 by the Rotary Club of Lakewood in 1978. This hydraulic rescue tool greatly assisted firefighters with the extrication of entrapped motor vehicle crash victims. This innovative tool enhanced access to rapid, lifesaving care and transportation to area hospitals. Fire Chief Tom Kanno led the District from 1981-1989. This decade was one of growth and continued change for the fire service. The increased services provided were a direct result of the community's continued support of the Maintenance and Operations Levies.

In February 1981, every firefighter working for Lakewood Fire District 2 completed an 81-hour basic EMT course. This certification greatly improved the level of medical care firefighters could bring to the citizens. In 1983, the Lakewood Rotary Club donated the first transport-capable medic unit to the District. The paramedic program started in 1984 when the District hired its first class of firefighter/paramedics to staff this unit. This was the first time the District was able to provide advance life support care for its citizens.

Astro Villa Lanes Fire (1982)

The 1980s brought about a change in the make-up of the workforce at Lakewood Fire District 2. As the fire service changed, volunteers were phased out and more full-time paid firefighters were hired. The paid staff could be ready to serve at a moment's notice, which reduced response times to emergencies. In 1984, the volunteer program transitioned into a support group which lasted until 1992, when the final member left.

In 1982, steps toward a consolidated dispatch agency began. This meant Lakewood Fire District's dispatch center, known as Fire Comm, would begin dispatching for the University Place and Fircrest Fire Departments as well. This model of centralized dispatch was so successful that today, the foundation has been built for South Sound 911 which will become the premier police and fire dispatch center in Pierce County.

Fire Communications (1990's)

The 1990s was the decade of customer service, water rescue and technical rescue. Chief Steve Marstrom was the Fire Chief from 1990-1999. The District had been providing many different services to the community for years, but this was when the fire service began to realize just how important customer service was.

Fire Chief Paul Webb who succeeded Chief Marstrom, used to say, "We may provide all sorts of special services to the community, but they pay for it through taxes. It is the same as any other service business like a plumber or carpenter. We will be sensitive to their needs and provide them the best service we can." Because this customer service philosophy was so important at Lakewood Fire District 2, the following motto was adopted, "Respond Efficiently•Execute Flawlessly•BE NICE!"

The District's first fire boat was purchased in 1991. Outfitted with medical and water rescue equipment, this boat provided firefighters a means to respond to emergencies on the various lakes and Silcox Island on American Lake. In 1999, a larger boat was purchased which provided the additional capability of being able to fight fires on Silcox Island. Just days after this boat was placed in service, there was a significant house fire on the island and firefighters thankfully had the capability to extinguish it and protect the house next door.

Confined Space Rescue

This was also the decade where the fire service was increasingly called to a wide variety of emergencies, not simply fires and medical calls. The District was called when people needed to be plucked from water towers or bridges, had fallen off a cliff, or even fallen in a sewer, drain or hopper. These types of calls require specialized training to minimize the risks and hazards to victims and firefighters. A technical rescue team was developed and firefighters assigned to the team were provided with the necessary skills and training to perform these types of high risk/low frequency incidents.

Ultimately, Lakewood Fire District 2's technical response team became part of the regional Pierce County Special Operations Rescue Team (PCSORT) in 2001. The team was formed when it was discovered that many of the larger departments in the county were redundantly purchasing technical rescue tools and equipment, along with providing the necessary training. As the equipment and training were expensive, the agencies decided it was best to pool their resources and equipment and conduct regional training to save tax payer dollars. This regional team included members from Lakewood, University Place, Central Pierce, Gig Harbor and Puyallup Fire Departments.

In the mid-1990s both departments combined administrative services. However, after a few years the agencies could not agree on the path forward and the functions were separated and returned to their respective agencies.

The 2000s were the decade of training and expansion. Due to aging fire stations and apparatus, coupled with the fact there was an area of the District with significantly longer response times, Lakewood Fire District 2 placed a $14 million bond on the September 18, 2001 ballot to build one new fire station, remodel three existing stations, rebuild one existing station and purchase new apparatus. This bond allowed the District to provide both men's and women's facilities, as the fire service was hiring more women during this decade. The bond also allowed the District to provide separate sleeping quarters in every station, replacing the old bunkroom concept.

This decade also saw an increase in hazardous materials incidents. In the late 1990s and early 2000s, the neighboring McChord Fire Department, a U.S. Air Force department, was relied upon to respond to hazardous materials calls in Pierce County, but with the events of September 11th, their focus shifted and they could no longer provide this service to fire districts off the base. As the frequency of Hazardous Materials incidents increased, several agencies in Pierce County used the model set forth by the PCSORT team and the Pierce County Hazardous Incident Team (PCHIT) was formed in May of 2007.

Station 20 Shortly After Construction (2004)

Technological advances were implemented during this era as well. Computers were placed on each piece of apparatus, providing information such as mapping, dispatch details, pre-fire plans, hydrant locations and more at the firefighter's fingertips. Another technological advancement was the use of thermal imaging cameras. This technology afforded firefighters the ability to see hidden sources of heat in smoky fire conditions, effecting a more rapid and thorough extinguishment. In some cases, trapped fire victims could be identified, providing the opportunity for a quicker rescue and a better chance for survival.

In April 2007, Ken Sharp took over as Fire Chief and he immediately set out to explore regional collaborative opportunities. One of these opportunities was once again starting discussions with the University Place Fire Department. South Sound 911, the consolidated police and fire dispatch center, was another collaborative opportunity in Pierce County which began during Chief Ken Sharp's tenure.

University Place Fire Department

The University Place Volunteer Company was formed on January 15, 1941. The community force operated out of a tomato shed in the area of 2500 Grandview Drive. Just a few short years later, Pierce County Fire District 3, or the University Place Fire Department, was officially formed by a vote of the people on August 26, 1944. The first Fire Chief was Leslie B. McGaw who served from 1941 to 1965.

In the 1950s, University Place was protected by volunteer firefighters who staffed the trucks and answered fire calls. At the time of need, volunteers were alerted by the fire station's roof-top siren. They attended weekly drills and furnished a "sleeper man", seven nights a week, to sleep at the fire station and answer emergency calls. The University Place population in 1950 was approximately 3,500 people.

By 1960, University Place had a force of 30 volunteers, including one woman, and three full-time employees. A vote of the people provided University Place with the funds to purchase a new fire engine in 1961. In 1965, Wayne Gotchy took over as Fire Chief. During his term as Chief, a great deal of effort was placed on fire prevention. Firefighters conducted home fire prevention inspections, provided safety displays at

University Place Fire Station (Mid-1960's)

public events and displayed advertisements in local stores. In 1968, these fire prevention efforts paid off as it was the first year fires began to decrease in University Place.

The 1970s was a decade of population growth and an increased importance of Emergency Medical Services (EMS). By 1977, the population in University Place was approximately 25,000 and the fire department was struggling to keep up with the rising call volume. The cause of the rising call volume was twofold; the population was increasing and calls for EMS were becoming more common.

By the mid-1970s the Tacoma Fire Department added Advanced Life Support (ALS) Paramedics to their responses. The intensive instruction program was being offered at Tacoma Community College. A volunteer firefighter with University Place Fire Department had completed the training and was working part-time with a local ambulance company. Another full-time firefighter was attending classes and the department hired a firefighter with Paramedic credentials in February 1976. Eventually, the University Place Fire Department became the first Fire District in Pierce County to provide ALS Paramedic service.

In 1974, firefighters volunteered their time to build a fire boat, which was needed to fight fires at the Day Island Marina and help distressed boaters on Puget Sound. The department bought a fiberglass hull,

University Place Firefighters (1970s)

which was considered a reject, only because the paint was discolored. The 21-foot shell was then fitted with an overhauled 17-year-old automobile engine. The marine hardware came from an old wood boat. When the project was completed, the department had invested $6,000 into a boat that should have cost $14,000.

A tax structure set up for rural communities did not provide adequate funding to communities like University Place, which was now a suburb with higher call volumes. To keep up with these challenges and the rising costs associated with expanded Emergency Medical Services, the first EMS Levy was passed in University Place in 1979.

University Place Fire Department was led by Chief Ray VanValkenburg from 1977 to 1993, which was another period of growth. The population was increasing at a rapid rate, as well as the call volume. This brought about the need for more firefighters. The growing workforce required the department to place a bond issue on the ballot on September 16, 1980 to remodel and expand the existing station. The original fire station on Grandview Drive was donated to the UP Boosters Club in exchange for their parcel adjacent to the 40th Street fire station. The extra land afforded the existing station footprint to be significantly enlarged. The remodeled station was dedicated to the community in 1981.

1985 brought a $60,000 medical aid vehicle to the fleet, which was donated by community groups such as the University Place Kiwanis, Tacoma Narrows Rotary, and R.E. Nau/University Insurance Brokers, Inc. This new medical aid vehicle allowed patient care to be conducted inside the unit and provided the capability to transport patients to the hospital.

The 1990s was a decade of mergers and consolidations. Merger talks between the University Place and Fircrest Fire Departments began in 1992, but never came to fruition. In the mid-1990s, the University Place and Lakewood Fire Commissioners agreed upon an Administrative consolidation. However, after a few years the goal of a merger was not reached and the

consolidation ended.

The 2000s was a decade of expansion for the University Place Fire Department. The population growth started to slow, but call volume continued to rise. The number of volunteer firefighters began to decline during this decade and an all career force was established in 2008, when the last volunteer was hired full-time by the department.

University Place Firefighters (1991)

In 2001, a new Public Safety Building was constructed to house both the University Place Police and Fire Departments. The new station was larger and could accommodate more firefighters. Owned by the fire department, the City of University Place leased space in the facility for police personnel. With completion of the new Public Safety Building, the Board of Fire Commissioners listed nearby Station 32 for sale. The sale was not successful and the department retained it for a future sale or repurpose. In 2008, a Federal Staffing for Adequate Fire & Emergency Response (SAFER) Grant was received which provided funding to hire 12 firefighters. With the increased personnel, Station 32 located on 40th Street, was remodeled and reopened to house a staffed engine company and medic unit.

West Pierce Fire & Rescue

Looking at the histories of the two organizations, it is clear they mirror each other. They were created just one year apart. In every decade, the organizations were conducting similar programs. They became so similar, Chief Ken Sharp from Lakewood and Chief Mitch Sagers from University Place decided it was time to talk about a merger again in late 2008. It had been over a decade since the initial consolidation failed, but Chief Sharp felt these districts were so similar in operation that their current demographics lent themselves to a merger more than ever.

The chiefs then took the concept back to their Boards. In January of 2009, both Boards agreed to form a Regionalization Committee to explore the possibility. On January 25, 2010, Lakewood's Board of Fire Commissioners unanimously adopted a petition for merger, requesting to merge Lakewood Fire District 2 into the University Place Fire Department. A month later on February 27th, University Place's Board unanimously voted to accept the petition for merger.

On February 8, 2011, a measure was placed on the ballot, asking Lakewood voters, "Shall Pierce County Fire Protection District 2 (Lakewood) be merged with Pierce County Fire Protection District 3 (University Place)?" With an 82 percent yes vote, the organizations officially merged on March 1, 2011. With the merger official, Station 31 was chosen for the WPFR headquarters location. In 2012, the University Place Police Department moved out of Station 31 into their new facility on Market Street. This provided the necessary office space to house the larger WPFR administrative staff.

West Pierce Fire & Rescue Unveiling Ceremony (2011)

On May 1, 2013, the first West Pierce Fire & Rescue fire apparatus, fire boat "Endeavor" was placed into service. Acquired through a regional Port Security Grant, the boat could protect the District's waterways and be utilized as a regional response vehicle covering the South Puget Sound area. Prior to the merger, University Place had a boat, but due to a lack of funding and the age of the vessel, the service had to be discontinued. The grant paid for the boat and all necessary Marine Pilot training.

Endeavor Commissioning Ceremony (2013)

As a result of the merger, many resources were reallocated to more efficiently and effectively protect the district. This reallocation of resources allowed West Pierce Fire & Rescue to close Station 32, located on 40th Street, and consolidate the personnel and response apparatus to Station 31 on Drexler Drive. In 2014, Station 32 was sold to Sunset Bible Church.

Today WPFR is a premier, professional, all-hazards fire department. The values of public relations and customer service that began in the early years of both Lakewood and University Place, still hold true in WPFR today. Our motto is to "Respond Efficiently•Execute Flawlessly•BE NICE!" This motto has defined the culture of all WPFR employees. In fact, any employee of the District asked about this motto would be able to recite it. The exemplary services WPFR strives to provide every day would not be possible without the enduring support received from its citizens.

Annual Duck Daze Open House (2013)

SERVICES PROVIDED

West Pierce Fire & Rescue (WPFR) is an all-hazards response agency. In 2014, the District responded to 14,038 calls for service. In 2015, there were 15,458 calls for service, which represents an increase of over ten percent in just one year. This growth is projected to continue into 2016 and beyond. The type of incidents include fires, emergency medical services, hazardous materials releases, marine/water rescues, technical/confined space rescues, motor vehicle crashes and various other emergencies.

The District encompasses the cities of Lakewood and University Place, as well as some small unincorporated areas of Pierce County. The District also contracts to provide emergency services to the Town of Steilacoom, as well as the Veteran's Administration American Lake Campus.

In addition to providing emergency response within the fire district, West Pierce Fire & Rescue also responds to other parts of Pierce County through automatic aid agreements, requests for mutual aid, Pierce County Special Operations Rescue Team, and Pierce County Hazardous Incident Team callouts.

Organizational Structure

The District operates under Revised Code of Washington (RCW) Title 52 and is a municipal corporation as defined by law in the State of Washington pursuant to RCW 41.24.010, operating as a junior taxing district. The District is governed by a Board of Fire Commissioners consisting of five members elected by the public to represent them. The Board meets twice monthly to conduct the business of the fire district. They are responsible for setting budgets, establishing public policy and providing administrative oversight to the Fire Chief.

The Fire Chief leads the day-to-day operations of the District and has the overall responsibility for operation of the fire department in accordance with the goals and directives provided to him by the Board of Fire Commissioners. The Fire Chief is assisted by a staff consisting of one Deputy Chief, four Assistant Chiefs, one Director of Administrative Services and Finance, one Executive Assistant and one Community and Media Relations Manager.

The Fire Chief is directly responsible for and provides oversight to the following employees:

- 1 Deputy Chief
- 2 Assistant Chiefs
- 1 Director of Administrative Services and Finance
- 1 Executive Assistant

The Deputy Chief serves as the head of the District in the absence of the Fire Chief. The Deputy Chief is directly responsible for and provides oversight to the following employees:

- 2 Assistant Chiefs
- 1 Community and Media Relations Manager
- 3 Peer Support Advocate/Chaplains

Divisions

The District is divided into six divisions: Operations, Training and Emergency Medical Services, Fire Communications and Information Technology, Administration and Finance, Logistics, and Prevention and Emergency Management.

September 11th Ceremony (2013)

Operations

The Operations Division operates under the direction of an Assistant Chief. The primary function of this division is to respond to emergency events with the goal of preventing the loss of life, reducing injuries and minimizing property loss through fire suppression activities and emergency medical care. The Assistant Chief of Operations is directly responsible for, and provides oversight to the following employees divided among three operational shifts:

3 Battalion Chiefs
24 Captains
38 Firefighter Paramedics
27 Firefighter Engineers
41 Firefighters

Cirque Drive Training Burn (2015)

Special Operations, such as hazardous materials, technical rescue, and marine operations are the responsibility of the Operations Division. Those assigned to these tasks are Operations personnel who are cross-trained in one or more of these specialized disciplines. Because these special types of incidents don't happen frequently, but are very high risk, regional hazardous materials and technical rescue teams have been formed with firefighters from several Pierce County fire agencies. The Pierce County Hazardous Incident Team (PCHIT) handles significant hazardous materials incidents and the Pierce County Special Operations Rescue Team (PCSORT) provides technical rescue services in structural collapse rescue, trench rescue, confined space rescue and rope rescue. These teams share resources, personnel and operational costs.

Logistics

The Logistics Division operates under the direction of an Assistant Chief. The primary functions of this division include purchasing, facilities and fleet maintenance. The Assistant Chief of Logistics is directly responsible for and provides oversight to the following employees:

Purchasing
1 Purchasing Specialist
Facilities Maintenance
1 Facilities Manager
3 Facilities Maintenance Technicians
Fleet Maintenance
1 Fleet Manager
3 Mechanics

Prevention

The Prevention Division operates under the direction of an Assistant Chief. The primary functions of this division include: Prevention, Education, and Emergency Management. The Assistant Chief of Prevention is directly responsible for and provides oversight to the following employees:

Prevention
2 Battalion Chiefs
5 Captains
Emergency Management
1 Emergency Management Coordinator
1 Disaster Preparedness Coordinator

Fall Safety Day (2015)

EMS Service at US Open (2015)

Training and Emergency Medical Services

The Training and Emergency Medical Services (EMS) Division operates under the direction of an Assistant Chief. The primary function of this division is to coordinate training and provide support for maintenance of all of the certifications required by the organization, county and state. The division provides classes internally and coordinates outside training opportunities. The Assistant Chief of Training and EMS is directly responsible for, and provides oversight to the following employees:

Training - 1 Battalion Chief and 2 Captains
EMS - 1 Battalion Chief and 1 Captain

Administration and Finance

The Administration and Finance Division operates under the Director of Administrative Services and Finance. The primary function of this division is to provide fiscal oversight for all aspects of District finances including managing the department budget, payroll, contracts management, accounts payable and accounts receivable. They are also responsible for human resources, risk management and employee benefits. In addition, this group provides administrative support for all divisions. The Director of Administrative Services and Finance is responsible for and provides oversight to the following employees:

Administration Division (2015)

1 Administrative Manager
1 Finance Manager
2 Finance Specialists
1 Human Resource Manager
4 Administrative Assistants
1 Grant Writer

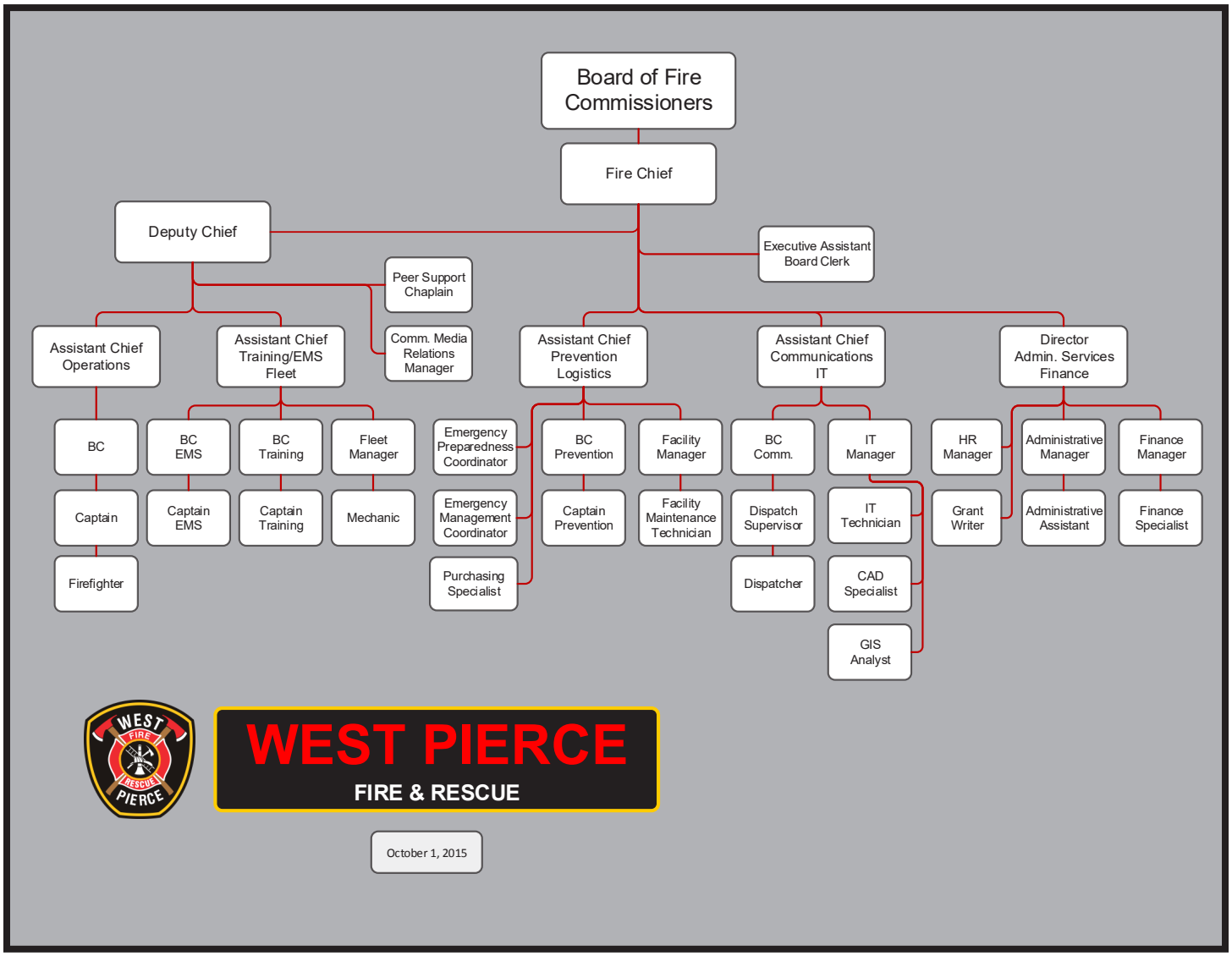
Fire Communications and Information Technology

The Fire Communications and Information Technology (IT) Division operates under the direction of an Assistant Chief. The primary functions of this division are separated into two branches. The largest branch is Fire Communications (Fire Comm). Currently, WPFR manages Fire Comm, a branch of South Sound 911. In 2017, Fire Comm will transition fully to South Sound 911.

Fire Comm currently provides call receiving and dispatch services to all fire agencies within Pierce County with the exception of the City of Tacoma and Ruston. The second branch is IT which is responsible for all of the District's technology assets and services including servers, computers, tablets, phones (cellular and VoIP), along with all of the software programs the district utilizes. The Assistant Chief of Fire Communications and IT is directly responsible for and provides oversight to the following employees:

Communications
1 Battalion Chief
5 Dispatch Supervisors
21 Call Receiver/Dispatchers
1 Shift Supervisor/Computer Aided Dispatch (CAD) Specialist
Information Technology
1 Information Technology Manager
2 Information Technology Technicians
1 GIS Analyst

Organizational Chart



Station Locations And Resource Deployment

Companies

WPFR currently operates with a daily minimum staffing of 30 personnel, including one Battalion Chief, one ladder company, six engine companies and four medic units. One additional medic unit is staffed Monday through Friday from 8:30 am to 6:30 pm, bringing the minimum staffing to 32 during peak service hours. Apparatus are spread amongst six separate stations based on the risks and historical response load in the area. WPFR has defined the types of apparatus as follows:

Air and Light Truck: Specialized apparatus designed with a refilling station for empty firefighter air bottles. It also has a generator with portable lighting.

Battalion: Vehicle designed to deliver a Battalion Chief and resources necessary to manage emergency scenes.

Brush Truck: Small sized mobile pumper utilized mostly for brush and grass fires which can be difficult to access.

Dive Unit: A specialized apparatus designed to carry all the necessary materials, such as scuba air tanks, wet suits, warm clothing, ropes, computers and navigation equipment to conduct a dive rescue operation.

Engine: Primary response apparatus assigned to handle most types of incidents. Each engine has a minimum 1,500 gallons per minute (gpm) pump, hose, and water tank with a 500 gallon capacity.

Fire Boat/Marine: Watercraft ranging in size from 16 feet to 37 feet, utilized for water-related incidents such as fires or marine/dive rescues.

HazMat: A specialized response apparatus designed to carry personnel and equipment necessary for the containment and control of hazardous materials releases.

Ladder: Specialized primary response unit with a complement of ladders, an aerial ladder 105 feet in length, a 1,500 gpm pump, a 300 gallon water tank and salvage and overhaul equipment.

Medic: A response unit equipped to handle medical and traumatic emergencies. This vehicle is also used to transport patients to area hospitals.

Rescue: A specialized response apparatus designed to carry technical rescue personnel and equipment to the scene of an emergency involving unique entrapment/ collapse type situation.

The following chart displays the resources assigned to each station, along with the number of personnel on each unit. There are some response units cross-staffed by personnel with specialized training which are assigned to other front-line apparatus. All units are able to respond 24 hours a day, seven days a week unless otherwise noted.

Resource Deployment by Station

Station	Unit Type	Personnel
Station 31	Engine 31	3
	Engine 32	3
	Medic 31	2
	Fireboat Endeavor*	*
Station 20	Battalion 20	1
	Engine 20	3
	Medic 20	2
	Rescue 20*	*
	Dive 20*	*
Station 21	Ladder 21	3
	Medic 21	2
	HazMat 21*	*
	Air and Light Truck *	*
Station 22	Engine 22	3
	Medic 22	2
	Marine 22*	*
Station 23	Engine 23	3
	Marine 23*	*
Station 24	Engine 24	3
	Medic 24 (M-F 8:30-6:30)	2
	Brush 24*	*

*Denotes units cross-staffed by personnel with specialized training assigned to other front-line apparatus.

Fire Stations and Staffing Levels

Station 20 – 10928 Pacific Highway SW, Lakewood

Station 20 opened in 2004 and houses the offices of the Prevention, Emergency Mangement and IT Divisions, along with suppression personnel. The facility includes a conference room, training room, tool room, exercise room, history room, kitchen, day room, etc.

The lot size is 60,939 square feet and the building is 28,692 square feet with 6,000 being the apparatus bay. The station is split based on function. The south side of the building is dedicated to office space, a conference room and a training room. The apparatus bay is in the center of the building, including 3 ½ bays, housing five response vehicles including; Engine 20, Medic 20, Battalion 20, Dive 20 and Rescue 20. The north side is dedicated to the living quarters for suppression personnel. There are 13 dorm rooms.

Staffing at Station 20 includes:

- 1 Battalion Chief
- 1 engine company (1 Captain, 1 Firefighter/Engineer and 1 Firefighter/EMT)
- 1 medic unit (1 Firefighter/Paramedic and 1 Firefighter/EMT)
- 1 technical rescue unit (cross-staffed)
- 1 dive unit (cross-staffed)

Station 21 – 5000 Steilacoom Boulevard SW, Lakewood

Station 21 originally opened in 1969 and was remodeled in 2003. This facility houses suppression personnel, Fire Communications, the offices of the Training and EMS Division and is the main training facility in the District.

The lot size is 145,926 square feet and the building is 19,589 square feet with approximately 5,000 being the apparatus bay, as well as 4,213 square feet dedicated to Fire Communications.

There is a large, state of the art training room at this station, along with office space. There is a kitchen and day room, along with 10 dorm rooms. The station houses six pieces of apparatus: Ladder 21, Medic 21, HazMat 21, Air and Light Truck, Engine 21 (Reserve) and Ladder 219 (Reserve).

Station 21 also has a drill ground which includes a training tower, state of the art confined space and trench rescue props, an area to practice heavy lifting technical rescue skills, commercial and residential roof props, auto extrication area, various hazardous materials props, and forcible entry door props.

Staffing at Station 21 includes:

- 1 ladder company (1 Captain,1 Firefighter Engineer and 1 Firefighter/EMT)
- 1 medic unit (1 Firefighter/ Paramedic and 1 Firefighter/ EMT)
- 1 hazardous materials unit (cross-staffed)
- 1 air and light truck (cross-staffed)

Station 22 – 8517 Washington Boulevard SW, Lakewood

This station, located in the Lake City neighborhood, originally opened in 1994 and was remodeled in 2003. When this station opened, it included what was at the time, the District's largest training room, but this location was quickly outgrown and now serves as a community meeting space and backup training room.

The lot size is 47,716 square feet and the building is 7,600 square feet, with 3,200 being the apparatus bay. There is a kitchen and day room, along with six separate dorm rooms. The station houses four pieces of apparatus; Engine 22, Medic 22, Marine 22 and a reserve medic unit.

Staffing at Station 22 includes:

- 1 engine company (1 Captain, 1 Firefighter Engineer and 1 Firefighter/EMT)
- 1 medic unit (1 Firefighter/Paramedic and 1 Firefighter/EMT)
- 1 fire boat (cross-staffed)

Station 23 – 14505 Grant Avenue SW, Lakewood

This station, located in the Tillicum Neighborhood, originally opened in 1955, but was demolished and completely rebuilt in 2003.

The lot size is 46,172 square feet and the building is 5,987 square feet, with 2,300 being the apparatus bay. There is a kitchen and day room along with six dorm rooms. This station is home to Engine 23.

Staffing at Station 23 includes:

- 1 engine company (1 Captain, 1 Firefighter/Engineer and 1 Firefighter Paramedic)
- 1 fireboat moored on American Lake (cross-staffed)

Station 24 – 8310 87th Avenue SW, Lakewood

This station, located in the Oakbrook neighborhood, was originally opened in 1981, and was remodeled in 2003. It is located on land leased from the Department of Social and Health Services (DSHS).

The lot size is 39,538 square feet and the building is 5,786 square feet, with 2,300 being the apparatus bay. There is a kitchen and day room along with six dorm rooms. The station houses Engine 24, Medic 24 and Brush 24.

Staffing at Station 24 includes:

- 1 engine company (1 Captain, 1 Firefighter Engineer and 1 Firefighter/EMT).
- 1 medic unit is staffed from 8:30 am to 6:30 pm, Monday through Friday to accomodate an increase in calls during peak hours (1 Firefighter/Paramedic and 1 Firefighter/EMT)
- 1 brush unit (cross staffed)

Station 31 – 3631 Drexler Drive W, University Place

This station is located in University Place and is the headquarters for the District. In 2001, the station was built in partnership with the City of University Place as a combined police/fire station. In 2011, the police moved into the new Civic Building on Market Street and WPFR took over the entire building.

The lot size is 145,926 square feet and the building is 24,210 square feet with 8,100 being the apparatus bay and supply storage. There is a kitchen and day room along with 10 dorm rooms.

The station houses Engine 31, Engine 32, Medic 31, Fireboat Endeavor, Battalion 20 (reserve), and a reserve engine. There are 9 offices upstairs and 10 downstairs to accommodate the executive, administrative and finance staff.

The 9/11 Reflection Park is located at this station and includes a piece of steel from the World Trade Center.

Staffing at Station 31 includes:

- 2 engine companies (1 Captain, 1 Firefighter/Engineer, and 1 Firefighter/EMT)
- 1 medic unit (1 Firefighter/Paramedic and 1 Firefighter/EMT)
- 1 fire boat moored on Puget Sound (cross-staffed)

Services Provided

West Pierce Fire & Rescue is an all-hazards response organization. The district has identified multiple risks and developed a response strategy accordingly. The emergency services provided to mitigate these risks include, but are not limited to the following: dispatch services, emergency medical services, fire suppression, rescue response for vehicle crashes, surface water rescue, dive rescue, confined space rescue, technical rescue and hazardous materials incidents.

There are instances when multiple incidents occur simultaneously or a significant event occurs taxing our local resources. When these types of incidents occur, the organization has established mutual aid agreements with surrounding agencies. These agreements allow WPFR to receive assistance from neighboring jurisdictions when all companies are assigned on other calls. The agreements also allow WPFR to provide the same assistance in return.

Dispatch Services

A division of WPFR, Fire Comm, has been in existence since 1983 receiving and dispatching 9-1-1 calls for agencies throughout Pierce County. As of November 2015, Fire Comm provided services to 18 user agencies, the Pierce County Department of Emergency Management and the Pierce County Fire Marshal's Office. In 2015, Fire Comm handled 150,468 phone calls. In 2017, this division will transition under the direction of South Sound 911, the new police/fire dispatch agency in Pierce County.

Fire Communications Dispatch Services (2015)

Once a call comes in, the Call Receiver/Dispatcher determines the nature of the event, priority level, verifies the location and enters sufficient data into the Computer Aided Dispatch (CAD) system to determine the correct unit types, number of units and any additional resources necessary to mitigate the event.

WPFR has response plans for both fire and non-fire incidents which are developed around the nature of the event and risk level. The response plans are built into the CAD System which allows the Call Receiver/Dispatcher the ability to gather the information from the caller and dispatch the appropriate amount and type of resources as quickly as possible.

Fire Services

Fire suppression services provided by the District include the following types of fires:

Structure fires
- Single-family dwellings
- Multi-family dwellings
- Commercial and residential high-rise
- Commercial and industrial buildings

Mobile property fires
- Vehicles
- Trains
- Watercraft
- Recreation vehicles
- Heavy equipment

Other fires
- Natural vegetation
- Landfill
- Dumpster

For all moderate structure fires a minimum of 19 personnel are deployed on the initial dispatch. Resources include one Battalion Chief, three engine companies, one ladder company, two medic units, one Duty Chief and one Safety Officer. Minimum staffing

levels require three personnel on engine and ladder companies and two personnel on medic units.

All fire apparatus are equipped to meet the needs of the typical fire suppression activities encountered. The type and amount of equipment carried on apparatus is based on factors such as the National Fire Protection Association (NFPA) standards relating to apparatus and equipment, as well as past experience. The equipment on each fire engine in the District is standardized. The ladder company carries additional specialized equipment that is not on the engine company.

Cirque Fire Training Burn (2015)

In order to provide a high level of service to the community, which is both efficient and effective, all firefighters meet the same basic level of training which includes at a minimum IFSAC Firefighter Level II and EMT.

Confirmed fires made up approximately two percent of the calls in the District in 2014 and increased to nearly three percent in 2015. While this seems like a very low percentage of the overall call volume, there were still 287 confirmed fires in 2014 and 438 in 2015, an average of one each day. These events take a significant amount of time and resources when they do occur. Although fires occur much less frequently, they are extremely dangerous and pose significant risk to the community. There were an additional 1,330 fire calls dispatched in 2014 and 1,348 in 2015, but ended up being false alarms or good intent calls.

Emergency Medical Services

When the Lakewood and University Place Fire Departments originated in the early 1940s, stations were located so crews could quickly arrive at burning structures. It soon became apparent the firefighters' ability to arrive at a scene quickly could be beneficial for other types of emergencies as well, including medical emergencies.

Critical Patient Requiring Airlift NW (2015)

Today, the highest percentage of calls WPFR firefighters respond to are for Emergency Medical Services (EMS) which include heart attacks, strokes, vehicle collisions, falls, water rescue, etc. This category makes up roughly 68 percent of call volume.

Currently, all uniformed personnel are trained to the minimum level of EMT. There are 49 captains and firefighters who are certified as Paramedics. All front line apparatus are equipped with the equipment and supplies necessary to provide medical aid to a patient until a medic unit or private ambulance arrives to transport them to an area hospital.

WPFR has an EMS Subscriber Program. When a patient is transported by WPFR, their medical insurance provider is billed. WPFR residents who are transported are not billed for any remaining balance not covered by their insurance as the Subscriber Program allows their EMS levy dollars to cover the balance due. In 2014, this subscriber program saved WPFR residents nearly $408,126. For a non-resident, any remaining balance not paid by insurance is billed to the patient.

In 2011, the EMS transport program was expanded to include more Basic Life Support (BLS) transports. Total calls have increased approximately 16 percent from 2011 to 2014, but EMS transports have increased nearly 45 percent from 2011 to 2015. The increase in transports were due to a policy change to transport both ALS and BLS patients which has improved the emergency medical services provided to the community.

Vehicle Extrication

Vehicle collisions involving entrapment are often complex and require more than a single engine company response. These incidents require specialized equipment such as the "Jaws of Life" to remove portions of the vehicle such as windows, doors and roof that are trapping the patient. After the "Jaws of Life" are utilized, firefighters can safely remove the patient from the vehicle and transport them to the hospital. There are often fluid spills associated with these collisions, which must be contained and controlled, as well as mitigating any potential ignition sources. Collisions such as these usually have multiple patients. There is at least one medic unit on the initial dispatch to treat the patient(s) and transport them to an area hospital, but this number can be increased based on the number of reported patients.

Special Rescue Types

As previously stated, WPFR is an all-hazards agency, and responds to incidents involving hazardous materials releases, marine incidents (rescue, recovery and fire), as well as technical rescue emergencies such as trench collapse, high angle rescue, confined space incidents and structural collapse situations. These types of operations require the rescuers to employ specialized knowledge, skills, tools and techniques. WPFR, in cooperation with other jurisdictions in Pierce County, have created special teams of cross-trained firefighters to respond to and mitigate these types of incidents. The teams include the Pierce County Special Operations and Rescue Team (PCSORT) and the Pierce County Hazardous Incident Team (PCHIT). WPFR is also a partner agency in the Regional Water Response Plan for Puget Sound.

Mock DUI Crash with Lakes High Students

Technical Rescue

WPFR responds to a variety of unique emergencies requiring specialized technical rescue operations. Some examples of this type of incident include; tower rescues, building collapses, and entrapment in a confined space or collapsed trench. All firefighters are trained to be aware of the inherent risks involved with a structural collapse, confined space rescue, trench rescue, high or low angle rescues and entrapment situations. All firefighting personnel are trained to the Operations Level for Technical Rescue, as defined by the National Fire Protection Agency (NFPA) 1670. At the operations level, they are familiar with ropes, knots, mechanical advantage and safety operations involving these types of events.

WPFR has 30 firefighters trained to the Technician level, an advanced level of training above the Operations level. There are a minimum of two Rescue Technicians on duty each day. WPFR is also a member of PCSORT which was formed in 2001 to respond to high angle, confined space, trench collapse and structural collapse incidents throughout Pierce County. The member agencies include WPFR, Central Pierce Fire & Rescue, East Pierce Fire & Rescue and Gig Harbor Fire & Medic One. Each agency provides team members and financial support for equipment and training. This cooperative approach helps provide this technical expertise at a reduced cost to taxpayers. If deployed to a non-PCSORT agency's incident, the agency can be billed for PCSORT services.

Local Response
The initial response to a technical rescue incident typically involves the first due engine company, based on the location of the incident. Depending on the complexity of the incident, this engine company may handle the incident themselves at the operations level or they may request a PCSORT response.

Car Through Apartment (2014)

Regional Response
Technical rescue incidents do not happen often, but when they do they can be very high risk to firefighters and victims. These types of incidents may need additional Rescue Technicians and/or resources. During such incidents, the regional PCSORT team may be requested. When requested, each agency sends on-duty Rescue Technicians and assigned equipment to the emergency scene. These technicians then work together to come up with a comprehensive, safety oriented Incident Action Plan to mitigate the emergency.

Hazardous Materials
WPFR responds to and mitigates the release or potential release of hazardous materials. Some examples of this type of incident include fuel leaks, carbon monoxide issues, unknown substances, threats and confirmed releases of toxic industrial chemicals. All firefighting personnel are trained to the Operations level as defined by NFPA 1072. At the Operations level, they are familiar with issues such as carbon monoxide alarms and fuel leaks.

WPFR has 15 personnel trained to the Technician Level, an advanced level of training above Operations Level. In addition, WPFR is part of PCHIT, which is a regional response team made up of five fire districts in the county, including WPFR, Central Pierce Fire & Rescue, East Pierce Fire & Rescue, Gig Harbor Fire & Medic One and Graham Fire & Rescue.

There are 75 firefighters throughout Pierce County trained to the Technician Level. The regional PCHIT shares equipment and operating costs. Like PCSORT, if deployed to a non-PCHIT agency's incident, the agency can be billed for PCHIT services.

Local Response
The initial response to a hazardous materials incident usually involves the first due engine company, based on the location of the incident. Depending on the severity of the incident, this engine company may handle the incident themselves at the operations level, or they may call in one of the Hazardous Materials Technicians who is on-duty that day. The Technician, along with the on-duty Battalion Chief, will make a decision if the incident can be handled with the personnel on scene or if a PCHIT response needs to be initiated.

Hazardous Materials Incident (2015)

Regional Response
If it is deemed a PCHIT response is necessary, each agency sends their on-duty rescue technicians and assigned equipment to the emergency scene. No entry is made until a minimum of 14 Hazardous Materials Technicians arrive at the scene. This contingent is necessary to ensure the safety protocols for hazardous materials incidents can be followed.

Marine Rescue

The western border of WPFR includes eight miles of shoreline on the southern end of Puget Sound. South Puget Sound is home to various wildlife, is utilized for recreation and is also home to two major ports; Port of Tacoma and Port of Olympia. The economic vitality of our region is tied to these ports, which is one reason WPFR was awarded a grant to purchase a fire boat in 2011. Fireboat Endeavor is stationed at the Narrows Marina located at the end of 19th Street, on the northwest border of the district.

Fireboat Endeavor is a 37-foot fire and rescue boat capable of flowing over 2,000 gallons of water per minute. The boat typically responds to water-based incidents for fire suppression or rescue emergencies, but has also been utilized to put out fires near the shoreline or to assist with rescues in areas of difficult land access.

The Fireboat Endeavor is cross-staffed with 19 firefighters who have completed an 80-hour Marine Pilot Training Course which provides a basic foundation of capabilities and skills including; basic crew member seamanship, small vessel operations, marine electronics and communications, basic navigation and marine safety. Additionally, 12 firefighters went above this level of training and received their Merchant Mariner Credentials through the US Coast Guard. Engine 31 and Engine 32 each maintain a daily minimum of one Marine Pilot. Twenty-four hours a day, seven days a week, the boat is ready and able to respond.

As a federally funded vessel, Fireboat Endeavor is a regional asset. Not only does it respond to the portions of the Puget Sound along the WPFR borders, it responds throughout the region as needed. Gig Harbor Fire & Medic One has significant marine risk and has entered into an agreement with WPFR which helps offset some operational costs. This vessel has responded as far south as Olympia and as far north as Federal Way.

Regional Response
There are some situations where WPFR may not have all the resources needed to safely mitigate an incident occurring on the water. The Region 5 Water Resource Response Plan was established for these types of incidents. The plan provides a mechanism for agencies to respond to water-related incidents on Puget Sound. Participating agencies include, WPFR, Anderson Island Fire & Rescue, Browns Point/Dash Point Fire Department, U.S. Coast Guard, Gig Harbor Fire & Medic One, Gig Harbor Police Department, Key Peninsula Fire Department, Pierce County Sheriff's Department, Puyallup Tribal Police, Tacoma Fire Department and the Tacoma Police Department.

Marine Incident (2015)

Water/Dive Rescue

In addition to the Puget Sound, WPFR has several lakes within its borders and has two additional boats able to respond to incidents on the lakes. Marine 23 is moored in Tillicum on American Lake, which is the largest lake in the District. It is a 21-foot fire/rescue boat capable of flowing 500 gallons of water per minute. It strictly responds to incidents on American Lake and Silcox Island, which is located in the middle of the lake.

Marine 22 is a 16-foot, hard-bottom inflatable boat used for water rescue and recovery. It remains on a trailer at all times, so it can be mobilized to any location as needed. Marine 22 is housed at Station 22, located on Washington Boulevard in the Lake City area of Lakewood.

WPFR has a Dive Team along with a Rescue Swimmer program. There are 20 firefighters trained as rapid entry rescue divers and 24 as rescue swimmers. There are a minimum of two divers on duty each day located throughout the district.

Training

The WPFR Training Division is responsible for scheduling, tracking and coordinating training for all employees. The goal is to provide knowledge, skills and abilities needed to perform all required duties. These duties include but are not limited to; firefighting fundamentals, safety, emergency vehicle operations, fire officer and command functions, specialized rescue operations, hazardous materials responses, dive and marine operations, customer service and leadership development.

The Training Division develops many of these classes and conducts or coordinates regional training with many other fire agencies as well. The training provided is a combination of hands-on, computer-based and classroom instruction.

Fire Prevention and Public Education

WPFR also provides services to help prevent incidents from occurring. WPFR provides fire inspections and code enforcement services to the City of Lakewood. The City of University Place and the Town of Steilacoom conduct their own fire inspections and code enforcement services. Fire and life safety education is also provided to residents of the fire district. These tasks are necessary in order to identify and reduce potential risks within the community and to promote a safer place for our citizens to live and work.

Smoke Alarm Installation Program

The Prevention Division of WPFR is responsible for fire and life safety education, fire inspections, code enforcement, plan review and fire investigations. All Prevention personnel are certified as Inspector I and/or II by the International Code Council.

Inspections are conducted to ensure the safety of occupancies by eliminating any fire or life safety hazards present in the building. If a hazard exists, they are corrected in a timely manner. The timeframe in which items must be corrected varies due to the severity of the violation. Inspections are conducted each year by a certified fire inspector for Assembly, Educational, Hazardous Materials and Institutional occupancies. The occupancy types of Business,

Mercantile, Storage and Multi-Family Residential are inspected every three years by suppression personnel.

Construction plan reviews are completed for any new commercial or multi-family development. Plans for commercial renovations, sprinkler systems, fire alarms and suppression systems are also reviewed by the division. During this process, the fire code official is focused on making the building safer for emergency responders and the public. After the plans are approved, work on the project may begin.

Fire investigations are performed by certified investigators within the Prevention Division. Fire investigations are conducted within the City of Lakewood and the Town of Steilacoom. Investigators are responsible for determining the cause and origin of a fire. If a fire has a possibility of being intentionally set, WPFR works closely with Lakewood and Steilacoom Police to complete the investigation. The City of University Place contracts with the Pierce County Fire Marshal's Office for all fire investigation services.

Fire and life safety education is also conducted by the Prevention Division. The division develops, manages and conducts district-wide risk reduction strategies. The division offers various age-appropriate school programs as follows:

Fire Safety in the Schools (2015)

- Preschool – Fire Safety
- Kindergarten – Fire Safety
- 1st Grade – Child Passenger Safety
- 2nd Grade – Fire Safety
- 3rd Grade – Disaster Preparedness/Water Safety
- 4th Grade – Wheeled Sports Safety
- 5th Grade – First Aid
- High School – CPR Certification

The division prides itself on coordinating the District's Smoke Alarm Program. WPFR has been the recipient of several grants to provide free smoke alarms to the residents of the community. The program requires the District to not only provide the alarms, but install them as well. The installation gives WPFR the opportunity to provide vital safety information to citizens where a fire is most likely to happen; in the home.

Fire and life safety education programs are not only provided for children in our community, but for adults as well. For example, WPFR delivers education programs targeted to adult learners on topics such as fire safety, fall prevention, and first aid and CPR.

While the Prevention Division is responsible for coordinating these programs, it is the responsibility of all employees to provide fire and life safety education to the community.

Emergency Management

When disaster strikes it is important for the entire community to be prepared, including citizens, businesses, government agencies, hospitals, schools and colleges. All of these community groups must collaborate to build an effective and efficient community response, which leads to resilience and the ability to recover from a catastrophic event.

WPFR and the City of Lakewood are leaders in this type of collaborative effort. WPFR is a member of the Lakewood Emergency Management Committee which also includes representatives from St. Clare Hospital, Western State Hospital, Clover Park Technical College, Pierce College, local utility companies, transit agencies, public health and the Clover Park School District.

The group focuses on emergency response plan coordination, collaborative training and exercises. Early collaboration will help our community to be more prepared, should disaster strike.

Emergency Management Exercise (2015)

WPFR also provides Community Emergency Response Team (CERT) training to our citizens. West Pierce CERT training follows a model developed by the Federal Emergency Management Agency (FEMA) and is offered in cities across the United States. The idea behind this model is to teach people in neighborhoods how to help each other following a disaster – before emergency responders are able to get to them to render professional help. In the classes, students gain hands-on skills such as how to put out small fires, render first aid in a disaster situation, and perform light search and rescue.

Fleet Maintenance

The Fleet Maintenance Division is responsible for providing routine and emergent maintenance for the entire fleet of over 70 vehicles, apparatus and marine vessels, as well as a variety of motorized equipment, such as station generators. All WPFR vehicles undergo a 75-point annual safety inspection. In addition, routine maintenance checks are performed either quarterly or semi-annually based upon the individual equipment's use. Emission and pump tests are conducted annually for all appropriate vehicles.

Fleet Maintenance Division (2015)

The WPFR Fleet Maintenance Division also contracts with other agencies to provide routine and emergent maintenance on over 70 additional fire service vehicles and pieces of equipment. Agencies who contract for fleet maintenance include Brown's Point/Dash Point Fire Department, Tacoma Fire Department and occasionally vehicle manufacturers.

Facilities Maintenance

The Facilities Maintenance Division is responsible for custodial work, along with general repair and maintenance of all District facilities, grounds and related equipment including six fire stations and one maintenance facility. The four members of this division are tasked with maintaining a total of 101,675 square feet of facilities and 8.75 acres of grounds. The workload is broad and varied and is critical to support the mission of the District.

Facilities Maintenance Divsion (2015)

Legislative

West Pierce Fire & Rescue is governed by a Board of Fire Commissioners which consists of five members. The Board meets twice monthly to conduct the business of the fire district. They are responsible for setting budgets, establishing policy, and providing

administrative oversight to the Fire Chief. Members of the Board are elected by a vote of the citizens and serve six-year terms. The current Board members are as follows:

Bart Dalton – Position 1, 2014-2019
John Clancy – Position 2, 2016-2021
Daniel Rankin – Position 3, 2012-2017
Grant Erb – Position 4, 2016-2021
John Sheeran – Position 5, 2014-2019

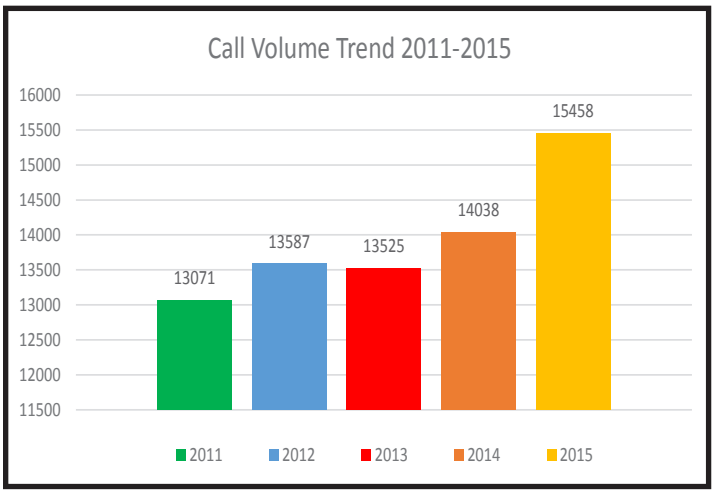
Community Baselines

The current performance of WPFR is an essential part of the Standard of Cover process. Establishing community baselines is essential when attempting to understand how well the services provided are being delivered. WPFR then compares performance to baselines to determine if operational changes are necessary.

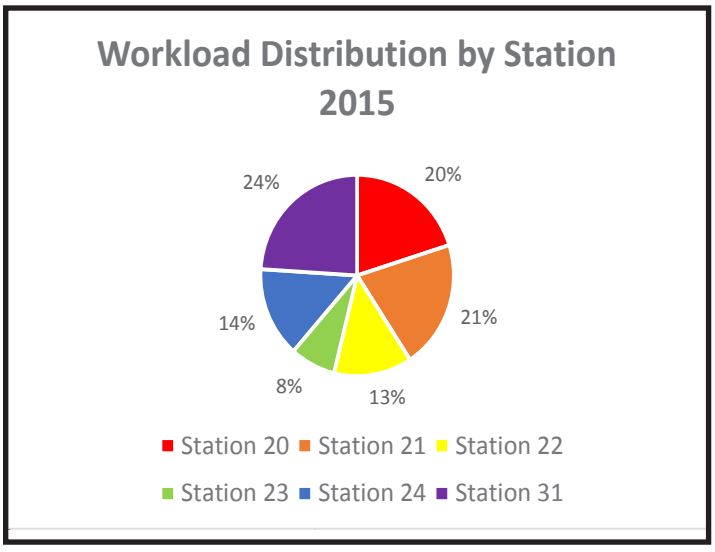
The District is responsible for deciding the location of resources and personnel. WPFR must be sure the number and types of resources deployed match the needs of the community. This section is a description of how the current resources are deployed in the community.

In establishing the community baselines, the decision was made to analyze data from the last four to five years. The data was collected using the district's record management system as well as Computer Aided Dispatch (CAD) data. The analysis covers January 2011 through December 2015. Due to the different systems being utilized for data collection and the various filtering methods, there are some variances in the data between the Standard of Cover document and the Annual Report. There are also slight variances in the data within this document because two seperate data sources were used to complete this report. The analysis looked at the data, first by the entire jurisdiction, then by station areas.

The overall demand for services has increased each year as shown in the "Call Volume Trend" graph. In September 2012, WPFR entered into a contract to provide emergency response services to the Town of Steilacoom which impacted call volume. This contract accounted for 479 calls in 2013 and 536 in 2014. The data for 2012 is slightly higher than 2013 for two reasons; WPFR was providing automatic aid to the City of DuPont during 2012 which accounted for 147 calls and there was a large storm that year which created hundreds of calls for service in a very short period of time. The call volume rose by over eight percent from 2014 to 2015.



The "Workload Distribution by Station" chart illustrates the workload for each of the six station response areas. The differences in service demand are caused by factors such as the area covered by each station, population density, socioeconomic factors, concentrations of specific risk groups and the age of buildings.



Each station area has unique characteristics that help explain call distribution. Characteristics include: percentage of the District's population, square miles served, the number of road miles and the number of housing units in each response area. The following descriptions provide some characteristics for each station area.

Station 20 has a relatively small geographic response area of 2.8 square miles and 48.6 road miles. It accounts for 14.1 percent of the District's population, has 5,112 residential housing units and 388 commercial properties. Even though this area is small, this station responded to 20 percent of the District's calls in 2015. The area contains the Interstate 5 corridor. There is a significant amount of low-income families as defined by the US Census, along with a large amount of high density housing.

Station 21 has a moderate sized response area of 5.3 square miles and 67.0 road miles. It accounts for 13.7 percent of the Distict's population, has 6,898 residential housing units and 450 commercial properties in this area. The risks in this area are great, as it has a significant amount of low-income housing and encompasses the commercial core of the District. The ladder company at this station responds to more calls than any other company in the District, accounting for 21 percent of the call volume in 2015.

Station 22 has a geographic area encompassing 5.8 square miles and 66.3 road miles. It accounts for 16.5 percent of the District's population, has 6,559 residential housing units and 59 commercial properties. This station accounted for 13 percent of the District's call volume in 2015. This geographic description includes a portion of the Town of Steilacoom.

Station 23 has the smallest geographic area of just 1.7 square miles and 12.9 road miles. It accounts for just 4.5 percent of the population, has 2,772 residential housing units and 83 commercial properties. It is an isolated portion of the District and the only way to access it is via Interstate 5. Despite the small geographic area, Station 23 accounted for eight percent of the District's call volume in 2015.

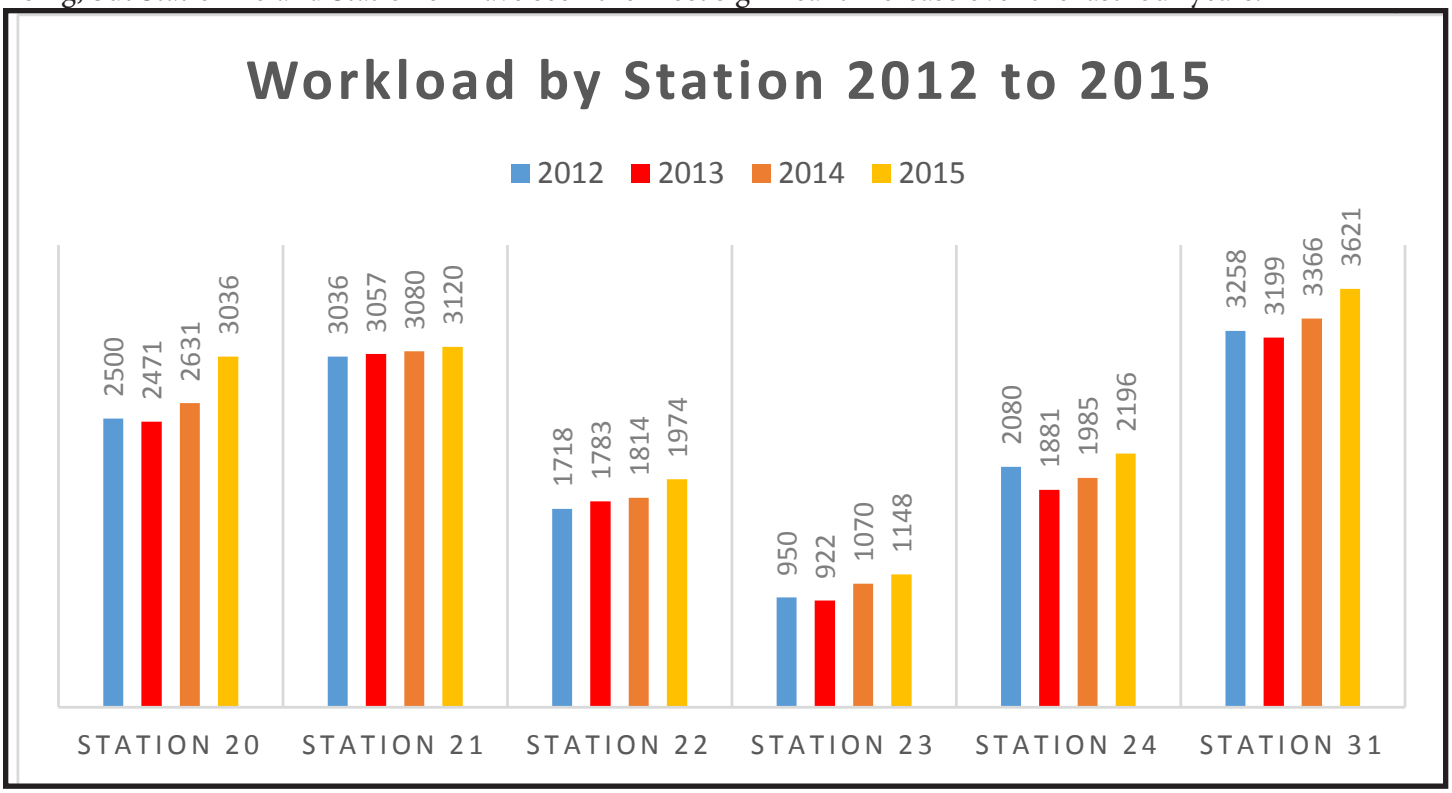
Station 24 has a geographic area of 6.8 square miles and 87.0 road miles. It accounts for 19.8 percent of the population, has 9,132 housing units and 72 commercial properties located in this area. Station 24's response area accounts for 14 percent of the District's calls in 2015. This area is mostly single family residential, but includes Western State Hospital, several adult family homes and multi-family housing units. This response area also includes a portion of the Town of Steilacoom.

Station 31 covers the entire City of University Place. It covers the largest geographic response area at 8.6 square miles and 118.8 road miles. It accounts for 31.4% of the population, has 13,556 residential housing units and 184 commercial properties. In 2015, this station responded to 24 percent of the calls in the District. There used to be two stations covering this area, but the close proximity of Station 32 to Station 31 led WPFR to sell station 32 in 2014 and move those crews to Station 31. There are two engine companies assigned to this station, as well as a medic unit.

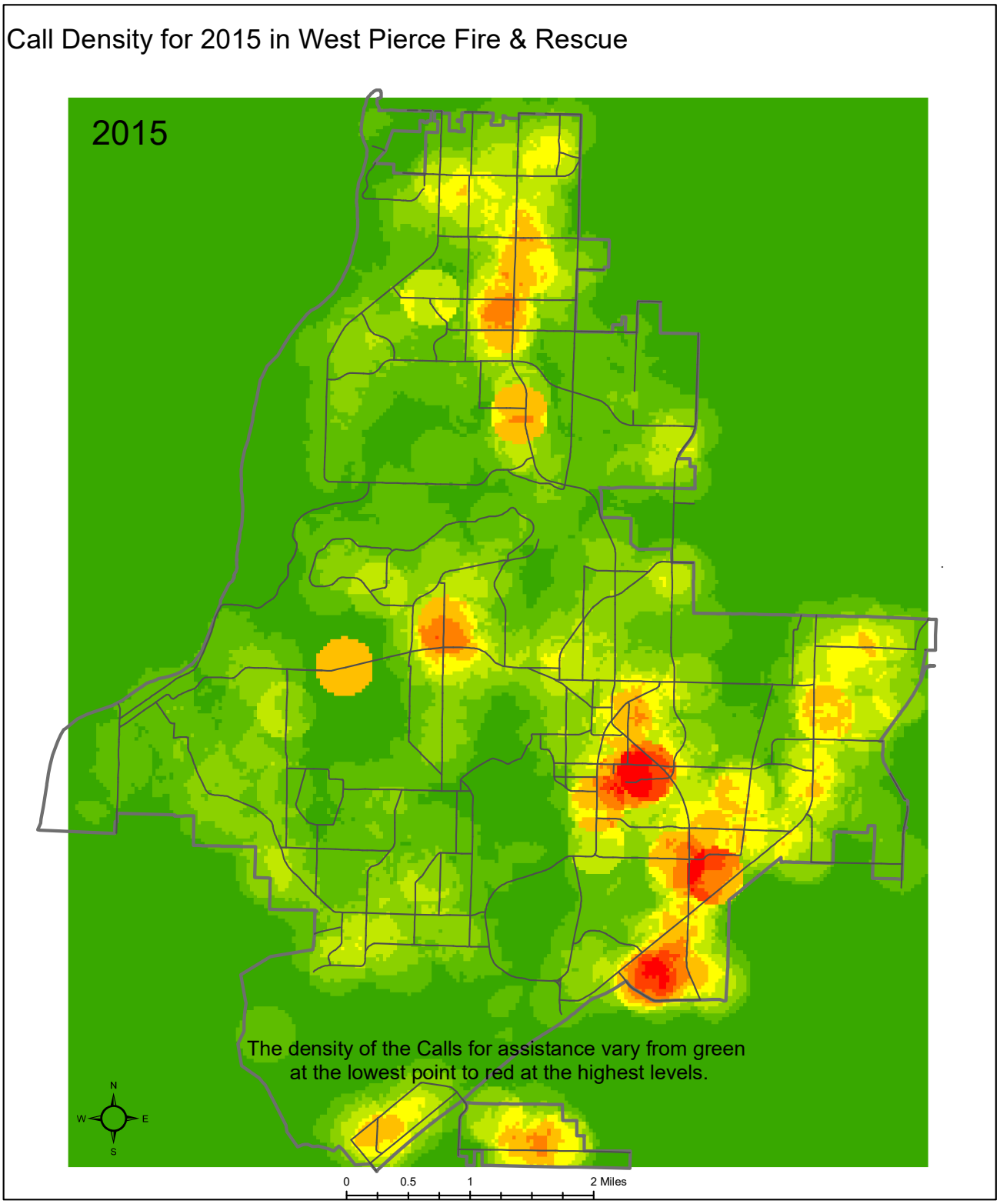
Station Statistics 2015

Station	Percent of WPFR Population	Square Miles	Road Miles	Residential Units	Commercial Properties	Call Volume
20	14.1%	2.8	48.6	5,112	388	3,036
21	13.7%	5.3	67.0	6,898	450	3,120
22	16.5%	5.8	66.3	6,559	59	1,974
23	4.5%	1.7	12.9	2,772	83	1,148
24	19.8%	6.8	87.0	9,132	72	2,196
31	31.4%	8.6	118.8	13,556	184	3,621

The "Workload by Station 2012-2015" graph compares call volume for each year by station. The graph shows the percentage of call volume by station has not changed significantly in any given year. Call volume at all stations is rising, but Station 20 and Station 31 have seen the most significant increase over the last four years.



Geographic Information Systems (GIS) were used to map incidents and show where they were concentrated. The "Call Density for 2015" map shows the incident density for all calls in 2015, which further illustrates the distribution and concentration of calls for service. Distribution refers to the way in which the calls are spread throughout the district and concentration refers to the relative density of calls, as indicated by the areas in red on the map.



Response Performance

The key areas analyzed for response performance were call processing time, turnout time, travel time, total respose time, effective response force travel time, and effective response force total response time. The times shown in the "Overall Jurisdiction" table is the baseline performance at the 90th percentile which means that 90 percent of the calls are responded to at times at or below this level. There are two "Unit Response Time" tables, one showing the average times and one showing baseline performance at the 90th percentile.

Overall Jurisdiction - 90th Percentile Performance Times			
Performance Category	**2013**	**2014**	**2015**
Call Processing Time	2:46	2:30	2:33
Turnout Time (First Arriving)	2:57	2:40	2:40
Travel Time (First Arriving)	7:19	7:26	8:02
Total Response Time (First Arriving)	9:17	9:04	9:38
Effective Response Force Response Time	12:32	11:51	*

**In 2015 the ERF times were not available due to a change in the database. Effective Response Force Response Time is the response time for the deployment of a full first alarm assignment at a fire suppression incident. In WPFR, a full first alarm assignment includes 3 engines, 1 ladder, 2 medic units and 1 Battalion Chief.*

Unit Response Time Performance Average									
	Turnout Time			**Travel Time**			**Total Response Time**		
Unit	**2013**	**2014**	**2015**	**2013**	**2014**	**2015**	**2013**	**2014**	**2015**
E20	02:01	01:41	01:37	04:13	04:42	04:56	06:08	06:18	06:27
L21	02:14	01:54	01:54	04:26	04:35	04:49	06:26	06:19	06:35
E22	01:55	01:47	01:48	05:09	05:15	05:43	06:56	06:57	07:26
E23	02:04	01:30	01:46	05:33	05:24	05:22	07:28	06:44	07:04
E24	01:46	01:36	01:41	04:15	04:22	04:48	05:55	05:53	06:24
E31	02:04	01:53	01:47	04:41	04:49	05:06	06:36	06:31	06:40
E32	01:52	01:38	01:31	04:47	05:18	05:47	06:33	06:49	07:11
M20	01:58	01:42	01:38	05:49	06:04	06:15	07:36	07:39	07:46
M21	01:48	01:42	01:41	06:08	06:21	06:49	07:47	07:56	08:23
M22	01:55	01:43	01:51	07:28	08:01	08:01	09:17	09:38	09:44
M24	01:54	01:35	01:37	06:49	07:01	07:15	08:26	08:24	08:35
M31	01:49	01:34	01:31	05:51	06:24	06:40	07:30	07:47	08:03

**These response times include priority calls only. All patient assists, calls cancelled en route, service calls etc., have been filtered out.*

Unit Response Time Performance 90th Percentile									
	Turnout Time			Travel Time			Total Response Time		
Unit	2013	2014	2015	2013	2014	2015	2013	2014	2015
E20	02:53	02:37	02:36	06:38	07:15	07:57	08:43	09:00	09:27
L21	03:21	02:54	02:56	07:14	07:12	07:30	09:39	09:01	09:26
E22	02:50	02:39	02:41	08:15	08:23	09:04	10:06	09:56	11:00
E23	02:53	02:25	02:38	08:47	08:21	08:42	11:01	09:34	10:35
E24	02:38	02:31	02:36	07:04	06:46	07:40	08:41	08:32	09:28
E31	03:06	02:52	02:47	07:39	07:52	08:17	09:47	09:37	10:01
E32	02:50	02:31	02:24	08:00	08:05	09:08	10:12	09:52	10:28
M20	02:14	02:39	02:39	11:08	11:09	11:11	13:17	12:58	12:53
M21	02:56	02:43	02:40	11:05	11:24	12:21	12:47	12:52	14:04
M22	02:51	02:39	02:49	12:14	14:48	14:11	14:30	16:22	16:14
M24	02:59	02:38	02:38	14:27	14:17	14:12	16:16	15:32	15:47
M31	02:41	02:26	02:26	11:07	11:35	11:55	12:41	12:55	13:22

**These response times include priority calls only. All patient assists, calls cancelled en route, service calls etc., have been filtered out.*

COMMUNITY EXPECTATIONS

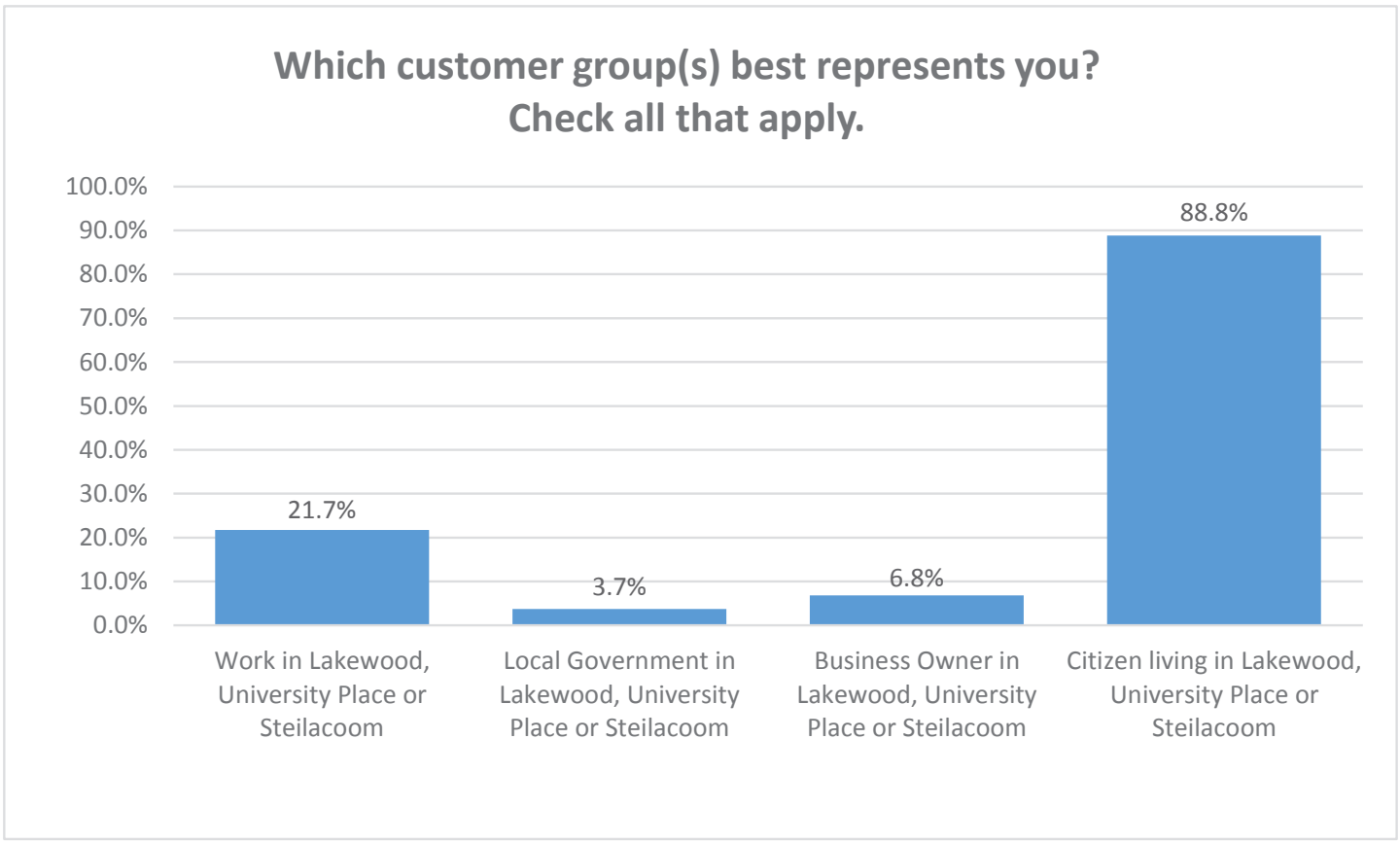
West Pierce Fire & Rescue conducted a citizen survey for the purpose of seeking input from various stakeholder groups. The survey was conducted to determine what the customers expected in terms of emergency response and other programs. This survey presented information on what the citizens value in their fire department, but also showed some areas where community education on what services can realistically be provided would be helpful.

A survey was developed in 2014 to help determine customer expectations allowing WPFR to analyze the root causes of different expectations, if any, by customer group and potentially design services that meet those expectations.

The survey was developed using Survey Monkey. The survey consisted of ten questions. Six of those questions were check the box type of questions and four were open ended questions. It was advertised via social media, the WPFR website and hand delivery methods. A total of 333 responses were received from various community members.

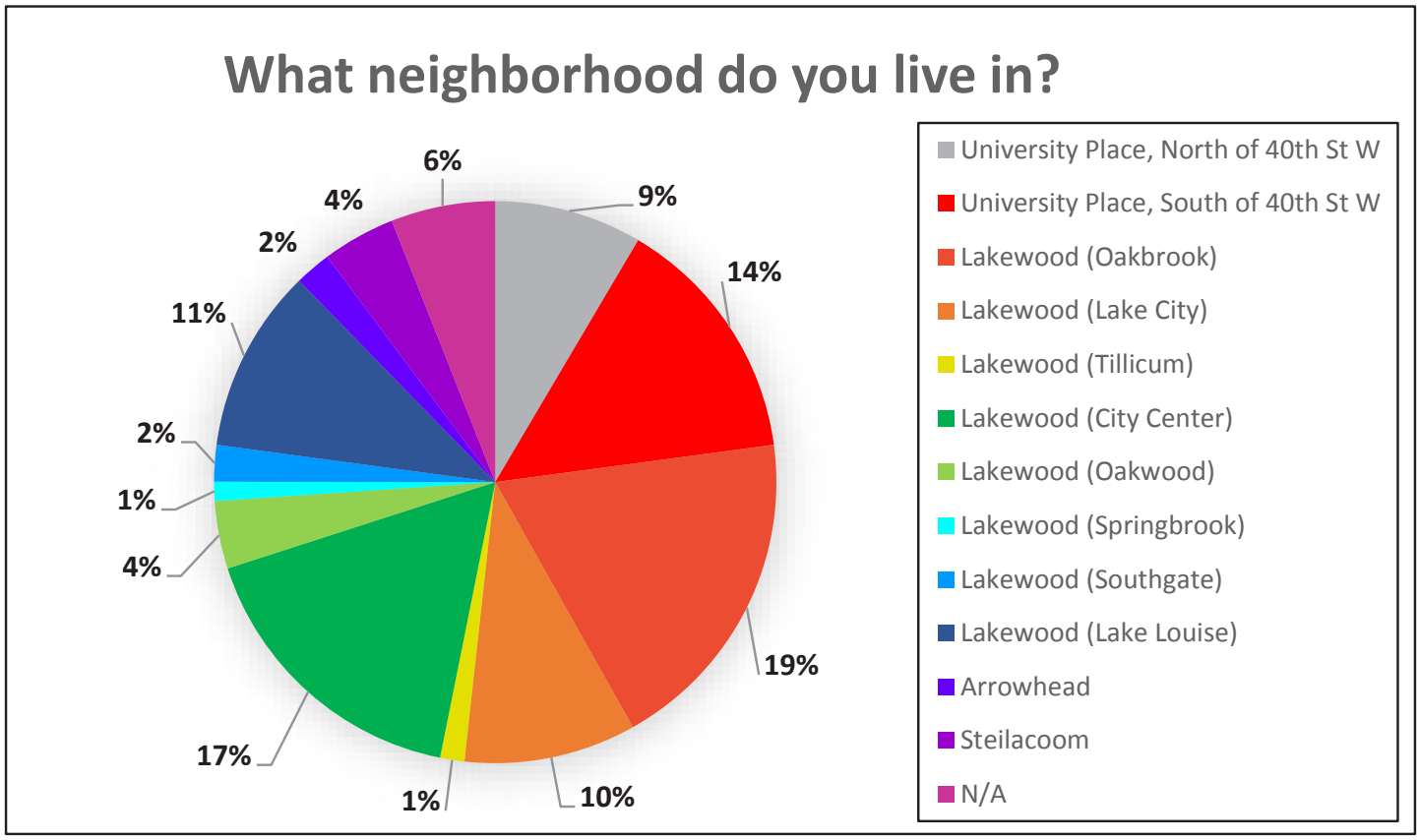
The following charts and tables show the answers provided by the community.

Question 1



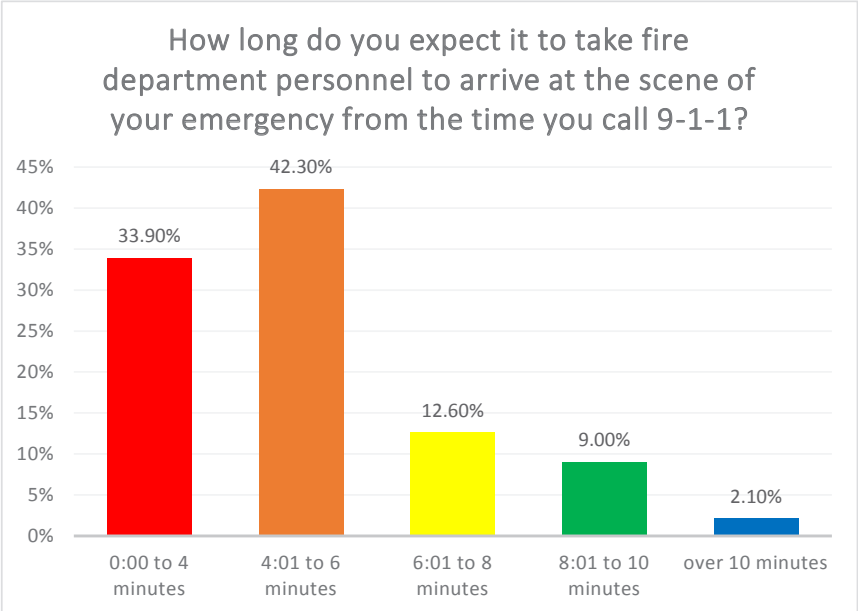
Respondents to this question may fall into more than one of the categories listed, but all have ties to Lakewood, University Place, or Steilacoom.

Question 2



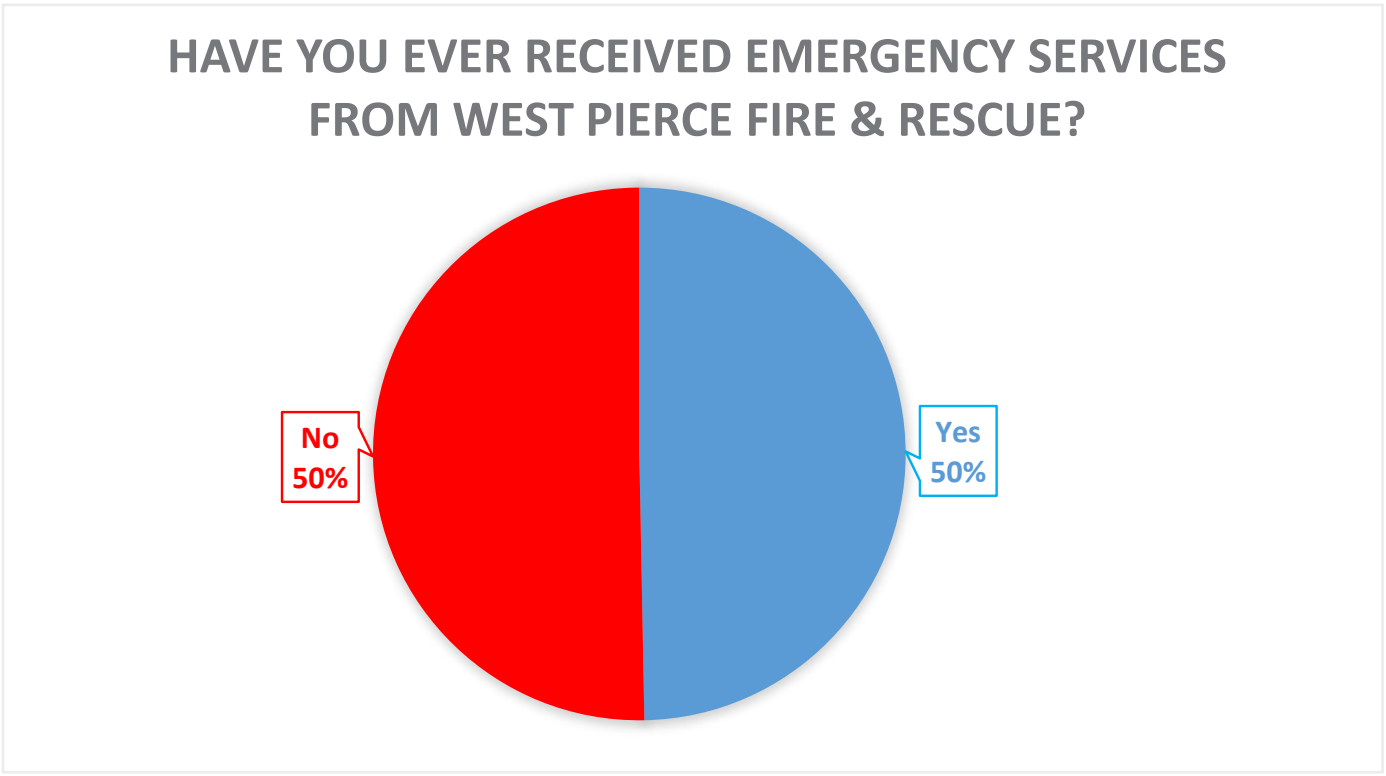
Approximately 23 percent of respondents lived in University Place, 65 percent lived in Lakewood, four percent in Steilacoom, two percent in the Arrowhead neighborhood (unincorporated Pierce County), and six percent answered not applicable, meaning they likely only work in the District.

Question 3



When analyzing this question, it is clear WPFR citizens want help to arrive as quickly as possible with over 76 percent of respondents indicating they expect arrival within 6 minutes. This is an area where improvements should be focused and/or community education should be provided.

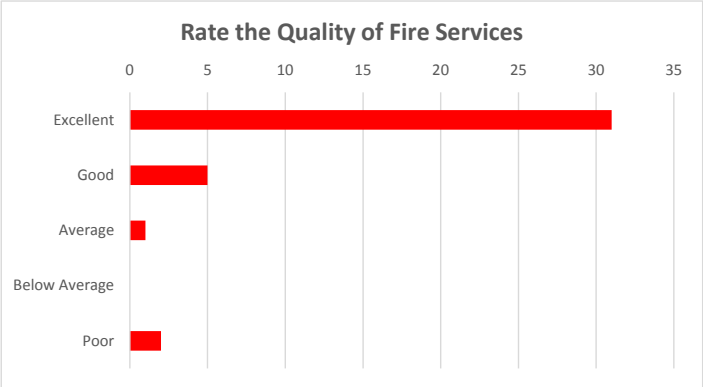
Question 4

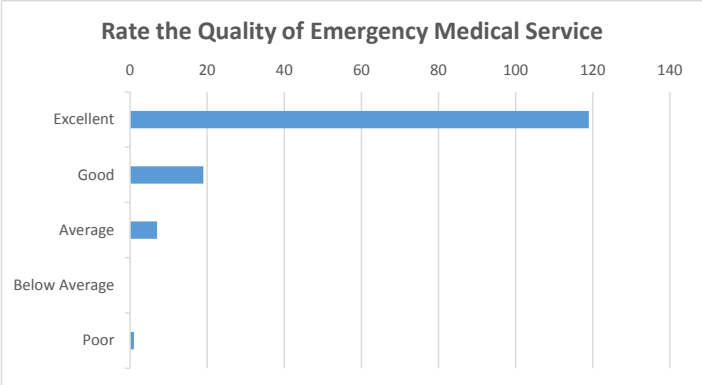


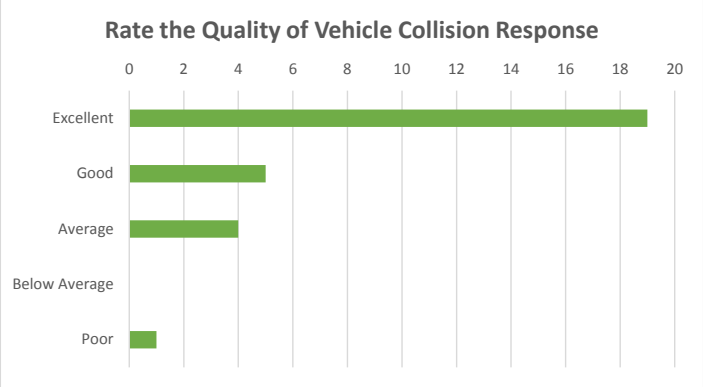
Springbrook Park Fire (2016)

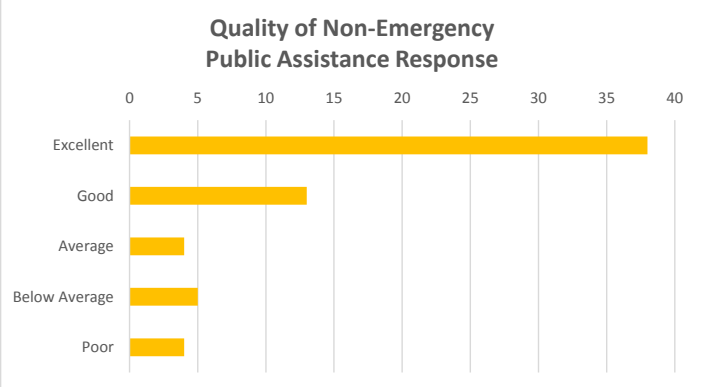
Question 5

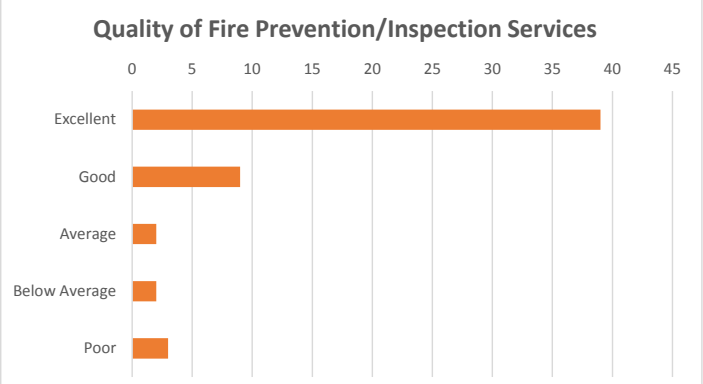
If you have received any of the following services from West Pierce Fire & Rescue, please rate the quality of service.

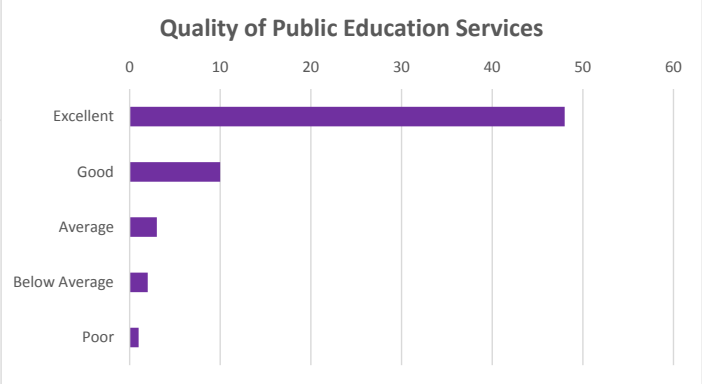








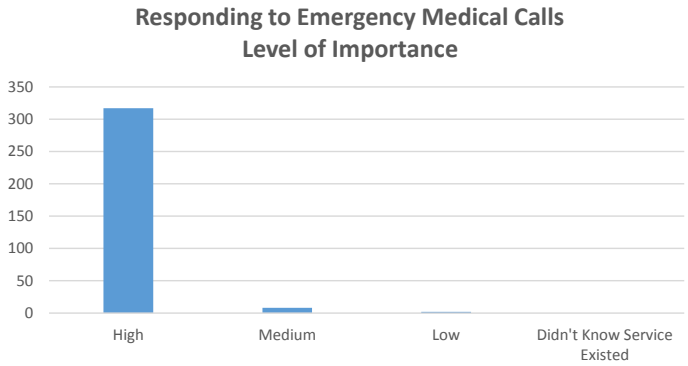


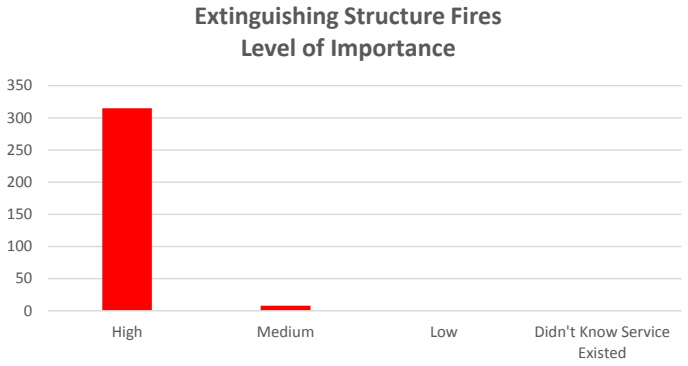


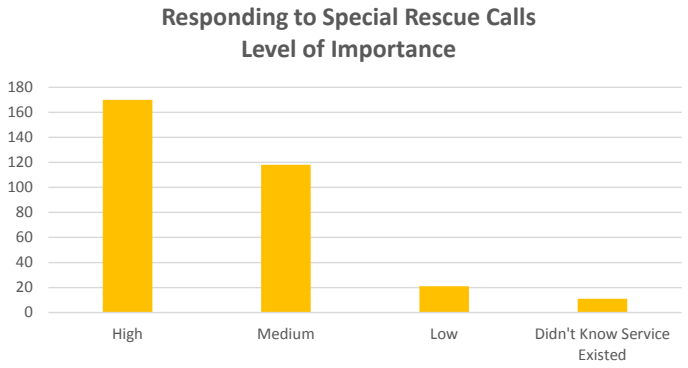
Overall, every service is rated overwhelmingly at good or excellent, meaning the citizens feel WPFR is providing quality service on a regular basis. While there is always room for improvement, overall WPFR is meeting community expectations on the quality of service.

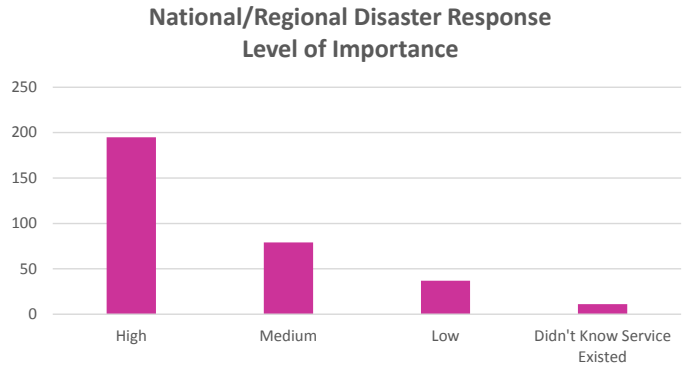
Question 6

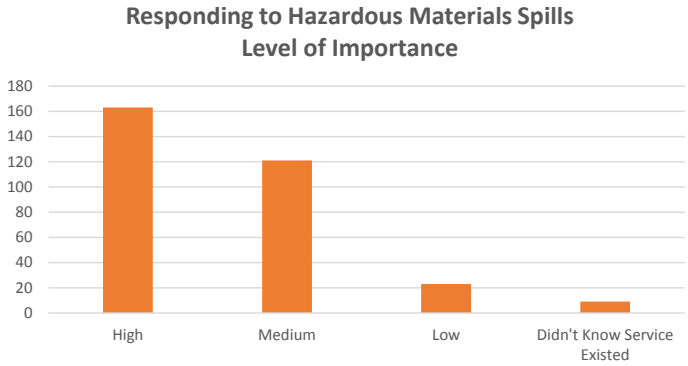
From the following list of services West Pierce Fire & Rescue provides, please rate their level of importance to you.

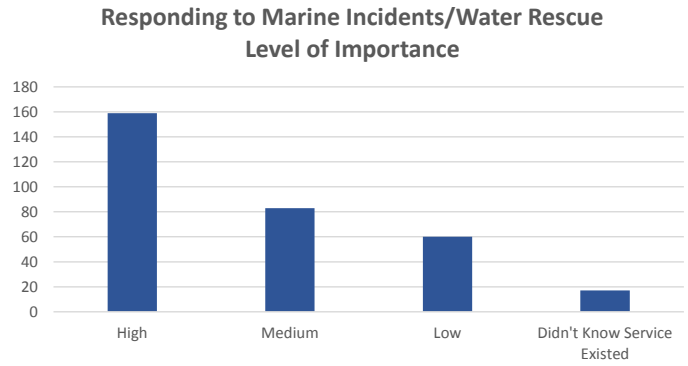


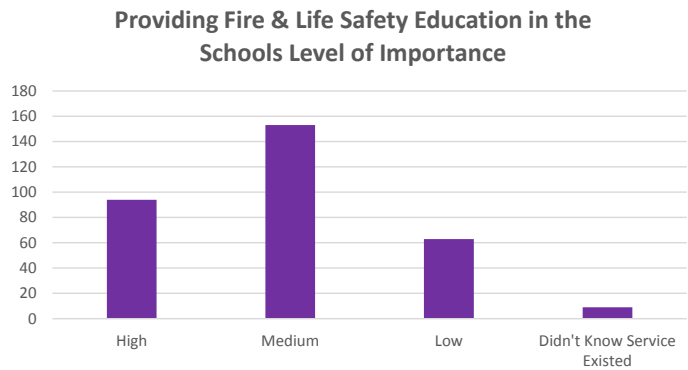


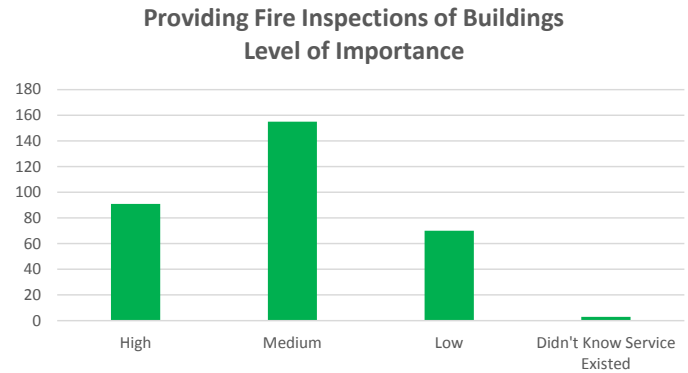












Question 6 (Analysis)

Emergency medical services and fire response are the most important to the community, followed by special rescue, national/regional disaster response and hazardous materials spills. Responding to marine incidents, fire and life safety education, and fire inspections were slightly less important, but still important overall.

Question 7

Are there any services or programs West Pierce Fire & Rescue is not providing that you would like to see?

There were 100 responses to this question and the majority of those, 78, said they could think of no additional programs, 11 recommended programs already offered by WPFR. The additional programs suggested were:

- helicopter rescue
- youth explorer program
- free CPR classes
- more community outreach
- working closer with local law enforcement to remind them of what you do
- provide an excellent example of how to work with the community
- reduced tax rate for seniors
- for a fee or donation, cat out of tree service
- water survival class

Question 8

Does the fire department offer any services you would like to see discontinued?

There were 100 responses to this question. Of those, 83 said there are no services they would like to see discontinued. The other 17 responses varied, but there were a few mentioned more than once.

The following were mentioned more than once:

- EMS service reduction was mentioned on four occasions
- car seat installation was mentioned twice
- going on service calls was mentioned twice
- marine incident response was mentioned twice
- school programs were mentioned twice

The following were only mentioned once:

- boot collection
- civilian training programs
- smoke alarm installtion
- irrelevant PR
- Haz-Mat response
- Building inspection

Question 9

Do you have any areas of concern regarding the department's delivery of services?

There were 107 responses to this question and 79 of those said they had no concerns. The concerns stated are in the following table. If a concern was listed more than once, the number of times the statement or something similar was made is indicated in the chart.

Areas of Concern	How often
Response times.	7
The fire department is being called to assist people with non-life threatening issues.	3
Billing for transport of local area residents is not entirely clear.	2
The handling of calls by the 911 center.	2
I hope the department can expand as needed to support increased home and apartment construction, along with the businesses that are growing to support them.	1
Public Education regarding highway safety and emergency vehicles.	1
You have taken on the revenue from Steilacoom, yet provided no resources any closer than already existed. Why couldn't you staff a responder with an SUV at Steilacoom's fire/police station? Even if that person had to leave to assist with a call in Lake City or Oakbrook, most of the time they would be able to respond in a more acceptable time frame.	1
I am sometimes concerned for the safety of our rescue workers; specifically when they come into dangerous neighborhoods, like mine. I hope that they are trained to protect themselves as well as those they are serving.	1
According to the Puget Sound Clean Air Agency, my local fire dept. is the one to respond when someone is burning outdoors during an Outdoor Burn Ban. Twice I have called the non-emergency number when my neighbor was burning trash outdoors during a burn ban. These are anything but small recreational fire pit burnings - they are large and likely fueled with an accelerant. The response on the phone was that it is not the West Pierce's job to respond to these calls. I called the Clean Air folks back and was told by a supervisor that my local FD is the one to respond. You need to work this out with the PSCA folks.	1
Must say it was ABOUT time when you combined back to West Pierce. Talk about a waste of money to have Pierce, Steilacoom, UP, Dupont, Tacoma .... too much money for chiefs and not enough for REAL service. Silly boys, silly.	1
Better info on when I could (or if I should) call for non-life threatening issue, like if I have a burst pipe and can't or don't know how to turn off the water would you be able to help? What about a tree falling on my house?	1
NO fire truck should go out on any medical call, unless they are called to scene by trained medical. We need to charge like the ambulance company's do also for transport. We should not be supplementing adult family homes care/ nursing home care/ I'm on the floor and I can't get up but I refuse to move into assisted living. They are the FIRE DEPT. not Moe's medical!!! at tax dollars.	1

Question 9 (Continued)

Areas of Concern	How often
Yes. I think a lot of the superfluous PR is unnecessary. Firefighters and medics are above the pay grade for PR. Anyone can do that.	1
Trained professionals in train derailment response.	1
More medics.	1
We are a museum and preventive measures to avoid loss of our artifacts are high on our list.	1
High speed rail will impact response time to my neighborhood.	1
Budget, budget, budget. Big area to cover.	1
I hope your Commissioners make smart decisions, and that they maintain employment of everyone currently on-staff! 2-man crews out in Thurston County! :(Do not allow it!	1

Annual Mock Crash with students from Lakes High School

Question 10

Is there any other input you would like to give West Pierce Fire & Rescue?

There were 144 responses to this question, 12 responded with "good job" or "great job," 14 responded with "thank you," and 24 responded they had no further input. The remaining comments are listed in the following table.

Additional Input
West Pierce Fire & Rescue has provided excellent emergency medical service to our family, especially to my parents, during their final years.
Excellent service considering need for additional resources.
Just add that they were very helpful when my father was ill and when he passed in 2003. My mom still remembers them and how kind they were.
Maybe video cameras in vehicles to: 1. record vehicles slowing emergency vehicle. 2. record license plate numbers of any vehicle which causes response time to emergency fire & medical calls.
I smelled a gas leak in Oakbrook while walking one night. I did not want to call 9-1-1 in case it was only my imagination or nothing warranting the "whole brigade." Found out calling 9-1-1 was indeed my only option and that indeed that call required the "whole brigade" to respond. It leaves a person feeling like they may have wasted tax dollars in doing the only thing open to them. I wish there was a # for minor calls that can be verified before a full-fledged Dept. response.
We in Oakbrook appreciate F&R attendance at the annual Natl Night Out in August.
I recently had reason to call for medical assistance, everyone who responded was extremely kind and understanding. They did an awesome job.
Very glad to have them around...Thanks.
I think the merger shows the leadership is competent and showing good stewardship of public funds. I appreciate and fully support this organization.
Overall, the website is very basic and isn't very informative. IT still says that the website is under construction and it's already March.
Job well done. Highest of professionalism.
Our thanks and gratitude for all you do for us!
They go above and beyond the call of duty to care for us when needed. We always vote YES on the ballot for our West Pierce Fire and Rescue.
We appreciate the fact that several years ago, my wife was able to go to the nearest station when the doctor wanted her to have her blood pressure checked at the same time every day for several days in a row.
The response to my wife's wheelchair accident last year at Lakes High School was much slower than expected. More than 15 minutes when expected 5 minutes or less.
They have always provided excellent service especially in emergency medical response.
Outstanding, totally dedicated & professional group. Special credit to the totally volunteer group of EMTs who monitor us octogenarians at the YMCA. Seriously.
I did not know of the home inspection program.
Thank you for the work you do to keep our community safe.

Question 10 (Continued)

Additional Input
Keep up the good work. RESPECT!
Haven't used the services, but it is a comforting factor to have the station less than 1 mile from my neighborhood. EMT and Fire Service are the top interest for me.
The members of the department seem pleasant and competent. I have heard pleasant things about their responses to emergency calls.
I think you are doing an awesome job of assisting the community in emergencies, as well as educating us on fire and life safety. My child is in Kindergarten at Tillicum Elementary, and he was so excited when the firefighters came and taught him about fire safety. He went all through the house and showed me the detectors and made me check the batteries, told me about smoke and how to feel the door, etc. I also appreciate the social media updates. They help keep us in the loop. Thank you so much!!
While I have not used the services many I know have and it has been outstanding. Thank you for the exceptional efforts.
The actual Fire & Rescue guys are outstanding and I never give it a second thought when I vote to approve the levy.
I have family members who have called 911 for medical emergencies in the middle of the night. Why don't you change your shifts so that citizens don't have to wait for you to wake up to respond? Other cities use 12 hour shifts and others besides the 24 hours shift with responders who are awake, alert and better prepared. Imagine if hospitals operated with a medical and nursing staff who were all asleep until a patient walked in. You wouldn't find that acceptable. The 24 hour shift is a very old tradition that has long been obsolete.
I hope that our firemen and EMTs know how much we appreciate their professionalism, capabilities, and respect them. We worry about them, and are grateful that they are there. Our lives depend on them.
It would be great to have a list of things YOU need when you arrive. When people are upset and need to call for services, you may need to know specific information...meds taken by individuals, medical issues, allergies, etc. If my son were not at home, and I needed you, I may or may not be able to tell you myself. Does that make sense?
Have a non-emergency number for where to dispose of hazardous waste.
I hope the station in my neighborhood will not close.
Thank you for your service. I feel our community is well cared for and have not heard any complaints about timeliness from fellow community members after 30 years.
Expand West Pierce and re-associate with Tacoma, join Dupont, etc. LOWER administrative overhead. Stop the CRAZY excessive benefits and abuse of overtime and benefits for your fighters. Fight that damn crazy and way too powerful union please. We all know firefighters that work 2 days a month and get paid >$80K per year.
We feel there should be a fire station in the Town of Steilacoom so that the best response time and services are provided to the citizens in this area.
They came to check the house when we were on the east coast, which I am most grateful for and felt was over and above their job. We have great confidence in them.
I think you are doing a great job! I hope you won't have to discontinue any services.
I think they do a fabulous job. Thank you.
Our contact and experience has been excellent and positive. Keep up the good work.

Question 10 (Continued)

Additional Input
The guys from Station 20 were very professional in their job when handling me as a heart attack victim. Thank You!
My son had many health problems relating to seizures and maintaining his airway. I was always impressed with how quickly Lakewood Fire Dept. responded when called. We're on Butte so between the stations on Washington and the Oakbrook one. Also, as a parent, I appreciated the fact that they treated him with compassion and dignity.
Consider a non-emergency response unit (Vehicle with a Nurse/EMT) to cover non-emergency calls, thus freeing engines/emergency personnel to handle true emergencies.
Being close to 83, the medical services are the top of the list. Have had to use them many times, and find them outstanding.
I am 74 years old and have lived here in Lakewood since emigrating from England in 1997, and from day one have been impressed with the frequent response I have witnessed of the well turned out West Pierce Fire and Rescue Vehicles and Personnel, This gives me a feeling of Great CONFIDENCE for ANY-ONE in NEED of HELP
Sorry, but a lot of your job can be done at lower tax dollars by lessor trained, lessor paid, and lessor retirement cost people. You should not be picking up people who need to call an ambulance and be billed not the free fire dept. Fee for services beyond FIRE
Keep up the excellent work you do. Please keep it up. We all sleep better at night knowing you are close. We appreciate the services you provide. Thanks!
Hopefully I will not need fire or rescue, but it's nice to know your there.
I am so thankful that West Pierce Fire & Rescue provides such excellent service. The few times we have needed to call, help was fast and so caring. Keep up the good work!!
Recently when we called 911 there was no answer for 2 minutes. We redialed and it was answered but then it took time to be transferred to WPF&R
I've been interested in doing a CERT class - but haven't kept my eye out to the availability of one. If you offer this kind of training - great!
The fire departments main focus needs to be for people with life threatening conditions and not for calls that should not involve them. Calls for non-emergency/critical patient conditions that should never be made through the 911 center. The fire dept. should deal with fires and other similar conditions and critical patient conditions. That is what I pay taxes for and not for the rest of the non-critical calls.
They are THE BEST, professional, great communicators. Our neighbor had number of responses (he was very elderly) and treated affected parties with respect.
I have had several EKGs and an emergency response to B sting. You have helped us install car seats (multiple). I am always impressed with the quality/knowledge/service of WP.
Resident in area for over 20 years. Have always been greatly appreciative of the service we have received from WPF&R. Thank you all so very much for your service.
Taxes are outrageous! The merger with Lakewood was a huge mistake for UP taxpayers.
Think the service is outstanding and everyone I have dealt with has been professional but know when to personalize the service.
I get great comfort knowing there is SOMEBODY there! Active live alone 100 year old.

Question 10 (Continued)

Additional Input
Love you guys - great job and many thanks!!!
I have had occasion to use the Medical Services several times in the past 4 years as my health is fragile. I believe that your personnel are the best around. We are very fortunate to have such wonderful service.
Keep up the great work you provide the citizens you serve.
Make it easier to find out about all the programs you offer.
Feel they do a wonderful job congratulations.
Keep up the great work you do. Thanks.
Gratitude for doing a sometimes difficult and dangerous job well.
You guys are the best, seriously. Thank you.
Look at bringing DuPont into West Pierce.
Fantastic bunch of very dedicated and professional men and women. Bless you all for the work you do.
Not be a primary care provider.
I think your Dept does an AWESOME job! From a 40 Yr Veteran that worked close with TFD (police) Tacoma Dispatch THANK YOU!
I am a C.E.R.T. Volunteer and I am glad to be a part of West Pierce Fire and Rescue.
I am grateful to know West Pierce is out there for anyone experiencing an emergency. Thank you!
I was really happy to find your CERT program and can't wait to learn more about it!
Implement benefit charges like Central Pierce.
Well worth funding.
Not mentioned in the survey, the in home smoke alarm installation is a valuable asset to the city.
I have only had to use your services once since I have worked in Lakewood but when I did the response was very fast. They did a great job.
Great partners to work with. It seems that we have to vote on a fire bond/levy frequently. We appreciate that West Pierce Fire and Rescue provides excellent service with the latest and best equipment, BUT always asking for more does not always means the community needs it -- it's just nice to have! I am sure smaller, less wealthy communities make do with workable, adequate equipment and less modern fire stations. Our other question pertains to a medical 911 call, is it really necessary to have a big fire rig respond? What service are they providing and how often?
I find your staff to be very knowledgeable and professional. Thanks for all you do!
We love the fire-people :) Not fires though.
I have worked with WPFR for years as a police officer and found this team to be professional and courteous. They are a credit to fire fighting.
The people are always friendly and helpful. Very pleasant people to be around.
Higher visibility for giving out bike helmets-fluorescent vests for kids, more times collecting $ from public.
Thanks. You all are awesome!
You have it all together doing a tough but rewarding job.
Keep up the good work, Thank you for serving our community.
Only good words. Keep up the great work you men and women are doing.

Question 10 (Continued)

Additional Input
Keep up the good work! Thank you.
Thank you for your services! Our gas furnace was malfunctioning and set off the smoke alarms many years ago. FD came quickly and assisted in figuring out the issue.
Keep up the great work! I love that you guys always find extra time for our youth and community events. Be safe!
Wonderful response and help on all calls, Several calls for medical emergency. Replacement of smoke alarms and clean-up of water in kitchen (refer leak while we were not at home).
Fantastic job, guys - we're so lucky to have you!
Keep up the good work. We support the needed levies.
Since we moved here in July 2009, WPFR has responded to multiple medical emergencies at our house & my parents' house. The teams provided outstanding medical assistance every time. THANK YOU!
Keep being visible. Make sure citizens see you and hear about the things you do and incidents to which you respond.
You guys are all doing a great job! I couldn't be more pleased with yours' and the LPD's response time!
West Pierce Fire and Rescue came to my assistance twice. Once my aunt had a stroke in the home and the second, I came home from work and found my husband hanging from a door knob. Firefighters and medics and other personnel showed true concern for my wellbeing and comfort. They all spoke with kind, calm demeanor that helped me to stay calm during the devastating scene I had just seen. I will always be in their debt and will always appreciate the work they do. Thank you to each and every one of them.
Maybe I'm just out of touch with the community, and understandably considering priorities, personnel resources, and duty limitations, but it would be nice to have more community outreach and interaction with not just Pierce Fire and Rescue, but also law enforcement. Maybe some collaborative team events during Summerfest and other events with a few reps once in a while, weekly highlights and good news features or tips included in a combined pierce county digital newsletter similar to the suburban times etc. Maybe there are already efforts such as I mentioned going on and, as I said, I'm the one out of touch.
I would love to see the City give the department more support and increased staffing for faster response times. Additionally, the allowance for fireworks in the City is highly concerning. There has not been a July 4th in three years that surrounding neighbors have not chosen to set off fireworks throughout the week regardless of laws. Instituting an aggressive educational and informational initiative regarding the fire risk from fireworks, particularly given the drought conditions throughout Western Washington, would only benefit the city. Perhaps this would assist in moving for the city toward a public fireworks display that could be more contained and enjoyed by all.
All interaction has been very pleasant and respectful.
I believe the Fire Dept is very quick to respond, and have great staff and I have extensive faith in their knowledge and abilities.
Firefighters, EMT's, you all are incredibly kind, hardworking individuals and we SEE you!! From career, all the way down the line to the volunteers! Thank you!! Our hero's!
Doing a great job!!! Thank you for your services. They are greatly appreciated.

Question 10 (Continued)

Additional Input
WP is excellent!!! Medic unit and fire truck had to come to my house before when I had a medical event and they were here quickly and got me out of the house, into the rig and to the emergency room very quickly. And when the phone in the rig wasn't working the medic used his own phone to call the ED and give them a heads up. I have nothing but praise for the dept. On a side note, as they were returning from a call (they tend to drive our street fairly often) my 2 year old son was in the front yard waving his little arms at them and they turned on the lights and gave a "whoop-whoop" just for him! The dept is definitely community oriented and I love it! Thanks for being a great dept!
I think West Pierce does a great job in the communities, from emergency involvement to interactions with the community. Thanks for all you do!!! It doesn't go unnoticed and is greatly appreciated!!!
Y'all are FANTASTIC!! Seems all the other departments are being overrun by politics and squabbling, and you're making service better!! WELL DONE!!
You are great community partners. We appreciate your support!

Annual Fall Safety Day festivities

RISK ASSESSMENT

Introduction

The intent of this section is to provide an understanding of the processes utilized in describing the community's risks, as well as the scope, complexity, and evaluation methodology used to measure the risks. This analysis includes; not only the physical aspect of risk, but also the economic, sociologic, and demographic aspects of risk.

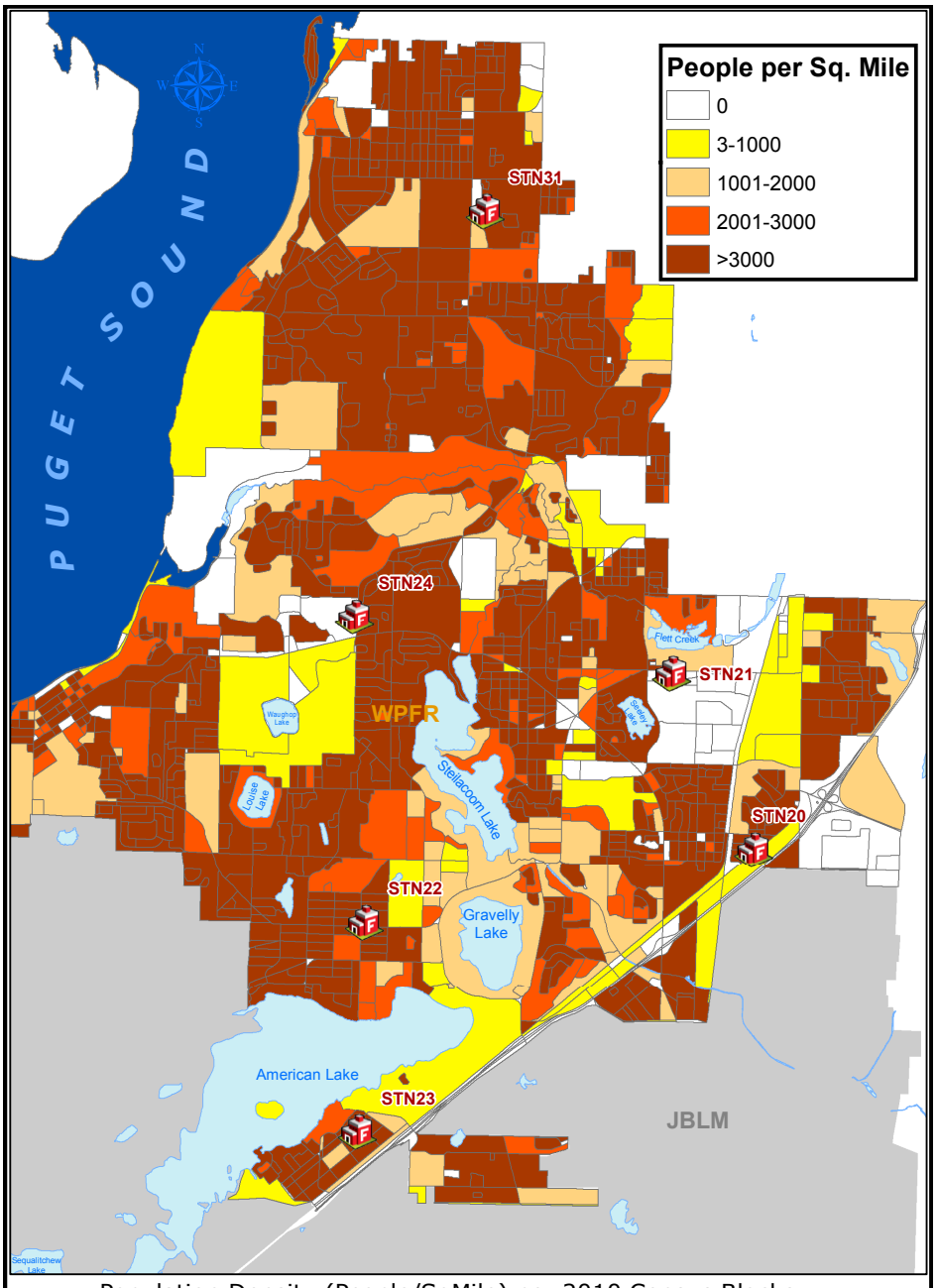
WPFR looked at the structural fire problem in addition to non-structural and non-fire related risks which include emergency medical, marine, technical rescue, and hazardous materials, along with major disasters such as; inclement weather events, earthquakes, etc. These risks include fixed facility events, as well as, transportation risks such as marine vessels, rail carriers, cargo trucks, aircraft and pipelines.

Some factors affecting these risks are street connectivity, traffic volumes, structure size, commercial processes, weather issues, and special events that draw large crowds into the District. Building and population densities were evaluated to determine the need for adjusting response plans according to anticipated exposures and life safety risks.

Physical Risk Factors

Population Risks

Population density is important when determining risk. Densely populated areas tend to have more calls for service as well as increased life safety risks. The WPFR "Population Density Map" shows the population densities throughout the District. The Center For Public Safety Excellence classifies population densities using the following definitions: metropolitan areas have a population density of over 3,000 people per square mile, urban areas have between 2,000

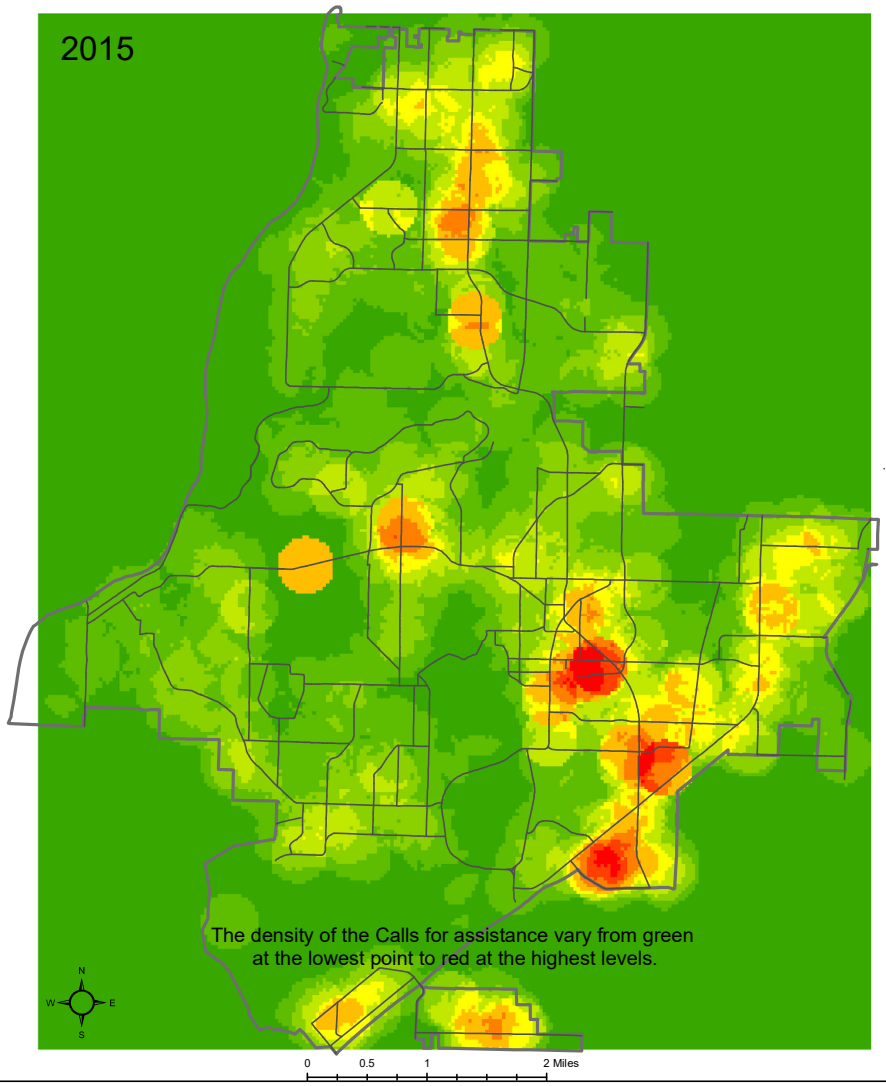


Population Density (People/SqMile) per 2010 Census Blocks

and 3,000 people per square mile, suburban areas have between 1,000 to 2,000 people per square mile, rural areas have less than 1,000 people per square mile, and wilderness or undeveloped areas are not readily accessible by a publicly or privately maintained road. Most of WPFR is classified as metropolitan, but there are urban, suburban and rural areas as well, throughout the community.

When evaluating the risk potential it was necessary to also look at the trends and patterns regarding where incidents occur. The high demand for service areas have not changed significantly from year to year, so WPFR can expect higher call volumes in these areas in the future. The maps validate the positioning of resources based on demand and concentrations of events. Anticipated population growth and redevelopment will require WPFR to continue to evaluate resource deployment. In WPFR, the areas with a higher population density also have a higher call volume. This can be noted by comparing the map titled "Call Densities for 2015 in WPFR" to the "Population Density Map."

Call Density for 2015 in West Pierce Fire & Rescue



Political Boundaries

WPFR encompasses the Cities of Lakewood and University Place. There are also two small pockets of unincorporated Pierce County, one being the Arrowhead community and other being a small pocket of land near the Meadow Park Golf Course. The Town of Steilacoom contracts for service with WPFR, but is not included within the legal boundaries of the District. It is unlikely the District will increase its boundaries unless there is a merger with a neighboring jurisdiction or if one of the cities should annex additional land into their borders.

Growth

According to the Comprehensive Plans of the City of Lakewood and the City of University Place, there are no current intentions to annex any additional land outside the existing borders. Both cities are considered extensively developed, mature communities. Most future growth will occur as a result of urban infill and redevelopment of existing properties. Both cities have current commercial development patterns largely representative of typical urban sprawl, with little in the way of a recognizable downtown core. Both cities are working to change this; Lakewood with the Towne Center, and University Place with The Village at Chambers Bay.

The City of Lakewood has defined several steps to control urban sprawl in their Comprehensive Plan. The first was the creation of new land use designations which restricts new commercial development to specialized nodes and corridors, as opposed to the random distribution that has occurred up to this point.

Many neighborhoods within Lakewood are slated for redevelopment which will likely have an impact on call volume and type of incidents. The Springbrook neighborhood, with its close proximity to Joint Base Lewis McChord, the Custer neighborhood in north central Lakewood, the northern portion of Tillicum, and the area around the Lakewood commuter rail station are all designated for higher density housing development. The Woodbrook area is planned for industrial development, altering its current, mostly residential, land use. The Air Corridor which consists of the land just north of the Joint Base Lewis McChord runway is slated for a conversion from the existing higher density housing, including mobile home parks and apartments, to lower density land uses such as warehouses, storage, and open space.

The City of University Place also addresses growth in their Comprehensive Plan. University Place intends to direct a large share of its forecasted population growth to its Regional Growth Centers; which includes; The Village at Chambers Bay, 27th Street Businesses, Northeast Mixed Use Districts and other areas already designated and zoned for multifamily housing and mixed use development. The Regional Growth Centers are envisioned as higher density focal points within the community; attracting people and businesses to an excellent multimodal transportation system with diverse economic opportunities, a variety of well-designed places to live; with a close proximity to shopping, recreation, and other amenities.

Redevelopment is also likely at Chambers Creek Properties where there have been proposals for private sector development, possibly a hotel, restaurant, and conference facilities. University Place is also planning to provide light manufacturing, industrial, and business park land uses, specifically in the northeast area of the City, which has convenient access to major transportation corridors.

The City of Steilacoom does not predict much growth within its boundaries according to their Comprehensive Plan. The growth they are expecting is predominantly residential.

Lakewood Transit Station

Construction Limitations

There are construction regulations within WPFR which can be found in the Municipal Codes of the Cities of Lakewood and University Place and the Town of Steilacoom. These sections cover such topics as water/sewer, storm water, set-back and buffer requirements, building height, development density, land uses, etc. These regulations are often based on the land use zoning such as residential, central business, office, institution, etc. along with special use permits and exceptions.

Response Barriers

West Pierce Fire & Rescue is a community with many natural barriers to response. The many lakes and streams in the community are one example. These bodies of water make it impossible to build new routes from one side of Lakewood to the other. The only routes available to get from the east side to the west are; Steilacoom Boulevard, Interlaaken Drive, and through the Lake City neighborhood. The limited routes can sometimes lead to longer response times if a road is heavily congested, closed, or under construction.

In addition to these natural barriers, the railroad crossings in the District can also impede response when the trains are passing through. Sometimes WPFR response units are required to wait for a train to pass while responding to an incident.

There are several neighborhoods isolated from the rest of the community in WPFR. The Tillicum and Woodbrook neighborhoods can only be accessed via Interstate 5, which is frequently blocked due to heavy traffic, impacting response times. The Springbrook neighborhood is another example, as the only way in and out is via a bridge over Interstate 5 on Bridgeport Way SW.

Interstate 5 during rush hour

Silcox Island is located in the middle of American Lake. The only transportation to and from the island is via private boat. Marine 23, moored on American Lake in Tillicum, responds to emergencies on the island. Day Island in University Place has only one point of ingress and egress, which is the Day Island Bridge. If this bridge is obstructed for some reason, the area is isolated from the rest of the community. Day Island also has limited boat access due to tidal changes. This area has very narrow roads and homes are located close together. It is a beach community also subject to flooding during high tides.

Silcox Island on American Lake in Lakewood

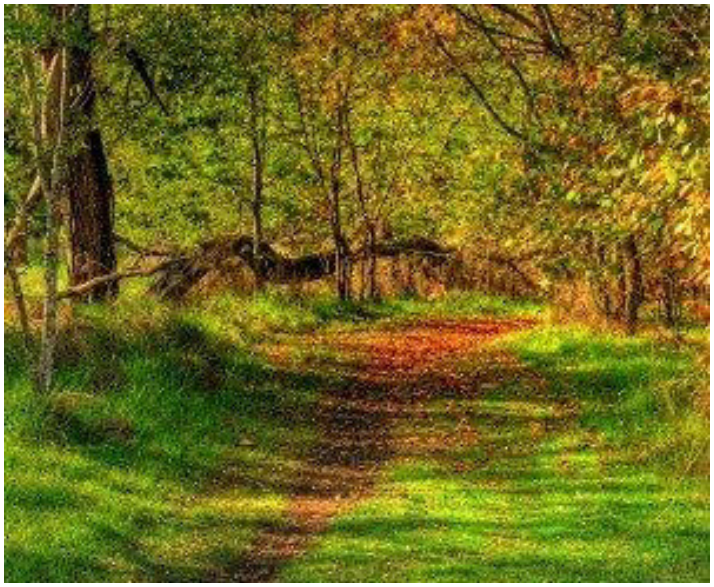
Sunset Beach in University Place has significant obstacles to response. Fire department access is limited due to steep and narrow roads and railroad tracks. The railroad traffic would need to be shut down in the event of a fire and spotters would be necessary to ensure no trains came down the tracks, damaging hose lines or injuring firefighters. If a fire occurs in this neighborhood, it will take a significant amount of work on the part of firefighters to establish a water supply. This is also a difficult area to access for EMS calls, especially if a patient needs to be transported.

Elevation Changes

The elevation throughout WPFR ranges from sea level to a high of 480 feet. There are some areas where the elevation changes quickly, specifically along the Puget Sound shoreline and Chambers Creek. These areas can pose increased risks for responding units and may require skills such as high angle rescue to mitigate an incident. There are properties along the shoreline with the potential for significant changes in the water levels as a result of the tides, specifically Day Island and Sunset Beach. These tidal changes, whether a very high or very low tide, can impact service.

Open Space/Interface

Only six percent of land in WPFR is undeveloped, an additional seven percent of land is vacant, including area parks, and 20 percent is classified as wooded residential, which means a significant amount of trees and vegetation were left in the area when it was developed. There is only a minor interface between developed and undeveloped areas, so there is not a significant risk of wildfires in our community, although there have been large fires over the years at Ft. Steilacoom Park, which has a significant amount of surface level natural vegetation.



Ft. Steilacoom Park Open Space

Transportation Risk Factors

Traffic and Roadways

The streets in WPFR form a network much like that of the human body's vascular system, composed of arteries, veins, and capillaries, that work together to supply oxygen to the rest of the body. Similarly, the street network must function together to provide mobility to the entire region. Roads have a hierarchy of functional classifications, which range from major routes designed to move large numbers of vehicles quickly throughout the region (principal arterials) to streets intended to provide a greater balance between mobility and access to residential, commercial, and industrial areas (minor arterials and collector arterials) and to those used primarily for access to homes (local access road). The functional classification system acknowledges that individual streets do not act independently of each other, but form a network of streets that work together to serve travel needs on a local, city-wide, and regional level.

The street system is one of the most important factors affecting WPFR's ability to deliver the necessary resources to the scene of an emergency. Traffic flow patterns, numbers of vehicles, connectivity, traffic calming devices, and the ability of drivers to yield to emergency vehicles all affect service delivery. Traffic congestion is predicted to increase as the population increases, which will likely cause WPFR to see more traffic related incidents and could increase response times. The following pages describe in more detail the transportation network within WPFR.

By the year 2020, traffic congestion on freeways and arterial roadways within the region is projected to be far more extensive, resulting in longer travel delays. This has a direct impact on Lakewood, University Place, and Steilacoom as they are all part of the regional transportation system and are integrally connected to systems of adjacent jurisdictions. WPFR currently experiences traffic congestion around the freeway interchanges and some principal arterial streets.

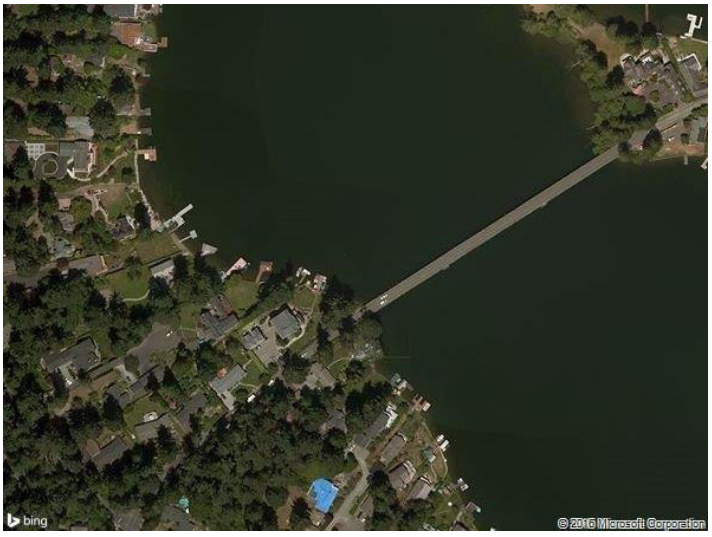
According to the Lakewood Comprehensive plan there are many causes of increased traffic congestion in WPFR including:

- Annual vehicle miles travelled are growing at a faster rate than the population or employment.
- An increase in the number of two-wage-earner households.
- A historical decline in transit use as a percentage of overall trips.
- Road improvements have not kept pace with traffic volume for environmental, financial, and community character reasons.

To correct some of the problems contributing to these conditions, all three communities must develop and maintain a balanced multimodal transportation system integrating the local transportation network with the regional transportation system.

Lakewood

There are several challenges to improving the transportation system in Lakewood. First, there are natural obstacles such as, American Lake, Gravelly Lake and Lake Steilacoom, which constrict traffic flow between the east and west halves of the city to a few arterial connections. Secondly, the existing traffic patterns evolved in a pattern typical of urban sprawl, a few principal roadways connect a network composed of otherwise unconnected cul-de-sacs. Because of the city's geographic location, natural features, and military installations; Interstate 5 and State Route 512 form the primary connections with the rest of the region. Finally, there are limited alternative modes of transportation. The City's incomplete bicycle and pedestrian network does not provide safe links between most commercial areas, schools, community facilities, and residential neighborhoods.



Interlaaken Bridge over Lake Steilacoom

To help alleviate these transportation issues, Lakewood has several goals and policies listed in their comprehensive plan. Due to the City's close proximity to Joint Base Lewis-McChord and Camp Murray, other agencies are involved in improving the transportation network. One goal is to work with these agencies to maintain consistency with state, regional and local plans and transportation projects. The City is establishing freight routes to reduce the impact of freight vehicles on the residential streets and other sensitive lands. They also want to reduce the predominance of single occupant vehicles as a primary means of transportation, by increasing the use of public transportation, biking and walking, which will involve improving the linkages from one neighborhood to the next.

University Place

The City of University Place also has several goals related to their road network and transportation system. The first goal is to create a transportation network including vehicle, pedestrian, bicycle and transit components located throughout the City and connecting to adjacent communities. Secondly, they plan to establish assigned truck routes to the City's delivery destinations along major arterials to avoid impacts on the secondary arterials, collectors and neighborhood streets. They also plan to add roundabouts, traffic circles, landscaped medians, pedestrian bump-outs, and other traffic calming measures to reduce speeds and increase safety. These traffic calming devices may have an impact on response, as they also slow emergency vehicles. Improvements are planned to major arterials,

secondary arterials and collector arterials in hopes of maintaining a consistent level of service on the arterial system that mitigates the impacts of new growth.

Steilacoom

Steilacoom has recently reconstructed the Town's major streets, which means their transportation projects will concentrate on non-motorized improvements such as sidewalks and bike lanes. There are plans to implement traffic calming strategies such as traffic circles, speed bumps, raised crosswalks, etc., which may impact emergency response.

Roadway Performance

Roadway performance is measured using the National Research Council Highway Capacity Manual's standardized Level of Service (LOS) Scale of A-F. LOS "A" represents the least amount of congestion, while the letter "F" represents the highest level of congestion. Lakewood has several roads rated at Levels "E" and "F," which need improvements.

Level "E" is defined as representing operating conditions at or near the capacity of the roadway. Low speeds (approaching 50 percent of normal) and average intersection delays of 40 to 60 seconds per vehicle are common. Freedom to maneuver within the traffic stream is extremely difficult. Any incident can be expected to produce a breakdown in traffic flow with extensive queuing. Level "E" rated roadways in the District include:

- South Tacoma Way between 84th Street S and Steilacoom Boulevard SW
- 108th Street SW between Pacific Highway SW and Bridgeport Way SW
- Bridgeport Way SW between Pacific Highway SW and 108th Street SW

Level "F" is defined as forced flow operation at very low speeds. Operations are characterized by stop-and-go traffic. Vehicles may progress at reasonable speeds for several hundred feet or more, then be required to stop in a cyclical fashion. Long typical delays of over 60 seconds per vehicle occur at signalized intersections. Level "F" rated roadways include:

- Steilacoom Boulevard corridor between 88th Street SW and 83rd Avenue SW
- Gravelly Lake Drive between I-5 and Washington Boulevard SW
- Washington Boulevard SW, west of Gravelly Lake Drive SW
- Ardmore Drive SW between Steilacoom Boulevard SW and Whitman Avenue SW
- Murray Road SW north of 146th Street SW

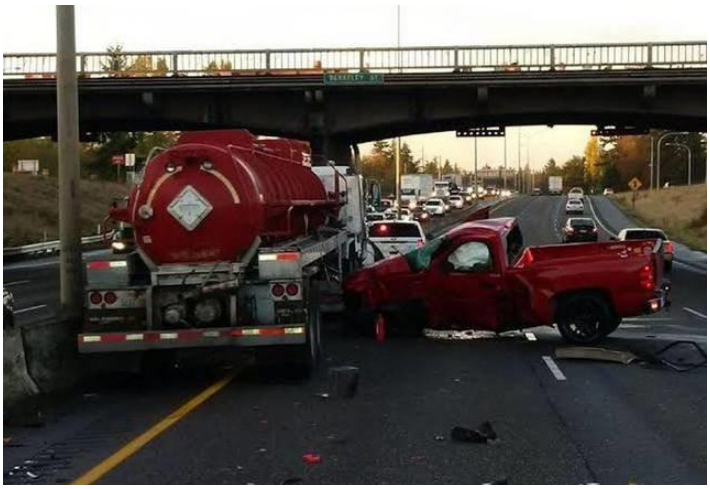
Intersection at Lakewood Drive W and 74th St W

South Tacoma Way, Bridgeport Way, Steilacoom Boulevard, Gravelly Lake Drive and Washington Boulevard are principal arterials with over 15,000 vehicles travelling per day. Murray Road and 108th Street are minor arterials with between 5,000 and 20,000 vehicles per day. The peak times for congestion on these roadways are early in the morning between 6:00 and 8:00 am and in the afternoon between 4:00 and 6:00 pm.

Improving these roadways in Lakewood is beyond the funding capacity of the current capital facilities plan, so it is unlikely improvements will be made in the near future and may even get worse with anticipated population growth. Neither the City of University Place, nor the Town of Steilacoom currently have any roadways with "E" or "F" ratings, but University Place is anticipating several intersections to receive those ratings in the near future as a result of population growth.

Interstate 5

In 2013, the average daily vehicle count on Interstate 5 at milepost 119 located near the Steilacoom/DuPont Road, just south of the fire district, was 120,000 with approximately 10 percent (12,000) of those vehicles being trucks. The peak truck volumes near this exit were from 9am to 1pm. At Milepost 131, just north of the fire District at 56th Street, the average daily vehicle count was 188,000 with approximately 8 percent (15,040) being trucks. The peak truck volumes near this exit were from 8am to 11am.



Crash on Interstate 5

Of the large trucks on Interstate 5, approximately three percent were transporting a hazardous material and an additional 3 percent were transporting "super heavy" loads (those exceeding 254,300 lbs. gross weight). A 2010 and 2011 review of the "heavy truck" collision data for Pierce County indicated 11 percent of the collisions occurred in Lakewood which amounted to an average of 45 "heavy truck" crashes per year. This means West Pierce Fire & Rescue responds to nearly one collision involving a "heavy truck" on Interstate 5 each week. Since 2011, the average number of collisions WPFR responded to on the highways, including both Interstate 5 and Highway 512 is 151 per year or nearly three collisions per week.

Bridges

There are several communities in Lakewood accessed by private bridges. A voluntary certification program was put in place where owners of the bridges were to obtain an inspection and weight-rating by a licensed structural engineer every two years. There are two bridges that have not undergone the inspection, posing an unacceptable risk to WPFR personnel and apparatus to cross. These neighborhoods will require WPFR to deploy personnel and hand-carried equipment across the bridge to provide emergency services, creating delays in response. The two neighborhoods impacted are:

- Valley Creek with two bridges at the end of Phillips Road
- Greystone, 11210 Gravelly Lake Drive

Rail

There are two sets of railroad tracks running through the District; one travels along Puget Sound on the western border of the District through Steilacoom and University Place, the other travels through Lakewood along Interstate 5 until it arrives at the Lakeview neighborhood, where the track turns and runs along the west side of South Tacoma Way.

The railroad tracks along the shoreline were first built by Northern Pacific Railway in 1912. Now owned by the Burlington Northern and Santa Fe Railway Company (BNSF), the double track serves as many as 60 trains per day, including both freight and passenger traffic. Neither passenger nor freight trains make scheduled stops in the District.

In 2015, an average of 30 commercial trains containing a variety of materials travelled through the District each day. BNSF is required by Federal Law to transport any legal commodity, including any hazardous materials in accordance with DOT regulations. BNSF transports consumer commodities, grain and agricultural commodities, low-sulfur coal, and industrial goods such as petroleum, chemicals, housing materials, food and beverages. Hazardous

materials account for approximately 5 percent of this rail traffic. Trains vary in size from a merchandise train, containing about 20 cars or more to a unit train with 125 cars or more.

Sounder commuter train

Passenger and commuter trains also travel through the District, using the same tracks as the commercial trains. According to the latest posted schedule, Amtrak runs 10 trains through the area each day; equally split between northbound and southbound. In 2014, there were 125,984 total passengers getting on or off the train in Tacoma which is the nearest station to WPFR. This comes to an average of 345 Amtrak passengers getting on and off the train each day. There are many additional passengers who travel through the area and do not get off at stops near the District.

The Sounder commuter train has its southernmost station in Lakewood. Daily there are six round-trip trains travelling between Seattle and Lakewood. Average daily weekday ridership on these trains is just over 300 passengers, but this number is increasing at a rapid rate as service expands.

The Washington State Department of Transportation studied high-speed rail service in the Pacific Northwest Rail Corridor, running from Vancouver, British Columbia to Eugene, Oregon. The Amtrak Cascades Plan for Washington State (April 2000) calls for passenger trains to be re-routed from Tacoma through Lakewood to avoid the curves and single-track tunnels at Point Defiance, thus bypassing Steilacoom. The new route is currently slated to begin in 2017. Freight service will continue along the shoreline for the foreseeable future.

The rerouting of the trains provided the City of Lakewood an opportunity to conduct a hazard analysis which identified some risks associated with the trains coming through the City as opposed to traveling along the water. Some of the hazard descriptions identified were as follows:

- Collision between train and pedestrians
- Collision between train and fixed structures
- Collision between train and foreign objects
- Collision between train and grade crossing user(s)
- Derailment
- Explosion
- Fire or smoke under bridge structure
- Flood on alignment
- Foreign object on alignment

The City of Lakewood plans to mitigate as many of these risks as possible through education, engineering and maintenance. Education includes public safety messages around rail safety and providing appropriate signage. Engineering includes additional fencing, installation of warning devices, ensuring safe right-of-way and roadway design, installing pedestrian gates in areas where people often walk, and coordinate traffic control device upgrades and design intersection

Freight train travelling through Steilacoom

interface with adjacent intersection traffic signals. Maintenance includes frequently removing debris from tracks and clearing vegetation or removing objects to allow for adequate sight distance. (Reference: Point Defiance Bypass Preliminary Hazard Analysis)

Waterways

WPFR is bordered on the west by roughly eight miles of Puget Sound waterfront. This waterway is utilized for recreation and trade. There are two ports in close proximity to WPFR. To the south is the Port of Olympia, which mostly exports logs to Japan and imports fracking sand from China. To the north, is the Port of Tacoma. They import and/or export items such as automobiles, grain, logs, and much more. This port is an economic driver for Pierce County and the rest of the region. If there are any interruptions at either of these ports the impact to the local and national economy are significant.

View of the Tacoma Narrows Bridge

Airport

There is no airport located within WPFR, but a runway operated by the Department of Defense at Joint Base Lewis-McChord (JBLM) is on the eastern border. Although this airport is not located in the District, WPFR would likely respond through automatic and mutual aid agreements to significant incidents at this location. Also, the flight path for this airport sends aircraft directly over the District on take-offs and landings, increasing the risk for an aircraft incident to occur within the District since most aircraft incidents occur during take-off or landing.

C-17 landing at JBLM

There are two asphalt runways at the airport. One is 6,121 feet long by 147 feet wide and the other is 10,108 feet long by 150 feet wide. Multiple flights take off and land each day.

Aircraft from JBLM are tasked with supporting worldwide combat and humanitarian airlift contingencies. There are several different types of aircraft that utilize this airport from large C-17's to Apache and Chinook Helicopters. The C-17 crew consists of a pilot, co-pilot and loadmaster. The maximum load is 170,000 pounds and can fit two large buses, three helicopters, and one of the Army's newest tanks or other oversized cargo. In addition, it has airdrop capabilities for cargo and up to 102 paratroopers.

The City of Lakewood recently rezoned the entire flight path area and has changed development from the current high density housing to a more industrial use based on the risks to the community.

Utilities

A utility emergency may involve one or more of the following; natural gas, heating oil, gasoline, coal, electricity, or water. These types of emergencies can create a great risk to firefighters. They must mitigate the hazards so neither they, nor the public are injured. No matter what type of utility is involved, when a lack of resources disrupts business and the day-to-day lives of citizens, it can become an emergency. This is especially true during periods of inclement weather or other types of disasters. WPFR citizens receive service from several different utility providers.

Lakewood water tower

Lakewood Service Providers
Pierce County Public Works provides sewer service to the majority of Lakewood. There are a few pockets where no sewer service is available limiting development. Those areas are 1) north of Pierce College and north of 101st St SW 2) along Clover Creek near Cochise Lane. Recently, sewer trunk lines were installed in Tillicum and Woodbrook which is anticipated to increase development in these areas. Lakewood Water District provides water service. Gas and power are provided by one of the following entities in Lakewood; Lakeview Light and Power, Tacoma Power, and Puget Sound Energy. Storm water management is provided by the Surface Water Management Division of the Public Works Department for the City of Lakewood.

University Place Service Providers
Pierce County Public Works provides sewer services in University Place and Tacoma Public Utilities provides the power, gas and water service to most residences although there are other smaller companies who provide service as well. There are several telecommunications providers. The City plans to work with these agencies to be sure necessary maintenance and upgrades are completed to ensure the needs of the community are met. Storm water management is provided by the City of University Place.

Steilacoom Service Providers
The Town of Steilacoom operates much of its own utility infrastructure; including electric distribution, storm water conveyance, sanitary sewer, and water systems. Many of the existing facilities are aging and in need of renovation to meet modern service standards and the demand created by future growth. There are plans to replace older, water pipes throughout town in the coming years. There are also plans to replace old pipes in the sewer system.

Utility emergencies can have a significant effect on the community, including but not limited to: impact on public safety and emergency response by causing

Utility pole

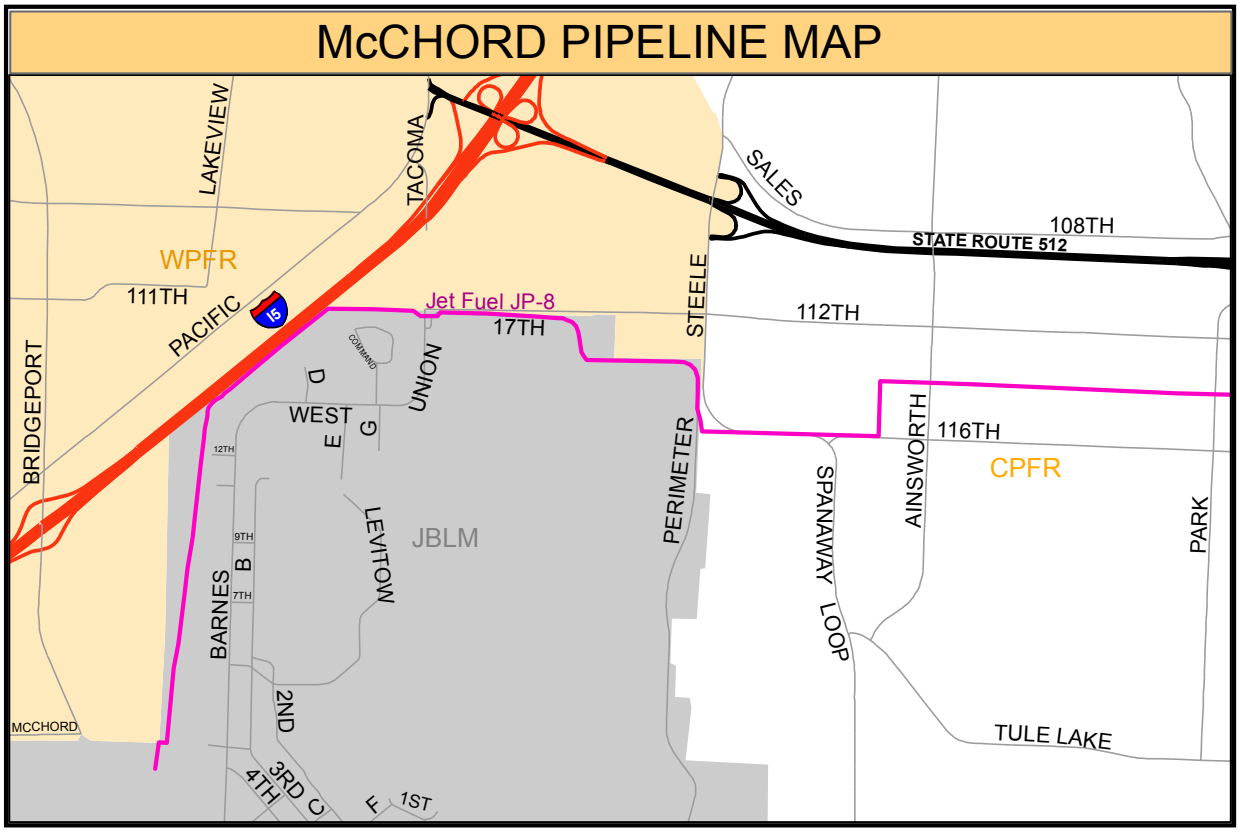
fires, explosions, flooding, etc.; inconvenience to citizens; reduced heating and lighting capabilities; reduced production across the economy; potential failures of transportation, water supply, wastewater treatment system, breakdown of communication, information, and banking systems. Even short-term utility impacts can affect some people. Senior citizens and the disabled may be unable to leave their homes, they may not have an alternate method of heating their home, and/or they may be unable to operate medical equipment necessary for survival.

Pipelines

The McChord Pipeline Co. is the primary supplier of jet fuel to Joint Base Lewis McChord (JBLM). According to their website, the pipeline is a single 6-inch diameter, 14.25-mile long pipeline originating at the U.S. Oil & Refining Co., located in the Tacoma Tideflats, and terminates at storage tanks located at JBLM. The pipeline transports JP-8, a kerosene-based jet fuel, as its sole product. Jet fuel is a petroleum distillate and a combustible liquid. Jet fuel's physical properties are similar to that of kerosene.

WPFR is responsible for planning, coordinating and conducting emergency preparedness and response activities regarding the pipeline, because it carries hazardous materials that can pose serious risks to people and the environment. Pipelines are one of the safest and most economical means of transporting hazardous materials, but occasionally incidents do occur. The primary causes of pipeline incidents include corrosion; incorrect operation; material, weld or equipment failure; natural force damage like earthquakes and floods; excavation damage; and other outside force damage like vehicle collisions. Although pipeline incidents are relatively rare, considering the total mileage of pipelines and the volume of products transported, pipeline incidents can have catastrophic consequences.

The most important aspects of pipeline emergency preparedness and response are communication and cooperation between pipeline operators and emergency responders prior to an incident occurring.



Human Risks

Civil Disturbances

Civil disturbances are the result of groups or individuals feeling their needs or rights are being infringed upon, either by society at large, a segment thereof, or the current overriding political system. When this results in community disruption of a nature where intervention is required to maintain public safety it has become a civil disturbance.

Civil disturbance spans a wide variety of actions and includes, but is not limited to; labor unrest, strikes, civil disobedience, demonstrations, riots, or rebellion. Triggers could include: racial tension, religious conflict, unemployment, a decrease in normally accepted goods or services such as water, food or gas shortages, or unpopular political actions.

There has never been an issue with civil disturbances within WPFR's borders, but they can happen anywhere. Labor disturbances will tend to occur at individual companies or organizations or during marches in support of workers. Confrontations can also happen at either of the colleges in the District, especially during periods of protest against governmental policy, college policy or during and after sporting events.

Civil disturbances can affect the region's economic vitality should businesses be forced to close or highways and other infrastructure severely impacted.

Natural Hazards

Climatic Impact

WPFR enjoys a very mild climate. July is on average the warmest month, with the highest recorded temperature of over 100 degrees in 2009. The summer of 2015 was one of the hottest and driest on record with more than 10 days over 90 degrees. On average, December is the coolest month with the lowest recorded temperature being five degrees in 1985. The average yearly rainfall is 39 inches and the average

Funnel cloud over Lakewood Towne Center (2013)

snowfall is eight inches. The number of days with measurable precipitation on average each year is 146, with the remaining days varying from sunny, to partly cloudy, to overcast.

Severe weather is a risk to the community. Windstorms, hail, snow, and ice storms, have all impacted WPFR in the past. While tornadoes have not occurred in our jurisdiction they have taken place recently in areas nearby. The most recent federal disaster declaration in Pierce County was on March 5, 2012 for a severe winter storm.

Land Erosion Risks

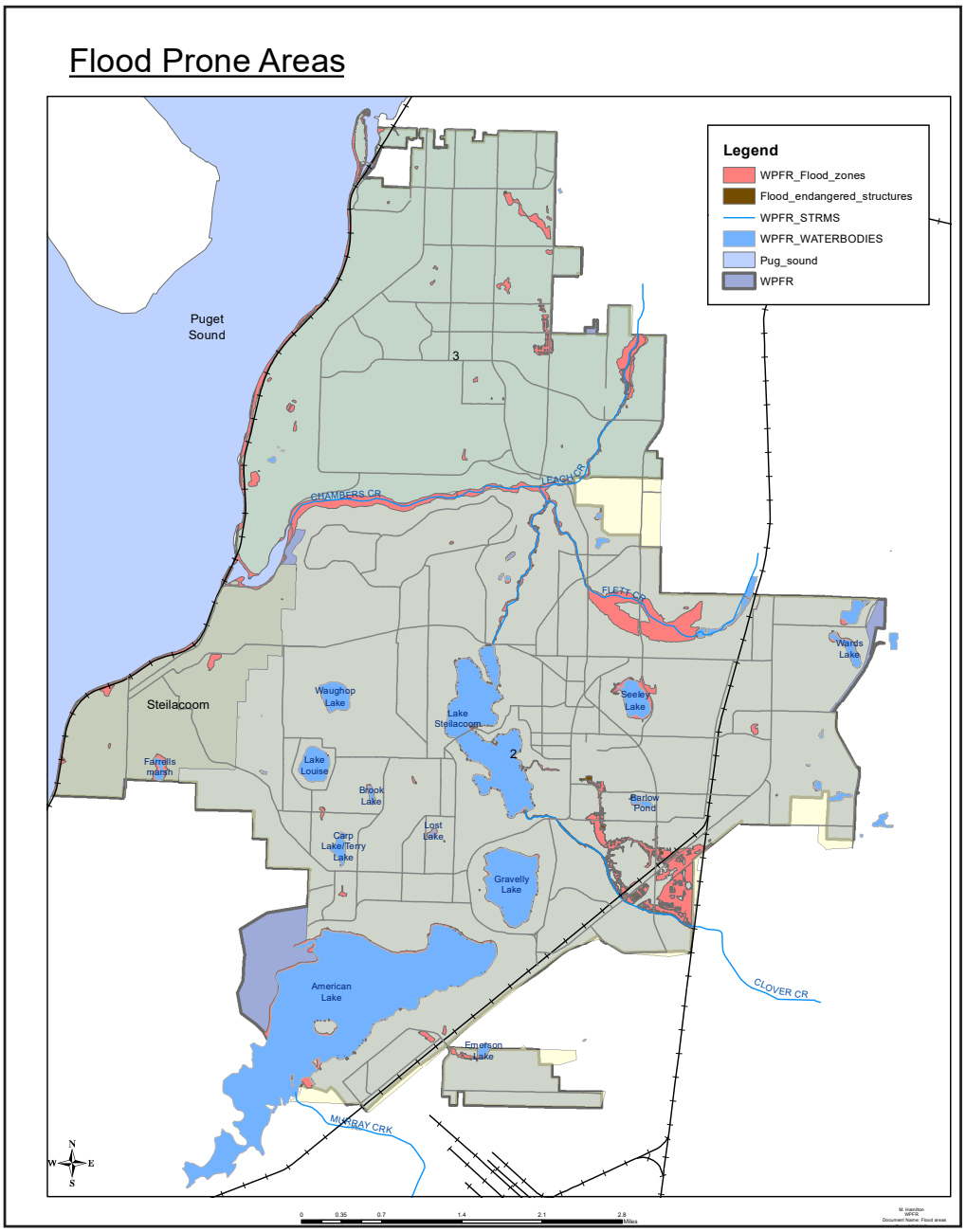
There are many areas throughout WPFR where slopes exceed 15% and glacial till is overlain by well-drained soils. When these hillsides become wet, it is possible for the slope to fail. These areas are also at an increased risk of damage resulting from an earthquake

Kobiyashi Park in University Place

or slope settlement. The largest steep slope hazard area lies along Chambers Creek affecting both Lakewood and University Place.

Flooding

There are very few areas identified in the District as being at risk for floods. The areas at risk do not flood often, but during periods of heavy rain, it is possible. The areas identified are shown on the following map. Notice most of them are located near creeks and streams. Urban flooding would be the most likely type of flood to occur within the District, as drains get clogged during times of heavy rains.



Earthquake

There are three distinct earthquake threats in our region. Deep earthquakes, like the 2001 Nisqually Earthquake, which was a magnitude 6.8; earthquakes on the Seattle or Tacoma Faults that could have a magnitude up to 8.0; and subduction earthquakes located off the Washington Coast that could have a magnitude as high as 9.0. Any of these types of earthquakes could cause millions, if not billions of dollars in damage within the region. (Region 5 Hazard Mitigation Plan November 2008-2013 edition)

Tsunami or Seiche

Tsunami is a Japanese word meaning large harbor wave. Pierce County has been impacted by three tsunamis generated in the Puget Sound in the past 120 years. The largest of these, the 1894 tsunami, originated in Commencement Bay and destroyed 300 feet of dock and sent a ten foot wave into Old Town Tacoma. With eight miles of Puget Sound waterfront acting as the western border of the District, there is a risk of either a tsunami or a seiche. A seiche is a standing wave in an enclosed or partially enclosed body of water. This phenomenon has been observed on lakes, reservoirs, swimming pools, and bays.

Volcanic Eruption

While WPFR will not likely be directly impacted by a volcanic event, it will likely be an area of refuge from citizens throughout Pierce County whose homes would be affected if Mount Rainier erupted. Another risk is that of isolation. Many of the roads utilized for commerce and travel to work may be impacted in the event of a volcanic eruption.

Epidemic

The Pierce County Health Department informs local healthcare providers, including the EMS Division of WPFR, when there is some sort of communicable health risk in the region. The main health risk in Pierce County in 2016 was influenza, but diseases imported from other countries could create the worst epidemics in the future. Many diseases that Americans have not worried about for years, if not decades, still exist in many parts of the world, not to mention completely new diseases. In 2016, there were health advisories for the Zika Virus and the Middle East Respiratory Syndrome Coronavirus. It is important for WPFR to heed these advisories to protect the health of first responders and the community alike. There are animal epidemics and human epidemics. Examples of animal epidemics include "The Bird Flu" which originated in birds and spread to humans. Another example would be "Mad Cow Disease," which infected a significant amount of the cattle in Great Britain and Canada resulting in the slaughter of them, so the disease would not spread to other cows or affect humans. Rabies is also an example of an animal epidemic that can spread to humans when they are bitten.

Human epidemics include; Measles, Hepatitis B, Tuberculosis, the standard flu, E-coli, Lyme Disease, etc. In the event of a pandemic outbreak, because most or all people would not have immunity to the virus, a large number of people around the world could be infected. If a pandemic should hit the United States, the Centers for Disease Control and Prevention (CDC) predicts that as much as 25 to 35 percent of the US population could be affected.

The impacts of either animal or human epidemics could include loss of life or short or long term debilitation for the victims. It could create an economic impact due to missed work, which affects not only the employee, but the employer as well. A serious epidemic or pandemic would likely cause a strain on the current public health and medical resources, of which WPFR is a part.

WPFR supports the local health community in preventing and epidemic by offering necessary immunizations to employees and their families.

Technological Hazards

The top technological hazards identified are the potential for communication failures, including those involving the emergency response system (9-1-1, first responder radios, etc.) and utility disruptions such as water, sewer, natural gas, and electrical service. Additionally, technological events can cause transportation failures, fuel shortages and information systems failure.

PSE crews repairing downed power lines in Lakewood

Commercial Property Risks

WPFR undertook a significant challenge in conducting risk assessments on every commercial and multi-family residential structure in the District. Firefighters and prevention personnel visited every commercial structure to obtain current and relevant data.

An Occupancy Vulnerability Assessment Profile (OVAP) risk assessment was conducted for each structure and once completed, structures were given a risk score. Items included in the score were exposure separation, type of construction, number of stories, access, square footage, occupant load, occupant mobility, warning alarm present, exiting systems, water demand, property value, regulatory oversight, human activity, ability to control fire, hazard type and fire load. Based on these scores, buildings were placed in one of the following risk categories: special, high, moderate, or low. A full description of the items evaluated and the scoring system is available in Appendix I.

This process occurred over an eight month period and in the end, over 1,800 structures and 3,500 businesses were assessed, representing all of the commercial properties in the District. This information will allow WPFR to look at the overall fire and emergency risks in the community and determine the deployment needed to accomplish the critical tasking necessary to extinguish a fire or respond to a major incident anywhere in the District.

WPFR was able to identify vacant and demolished structures, along with risks to firefighters. The identified risks to firefighters will be placed into the Computer Aided Dispatch (CAD) to inform crews prior to their arrival on the scene of an emergency. Upon completion of the process, the OVAP scores were reviewed by the Suppression Battalion Chiefs and the final scores were discussed. If certain structures were deemed to be in an incorrect category based on their knowledge of the area, the occupancy, or historical incidents, the scores were adjusted. The final scores are critical to determining resource deployment to a structure fire or other emergency at any one of the buildings.

Probability and Consequence

In addition to the OVAP scoring, occupancies were assessed for probability and consequence. Probability is the predictability of an event occurring based on historical data and provides a method for predicting the frequency of future events. Consequence refers to the impact of a particular emergency incident on the community. For example, a nursing home fire may be an infrequent event, but it carries an extremely high consequence to life and property.

The categories utilized and examples of each are as follows:

Special Risk – Low Probability/High Consequence
- Government or infrastructure risks
- Hospitals
- Nursing homes
- Abandoned structures
- Industrial complexes with fire flows of more than 3,500 gpm

High Risk – High Probability/High Consequence
- Concentrations of older multi-family dwellings
- Multi-family dwellings more than two stories tall
- Buildings with high concentrations of fuel load or hazardous materials
- Large mercantile facilities
- Built up areas with high concentration of property with substantial risk of life loss, severe financial impact upon the community or the potential for unusual damage to property or the environment.

Moderate Risk – High Probability/Low Consequence
- Detached, single-family dwellings
- Railroad facilities
- Mobile homes
- Industrial or commercial occupancies under 10,000 square feet without high fire load.

Low Risk – Low Probability/Low Consequence

- Storage sheds
- Outbuildings
- Detached garages

By utilizing these methodologies, risks were identified in each service area based on past incident data (probability) and whether or not the potential loss severity (consequence) of life and/or property during future events could significantly impact the community.

Special Risk Facilities

When considering probability and consequence of an event occurring, there are unique situations which are inherent to "Special Risk." These unique situations cause extreme conditions or have disastrous potential. These types of events occur so rarely and have such high consequences that most departments will only have a few members with any experience to mitigate these incidents. Although the department trains for these occurrences, the training is often theoretical and always simulated. These training exercises include, but are not limited to, hazardous materials releases, mass casualty incidents, water emergencies, and technical rescue.

WPFR assessed large facilities, occupancies where a high risk population is housed, and facilities where the types and volumes of products or the kind of business conducted require a unique response based on critical tasking and resources needed to accomplish necessary tasks. The following facilities and sites in WPFR were identified as Special Risks due to their size, complexity, processes, high life risks, or extreme or unique hazards.

FACILITY	ADDRESS	STATION RESPONSE AREA
Lakewood Meadows	5228-5230 112th St SW, Lakewood	20
St. Clare Hospital	11315 Bridgeport Way SW, Lakewood	20
Maple Creek Retirement Center	10420 Gravelly Lake Dr SW, Lakewood	21
Pierce Transit	3701 96th St SW, Lakewood	21
B & I	8012 South Tacoma Way, Lakewood	21
Lakewood Industrial Park	between 95th and 100th St SW and Lakewood Drive SW and Lakeview Ave SW, Lakewood	21
Western State Hospital	9601 Steilacoom Blvd SW, Lakewood	24
Bridgeport Place Senior Living Facility	5250 Bridgeport Way W, University Place	31
University Place Care Center	5520 Bridgeport Way W, University Place	31
Chambers Creek Wastewater	10311 Chambers Creek Rd W	31

High Risk Facilities

High Risk Facilities are those that have both a high probability of an incident occurring and a high consequence such as loss of life or a significant impact on the economy. Included in the high risk facilities are multi-family properties, adult family homes, facilities with hazardous materials, schools, and various other businesses.

Multi-Family Risk Assessment

Within the borders of WPFR there are 336 structures classified as multi-family dwellings. In 2015, WPFR responded to 2,859 calls to these structures. Of these, 136 were fire responses and 2,723 were EMS calls or other types of emergencies.

The life risk factor in these dwellings is significant based on the number of occupants. These structures are often wood frame and many use lightweight truss construction. In addition, some of these dwellings are three or more stories in height, which creates unique challenges for both rescue and ventilation efforts.

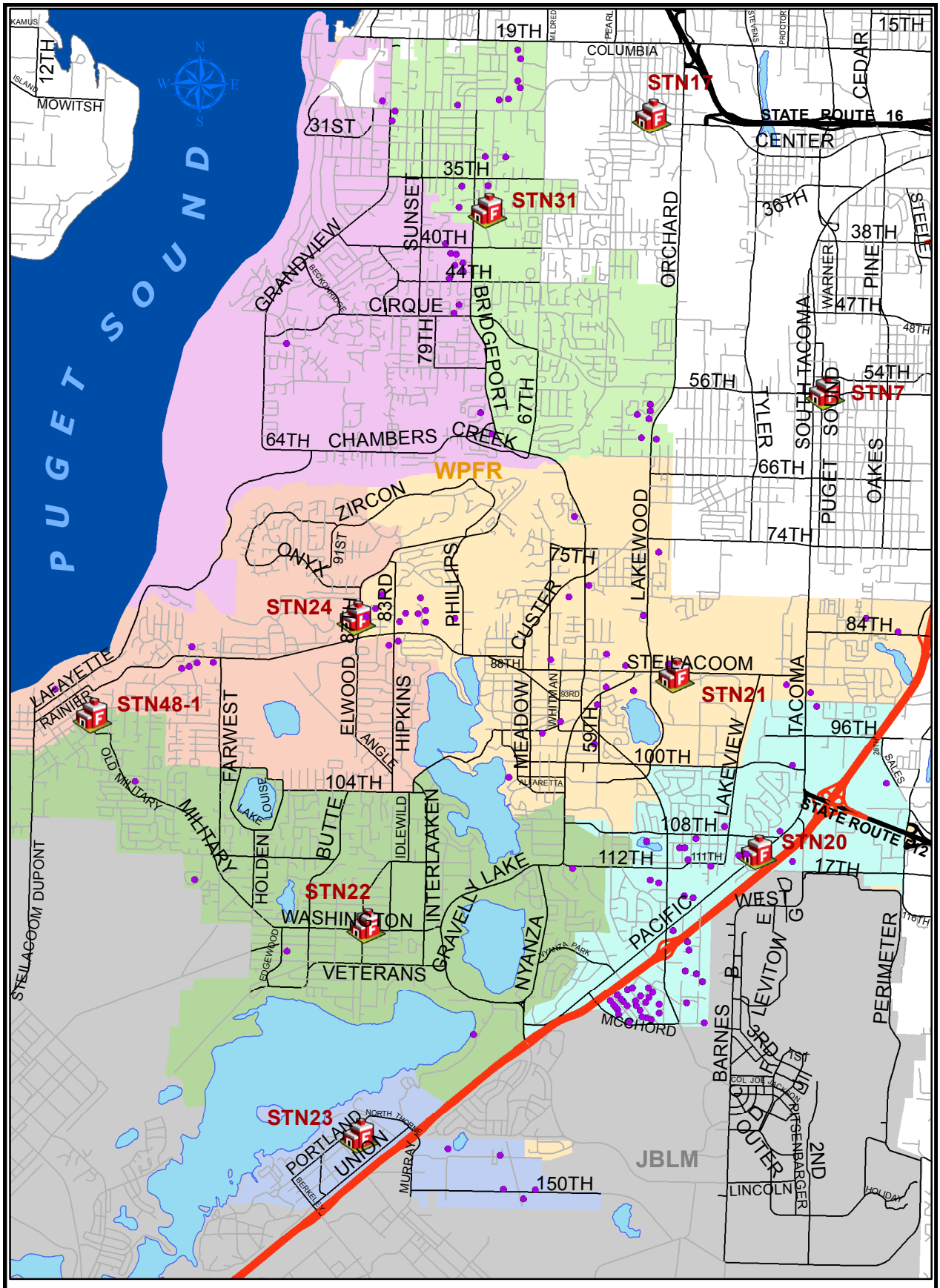
Multi-family structures are classified as follows:

High Risk: Multi-family structures with any of the following characteristics:
- more than three stories
- over 20,000 square feet
- built prior to 1980.

Moderate Risk: Multi-family structures with any of the following characteristics
- less than three stories
- under 20,000 square feet

There are numerous aging multi-family dwellings and some of them are located in higher risk areas. These dwellings are located throughout the district in all response areas, but some areas have more than others. The following chart shows the distribution of multi-family units and the number of calls in each of them.

Response Area	High Risk Complexes	Moderate Risk Complexes	Total Complexes	Fire Calls	EMS/Other Calls	Total Calls Multi-Family Units
20	49	70	119	51	905	956
21	19	28	47	30	497	527
22	7	14	21	2	130	132
23	5	33	38	13	339	352
24	18	16	34	16	336	352
31	21	29	50	15	330	345
32	12	15	27	9	186	195
TOTAL	131	205	336	136	2,723	2,859



High Risk Multi Family Units

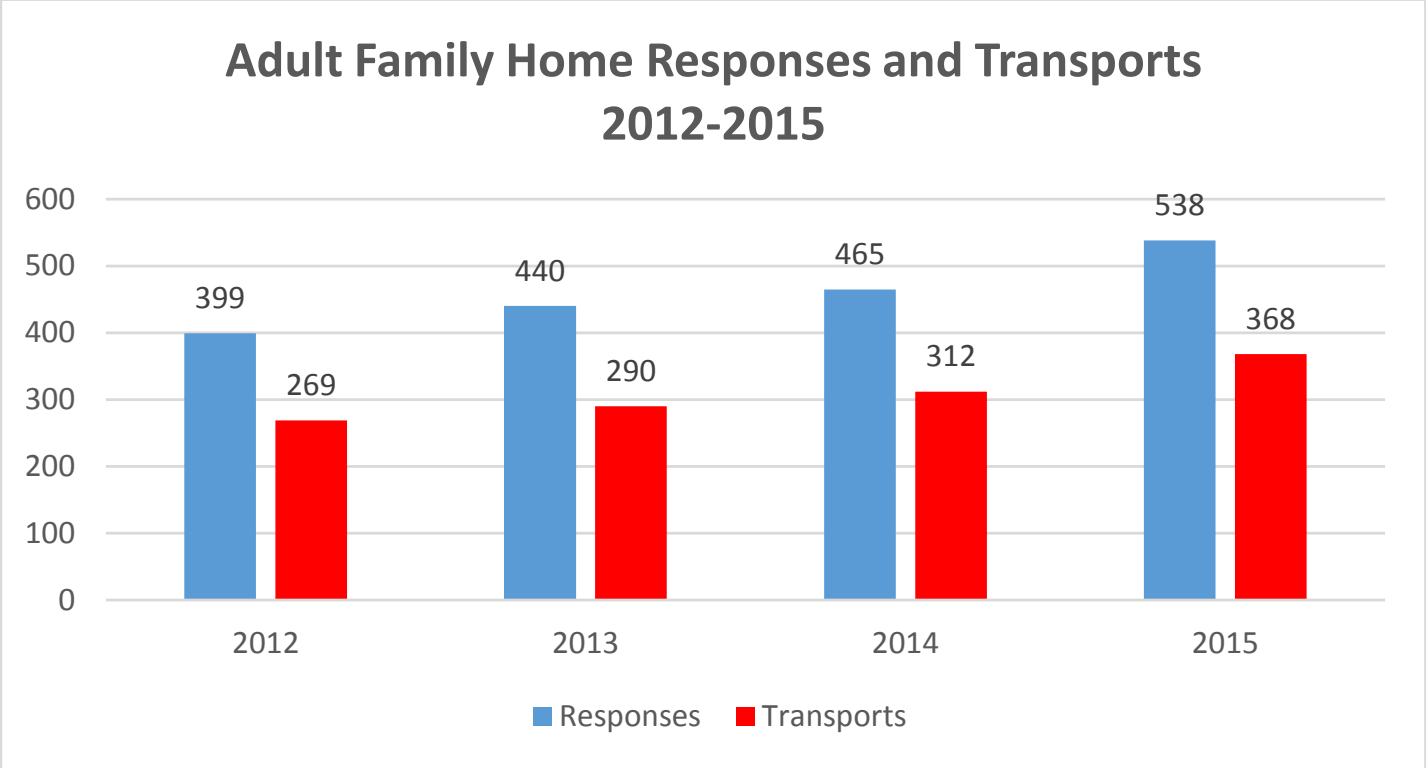
Adult Family Homes and Assisted Living Facilities

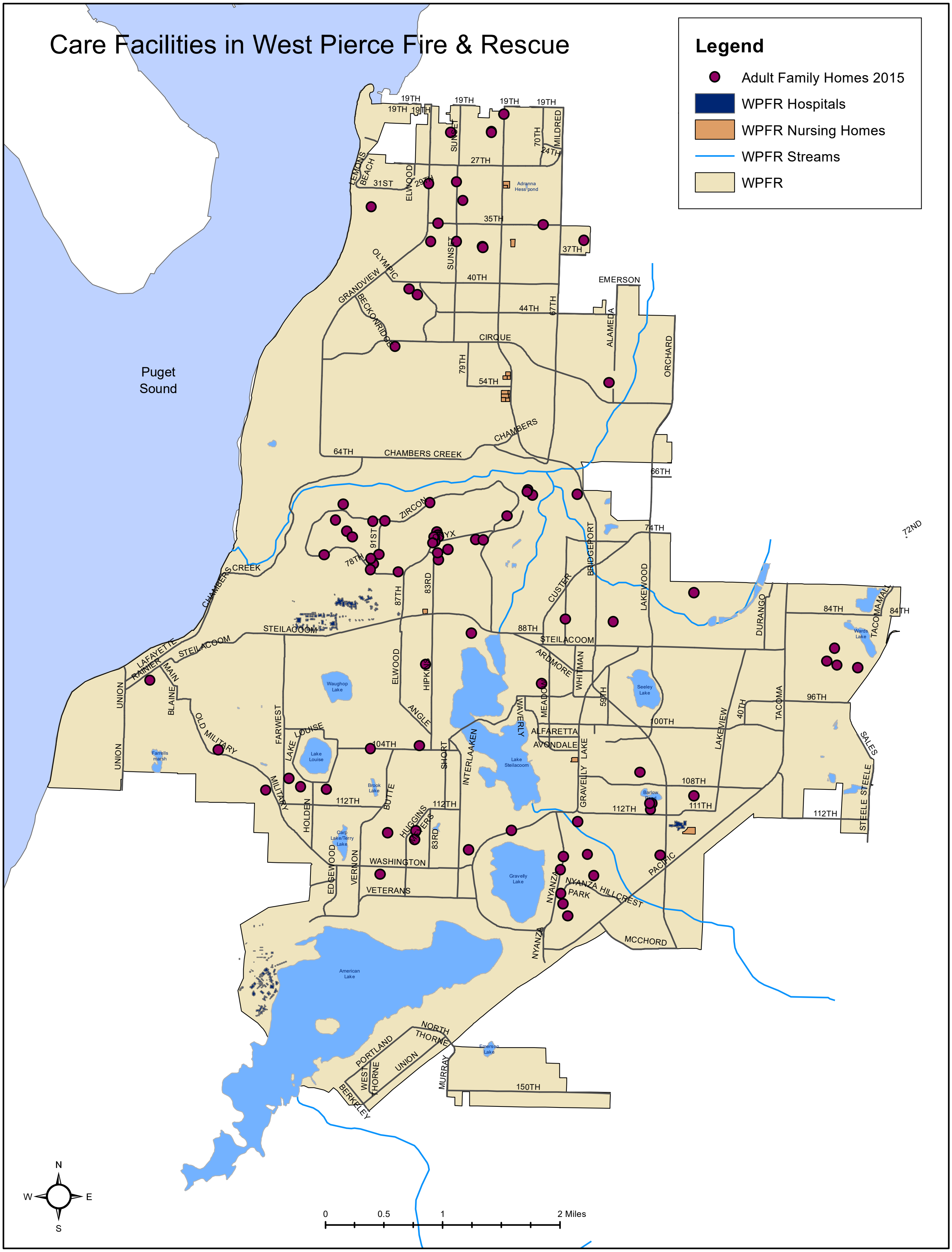
According to the State of Washington, an adult family home (AFH) is licensed to provide housing and care services for up to six adults in a regular house located in a residential neighborhood. The AFH may be run by a family, single person, or business partners. The AFH may also hire other employees. In some homes, multiple languages are spoken.

An assisted living facility (ALF) is licensed to provide housing and care services to seven or more people in a home or facility located in a residential neighborhood. All AFH's and ALF's provide housing and meals (room and board) and assume general responsibility for the safety and care of the resident. Additional services offered may be:

- Varying levels of assistance with personal care.
- Intermittent nursing care (a nurse available on a part-time basis).
- Assistance with or administering medications.

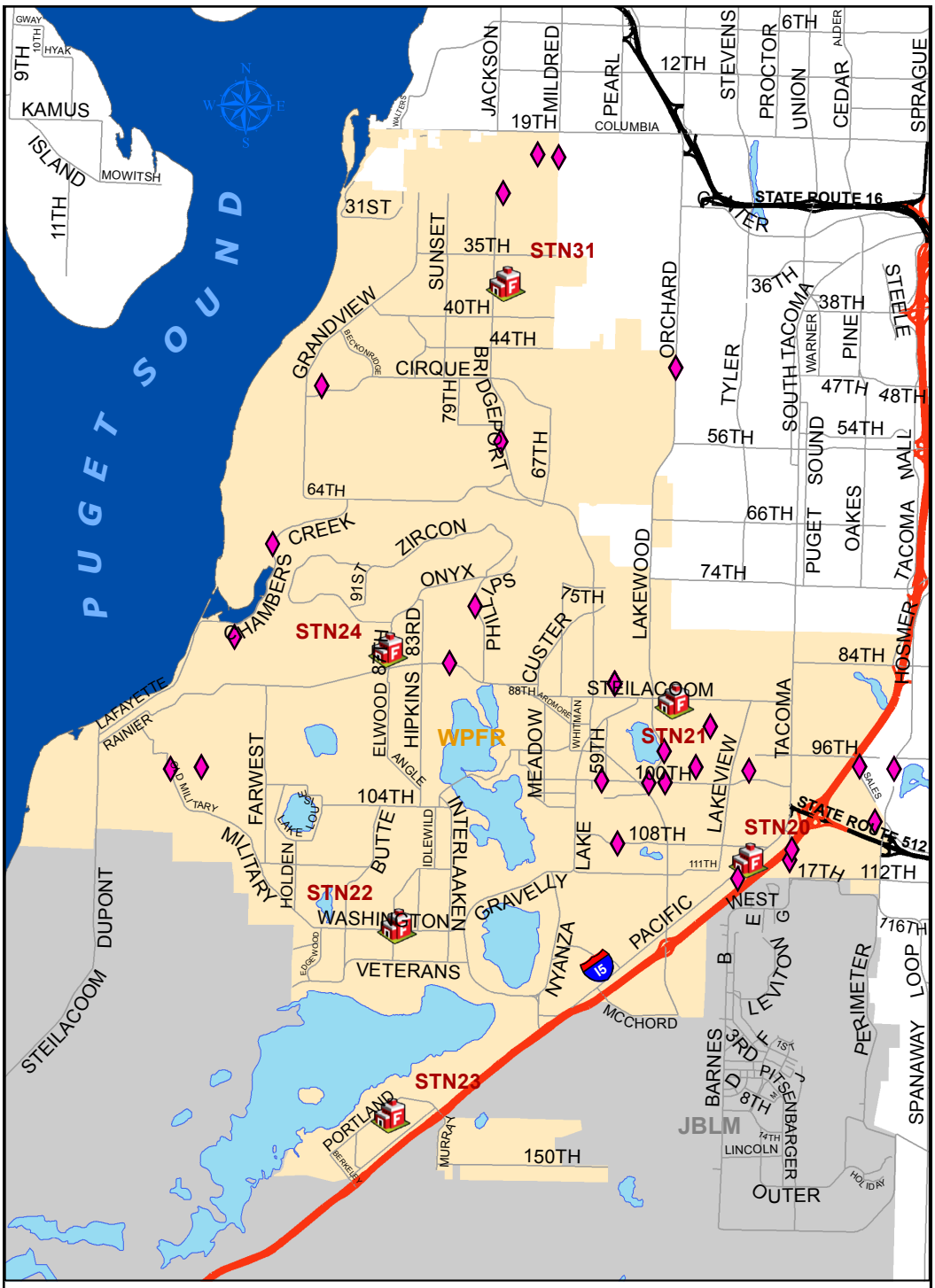
Some AFH's and ALF's also provide specialized care to people living with developmental disabilities, dementia, or mental illness. WPFR has seen a drastic rise in these types of facilities located throughout the jurisdiction. In 2015, there were 90 such facilities in the District. From 2012 to 2015 there were 1,842 calls for service at these facilities and 1,239 of them resulted in transports to area hospitals. The following chart shows the breakdown by year.




Care Facilities in West Pierce Fire & Rescue
Legend
Adult Family Homes 2015
WPFR Hospitals
WPFR Nursing Homes
WPFR Streams
WPFR
Puget Sound
American Lake
Lake Steilacoom
Gravelly Lake
Waughop Lake
Lake Louise
Seeley Lake
0 0.5 1 2 Miles
N
W
E
S

Hazardous Materials

While it is impossible to identify every potential hazardous materials risk in the community, there are certain facilities that would pose the highest risk should protection systems fail. There are several businesses in the District who are required to complete Tier II reporting. Tier II reports are forms that organizations and businesses throughout the United States with hazardous chemicals above certain quantities, are required to fill out by the EPA. Known officially as Emergency and Hazardous Chemical Inventory Forms, Tier II Reports are submitted annually to local fire departments along with other agencies, so plans can be established for response to chemical emergencies.



TIER 2 HAZARDOUS MATERIAL SITES IN WEST PIERCE FIRE & RESCUE

While some businesses fail to report, WPFR used the lists provided to us by the State of Washington to identify those facilities reporting. The facilities were mapped in order to provide a geographic reference in relation to department resources and other occupancies, such as schools, assemblies, and medical treatment facilities.

Assessing the known locations of hazardous materials or routes of hazardous materials transport allows for preplanning and provides an overview of the level of risk from a hazardous material event. Station response areas were evaluated for the risk of hazardous materials incidents, some first due areas have a higher risk potential due to the types of facilities or the presence of transportation corridors (i.e. major arterials and railway) while others only have a slight possibility for an event.

Schools

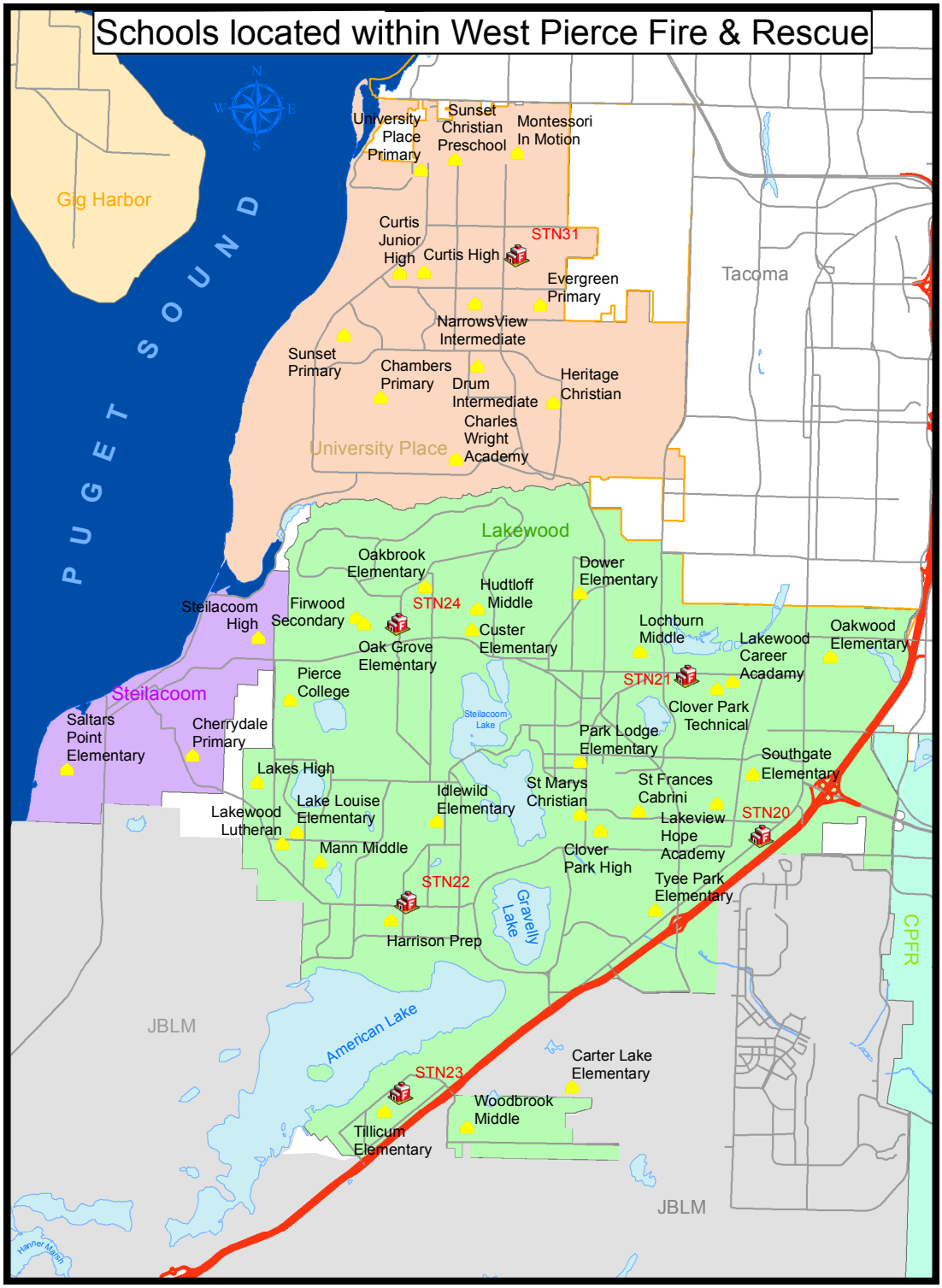
The risk assessment for schools was based on the student population, facility size, number of stories, built in protection systems, and exposures. Response history was also examined to determine the likelihood of an incident occurring in the future. The criteria utilized to assign the risk category is as follows:

- High Risk: Any school consisting of two or more stories or more than 400 students
- Moderate Risk: Any school less than 400 students and one story in height
- No schools were rated as low risk

Based on this criteria, 24 schools were deemed to be High Risk and the other 8 were Moderate Risk. A breakdown of the schools by station area is located in the following chart.

SCHOOL RISK ASSESSMENT						
STATION	*SCHOOL*	*TYPE*	*FIRE SPRINKLER*	*STORIES*	*POPULATION*	*RISK*
20	Southgate	Preschool	No	1	160	Moderate
	Tyee Park	Elementary	No	1	440	High
	Lakeview	Elementary	Yes	2	738	High
	St Frances Cabrini	Preschool-8th	No	1	126	High
21	Four Heroes	Elementary	Yes	2	677	High
	Harrison Prep	5-12	Yes	2	604	High
	Lochburn	Middle	Partial	1	538	High
	Park Lodge	Elementary	Yes	2	406	High
22	Clover Park	High	Yes	2	1133	High
	Lakes	High	Yes	2	1315	High
	Mann	Middle	No	1	404	High
	Idlewild	Elementary	No	1	478	High
	Lake Louise	Elementary	No	1	386	Moderate
	St. Mary's	Elementary	Yes	1	60	Moderate
23	Tillicum	Elementary	No	1	375	Moderate
	Woodbrook	Middle	No	1	466	High
24	Hudtloff	Middle	Yes	2	538	High
	Custer	Elementary	No	1	296	Moderate
	Oakbrook	Elementary	No	1	306	Moderate
	Cherrydale	Elementary	Yes	1	356	Moderate
	Salter's Point	Elementary	Yes	1	422	High
	Steilacoom	High	Yes	2	881	High
31	Curtis	High	Yes	2	1,408	High
	Curtis	Junior High	Yes	2	987	High
	Drum	Intermediate	Yes	2	624	High
	Narrows View	Intermediate	Yes	2	694	High
	Chambers	Primary	Yes	1	494	High
	Evergreen	Primary	Yes	1	514	High
	Sunset	Primary	Yes	1	411	High
	University Place	Primary	Yes	2	534	High
	Charles Wright	K-12	Partial	2	654	High
	Heritage Christian	Elementary	No	2	50	High

From 2012 to 2015 there were a total of 203 incidents at elementary or primary schools. Of the total number of incidents, there were 124 EMS or service calls, 70 commercial fire alarm responses and 9 fires. The intermediate, middle and junior high schools had a total of 160 incidents, with 139 of them being EMS or service calls, 13 commercial fire alarm responses and 8 fires. The high schools had a total of 332 incidents over the same time period. There were 249 EMS or service calls, 78 commercial fire alarms responses, and 5 fires. The private schools in the District are much smaller. They had a total of 45 incidents over the three year period, 22 EMS and service calls, 19 commercial fire alarms, and 4 fires.



Other High Risk Occupancies

These occupancies are classified as high risk due to one or more of the following factors: use of the facility, size and age of the building, occupant load, economic impact, call volume, etc.

Station 20 High Risk complexes and Structures	
BUSINESS NAME	ADDRESS
Agape Fellowship Ministries	4814 108th Street SW
Aquarium Paradise	11724 Pacific Hwy SW
Bridgeport Villa Plaza	10604 -10650 Bridgeport Way SW
Cheers	11521 Bridgeport WY SW
Commercial Drivers Services/Statewide Lift Truck	11000 34th Avenue S
Great American Casino	10115 South Tacoma Way
Greer Industrial Park	11302 Steele Street S
Greer Steel	3117 107th Street S
Greer Steel Paint & Blasting Building	10609 32nd Avenue S
Jenco Industrial Park	2311 - 2710 104th St Ct S
Specialty Products Inc.	2410 104th Street S
Lakewood Auto Body/Ponders Grocery	12116 - 12122 Pacific Highway SW
Lakewood Business Park	10025 – 10107 S Tacoma Way
Lakewood Corporate Center	10803 - 11101 South Tacoma Way
Metro Warehouses Plaza	3305 108th Street S
Omar's Tires	10402 South Tacoma Way
Pick-N-Pull	2416 112th Street S
Sound Transit Center	11424 Pacific Hwy SW
St. Clare Specialty Center	11307 Bridgeport Way SW
Tacoma Discount & Grand Prix	11013 - 11015 Pacific Highway SW
Tucci & Sons	11005 26th Avenue S
Vacant	11014 Pacific Highway SW

Station 21 High Risk Occupancies	
Business Name	Address
AMC Loews Theater	5721 Main Street SW
Barnes and Noble Bookstore and Café	5711 Main Street SW
Beauty Outlet/Vacant	8024 South Tacoma Way
Boo Han Plaza	9122 S Tacoma Way
Bowlero Lanes	3852 Steilacoom Boulevard SW
Bridgeport Professional Building	7424 Bridgeport Way W
Car Hop	8021 South Tacoma Way
Chips Smoke & Grocery/Sign Shop	8203 - 8205 South Tacoma Way
Discount Tire Company	2214 84th Street S

Station 21 High Risk Occupancies	
Business Name	Address
DSHS/Work Source/ESD	5712 Main Street SW
Extra Space Storage	2602 80th Street S
Golden Plaza	8302 South Tacoma Way
JR Furniture	2402 84th Street S
Lakewood Colonial Center East	9521 Gravelly Lake Drive SW
Lakewood Colonial Center West	6122 Motor Avenue SW
Lakewood Playhouse	5729 Lakewood Towne Center Boulevard SW
Lakewood Towne Center Theaters	5731 Main Street SW
Lakewood Towne Center - WA Department Of Health, Habitat for Humanity Store, etc.	6010 - 6030 Main Street SW
Lakewood Towne Center - Firestone	6120 Main Street SW
Lakewood Towne Center - Bright Now Dental, Payless Shoes, Alaska USA Credit Union, etc.	10321 Gravelly Lake Drive SW
Lakewood Towne Center - Old Country Buffet	5815 Lakewood Towne Center Boulevard SW
Lakewood Towne Center - Burlington Coat Factory, Office Depot, etc.	10210 - 10420 59th Avenue SW
Lakewood Towne Center - Dollar Tree, Marshalls, Michaels, Bed Bath & Beyond, Old Navy, etc.	5720 - 5830 Lakewood Towne Center Boulevard SW
Lakewood YMCA	9715 Lakewood Drive SW
Lowe's	5115 100th Street SW
Macau Casino	9811 S Tacoma Way
Multiple Businesses	2510 84th Street S
New Jerusalem Child Care	6145 Steilacoom Boulevard SW
Paldo World Building	9601 S Tacoma Way
PC Computers/Vacant	8204 South Tacoma Way
S & B Furniture	8220 - 8222 South Tacoma Way
South Tacoma Antique Mall	8219 South Tacoma Way
Swap Meet	8327 South Tacoma Way
Target	5618 Lakewood Towne Center Boulevard SW
Transmission Sales & Service	8009 South Tacoma Way
Vacant	8104 South Tacoma Way
Vacant	8500 Durango Street SW
Wal-Mart Lakewood	7001 Bridgeport Way W
Y & Y Thrift Shop	8202 South Tacoma Way

Station 22 High Risk Occupancies	
Business Name	Address
Community Healthcare	6315 Wildaire Road SW
First Korean United Methodist	11116 Military Road SW
Lakewood Water District	11900 Gravelly Lake Drive SW
Vince's Auto & Marine Repair	9007 Veterans Drive SW
Multiple Businesses	11004 - 11120 Gravelly Lake Drive SW

Station 23 High Risk Occupancies	
Business Name	Address
Pho Lewis / Vacant / Sheas Fades	14902 Union Avenue SW
Tillicum Baptist Church	8415 Maple Street SW
Bill's Boat House	15016 Silcox Drive SW
Thornewood Castle Bed & Breakfast	8601 N Thorne Lane SW
Vacant	14401 Woodbrook Drive SW

Station 24 High Risk Occupancies	
Business Name	Address
The Bluffs Condominiums	8581 – 8643 Zircon Drive SW
Oakbrook Condominiums	7425 Ruby Drive SW
Lakewood Baptist Church	8521 Steilacoom Boulevard SW
Vacant/Life Center/Hot Teriyaki/Mis Tres Amigos/Tax Services	8013 - 8101 Steilacoom Boulevard SW
Pierce College	9401 Farwest Drive SW
Lakewood Baptist Temple	10710 Old Military Road SW
Lakewood Presbyterian	8601 104th Street SW
Oak Terrace Apartments	42 Thunderbird Parkway SW
Oberlin Congregational	1603 Rainier Street
Steilacoom School District Office	511 Chambers Street
Steilacoom Town Hall	1715 Lafayette Street
Steilacoom Orr House Museum	1811 Rainier Street
Topside Bar and Grill	215 Wilkes Street
Ferry Office	56 Union Avenue

Station 31 High Risk Occupancies	
Business Name	Address
Vacant	8311-8315 27th St W
College Center	6704 - 6830 Mildred St W
Multiple Businesses	2001 - 2033 70th Ave W
Weathervane Square	7025 27th St W
Haps Auto Wrecking & Retail Shops	6802 27th St W
Storage Units / Spare Space	2912 69th Ave W
Franciscan Hospice House	2901 Bridgeport Way W
Fairlady Motors	2809 Rochester St W
The Place at Bridgeport	3318 Bridgeport Way W
Green Firs Shopping Center - (Safeway, Rite Aid)	3840 Bridgeport Way W
University Place Civic Building	3609 Market Place W
Regency Park Condos	4601 Grandview Drive W
SEB Building Retail/Apartments	3555 Market Place W
Whole Foods	3515 Bridgeport Way W
The Church on the Hill	5000 67th Ave W
Day Island Yacht Club	2120 91st Ave W
Boat Moorage / Storage	9425 19th St W
UP School District Transportation & Food Services	9311 Chambers Creek Rd W
Chambers Bay Marina	2651 Chambers Creek Rd

Differential Response

The risk analysis was intended to be comprehensive and analytical. The result of the process was the ability to quantify risks to allow for prevention, mitigation, and response. For a response, the allocated resources must match the level of risk present and ensure the most effective assignment on the scene is provided. The output of the risk analysis process allowed WPFR to place occupancies into categories. Based on the category, differential response models are applied.

Differential response means offering the correct amount and types of resources to provide for firefighter safety and system efficiency and effectiveness. It is important to know, the term resources encompasses not merely staff, but also appropriate apparatus, water and/or foam delivery capabilities, technical response equipment, and knowledge, etc. Differential response is not new to WPFR, however, now that this analysis is complete, WPFR can better observe the outcomes and identify any inefficiencies that exist.

Responses are not "one size fits all." Responses are therefore matched to the risk level of the event. For example, a fire in an outbuilding is indeed a structure fire, but it presents a far different risk scenario than a fire in a large commercial structure.

Critical Tasking

With every type of emergency event there are certain tasks to be accomplished in order to mitigate the incident. These tasks must be accomplished in a prompt, efficient, and safe manner. WPFR has the responsibility of assuring an adequate amount of resources are deployed in order to carry out the described tasks.

WPFR relied on historical events and practices to determine what the critical tasking should be for the various types of operations. WPFR also relied on studies and standards developed by agencies such as the National Fire Protection Association, International Association of Fire Chiefs, International Association of Firefighters, and the National Institute of Safety and Health in determining the amount and type of resources to be deployed as part of the Effective Response Force (ERF).

Lake City Elementary School Fire (2016)

Fire Ground Operations

Critical tasking for fire ground operations is the number of personnel needed to safely perform the required tasks in order to effectively control a fire in the defined risk category. Major incidents may require additional resources which are called after the situation has been assessed. The following table addresses the levels of response for the various levels of fire risk.

10911 47th Ave SW (2016)

11010 LakeviewAve SW (2016)

FIRE RESPONSES	
TASK	**PERSONNEL**
Low Risk Fires car fire, dumpster fire, grass fire, electrical line problem, smoke alarm sounding	
1 Engine Company	
Command/Safety	1
Attack Line	1
Pump Operator	1
Total	**3**
Moderate Risk Fires residential structure fire	
Battalion Chief, 3 Engine Companies, 1 Ladder Company, 2 Medic Units, 1 Duty Chief, 1 Safety Officer	
Command/Accountability	1
Duty Chief	1
Safety Officer	1
Pump Operator	1
Attack Line	2
Backup Line	2
Search and Rescue	3
Ventilation/Ladders	3
Rapid Intervention Team/On Deck	3
Medic/Rehab	2
Total	**19**
High Risk Fire commercial structure fire	
Battalion Chief, 4 Engine Companies, 1 Ladder Company, 2 Medic Units, 1 Duty Chief, 1 Safety Officer	
Command/Accountability	1
Duty Chief	1
Safety Officer	1
Pump Operator	1
Attack Line	2
Backup Line	2
Second Attack Line	2
Search and Rescue	3
Aerial Operations	1
Ventilation/Ladders/Exposure Protection	2
Rapid Intervention Team/On Deck	3
Medic/Rehab	2
Total	**22**

EMERGENCY MEDICAL SERVICE RESPONSES	
TASK	**PERSONNEL**
Low Risk EMS basic life support	
1 Engine Company	
Command/Safety	1
Patient Care	2
Total	**3**
Moderate Risk EMS advanced life support	
1 Engine Company, 1 Medic Unit	
Command/Safety/Accountability	1
Basic Medical Care	1
Transport to Hospital	1
Advanced Medical Care	2
Total	**5**
High Risk EMS CPR in progress	
2 Engine Companies, 1 Medic Unit	
Command/Accountability/Safety	1
Basic Medical Care	2
Transport to Hospital	1
Advanced Medical Care/Transport	2
Rescue Activities	2
Total	**8**
High Risk EMS mass casualty incident, vehicle collision with entrapment	
1 Battalion Chief, 2 Engine Companies, 3 Medic Units, 1 Ladder Company	
Command/Accountability/Size Up	1
Safety Officer	1
Triage	1
Medical officer	2
Rescue Activities	3
Basic Medical Care	3
Advanced Medical Care/Transport	**4**
Total	**16**

Emergency Medical Services

Critical tasking for emergency medical incidents is the number of personnel required to safely perform the tasks necessary to meet the current Pierce County EMS Patient Care Protocols. The following table addresses the level of response necessary for the various levels of EMS risk.

Vehicle collision 100th and Gravelly

US Open Medical Team (2015)

Hazardous Materials

Critical tasking for hazardous materials incidents is the number of personnel required to safely perform the tasks necessary to mitigate the hazard whether it be due to a transportation incident, industrial or manufacturing incident or terrorist activity. The following table addresses the level of response necessary for the various levels of hazardous materials incidents.

Regional Hazardous Material Response – For incidents of a great magnitude and extremely high risk to the community, a regional response team has been assembled. The Pierce County Hazardous Incident Team (PCHIT) includes members from West Pierce Fire & Rescue, Central Pierce Fire & Rescue, East Pierce Fire & Rescue, Gig Harbor Fire & Medic One and Graham Fire & Rescue. The team is called out when additional expertise and staffing is necessary to both mitigate the incident and maintain the safety of the public and fire department personnel.

HAZARDOUS MATERIALS RESPONSES	
TASK	**PERSONNEL**
Low Risk Hazardous Materials carbon monoxide alarm, fuel spill, natural gas odor	
1 Engine Company	
Command/Safety	1
Mitigation	2
Total	**3**
High Risk Hazardous Materials transportation incidents, manufacturing incidents or unidentified chemical incidents	
1 Battalion Chief, 2 Engine Companies, 2 Medic Units, 1 Ladder Company, 1 Duty Chief, 1 Safety Officer	
Command/Accountability/Size Up	1
Duty Chief	1
Safety Officer	1
Entry Team	2
Pump Operator	1
Protection Attack Line	2
Hazard Mitigation	2
Back up Mitigation	2
Technical Research	1
Decontamination	2
Total	**15**

Hazardous Materials Incident (2016)

TECHNICAL RESCUE RESPONSES	
TASK	**PERSONNEL**
Low Risk Technical Rescue	
1 Engine Company	
Command/Safety	1
Mitigation	2
Total	**3**
High Risk Technical Rescue	
1 Battalion Chief, 2 Engine Companies, 1 Medic Unit, 1 Ladder Company, all on duty Rescue Technicians	
Command/Accountability/Scene Size Up	1
Duty Chief	1
Safety Officer	1
Rescue Tasks	3
Patient Care	3
Mitigation	3
Technical Research	1
Rescue Technicians	2
Total	15
Decontamination	2
Total	**15**

Technical Rescue Drill on Narrows Bridge (2011)

Technical Rescue

Critical Tasking for technical rescue is the number of personnel required to safely and effectively assist patients in high risk situations that occur infrequently such as trench collapse, high angle rescues, confined space entrapments, and structural collapse. The following table addresses the level of response necessary for the various types of technical rescue situations.

Regional Technical Rescue Response – For incidents where additional personnel with technical rescue skills are needed, a regional response team has been assembled. The Pierce County Special Operation Response Team includes members from West Pierce Fire & Rescue, Central Pierce Fire & Rescue, East Pierce Fire & Rescue, and Gig Harbor Fire & Medic One.

Marine Rescue

Critical Tasking for marine rescue is the number of personnel required to safely and successfully mitigate water based incidents. These tasks include both water and land based resources. Water incidents are always of high risk to firefighters and therefore require specially trained personnel and specialty resources. The following table addresses the level of response necessary for various levels of water based response situations.

Regional Marine Rescue Response – Due to the numerous waterways in Pierce County, there is a high vulnerability to water-related incidents requiring a coordinated response. Emergency response agencies work collaboratively to improve responder safety during all-hazards water based incidents. The agencies involved in the Region 5 Water Response Plan are West Pierce Fire & Rescue, Browns Point/Dash Point Fire Department, Gig Harbor Fire & Medic One, Gig Harbor Police, Pierce County Sheriff's Department, Puyallup Tribal Police, South King Fire & Rescue, Tacoma Fire Department, and Tacoma Police.

MARINE/WATER INCIDENT	
TASK	**PERSONNEL**
Low Risk Marine/Water Incident	
1 Engine Company	
Command/Safety	1
Mitigation	2
Total	**3**
Moderate Risk Marine/Water Incident EMS	
1 Battalion Chief, 1 Safety Officer, 1 Boat, 3 Engine Companies, and 2 Medic Units	
Command/Accountability/Size Up	1
Safety Officer	1
Fire Boat Pilot	1
Fire Boat Crew	2
Second Fire Boat w/pilot and crew	3
Support	6
Divers	3
Total	**17**
Moderate Risk Marine/Water Incident Fire	
1 Battalion Chief, 1 Engine Company, and 1 Medic Unit	
Command/Accountability/Scene Size Up	1
Fire Boat Pilot	1
Fire Boat Crew	2
Support	2
Total	**6**
Dive Rescue Incident	
1 Battalion Chief, 1 Safety Officer, 1 Engine Company, and 1 Medic Unit	
Command/Accountability/Scene Size Up	1
Safety Officer	1
Diver	1
Safety Diver	1
Line Tenders	1
Accountability	1
Rescue Swimmers	2
Total	**8**

Service Level Objectives

Following risk identification, it is important to set specific service level objectives. The process of determining these objectives is part art, part science, and part politics. It is an art because now that an evaluation and categorization of the risks is complete, WPFR must review emergency outcomes which occur in any given risk category and determine how to best respond. It is a science because WPFR personnel have an understanding of historical events, can analyze past outcomes, and will plan for the future based on historical incidents. The political aspect asks the question, "Were the historical outcomes acceptable to the department, elected officials, and the community?"

The performance of WPFR has been praised by the community and ranks the highest of all community services as was learned in a recent City of Lakewood Community Survey. WPFR realizes as we look at the information in this Standard of Cover document, that there are improvements that can be made.

To identify and correct any deficiencies, WPFR has established the following community wide service delivery objectives as a part of this risk analysis.

Fire

Objective: *For all fire incidents, WPFR shall arrive in a timely manner with sufficient resources to stop the escalation of the fire and keep the fire confined to the area of involvement upon arrival. Initial response resources shall be capable of containing the fire, rescuing at-risk victims, and performing salvage operations, while providing for the safety of the responders and general public.*

Distribution Performance Measure for All Fires:
The first due engine (or ladder truck with pumping capabilities) staffed with a minimum of three personnel shall arrive within nine minutes and twenty seconds total response time, for ninety percent of all calls for emergency service. This is a total of the following objectives: 90 second call processing, 110 second turnout time, and a 6 minute travel time.

Veterans Drive Fire 2014

Concentration Performance Measure for a Moderate Risk Fire:
The effective response force for moderate risk fire events shall be comprised of a minimum of one Battalion Chief, three Engine Companies, one Ladder Company, and two Medic Units for a combined effective response force of seventeen personnel. The effective response force shall arrive within 12 minutes total response time for 90 percent of all requests for emergency service.

Concentration Performance Measure for a High Risk Fire:
The effective response force for high risk fire events shall be comprised of a minimum of one Battalion Chief, four Engine Companies, one Ladder Company, and two Medic Units for a combined effective response force of 20 personnel. The effective response force shall arrive within 12 minutes total response time for 90 percent of all requests for emergency service.

Emergency Medical Services

Objective: *For all emergency medical incidents requiring a first responder, WPFR shall arrive in a timely manner with sufficiently trained and equipped personnel to provide medical services that will stabilize the situation, provide for care and support to the victim and reduce, reverse, or eliminate the conditions that have caused the emergency while providing for the safety of the responders. All front line fire and rescue units are capable of providing basic life support for EMS events. All uniformed fire department personnel are trained to a minimum of EMT-B.*

Distribution Performance Measure for All EMS:
The first due unit staffed with a minimum of two personnel shall arrive within nine minutes and 20 seconds total response time, for ninety percent of calls for emergency medical service.

Concentration Performance Measure for Low Risk EMS:
WPFR shall respond with a first due unit staffed with a minimum of three personnel to all low risk emergency medical calls. The first due unit shall arrive within a total response time of nine minutes and 20 seconds for 90 percent of all calls for emergency medical service.

Concentration Performance Measure for Moderate EMS:
For all moderate risk events, WPFR shall deploy an effective response force consisting of an engine staffed with three personnel and a medic unit staffed with two personnel, one being a paramedic, for a combined staffing of five personnel. The ERF shall arrive within nine minutes and 20 seconds for 90 percent of the calls for emergency medical service.

Trauma patient 2015

Concentration Performance Measure for Moderate EMS (Contract areas outside the District):
For all moderate risk events, WPFR shall deploy an effective response force consisting of an engine staffed with three personnel and a medic unit staffed with two personnel, one being a paramedic, for a combined staffing of five personnel. The ERF shall arrive within 11 minutes and 20 seconds for 90 percent of the calls for emergency medical service.

Concentration Performance for EMS High Risk CPR in Progress:
For all high risk events where CPR is in progress, WPFR shall deploy an effective response force consisting of two engines, each staffed with three personnel and a medic unit staffed with two personnel, one being a paramedic, for a combined staffing of eight personnel. The ERF shall arrive within nine minutes and 20 seconds for 90 percent of the calls for emergency medical service.

Concentration Performance for EMS High Risk CPR in Progress (Contract areas outside the District):
For all high risk events where CPR is in progress, WPFR shall deploy an effective response force consisting of two engines, each staffed with three personnel and a medic unit staffed with two personnel, one being a paramedic, for a combined staffing of eight personnel. The ERF shall arrive within 11 minutes and 20 seconds for 90 percent of the calls for service.

Concentration Performance for EMS High Risk Mass Casualty Incident:
For all high risk EMS events with multiple patients, WPFR shall deploy an effective response force consisting of one Battalion Chief, two engine companies, three medic units, and one ladder company, for a combined staffing of 16 personnel. The ERF shall arrive within 12 minutes total response time for 90 percent of the calls for service.

Other:
All other types of incidents and resource deployment are addressed in the Performance Objectives and Measures section of this document.

HISTORICAL PERSPECTIVE AND PERFORMANCE

Introduction

Every emergency begins with an event. It may be a vehicle collision, a medical emergency, fire, etc. The first reaction triggering the response is discovery of the event. Then someone has to call 9-1-1 to initiate a response.

This 9-1-1 call sets into motion the call processing. The caller is asked a series of questions such as location, if there are injuries, if flames or smoke are visible, etc. The answers to these questions determines the correct number and type of resources to be deployed to the situation. Once the resources have been determined, the dispatcher will send the emergency notification to the agency via radio or computer.

WPFR evaluated data for the calendar year 2015 to determine current performance baselines. Historical performance data was analyzed for a four year period from January 1, 2012 to December 31, 2015. When analyzing response data, WPFR captures three elements of time. The times are used to assess current performance and set goals for future improvement. The first consideration is the amount of time it takes for the dispatch center to receive and process a call in order to determine what resources are needed, from which agency, to the point of actually dispatching these resources. This is referred to as **Call Processing Time**.

The following factors affect call processing times: the level of excitement of the caller, the caller's familiarity with the location of the emergency, the type of call, the level of detail needed to accurately process the call, the adequacy of information provided by the caller, etc. The next element of time is measured from the time the dispatcher begins notifying crews of an event until the apparatus is en route to the incident. This time period is referred to as **Turnout Time**. There are several things affecting turnout time such as, time of day, the location of the firefighters in the station, disengagement from tasks in progress, gathering

critical response information, putting on gear, mounting the response vehicle, securing seatbelts, starting the vehicle, opening bay doors, etc.

The final piece of the time equation is measured from the en route time until the resource actually stops at the location of the incident. This is referred to as **Travel Time**. The sum of these three segments of time is considered to be the **Total Response Time** for an emergency event.

The National Fire Protection Association (NFPA) sets a goal for the maximum time to receive, process, and dispatch emergency calls at 60 seconds for 90 percent of the events. The Center for Public Safety Excellence (CPSE) has set an acceptable baseline at 90 seconds for 90 percent of the calls for service. WPFR has chosen set its baseline at 90 seconds for 90 percent of the calls for service.

Once **Call Processing** is complete and WPFR receives the alert, personnel start disengaging from their tasks, move towards their apparatus, and start towards the scene of the emergency. This process is known as the **Turnout Time**. The NFPA standard for turnout is 60 seconds for EMS calls and 90 seconds for fire calls, 90 percent of the time. WPFR has set its standard at 110 seconds for all incidents, 90 percent of the time.

The NFPA in partnership with The Fire Protection Research Foundation conducted a study in 2010 titled "Quantitative Evaluation of Fire and EMS Mobilization Times." The study looked at **Turnout Times** for several

fire departments and the results brought into question some of the current benchmarks set by NFPA.

The researchers are not convinced of the realistic achievability, or safety of the current objectives. The study recorded the **Turnout Time** for 90% of the calls was 123 seconds or less for fire (slightly over one and one-third times the standard) and 109 seconds or less for EMS (slightly more than one and two-thirds times the standard). Furthermore, the study addressed station size when studying **Turnout Time** and found that every 50 feet traveled required 10 seconds of travel and stairs more than doubled that rate, so the larger a station, the higher the **Turnout Times**. This is the reason WPFR made the decision to set a more realistic standard for **Turnout Time**.

There are several standards that can be utilized for **Travel Time**. The first is NFPA, which states a **Travel Time** of four minutes should be the goal 90 percent of the time for arrival of the first unit. The Washington State Survey and Rating Bureau (WSRB) has held that instead of time, distance should be measured. Per WSRB, the maximum distance from the nearest fire station should not exceed 1.5 miles. CPSE has set the benchmark for **Travel Time** of the first due unit to be based upon both population and/or density. WPFR's population density is considered a combination of metropolitan and urban areas. The baseline **Travel Time** set by CPSE would be five minutes and 12 seconds for the first due unit. Based on station locations and traffic patterns, WPFR has set a **Travel Time** goal of 6 minutes for the first arriving unit for all incidents, 90 percent of the time. For fires, WPFR has established that an Effective Response Force (ERF) will consist of 3 Engines, 1 Ladder, 2 Medic Units, and 1 Battalion Chief. Further, all apparatus in the ERF should arrive within 12 minutes, 90 percent of the time.

Performance Objectives WPFR

Call Type	Call Processing	Turnout	Travel (First Due)	Total Response (ERF)
All	90 Seconds	110 Seconds	6 minutes	NA
Fires	90 Seconds	110 seconds	6 minutes	17 minutes 20 seconds
EMS	90 Seconds	110 Seconds	6 minutes	NA
Special Operations	90 Seconds	110 Seconds	6 minutes	NA
Marine Rescue	90 Seconds	110 Seconds	15 minutes	NA

The following table reflects the call processing times, turnout times, first due travel times, and the ERF travel times. The ERF times are for structure fires only. The tables also reflect the 90th percentiles for 2012, 2013, 2014 and 2015 combined for a historical snapshot, followed by a table showing only 2015 which indicate WPFR's current performance levels.

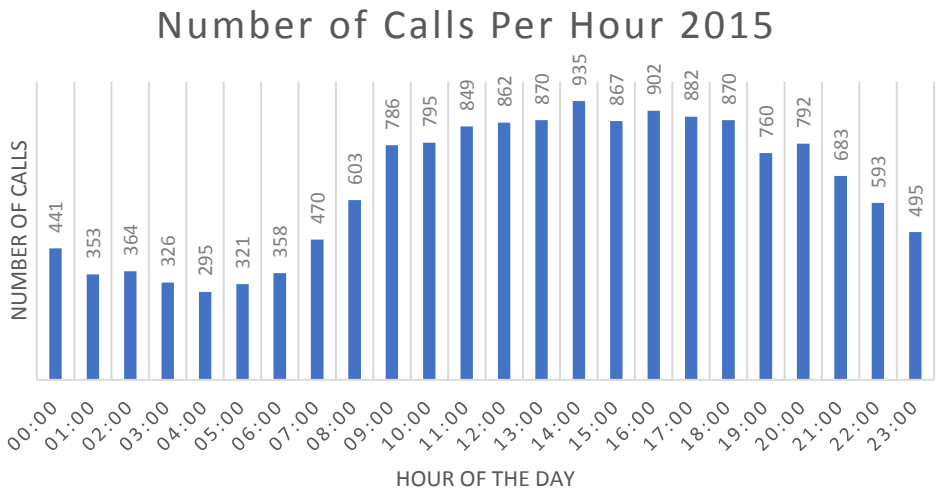
Collective Performance Data 2012-2015				
Call Type	**Call Processing**	**Turnout**	**Travel (First Due)**	**Total Response ERF**
All	2:34	2:41	7:35	NA
Fires	2:44	2:55	7:14	*
EMS	2:29	2:38	7:32	NA
Special Operations	4:08	2:29	**10:34	NA
Marine Rescue	5:11	3:32	**26:47	NA
This is the 90th Percentile data compiled for all four years. Only priority calls were considered. **Data unreliable due to a change in records capturing system in 2015.* *** Fireboat Endeavor and special operations calls can be regional in nature. These programs sometimes occur outside the District making travel times longer.*				

Performance Data 2015				
Call Type	**Call Processing**	**Turnout**	**Travel (First Due)**	**Total Response ERF**
All	2:16	2:33	8:12	NA
Fires	2:33	2:49	7:10	16:09
EMS	2:11	2:31	8:12	NA
Special Operations	4:17	2:26	**10:20	NA
Marine Rescue	4:15	3:11	**20:06	NA
This is the 90th Percentile data compiled for all four years. Only priority calls were considered. *** Fireboat Endeavor and special operations calls can be regional in nature. These programs sometimes occur outside the District making travel times longer.*				

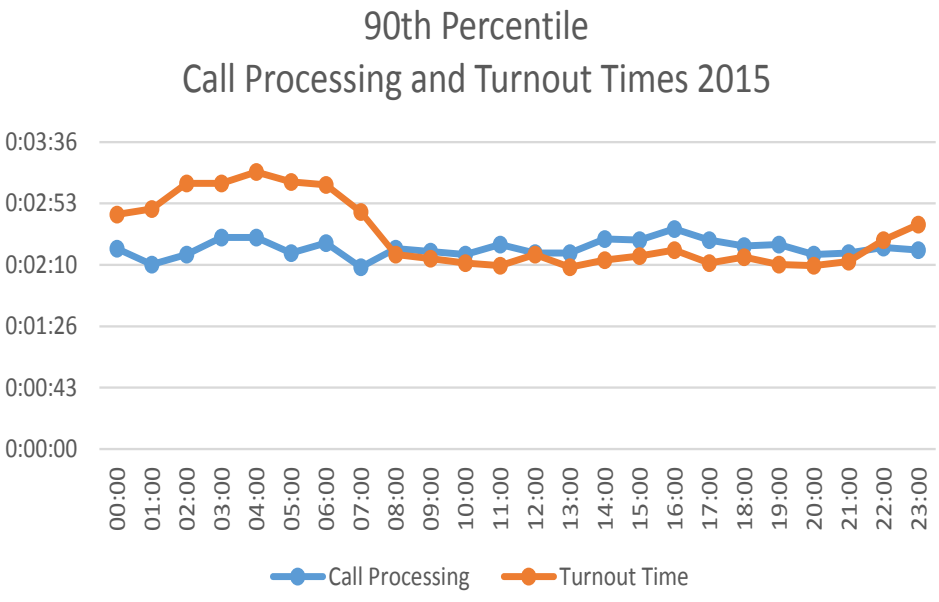
The assessment of call processing revealed the 90th percentile times are higher than desired based on the NFPA 1221 Standard. The assessment of turnout and travel times also revealed the 90th percentile times are higher than desired based on the 52.33 Standards set by the Board of Fire Commissioners. It is interesting to note that while the individual call processing, turnout and travel time components are not meeting the established goals, the total response time of the effective response force for commercial and residential fires combined is significantly less than the established goal of 17 minutes and 20 seconds for commerical fires.

WPFR personnel work 24 hour shifts. Therefore, calls are received during sleep hours, meal times and physical training hours. WPFR looked at the data to determine if these types of activities impacted performance; therefore, performance was analyzed by hour of the day. Five separate charts were compiled to examine how the time of day impacts call volumes and additional performance measures such as call processing, turnout times and travel times.

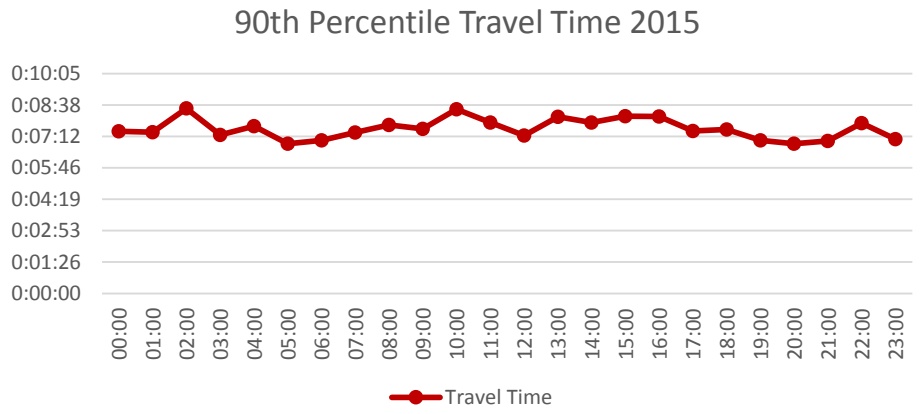
The first chart is titled "Number of Calls per Hour 2015." The axis on the left shows the number of calls for service and the axis on the bottom shows the hour of the day. This chart clearly shows the peak hours for service are from 9am to 8pm. The hours from 9pm to 8am have significantly fewer calls.



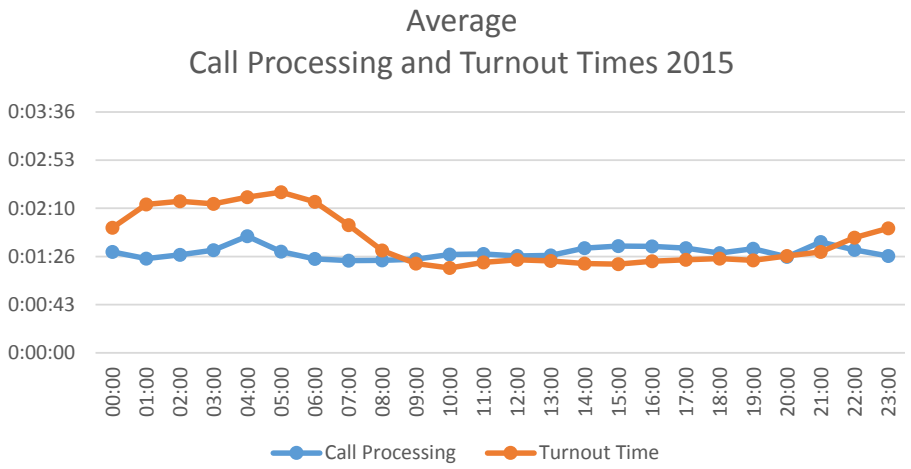
The second chart is titled "90th Percentile Call Processing and Turnout Times 2015." The left hand axis shows the unit of time it takes to process a call and turnout from the station. The bottom axis shows the hour of the day. The 90th percentile means that 90 percent of the time call processing times and turnout times were less than the numbers indicated on the chart. Turnout times are slightly longer during the evening hours which was not unexpected as firefighters are awoken from sleep during the evening hours. Call processing times held relatively steady and the hour of day did not make a difference.



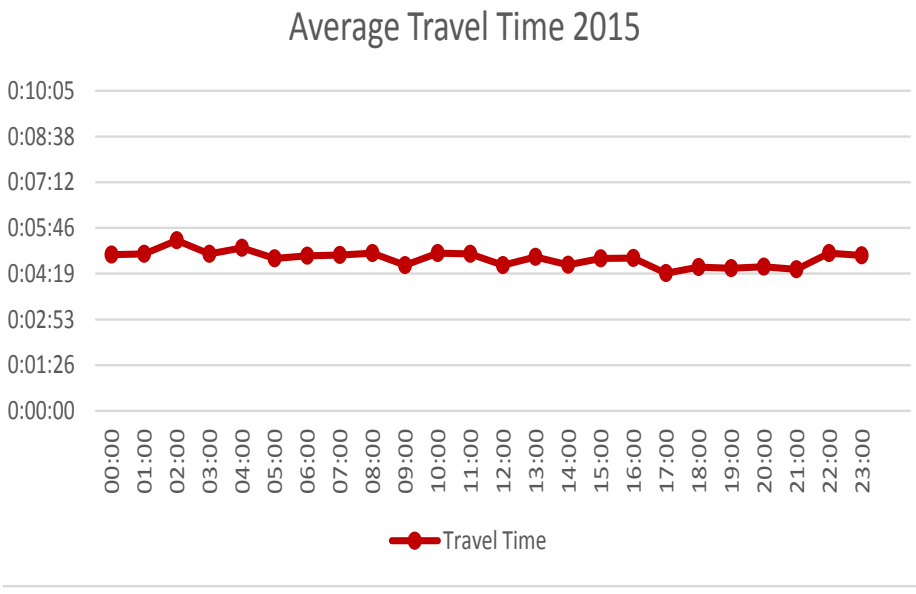
The third chart titled "90th Percentile Travel Times 2015" shows travel times are varied and there is not a large variance based on the hour of day.



The fourth chart is titled "Average Call Processing and Turnout Times 2015." The trends here are much the same as they were in the 90th percentile chart although the difference in nighttime turnouts is more clearly visible when looking at the averages.



The final chart is titled "Average Travel Time 2015." The average travel time chart looks very similar to the 90th percentile travel time chart. No real pattern appears based on the hour of the day.



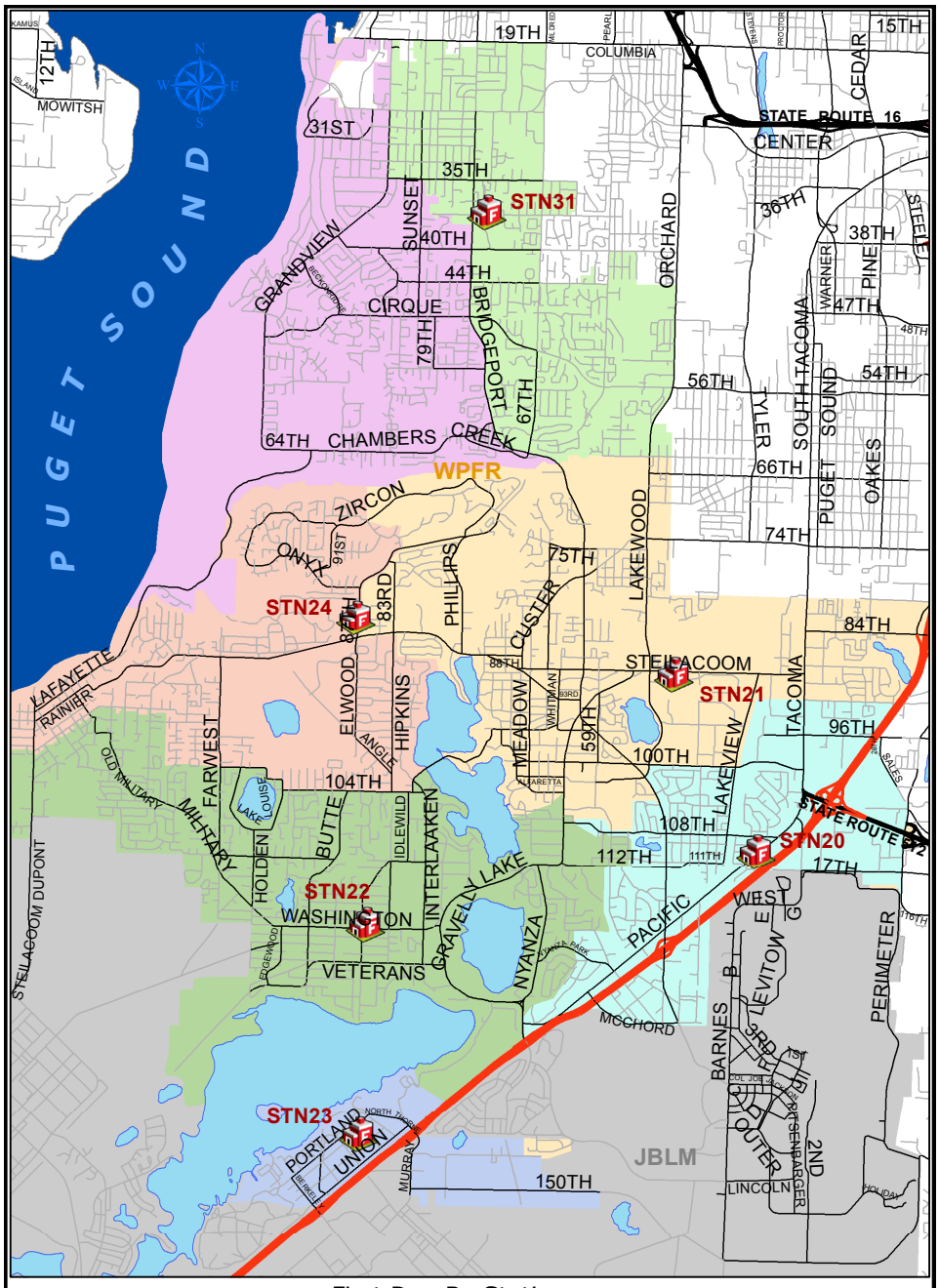
Distribution and Demand for Service

Distribution

The Commission on Fire Accreditation International (CFAI) has defined distribution as the geographic location of first due resources for all initial intervention responses. Station location affects the rapid deployment of resources. Most communities are faced with the issue of providing the same quality and level of service to all parts of the fire district. Most communities provide services and resources spread throughout the community rather than one central location. Distributing stations throughout the community will assure rapid deployment in order to minimize and mitigate emergencies.

West Pierce Fire & Rescue strives to provide equitable levels of service to all of its stakeholders. The socio-economically disadvantaged areas of the community should have the same level of protection as the more affluent areas. In many instances, the demand for service is higher in the poorer and distressed areas of the community. Station and resource locations were historically driven by compliance with the Washington Survey and Rating Bureau which suggests that all occupancies should be within one and a half miles of a fire station. This travel distance measured at an average speed of 35 miles per hour meant the first due fire engine would normally have an average travel time of 3.2 minutes.

Not all stations are located within this desired one and a half miles due to land availability, political ramifications, and costs, but the attempt to meet this standard has resulted in a reasonable station distribution throughout the District. There is one area at the border of Lakewood and University Place where a service gap exists. The distance between Station 31 located in University Place and all other stations is the greatest. The area to the south of University Place has longer response times than other areas of the district. The "Current Facilities and Deployment" map shows the facility locations and size of the first due response areas in comparison to other stations.



First Due By Station

Distribution can be evaluated by the percentage of the jurisdiction covered by the first-due units within the adopted public policy service level objectives. The demand for service has a direct impact on the distribution of resources. Where there is a high volume of demand or increased risk, additional resources may need to be allocated in order to achieve the objective of having a first due arrival within the established time frame. This is directly connected to the agency's concentration needs. Concentration is the arrangement of multiple resource spacing so that the Effective Response Force (ERF) can be assembled at the scene within the timeframes adopted by WPFR.

The established travel time goal for the first due unit on scene of an emergency event is a six minutes for Zone 1 which is Lakewood and University Place. Zone 2 is the Town of Steilacoom where the established travel time goal for the first due on scene is six minutes for most incidents, but eight minutes for advanced life support needed at an emergency medical incident.

Service Area

When WPFR was formed in 2011, measured and defined service areas were established. These areas were established based on call volumes and the area served with the goal of the first due unit, usually an engine company, being dispatched and arriving within the set time frame to initially contain or stabilize an event, or provide medical treatment when necessary. In service areas where a larger workload or geographic area exist, multiple resources may be assigned to the same station.

During the development of the Standards of Cover, each service area was analyzed to review the workload and reliability of the units to provide the services needed. Such issues as the amount of time the first due unit was unavailable to respond were reviewed. The unavailability of units may be due to a number of reasons including simultaneous events, training, apparatus service, prior assignment, administrative work, or other issues that arise.

Included in this section are maps and charts that demonstrate the distribution of WPFR's resources and travel time coverage. The section on reliability indicates workloads and simultaneous event history for each service area in the District.

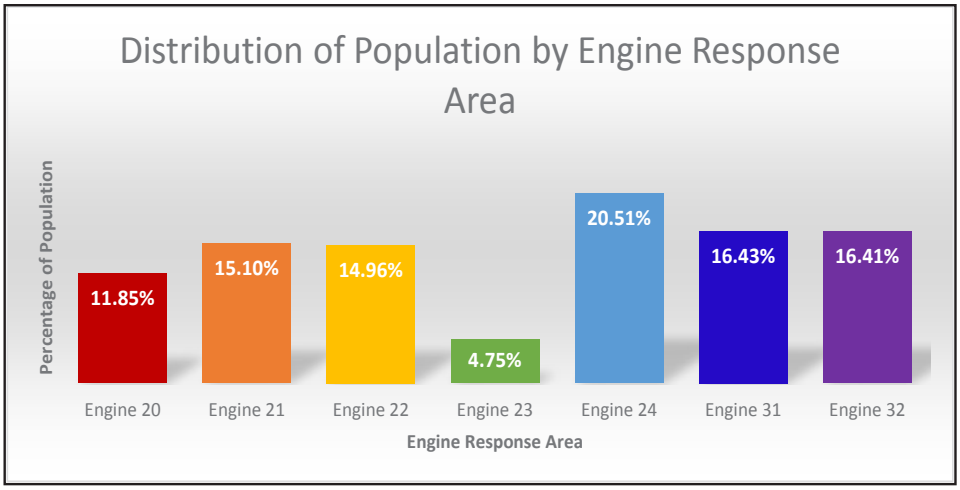
The population distribution among the first due station response areas is representative of the residential, commercial, and industrial properties located within the District. Although most of the population data is obtained from the US Census, it is important to consider how the populations in the different station areas may change throughout the day, with people relocating to work, shop or travel to school.

The "Demand for Service" table compares the call volume in 2012, 2013, 2014 and 2015.

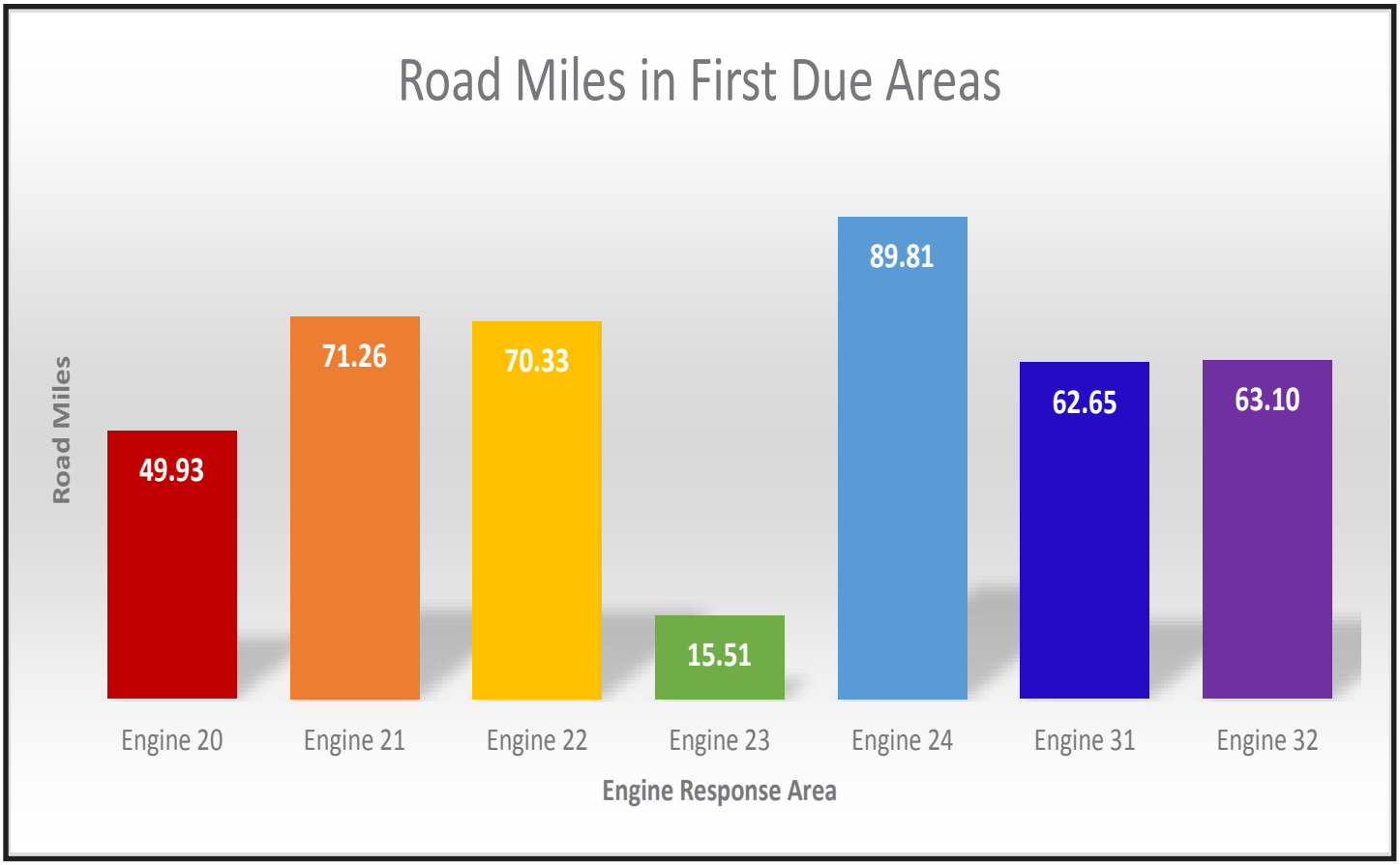
Demand for Service

Incident Type	2012	2013	2014	2015
Fire	420	402	397	551
EMS	10,334	10,789	11,184	12,192
Other	2,833	2,334	2,457	2,715
Total	13,587	13,525	14,038	15,458
% Change		-0.46%	3.79%	10.12%

Population breakdown by station first due areas is depicted in the "Distribution of Population by Engine Response Area" Chart.



The "Road Miles in First Due Areas" chart displays road miles for each station's first due area. Engine 24 has the most miles to cover, while Engine 23 has the least. Engine 23 covers the Tillicum area which is isolated from the rest of the District.



Understanding the relationship between area covered, road miles, and population is an important part of the analysis for distribution as well as determining performance. The "Station Area Characteristics" table describes these variables. Housing units in this chart include apartment units, single family and duplexes.

Engine Response Area	Square Miles	Road Miles	Population	Housing Units	Population Density	Population Percentage
Engine 20	2.79	49.93	11,794	2,845	4,227	11.8
Engine 21	5.27	71.26	15,025	4,818	2,851	15.1
Engine 22	5.83	70.33	14,885	7,452	2,553	14.9
Engine 23	1.71	15.51	4,726	1,330	2,764	4.7
Engine 24	6.83	89.81	20,411	5,343	2,988	20.5
Engine 31	3.43	62.65	16,347	5,545	4,766	16.4
Engine 32	5.19	63.10	16,331	6,173	3,147	16.4
Total	***31.05***	***422.59***	***99,519***	***33,506***	***3,205***	***100***

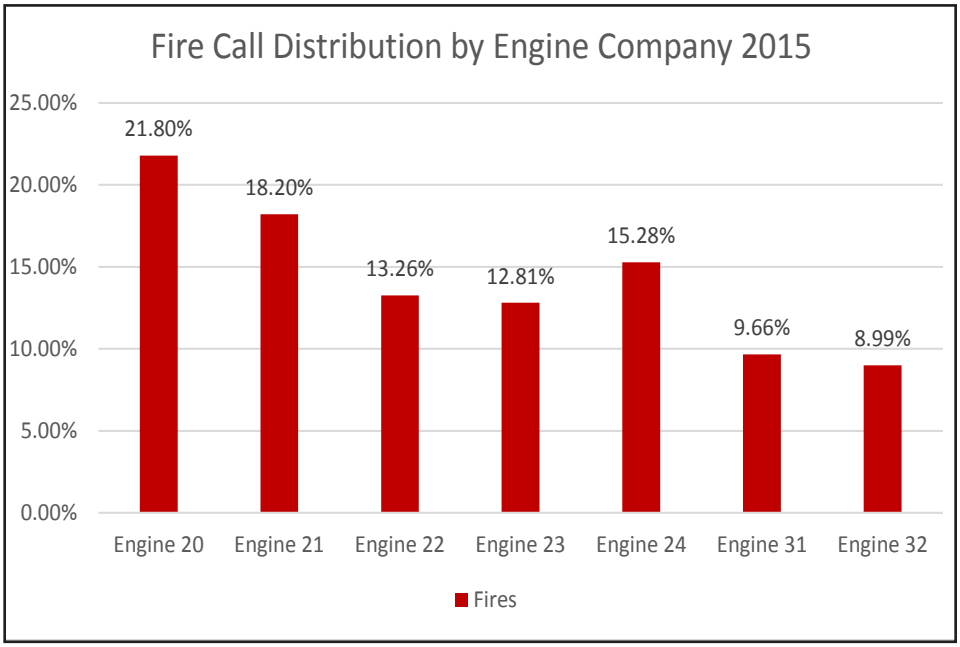
Another relationship to be evaluated is the one between station area, building inventory, and responses. The buildings listed are for commercial/business and residential housing units. For the following chart, apartment complexes are considered commercial properties.

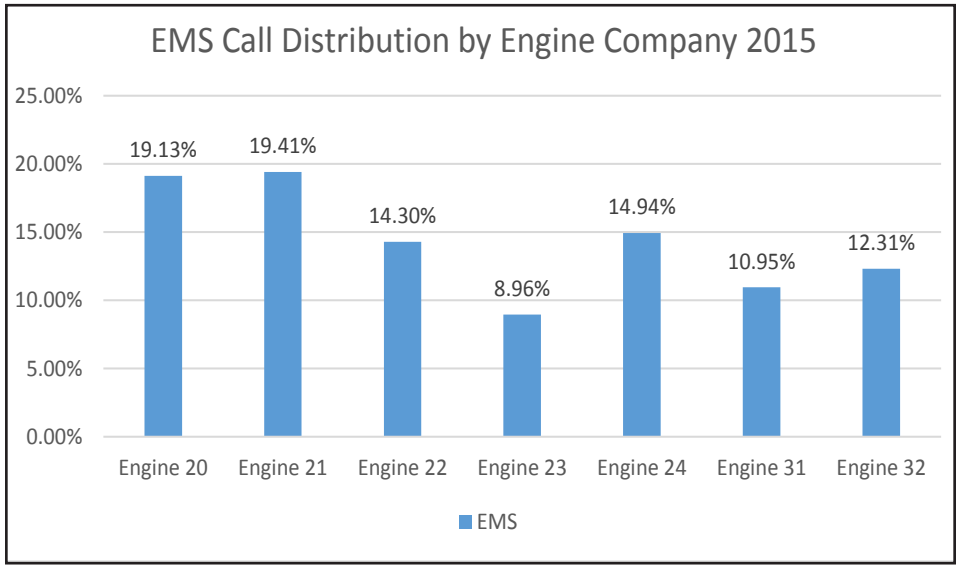
Engine Response Area	Commercial Properties	Percent of Commercial Buildings	Residential Properties	Percent of Residential	Percent Commercial	Percent Residential
Engine 20	1156	23.81%	2227	8.51%	34.17%	65.83%
Engine 21	1324	27.27%	3363	12.86%	28.25%	71.75%
Engine 22	347	7.15%	6128	23.43%	5.36%	94.64%
Engine 23	346	7.13%	1150	4.40%	23.13%	76.87%
Engine 24	561	11.56%	4826	18.45%	10.41%	89.59%
Engine 31	570	11.74%	3966	15.16%	12.57%	87.43%
Engine 32	551	11.35%	4500	17.20%	10.91%	89.09%

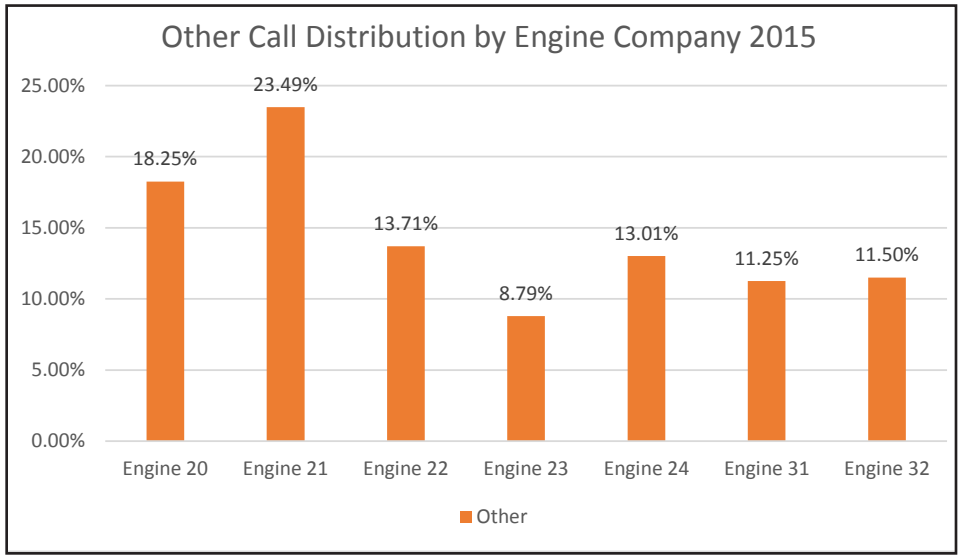
The following chart compares the percentages of workload, road miles and total area. These comparisons show that some of the smallest response areas have the highest distribution of calls.

Engine Response Area	Number of calls in the response area	Percent Workload	Road Miles	Percent of Road Miles	Station area/ square miles	Percentage of station area
Engine 20	3078	20.49%	49.93	11.82%	2.79	8.99%
Engine 21	3025	20.13%	71.26	16.86%	5.27	16.97%
Engine 22	1975	13.15%	70.33	16.64%	5.83	18.78%
Engine 23	1156	7.69%	15.51	3.67%	1.71	5.51%
Engine 24	2195	14.61%	89.81	21.25%	6.83	22.00%
Engine 31	1634	10.88%	62.65	14.83%	3.43	11.05%
Engine 32	1961	13.05%	63.10	14.93%	5.19	16.71%
Total	**15024**	**100.00%**	**422.59**	**100.00%**	**31.05**	**100.00%**

The percentages of Fire, EMS and other calls by Engine Company are depicted in three separate charts. (Fire Call Distribution by Engine Company 2015, EMS Call Distribution by Engine Company 2015, Other Call Distribution by Engine Company 2015) It is evident that Engines 20 and 21 respond to the highest percentage of calls in each category. Engine 23 responds to the lowest percentage of EMS and Other calls, but a relatively high percentage of fires when considering the small geographic area served. The percentage of fires are lowest for Engines 31 and 32.

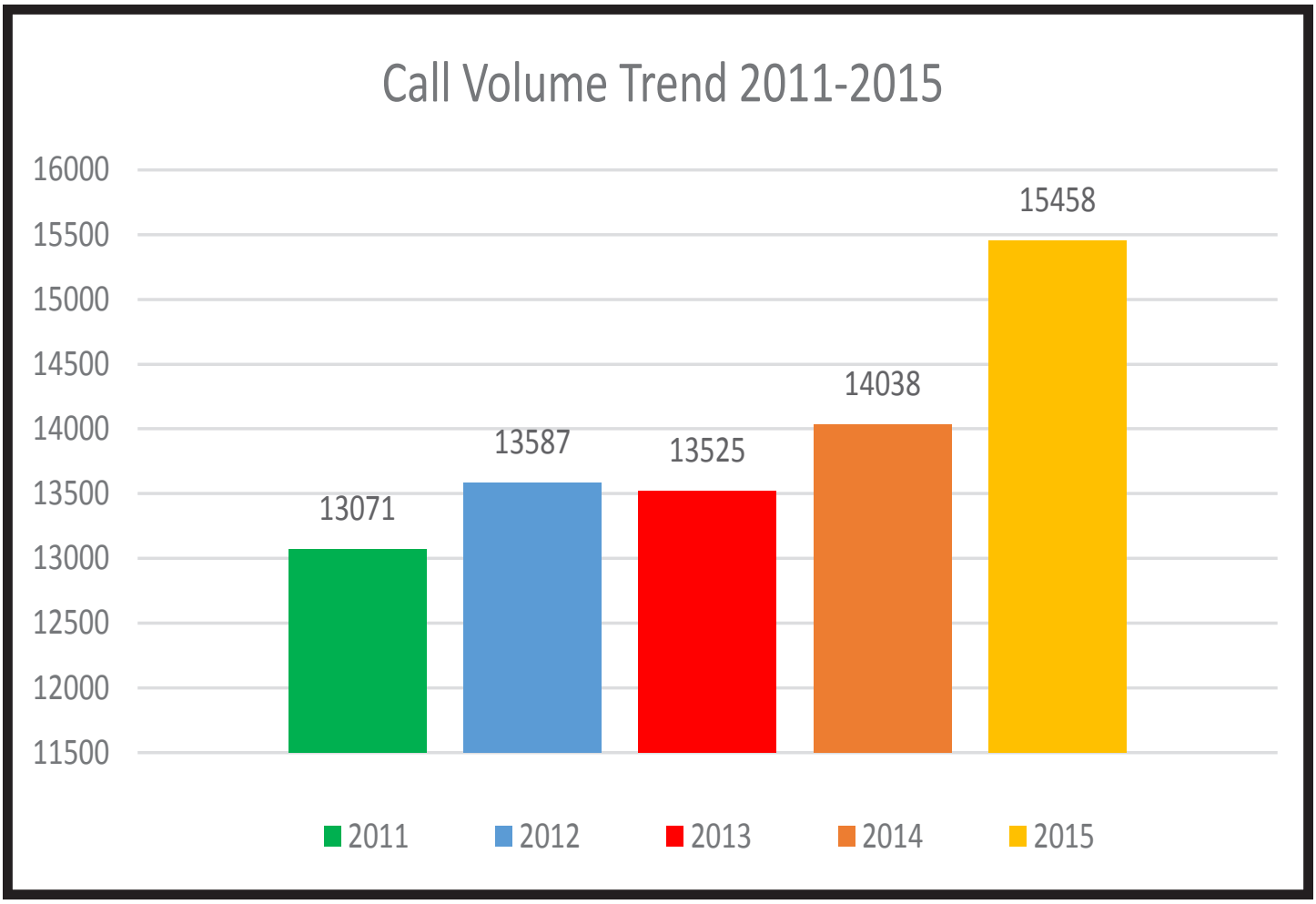






Historic Workload

The "Call Volume Trend" graph reflects the response workload for the years 2011-2015. This indicates an average workload increase of 4.5 percent per year. The increase is mostly attributed to emergency medical incidents. This trend is expected to continue as healthcare continues to change and the population ages.



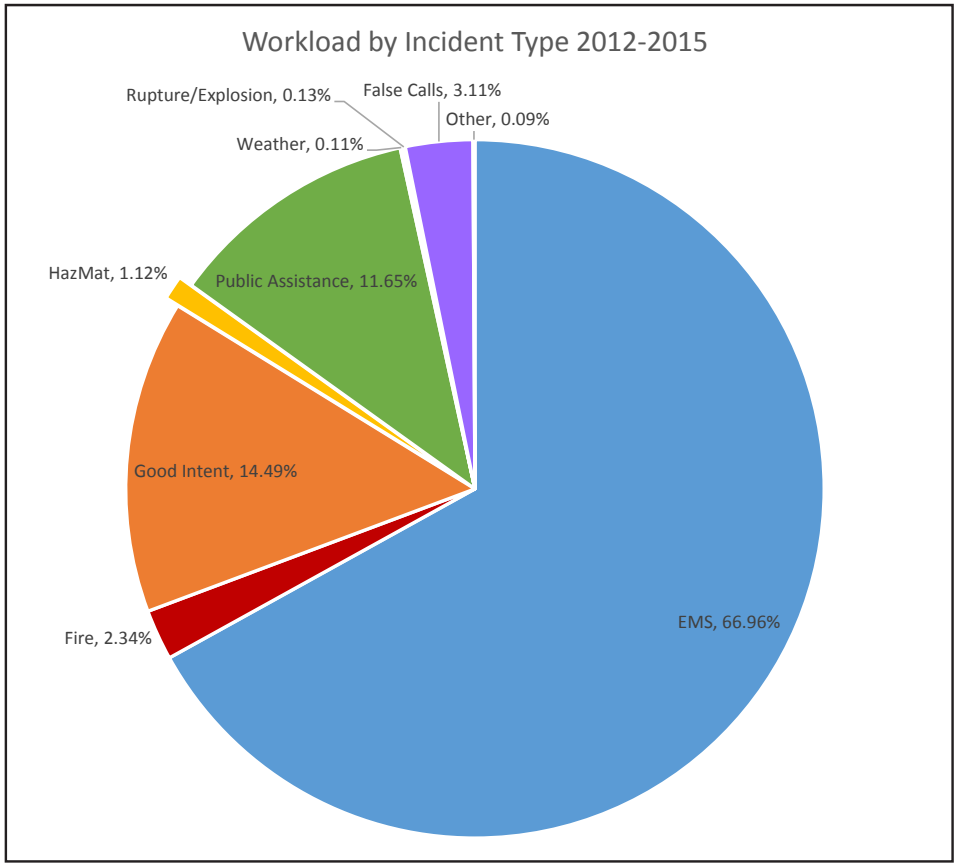
Travel Time and Distribution

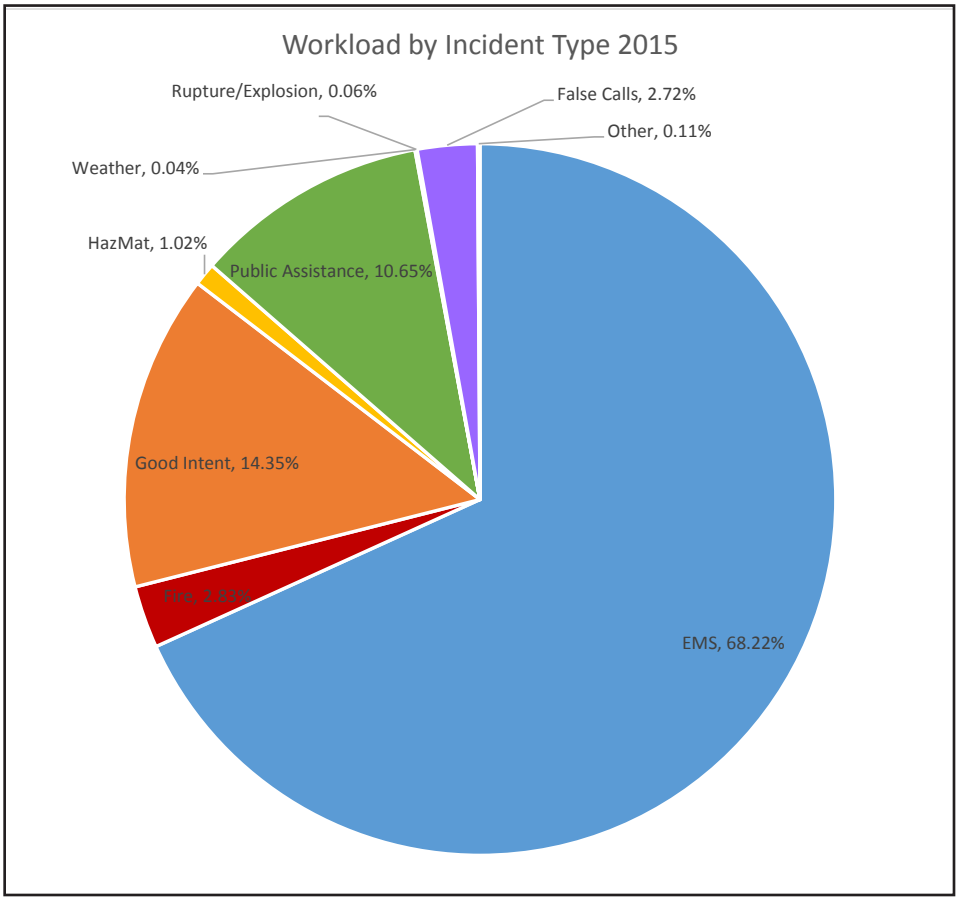
The distribution study included a geographic analysis of first due resources. Distribution is based on the notion that all areas experience equal service demands.

Not all areas experience equal service demands. For example, an area with low risks could have fire company travel time that are greater than those of the high-risk, high-consequence area, but this begs the question of whether or not the community members in the lower risk areas will accept a different level of service?

Additionally, the need for low EMS response times, based on successful intervention in cardiac arrest cases, drive distribution to be the same throughout the community. WPFR strives to have every home and business in the community located within a distance where the set response time goals can be achieved.

The "Workload by Incident Type 2012-2015" and the "Workload by Incident Type 2015" pie charts show responses by incident type for different periods of time. By far, the largest demand for service is EMS. Fires continue to account for under three percent of incidents, but when they do occur, the resources required to mitigate the incident are significant.



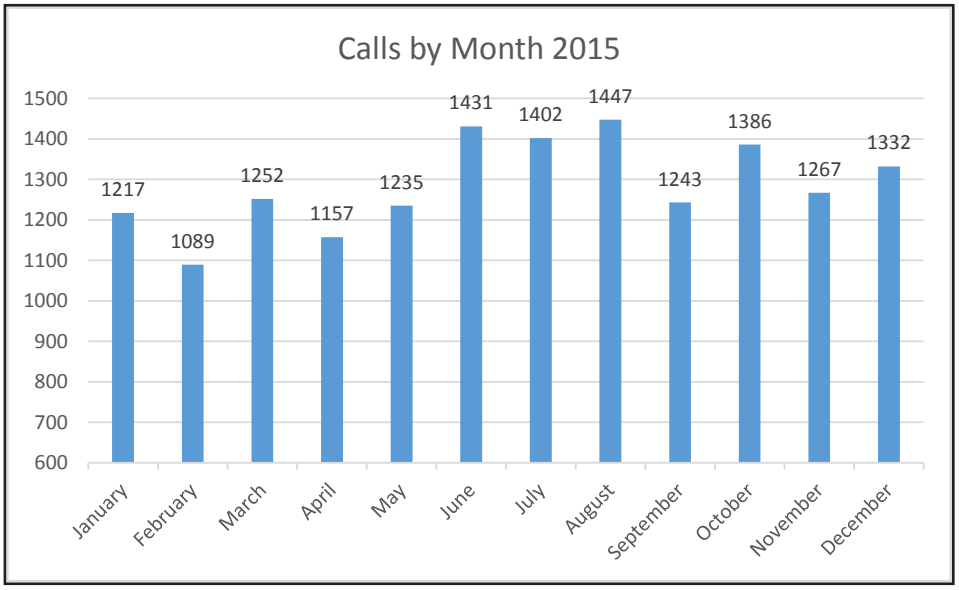


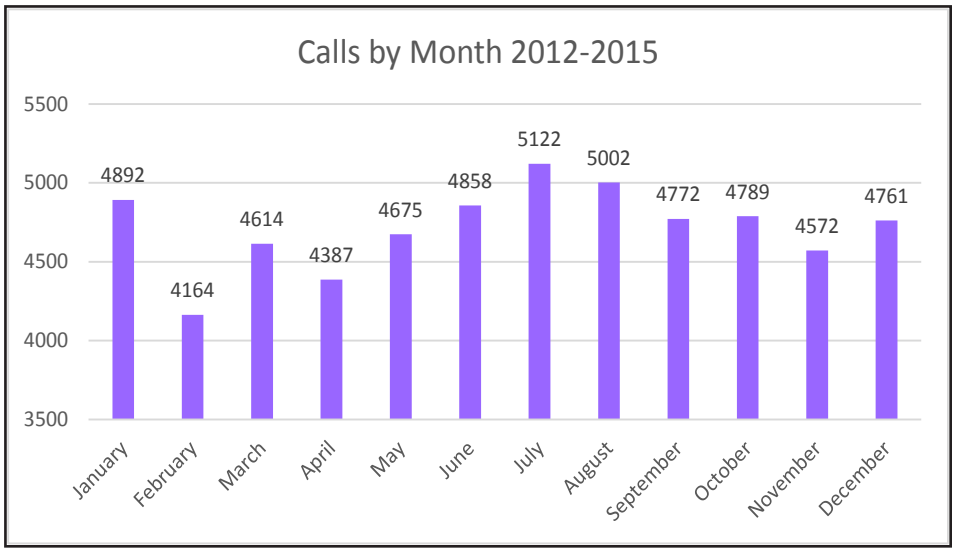
Temporal Activity

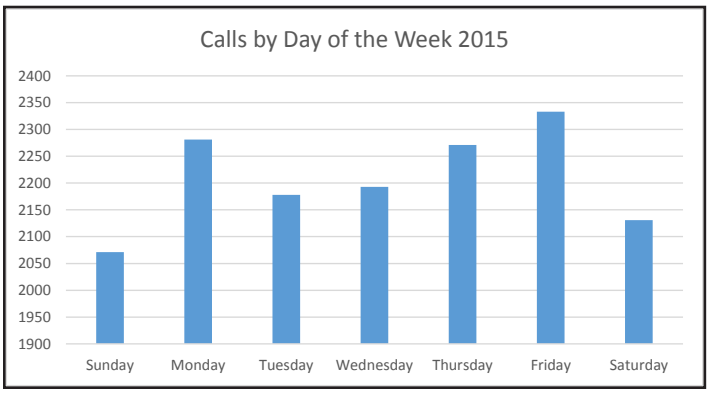
In order to determine when the greatest demand for service occurs, it is necessary to look at the call volume in each month, by the day of the week and also time of day. This allows the department to establish peak work periods that could have an impact on concentrations and deployment resources.

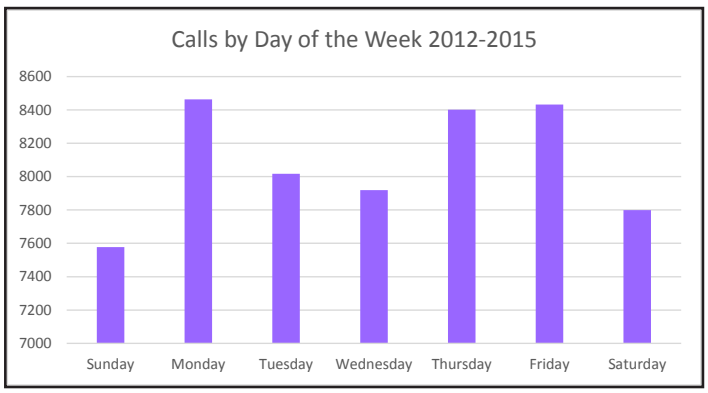
The "Calls by Month 2015" depicts the call volume in each month for 2015. The "Calls by Month 2012-2015" depicts the call volume trend by month for a four-year period. Both graphs show the summer months of June, July and August to be the busiest.

The "Calls by Day of the Week 2015" chart illustrates calls by the day of the week for 2015. The "Calls by Day of the Week 2012-2015" chart illustrates the trend for a four-year period. Both graphs show Mondays and Fridays as having the highest number of incidents with the weekends being substantially slower.









Reliability

The "Engine Company and Medic Unit Reliability for First Due Area 2015" table displays the availability of each unit in their assigned station. It provides data about how often each unit is the first on scene for incidents in their area. Units cover for each other frequently when they are on calls or at training. It is worth noting that Engine 31 and 32 are housed at the same station and cover for each other frequently, so the reliabilty for those two companies is actually over 90 percent as shown in the "Engine Company Response Area Percentages 2015" table.

Engine 23 is the most reliable at over 86%. This is not surprising due to the fact the area is so small and isolated. Engines 22, 23, 24, 31 and 32 all have similar reliability percentages. Engine 20 and Ladder 21/219 are the least reliable which is attributed to the fact that these areas have the most calls and are more likely to be on another call when the alarm sounds.

Engine Company Reliability First Due Area 2015			
Unit	**First Due Calls**	**First due responses**	**Reliability**
E20	3141	2485	79.11%
L21/219	3067	2439	79.52%
E22	1990	1655	83.17%
E23	1164	1011	86.86%
E24	2231	1850	82.92%
E31	1664	1366	82.09%
E32	1876	1541	82.14%

Medic Unit Reliability First Due Area 2015			
Unit	**First Due Calls**	**First due responses**	**Reliability**
M20	1792	1477	82.42%
M21	1847	1493	80.83%
M22	2742	2272	82.86%
M31	2053	1770	86.22%
***Medic 24 responses included in this data**			

Medic 31 is the most reliable of all the units. It is important to note that Medic 24 is utilized to cover the calls of all other units, so when Medic 24 responds to a call during its hours of operation, it is considered reliable no matter the response area. Without Medic 24, these reliability numbers would be well below 80 percent.

The next charts are the "Engine Company and Medic Unit Response Area Percentages for 2015." These charts provide data on the percentage of the time another unit, other than first due unit(s), responded into the area.

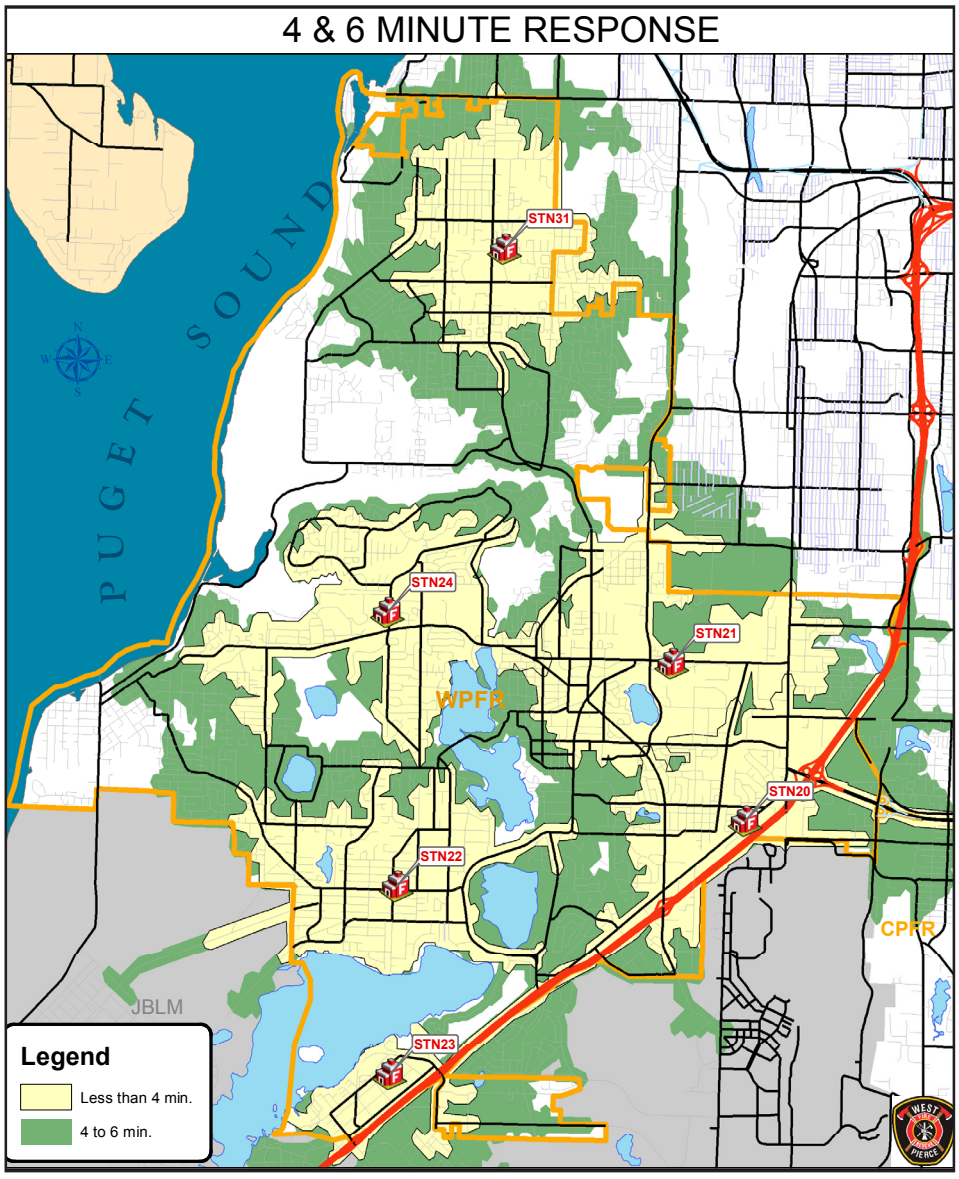
Engine Company Response Area Percentages 2015								
	E20	L21/219	E22	E23	E24	E31	E32	Private/ MA/Other
E20	**79.11%**	7.96%	3.60%	5.48%	0.48%	0.35%	0.22%	2.80%
L21/219	7.92%	**79.52%**	1.60%	1.17%	4.47%	0.91%	1.57%	2.84%
E22	3.47%	0.50%	**83.17%**	4.02%	5.03%	0.35%	0.45%	3.02%
E23	1.98%	0.52%	7.47%	**86.86%**	0.17%	0.17%	0.17%	2.66%
E24	0.58%	5.51%	7.08%	0.13%	**82.92%**	0.09%	0.58%	3.09%
E31	0.30%	1.98%	0.24%	0.24%	1.14%	**82.09%**	**11.24%**	2.76%
E32	0.11%	1.07%	0.16%	0.16%	1.39%	**10.07%**	**82.14%**	4.90%

Medic Unit Response Area Percentages 2015						
	M20	M21	M22	M31	M24	Private/MA/Engine
M20	**80.69%**	8.48%	6.81%	1.62%	1.73%	0.67%
M21	10.99%	**75.42%**	3.19%	3.90%	5.41%	1.08%
M22	8.61%	5.91%	**68.78%**	1.39%	14.08%	1.24%
M31	2.14%	10.23%	0.58%	**81.05%**	5.16%	0.83%

The above chart shows the least reliable unit is Medic 22. There are several reasons for this, 1) it runs the most calls, 2) Medic 24 covers for it often, and 3) the travel times to and from the hospital for this unit are significantly longer than the other units.

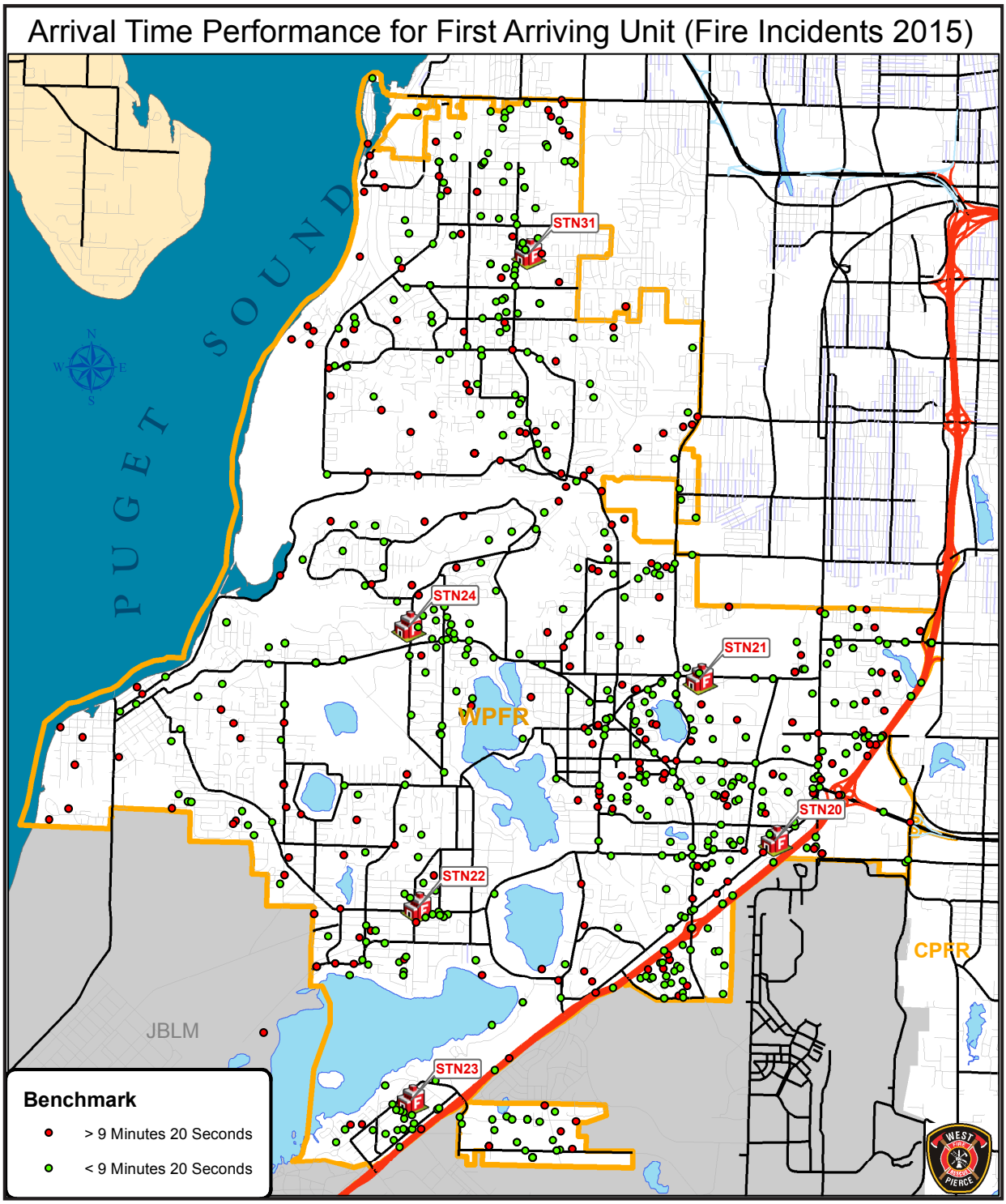
In order to evaluate reliability, it was necessary to determine what our response goals were and if we were meeting them. The ability of the units assigned to a station as "first due units" to respond to an incident within the station's assigned area and within the adopted time frame.

One of the tools utilized in setting goals for travel time modeling through data is presented and then displayed in a GIS format. This map illustrated the distances and coverage that should be provided within the adopted travel time goals. This system utilized projections based on a pre-determined travel speed while taking into consideration turns and connectivity. The "Travel Time Model 4 and 6 minutes" map displays the modeled coverage which the first due units should achieve based on a four minute and a six minute travel time from the first due stations. These times were chosen because 4 minutes is the NFPA standard for travel time and 6 minutes is WPFR's adopted travel time standard. The areas in white are the gaps for the ability of apparatus to arrive at all destinations within the District within the adopted standards.



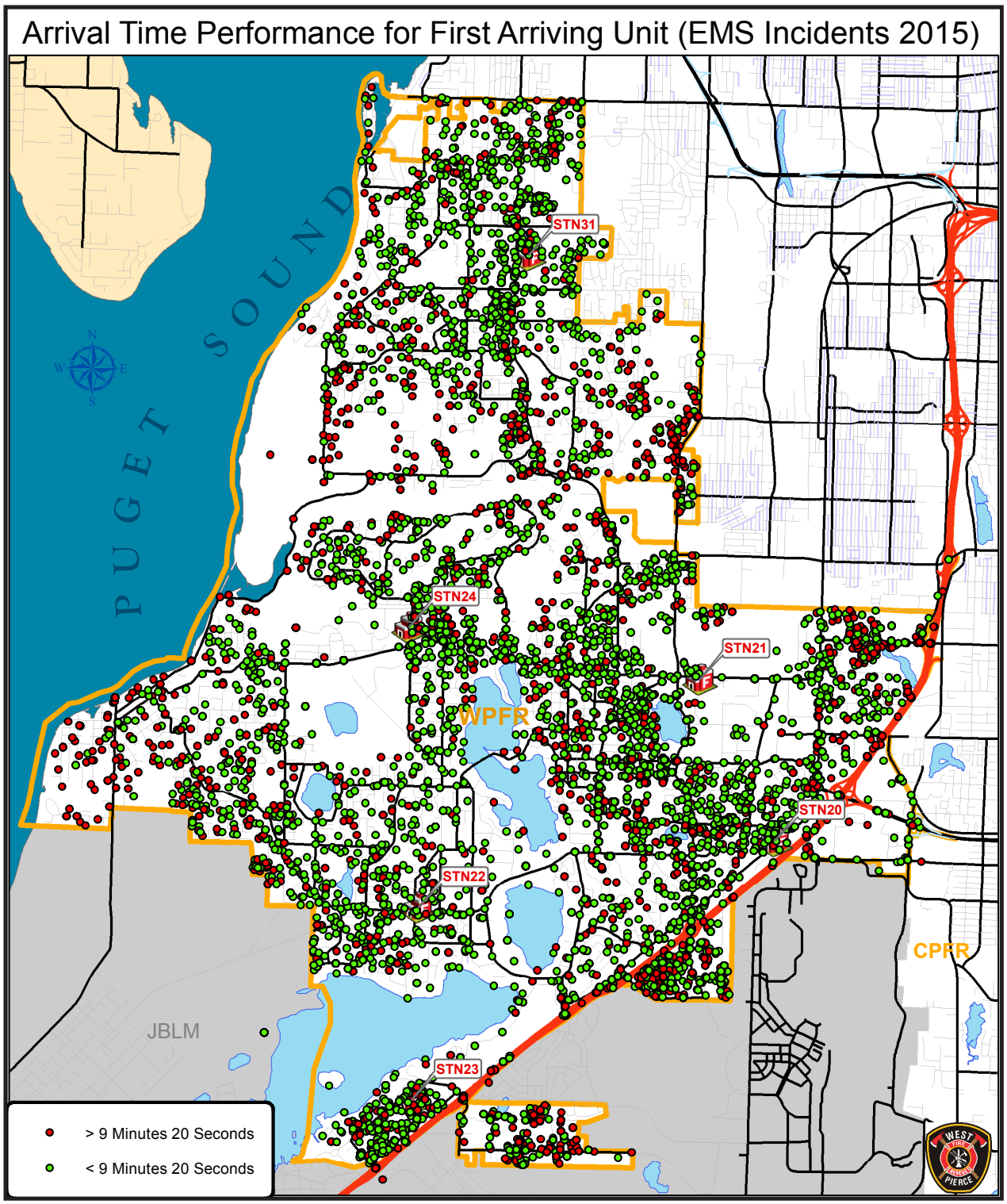
The "Arrival Time Performance for First Arriving Units" maps show where the response time goals were met and where they were not for both fires and EMS incidents. Representing this data in a visual way has helped WPFR to identify areas where response time goals are difficult to meet.

The Town of Steilacoom has a longer travel time standard than the communities within the Fire District due to the station location. There are several areas in the District where the time standards are difficult to meet as seen in these maps, such as the Woodbrook and Springbrook neighborhoods bordering Joint Base Lewis



McChord, the area are near the intersection of Orchard Street and Cirque Drive W and off of Grandview near the Chambers Bay Golf Course.

There were several difficulties identified that make meeting the response time goals a challenge in certain areas, including street connectivity, high traffic volumes, distance from the station and narrow roads. Additionally, arrival times suffer when units are out of position or on other calls.



Concentration

A concentration study requires an analysis of the arrangement of multiple resource spacing (close enough together) so that the Effective Response Force (ERF) may be assembled at the scene within the adopted public policy time frames. The Effective Response Force (ERF), resulting from critical task analysis, should be able to stop the escalation or forward progress of the emergency.

West Pierce Fire & Rescue's ERF for response time tracking on moderate risk structure fires is identified as 19 personnel within 15 minutes and 20 seconds. For high risk fires the ERF increases to 22 personnel and the response time increases to 17 minutes and 20 seconds for all personnel to arrive. While distribution considered first unit arrival, concentration is about having enough of the right equipment and staff arriving in a time frame that allows them to be effective while servicing the demand/situation. Distribution is about time and distance while concentration is about calls for service and risk level being protected.

Overall Demand for Service		
Unit Area	Calls for Service 2015	Percent of Total
Engine/Ladder		
Engine 20	3141	20.75%
Ladder 21/Engine 21	3067	20.27%
Engine 22	1990	13.15%
Engine 23	1164	7.69%
Engine 24	2231	14.74%
Engine 31	1664	10.99%
Engine 32	1876	12.40%
Medic Units		
Medic 20	1792	21.25%
Medic 21	1847	21.90%
Medic 22	2742	32.51%
Medic 31	2053	24.34%

Increased Risk = Increased Concentration

The analysis of concentration begins with a system wide overview of the demand for service by station first due areas. The "Overall Demand for Service 2015" table illustrates the demand for service for each first due engine company for 2015. The "All Incidents 2011-2015" map illustrates the hot spots of activity of a five year period.

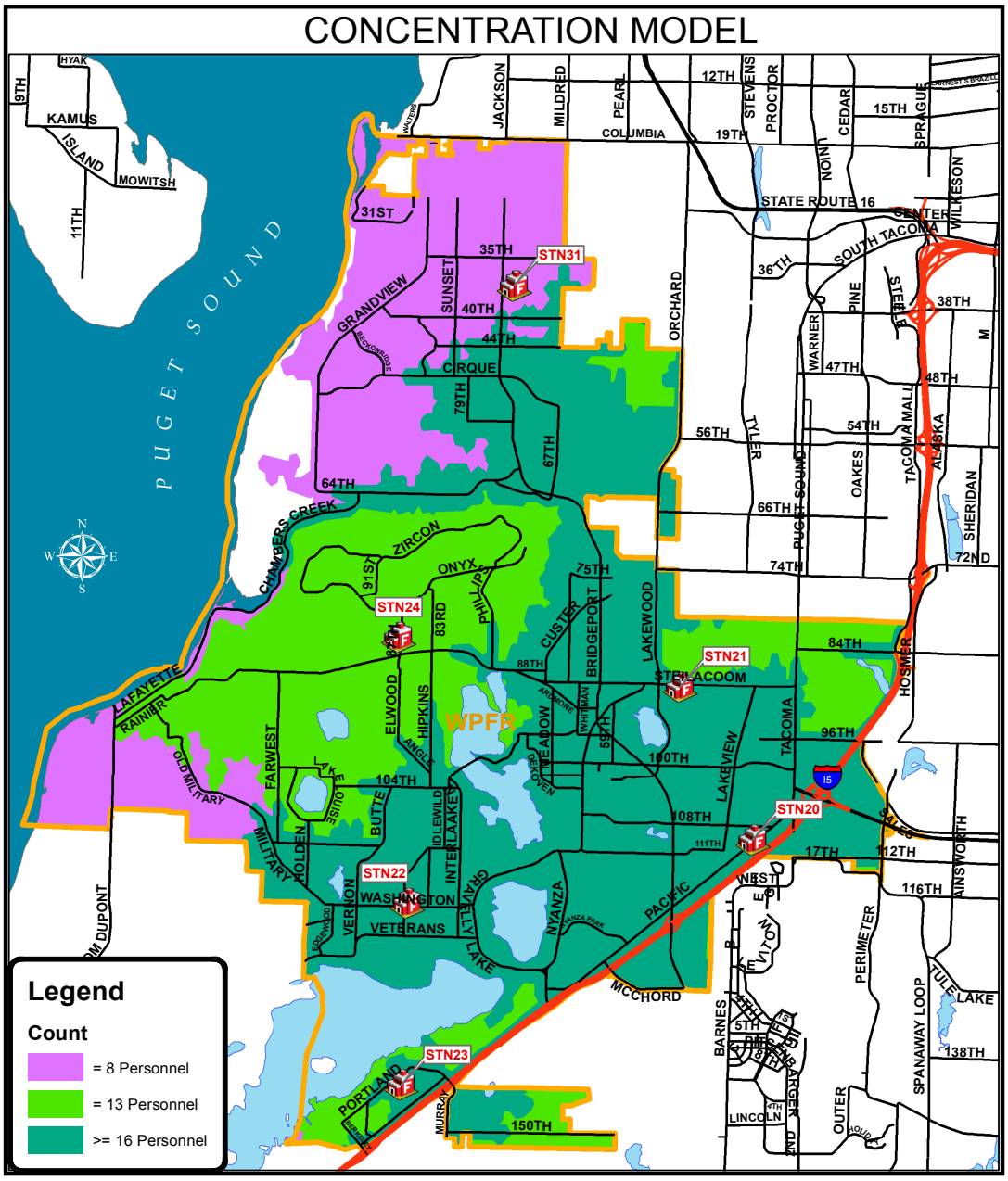
Effective Response Force

WPFR has set as an Effective Response Force (ERF) for a moderate hazard structure fire to be a staff of 19 personnel. In order to achieve the amount of personnel on scene as identified in critical tasking, response plans have been established to allow for a certain amount of units and personnel being deployed on the first alarm assignment as illustrated in the "First Alarm Assignment" table.

The current locations of fire stations were determined when the communities of Lakewood, University Place and Steilacoom each had their own fire departments according to the risks at the time. Our community has changed significantly since the original station locations were established. If station locations were chosen today, they may have been situated differently. There are some performance gaps indicated in the "Concentration Model" map which shows the number of effective response force personnel able to arrive within a 12 minute travel time. This map indicates the northern portion of University Place has a gap in the arrival of the entire effective response force. The area of Chambers Bay has no roads, so the effective force response time cannot be measured adequately, therefore it is white in color. One thing not indicated in this map is the effect mutual aid has on the concentration performance. The mutual aid agreements currently in place will fill some of the gaps indicated in northern University Place.

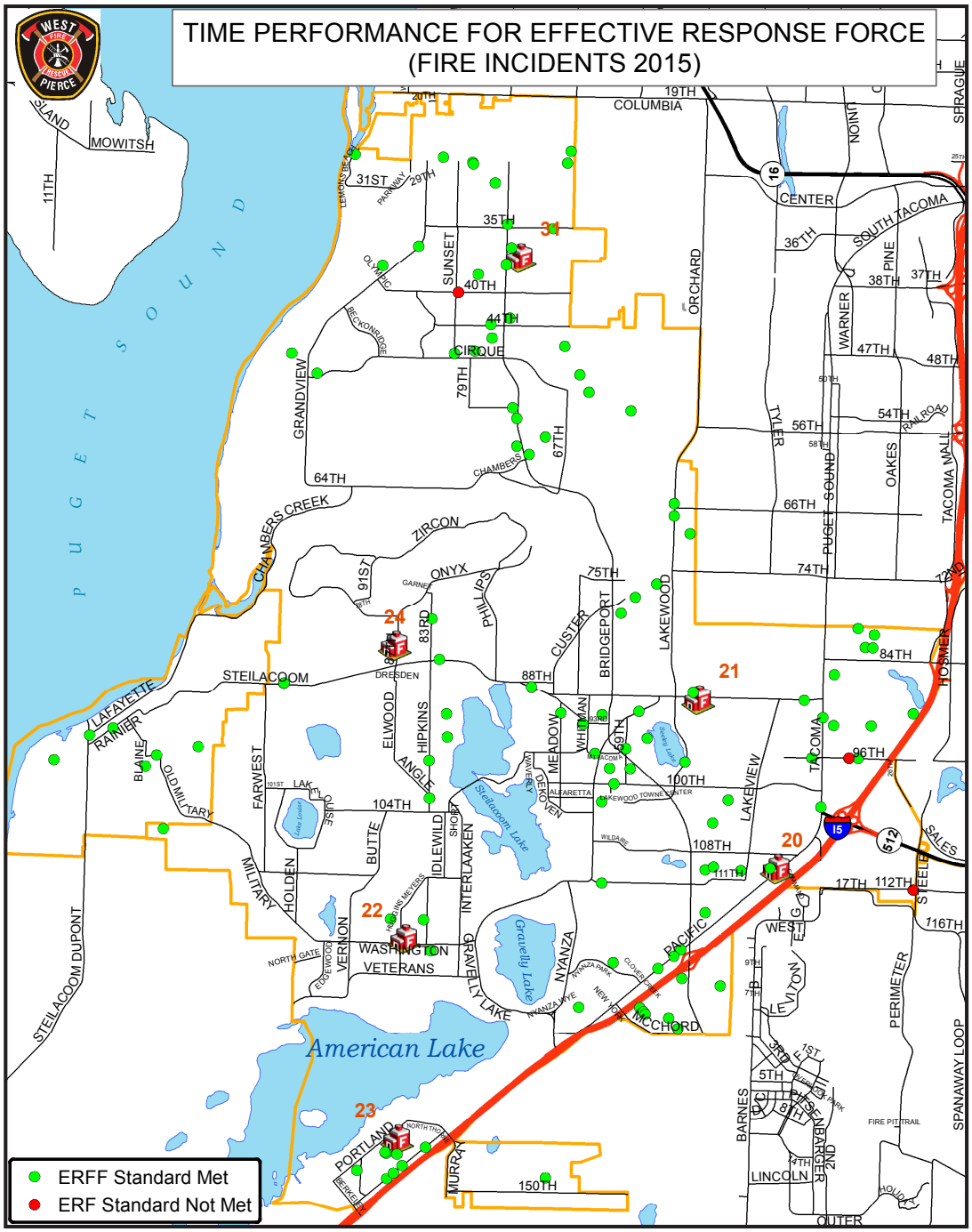
First Alarm Assignment	
Unit Type	**Personnel**
Battalion Chief	1
3 Engine Companies	9
1 Ladder Company	3
2 Medic Units	4
Duty Chief	1
Safety Officer	1
Total Personnel	19

Note: The "First Alarm Assignment" table shows 19 people responding, the Duty Chief and Safety Officer have been removed from the travel time tracking because they are often responding from home after hours because they are day staff personnel. The Battalion Chief has also been removed from the travel time requirements because the first company on scene can fulfill this role until the BC arrives.

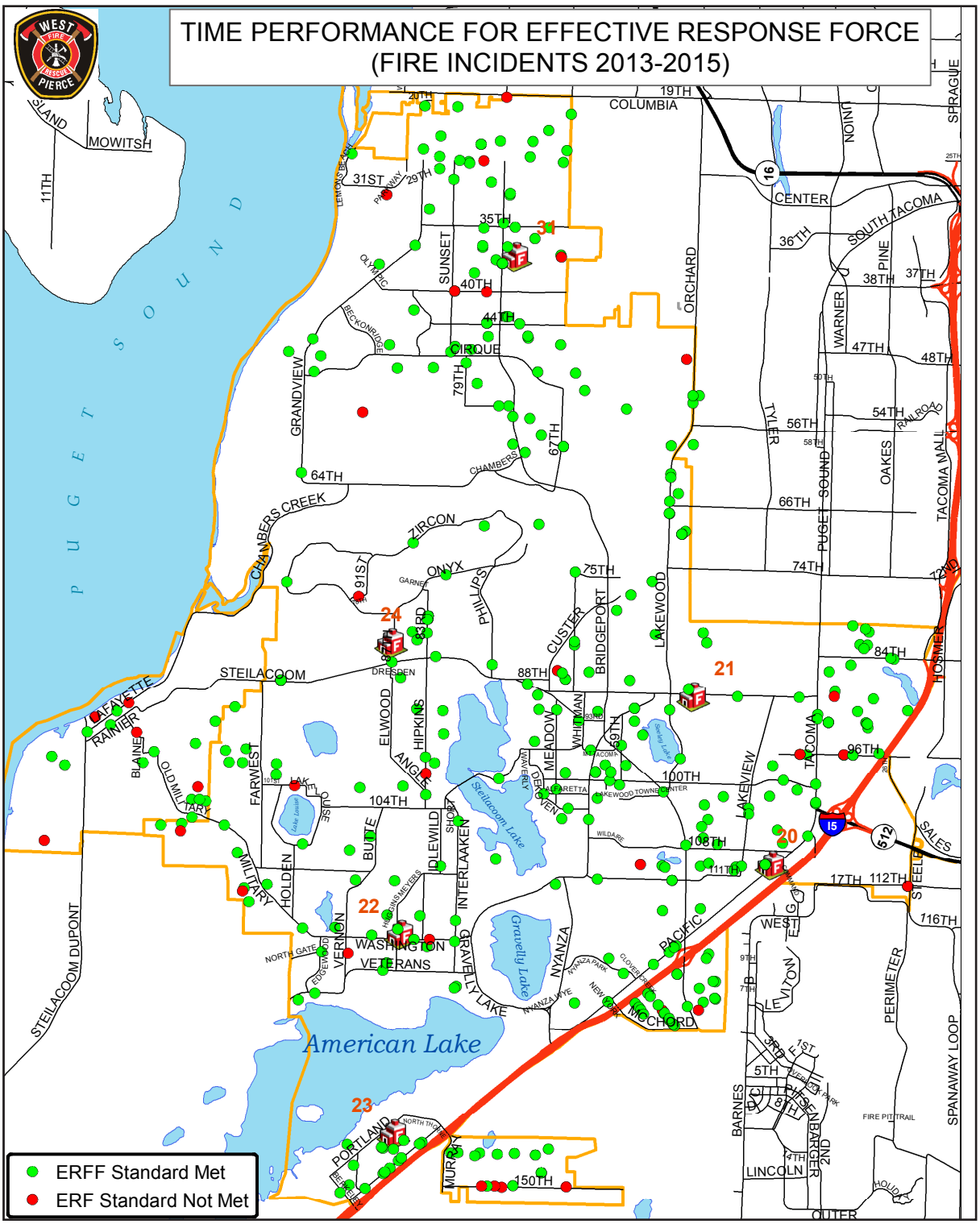


The areas shown in dark teal (where there is a capability of the entire effective response force arriving within 12 minutes) on the "Concentration Model" map encompasses all of the highest risk areas in the District. The blue section encompasses the areas where fires are most likely to occur based on past occurances and demographics. This is not to say the areas where WPFR cannot meet the ERF 12 minute travel time standard are insignificant or unimportant. The areas in pink or green can only be improved if additional resources are added. There is a station location gap that could improve the areas where the ERF travel times are not met.

The following maps indicate actual Effective Response Force Performance. The red dots indicate fires where the established Effective Response Force times were not met. The green dots represent fires where the ERF goal was met. These maps include all fires whether or not they ended up being actual working fires. There were only three



instances in 2015 where the ERF time goals were not met. The map below shows all fire incidents from 2013 to 2015. The red dots again show the areas where the performance objectives for the effective response force were not met. Most of the incidents where the performance objectives were not met fell in the areas identified in the Concentration Model map located on page 126 as unable to meet the standard.



PERFORMANCE OBJECTIVES AND MEASURES

West Pierce Fire & Rescue is a multi-risk response organization and has set benchmarks for each of the risk categories identified during the development of this Standard of Cover. For the performance objectives and performance measures, the department stressed two critical response areas, fire risk and EMS risk.

Dynamics of Fire in Structures

Most fires within buildings develop in a predictable fashion unless influenced by highly flammable material. Researchers have determined that a fire inside of a compartment or structure will progress through a series of predictable stages. These stages have been identified as ignition, growth, flashover, fully developed, and decay phases. Ignition starts the sequence of events. It may take several minutes or even hours from the time of ignition until a flame is visible. Examples of the delayed visible flame would be a smoldering, discarded cigarette or a pan of food left unattended on the stove. This smoldering stage is very dangerous, especially during times when people are sleeping, because large amounts of highly toxic smoke may be generated during this phase.

Once flames do appear, the sequence continues rapidly. This is identified as the growth phase of the fire. Combustible material adjacent to the flame heats and ignites, which in turn, heats and ignites other adjacent materials if sufficient oxygen is present. As the objects burn, heated gases accumulate at the ceiling of the room. Some of the gases are flammable and highly toxic.

The spread of the fire continues quickly from this point. Soon, the flammable gases at the ceiling as well as other combustible material in the room reach ignition temperature. At that point, an event termed "flashover" occurs; the gases and other material ignite, which in turn ignites everything in the room nearly simultaneously. Once flashover occurs, damage caused by the fire is significant and the environment within the room can no longer support human life.

Flashover, which is a transition from the growth phase to the fully developed phase, usually occurs about five to eight minutes from the appearance of the flame in typically furnished and ventilated buildings. During flashover, conditions within the structure change very rapidly as the fire changes from one dominated by the burning materials first ignited to one that involves all of the exposed combustible surfaces inside of the compartment. Since flashover has such a dramatic influence on the outcome of a fire event, the goal of any fire agency is to apply water to a fire before flashover occurs.

The final stage of a fire is the decay phase. This occurs when all of the available fuel is consumed or the oxygen in the environment is removed and the fire goes out.

Although modern codes tend to make fires in newer structures less frequent, today's energy-efficient construction (designed to hold heat during winter) also tends to confine the heat of a hostile fire. In addition, research has shown that modern furnishings generally burn hotter (due to synthetic composition).

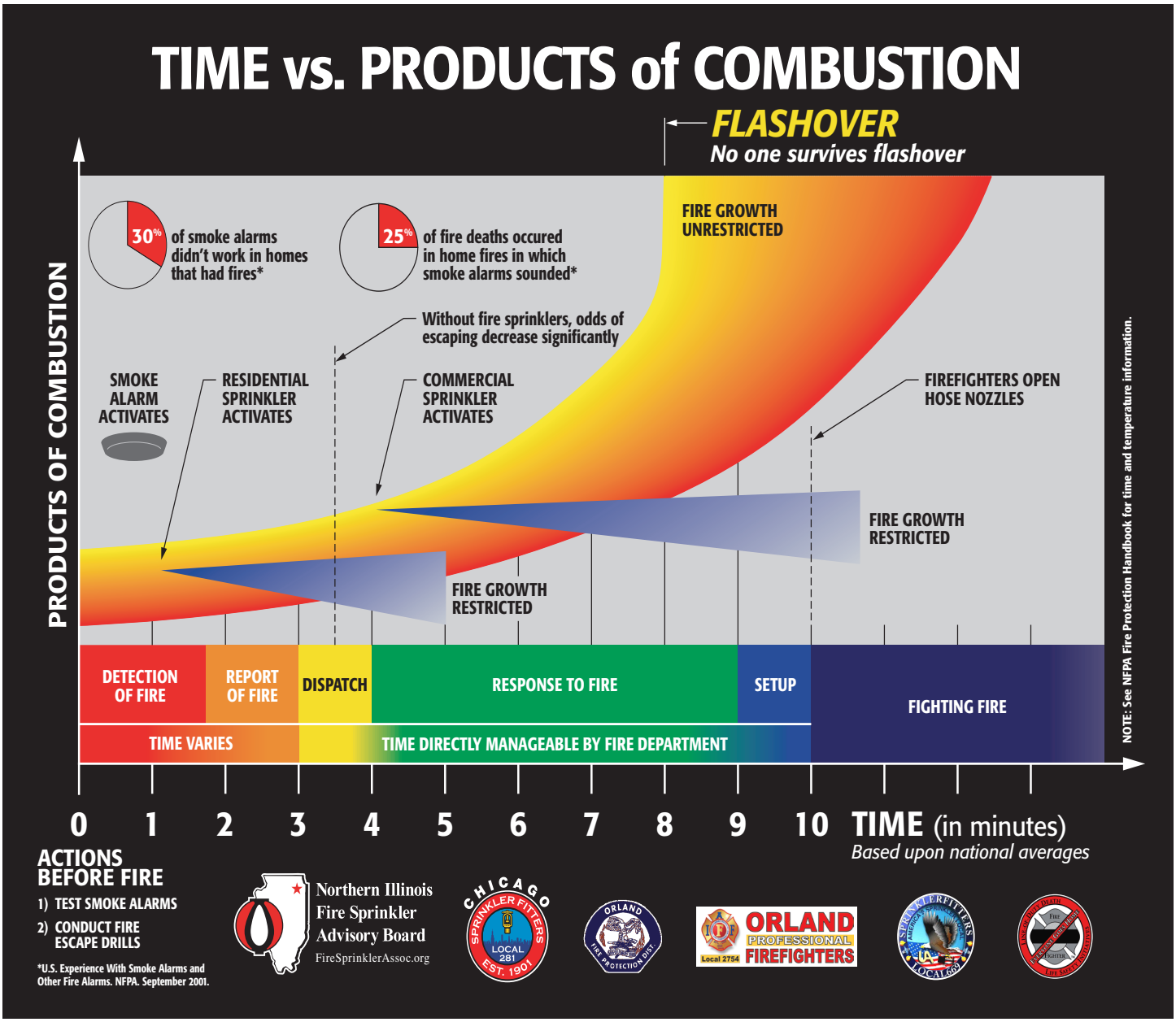
In the 1970's, scientists at the National Institute of Standards and Technology found that after a fire started, building occupants had about 17 minutes to escape before being overcome by heat and smoke. Today, that estimate is as short as three minutes. The necessity of effective early warning, (smoke alarms), early suppression (sprinklers), and firefighters arriving on the scene of a fire in the shortest span of time is more critical now than ever.

Perhaps, as important as preventing flashover is the need to control a fire before it does damage to the structural framing of a building. Materials used to construct buildings today are often less fire resistant than the heavy structural framework of older buildings. Roof trusses and floor joists are commonly made with lighter materials that are more easily weakened by the effects of fire. "Lightweight" roof trusses fail after five to seven minutes of direct flame

impingement. Plywood I-beam joists can fail after as little as three minutes of flame contact. This creates a dangerous environment for firefighters.

In addition, the contents of buildings today have a much greater potential for heat production than in the past. The widespread use of plastics in furnishings and other building contents rapidly accelerate fire spread and increase the amount of water needed to effectively control a fire. All of these factors make the need for early application of water essential to a successful fire outcome. A number of events must take place quickly to make it possible to achieve fire suppression prior to flashover. The following figure illustrates the sequence of events.

As is apparent by this description of the sequence of events, application of water in time to prevent flashover is a serious challenge for any fire department. It is critical, though, as studies of historical fire losses can demonstrate.



The National Fire Protection Association found that fires contained to the room of origin had significantly lower rates of death, injury, and property loss when compared to fires that had an opportunity to spread beyond the room of origin. As evidenced in the "Fire Extension in Residential Structures" table, fire losses, casualties, and deaths rise significantly as the extent of fire damage increases.

Reported Home Structure Fires, by Extent of Fire Spread 2010-2014 Annual Averages				
Extent of Fire Spread	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (In Millions)
Confined to object of origin	30,700	90	810	$248
Confined to room of origin	66,700	390	4,400	$822
Extended beyond the room of origin	91,100	2,040	5,840	$5,602
Source: National Fire Protection Association "Home Structure Fires," 2015				

Time, People, and Tools

In order to achieve an effective outcome for an emergency event, there are three primary components to be addressed including time, people, and tools. The first consideration must be the element of time. The amount of resources will be of little value if they are not delivered to the scene of an emergency in a timely manner. The next element is a sufficient number of properly trained personnel to accomplish the critical tasks. The third element is the right type and amount of tools and equipment to accomplish the mission.

Fire incidents utilize a considerable amount of resources to meet the community expectations for service delivery. In order to meet the primary objective in a fire situation which is the containment, confinement, and extinguishment prior to flashover, sufficient personnel must be delivered to the scene. The application of water in the right place and at the right time is the only practical method for controlling fire spread. This must be accomplished in an orderly manner in conjunction with ventilation, salvage, rescue and other tasks that provide for safety and property conservation. The greater the fire risks, the more resources that are necessary to meet the objective.

Emergency medical incidents, like fires, demand the correct number and type resources arrive in a timely manner in order to accomplish the desired objectives.

For a cardiac arrest, eight personnel are optimal; two to perform CPR, three to set up and operate advanced medical equipment, one to record the actions taken by emergency care providers, and two to direct patient care. Like fires, greater risks require more resources. Mass casualty events demand more numbers and types of resources whereas the more critical the patients' condition, the more important the element of time becomes. Cardiac/respiratory arrest, serious trauma, shock, or conditions which may lead to cardiac or respiratory failure necessitate a rapid response.

Thus, for an effective emergency response, the true measurement of performance is the time it takes to deliver the necessary amount of trained and equipped personnel to the scene in order to accomplish the stated goals and objectives. A single responder arriving with a radio does not equate to an effective response to an emergency.

Performance Statement and Objectives

The following section describes the emergency response performance levels that are determined to be both reasonable and achievable by West Pierce Fire & Rescue. Both the desired performance levels and the actual performance levels are described in this section. Every community must decide on the desired level of service it expects from the fire department. Each community has its unique risks. Although communities may be similar to their surrounding communities and other communities across the country, the frequency of events and the impact on the community are often very different; therefore, they must have a response tailored to their specific expectations.

The Board of Fire Commissioners is elected and charged with determining the levels of service, as well as, making resource allocation decisions in regards to funding and revenue streams. As they adopt the budget each year, the Board directs staff regarding where revenues will be spent. This direction directly impacts the level of services that can be delivered to the citizens and community.

Overall Performance Goal

West Pierce Fire & Rescue is committed to the prevention and reduction of risks to the citizens of the District and visitors to our community. WPFR is an all risk response agency, meaning that it responds to a multitude of events ranging from small trash and brush type fires to vehicle fires, structure fires, hazardous materials releases and spills, accidents and entrapments, medical emergencies, water rescues, technical rescues, assists other agencies, and any other type of emergency. The District also provides non-emergency types of service which help to reduce or prevent incidents from occurring. These services include but are not limited to fire and life safety inspections, public education, code enforcement, building plan reviews, child car seat installation, smoke alarm installations, blood pressure checks and fire investigations.

West Pierce Fire & Rescue is committed to providing the level of service the community wants and needs. Performance goals, as well as the industry standards, have been described in this document in order to define benchmarks. The District has evaluated the risks, as well as critical tasks, in order to establish specific performance objectives. Although the District may not currently demonstrate that all of these objectives are being met, our goal is to meet them in the future.

Performance Objective All Risks

Refer to the risk assessment section of this document, pages 106-107, for the performance objectives for West Pierce Fire & Rescue.

Cirque training burn 2015

Distribution Performance Measures

Distribution describes WPFR's ability to deliver a first due unit to the scene of an emergency within a described period of time.

Fire Response

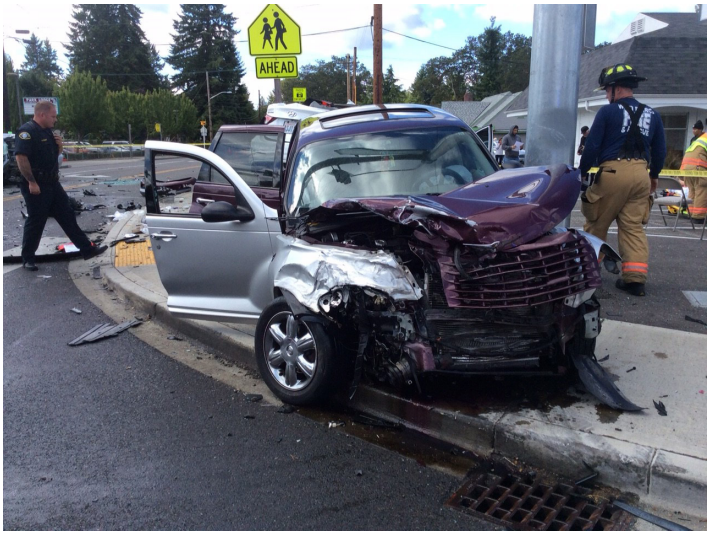
Automatic Fire Alarm Response: Single Family or Commercial

An automatic fire alarm response will consist of one fire apparatus staffed with a minimum of three personnel to respond priority unless otherwise notified

there is no fire. The first due unit will arrive within nine minutes and 20 seconds 90 percent of the time. The responding company may respond routine to verify the information for reporting purposes at the officer's discretion. At any time, the company officer or Battalion Chief may change the response as necessary. The first due company will be capable of determining the cause of the alarm activation and judging whether additional resources are needed.

Structure Fire Response: Residential and Commercial

For residential structure fire incidents, the first due fire apparatus staffed with a minimum of three personnel will arrive within nine minutes and 20 seconds of the initiation of the 9-1-1 call for 90 percent of the requests for service.



Motor vehicle collision 2015

Non-Fire Response

Technical Rescue Response

For all incidents requiring a technical rescue response, WPFR shall respond with a first due apparatus and a minimum staff of three personnel. The first due unit will arrive within nine minutes and 20 seconds from the time the 9-1-1 call was made for 90 percent of incidents. The first due unit will be capable of securing the scene, starting rescue operations and calling for additional resources if necessary.

HazMat Response

For incidents involving a potential release or spill of hazardous materials, WPFR shall respond with the first due apparatus staffed with three personnel. The first due unit will arrive within nine minutes and 20 seconds from the time the 9-1-1 call was made for 90 percent of the requests for service. The first due unit shall be capable of securing the scene, starting a hazmat response at the operational level and calling for additional resources if necessary.

Marine/Water Response

For all marine/water rescue incidents WPFR shall respond with a first due apparatus staffed with a minimum of three personnel. The first due unit shall arrive within 18 minutes and 20 seconds from the time the 9-1-1 call was made for 90 percent of requests for service. The first due unit shall be capable of starting the rescue operation and calling for additional resources if necessary. Considering the unique nature of marine/water incidents, the fact that marine units are staffed with cross-trained personnel and the location of the watercraft, response times are significantly longer than other incidents. If the incident is along the shore or on a dock, additional units are often dispatched to the incident location. As Fireboat Endeavor is a regional asset, it can requested for incidents outside WPFR borders. No performance measure is established for these incidents.

Emergency Medical Service

WPFR responds to a high percentage of EMS incidents classified as immediately life threatening which are dispatched as priority calls. Calls that are less emergent are dispatched as non-priority.

For the purposes of this SOC, the performance measures are for priority calls. WPFR shall respond with a first due apparatus staffed with a minimum of two personnel. The first due unit shall arrive within nine minutes and 20 seconds from the time the 9-1-1 call is placed for 90 percent of the requests for service.

WPFR BENCHMARK TIMES FOR DISTRIBUTION				
Distribution	**Response (First due)**	**Total Time**	**Percent**	**Personnel (Minimum)**
Fire Alarm Single Family and Commercial	Engine or Ladder	9:20	90%	3
Structure Fire Residential and Commercial	Engine or Ladder	9:20	90%	3
Non-Structure Fire	Engine or Ladder	9:20	90%	3
EMS	Engine, Ladder or Medic Unit	9:20	90%	2
Technical Rescue	Engine or Ladder	9:20	90%	3
HazMat	Engine or Ladder	9:20	90%	3
Water/Marine	Engine or Ladder	18:20	90%	3

Concentration Performance Measure

FIRE

All 9-1-1 calls for service in WPFR are received and dispatched by South Sound 911 Fire Division (Fire Comm). Emergency Fire Dispatch (EFD), an All-Hazards criteria based system is utilized for fires. Dispatchers gather information regarding the event and classify the call level based on the answers provided by the reporting party. This criteria based system is based on national standards with further refinement based on state and local protocols. The EFD program is adaptable to meet the needs of the individual locality while respecting national standards that have been applied.

Concentration performance measures are the time standards for the Effective Response Force (ERF) to arrive at the scene of an incident. ERF designation is defined as the minimum number of resources necessary to mitigate the incident. Concentration performance determines if there are enough resources located such that the ERF can arrive within a prescribed timeframe. The concentration performance goals are proposed as follows for WPFR:

Fire: Low Risk

For fires in the low risk category, which include sheds, brush fires, trash containers/dumpsters, vehicles, transformers, downed power lines, or investigation of unknown situations, the fire District shall respond with an ERF Force consisting of a minimum of three personnel. The ERF shall arrive within a total response time of nine minute and 20 seconds for ninety percent of the requests for priority service. In 2015, WPFR met this objective 67 percent of the time. It should be noted that these types of calls are low risk, therefore the urgency of getting to the incident is not as great as a moderate or high risk call.

Fire: Moderate Risk

For fires in the moderate risk category, including single family and duplex type structures, and detached garages, WPFR shall respond with an ERF with a minimum of nineteen personnel and sufficient apparatus with the capacity to deliver 3,000 gpm, initiate search and rescue, establish RIT (Rapid Intervention Team), advance two fire attack lines, begin ventilation, control utilities and provide for accountability, safety and resource management. The ERF shall arrive within 15 minutes and 20 seconds total response time for ninety percent of the requests for service. In 2015, WPFR met this objective 94 percent of the time.

Fire: High Risk
For high risk fires, the District shall respond with an ERF of 22 personnel within 17 minutes and 20 seconds for ninety percent of the requests for service. The ERF shall have the capability to deliver a minimum of 4,500 gpm, initiate search and rescue, establish RIT, advance two fire attack lines, begin ventilation, control utilities, and provide for accountability, safety, and resource management. High-risk fires shall include commercial structures, hazardous materials storage facilities, government buildings, multi-family units and assembly areas with a capacity greater than 100 occupants. In 2015, WPFR met this objective 85 percent of the time.

EMERGENCY MEDICAL SERVICES

WPFR provides Emergency Medical Services (EMS) to its citizens. EMS is a type of emergency service dedicated to providing out-of-hospital acute medical care, transport to definitive care, and other medical services to patients with illnesses and injuries. The goal of EMS is to provide treatment to those in need of urgent medical care, with the goal of satisfactorily treating the patient at scene or transporting the patient to a nearby hospital.

EMS: Low Risk
For a low risk EMS incident, WPFR will provide a single unit staffed with a minimum of two personnel with a total response time of nine minutes and 20 seconds for ninety percent of the calls for service. A low risk EMS incident would be defined as, but not limited to an illness, minor injury, motor vehicle incident without entrapment, etc. The first due unit shall be capable of starting patient care. These incidents are often times not urgent in nature, so meeting the time standard is not critical. In 2015, WPFR met this objective 61 percent of the time.

EMS: Moderate Risk
For a moderate risk EMS incident WPFR shall respond with an ERF of five personnel within a total response time of nine minutes 20 seconds for ninety percent of the calls for service. The ERF shall be capable of initiating patient care, securing the scene, and beginning rescue/extrication activities. Moderate risk EMS incidents would include, but is not limited to, motor vehicle incidents with entrapment, multiple patient collisions without major trauma, construction site incidents requiring technical rescue, etc. Typical response to these events would include an engine and a medic unit. In 2015, WPFR met this objective 52 percent of the time.

EMS: High Risk CPR in Progress
For high risk EMS incidents with CPR in progress, WPFR shall respond with an ERF of eight personnel within a total response time of 11 minutes and 20 seconds for ninety percent of the calls for service. The ERF shall be capable of initiating patient care, securing the scene and providing CPR. Responses to CPR in progress calls include two engine companies and one medic unit. In 2015, WPFR met this objective 86 percent of the time.

EMS: High Risk
For high risk EMS incidents, WPFR shall respond with an ERF of 16 personnel within a total of 15 minutes and 20 seconds for ninety percent of the calls for service. These events include but are not limited to rail incidents, aircraft crashes, structure collapses, explosions, and motor vehicle collisions involving mass transit with significant trauma, etc. The ERF shall be capable of initiating rescue, controlling ignition sources, beginning patient care, securing the scene, establishing and functioning as part of the ICS, providing triage, treatment and transport. There were no incidents that met this criteria in 2015.

HAZARDOUS MATERIALS

Hazardous material incidents pose special hazards to responders. WPFR has only two categories for these events, low and high risk incidents. For high risk incidents, WPFR responds in a tiered approach. Initially, all on duty West Pierce hazardous materials technicians are called to the scene. If the technicians on scene deem the incident as significant they will call for the Pierce County Hazardous Incident Team (PCHIT). This team consists of technicians from four fire agencies within Pierce County.

Hazardous Materials: Low Risk
For low risk hazardous material incidents, WPFR shall respond with an ERF of a minimum of three personnel within a total response time of nine minutes and 20 seconds for ninety percent of the requests for service. The ERF shall be capable of containing or controlling the spill/leak, securing the scene, and providing safety for the responders and public. Low risk events would include, but not be limited to, auto collisions with fluid spills less than five gallons, residential propane leaks, household chemicals, or unknown odors in a structure. In 2015, WPFR met this objective 73 percent of the time.

Hazardous Materials: High Risk
For high risk hazardous materials incidents, WPFR shall respond with an ERF of a minimum of 15 personnel within a total response time of 15 minutes and 20 seconds for ninety percent of the calls for service. If a regional response is required, the total response time will be closer to one hour. The ERF shall be capable of securing the scene, establishing command, and beginning the process of containment and control of the spill event while protecting the responders as well as the public. In 2015, WPFR had no incidents that met the criteria for high risk because the first arriving units either cancelled or slowed the response of other units.

TECHNICAL RESCUE

Technical rescue incidents occur infrequently and require specialized equipment and training. Examples include high angle rescue, trench rescue, confined space rescue, or structural collapse. Much like hazardous materials responses, technical rescue incidents are handled using a tiered system. WPFR sends the first due engine company to confirm the event and secure the scene. Once the event is confirmed all on-duty technical rescue personnel are called to the scene. If the on duty personnel need additional resources, the Pierce County Special Operations Rescue Team is called to assist.

Technical Rescue: Low Risk
For low risk rescue incidents, WPFR shall respond

Hazardous Materials Response I-5

with an ERF consisting of a single engine staffed with a minimum of three firefighters with a total response time of nine minutes and 20 seconds for ninety percent of the requests for service. The ERF shall be capable of securing the scene, confirming the need for one or more rescue technicians and beginning the rescue process. In 2015, WPFR met this objective 100 percent of the time.

Technical Rescue: High Risk
For high risk technical rescue incidents, WPFR shall respond with an ERF consisting of a minimum of 15

personnel within a total response time of 15 minutes and 20 seconds for ninety percent of the calls for service. The ERF shall be capable of securing the scene, establishing command, providing basic patient care, and performing the tasks necessary for rescuing the victim. If a regional PCSORT response is required, the total response time for all resources to arrive will be closer to one hour. In 2015, there were no incidents that met this description in West Pierce.

MARINE/WATER

Marine incidents vary greatly in geography, scope and complexity. Due to the diversity in the types of water and incidents within WPFR, there are four categories of marine incidents, low risk marine/water incident, moderate risk marine/water incident EMS, moderate risk marine/water incident fire, and a dive rescue incident.

Marine/Water Incident: Low Risk
For low risk marine/water incidents, WPFR shall respond with an ERF of a minimum of three personnel within a total response time of 18 minutes and 20 seconds for ninety percent of the calls for service. Low risk incidents include items such as a stranded boater, overturned small boat such as a kayak or canoe, or other smaller-scale water related incidents. The ERF shall be capable of evaluating the situation to determine the need for additional resources and either mitigate the incident or begin the necessary actions to prevent the situation from escalating. In 2015, there were eight calls that met this description. Five of the calls were handled by Endeavor who notified dispatch of the event when they got to the scene. The low number of calls makes the evaluation against the benchmark statistically irrelevant.

Marine/Water Incident EMS: Moderate Risk
For moderate risk marine/water incidents that are EMS in nature, WPFR shall respond with an ERF consisting of a minimum of a minimum of 17 personnel, some of these personnel are on shore and some are on the boat. The response will be measured using a total time of 18 minutes and 20 seconds for at least five personnel to be on the boat and leaving the dock for ninety percent of the calls for service. Medical emergencies on the water require more personnel than a land-based EMS incident. Firefighters on the water treat and package the patient and move them to shore where additional personnel receive the patient and transport them to an area hospital. If there are multiple patients, this type of incident would be upgraded to a regional marine response. There were no incidents that fit this description in 2015

Marine/Water Incident Fire: Moderate Risk
For moderate risk fires occurring on the water or near the shoreline, WPFR shall respond with an ERF consisting of a minimum of six personnel with a total response time of 18 minutes and 20 seconds for ninety percent of the calls for service. The ERF shall be capable of evaluating the incident to determine the need for additional resources and either extinguish the fire or upgrade to a regional response. In 2015, there were no incidents that met this criteria.

Dive Rescue Incident
For dive rescue incidents, WPFR shall respond with an ERF consisting of a minimum of eight personnel with a total response time of 18 minutes and 20 seconds for ninety percent of the calls for service. Dive rescue calls assume there is a victim in the water in need of rescue. The ERF shall be capable of entering the water and finding the patient. The Battalion Chief will assess the scene and determine if more resources are necessary. In 2015, there were no dive rescue incidents.

Water Rescue Drill 2013

Performance Objectives					
Distribution	Risk Level	Minimum Required	Personnel	Time Frame	%
All Risks	All	1 Engine or Ladder	3	9 minutes, 20 seconds	90th
Concentration	Risk Level	Minimum Required	Personnel	Time Frame	%
Fire					
	High	Battalion Chief, 4 Engine Companies, 1 Ladder, 2 Medic Units, 1 Duty Chief, 1 Safety Officer	22	17 minutes, 20 seconds	90th
	Moderate	Battalion Chief, 3 Engine Companies, 1 Ladder, 2 Medic Units, 1 Duty Chief and 1 Safety Officer	19	15 minutes, 20 seconds	90th
	Low	1 Engine or Ladder	3	9 minutes, 20 seconds	90th
EMS					
	High	1 Battalion Chief, 2 Engine Companies, 3 Medic Units, 1 Ladder Company	16	15 minutes, 20 seconds	90th
	High/CPR in Progress	2 Engine Companies, 1 Medic Unit	8	11 minutes, 20 seconds	90th
	Moderate	1 Engine Company, 1 Medic Unit	5	9 minutes, 20 seconds	90th
	Low	1 Engine Company or 1 Medic Unit	2- if Medic 3- if Engine	9 minutes, 20 seconds	90th
Technical Rescue					
	High	1 Battalion Chief, 2 Engine Companies, 1 Medic Unit, 1 Ladder Company, all on duty Rescue Technicians	15	15 minutes, 20 seconds	90th
	Low	1 Engine Company	3	9 minutes, 20 seconds	90th
HazMat					
	High	1 Battalion Chief, 2 Engine Companies, 2 Medic Units, 1 Ladder Company, 1 Duty Chief, 1 Safety Officer	15	15 minutes, 20 seconds	90th
	Low	1 Engine Company	3	9 minutes, 20 seconds	90th

Performance Objectives					
Distribution	Risk Level	Minimum Required	Personnel	Time Frame	%
Marine/Water					
	High EMS	1 Battalion Chief, 1 Safety Officer, 1 Boat, 3 Engine Companies and 2 Medic Units	17	18 minutes, 20 seconds	90th
	High Fire	1 Battalion Chief, 1 Engine Company, and 1 Medic Unit	6	18 minutes, 20 seconds	90th
	Dive Rescue	1 Battalion Chief, 1 Safety Officer, 1 Engine Company, and 1 Medic Unit	8	18 minutes, 20 seconds	90th
	Low	1 Engine Company	3	9 minutes, 20 seconds	90th

COMPLIANCE METHODOLOGY

This component of the Standard of Cover (SOC) process is Compliance Methodology, which WPFR will utilize to determine how often the District is meeting the standards established on a continual basis. WPFR will review the services provided and the level at which these services can be delivered. WPFR will then develop a plan to implement any necessary changes to provide for a more efficient and effective service delivery to meet the expectations of the community along with the objectives set by WPFR.

Data collection and analysis is critical to the compliance evaluation process. WPFR is committed to continuously improving records management and performance analysis in order to ensure the expectations of the community and the organization continue to be met. WPFR has shown its dedication to data collection and analysis by implementing a Planning Division which is now responsible for these tasks.

The initial stages of the Standard of Cover development were difficult because the data was not readily accessible. Several different data tools were purchased that did not meet the needs of WPFR. In the end, Metrics Toolkit along with data from the CAD were utilized to get most of the information necessary to complete this project. There are still a few pieces of data that will need to be fine-tuned as WPFR continues to collect and analyze emergency response data.

27th Street Fire 2015

Compliance Model

WPFR intends to use the compliance model developed and published in the CFAI Standard of Cover 5th Edition as a guide. The model is as follows:

1. Establish/Review Performance
2. Evaluate Performance
3. Develop Compliance Strategies
4. Communicate Expectations to Organization
5. Validate Compliance
6. Make Adjustments and Repeat

Phase 1: Establish/Review Performance Measures
WPFR will conduct a complete review of the performance measures and compliance to the SOC in 2020 and every five years thereafter. The analysis is risk-based and will evaluate the following:

- Services provided are identified
- Levels of service are defined
- Levels of risk are categorized
- Performance objectives and measures developed
- Distribution performance measures adopted
- Concentration performance measures adopted

Phase 2: Evaluate Performance
Performance measures are applied to actual services provided at various levels:

- System level
- Regional level
- First due level
- Unit level
- Effective Response Force level

Phase 3: Develop Compliance Strategies
Upon completion of the evaluation, determine issues and solutions.

- If there are areas where WPFR is not meeting its response goals, what can be done to close the gaps?
- Are there resources that can/should be reallocated?
- Are there alternative methods to providing the services?
- What are the budget estimates to close the gaps?
- Is WPFR maximizing existing resources?

Phase 4: Communicate Expectations to the Organization
Communication is vital both internally and externally regarding the organization's expectations.

- Explain the method of compliance measurement to personnel who are expected to perform the services.
- Provide mechanisms for feedback.
- Define consequences for noncompliance.

Training may be necessary if changes to policies, guidelines or procedures are implemented.

- Provide training for all affected personnel
- Empower personnel within the organization to identify the need to modify business processes, systems and infrastructure as necessary to comply with the new methods.

Phase 5: Validate Compliance
Develop and deploy verification tools and/or techniques that can be used by the organization on an ongoing basis to verify compliance requirements. These may include:

- Quarterly evaluation
- Performance by unit
- Overall performance
- Review of performance
- Yearly evaluation
- Performance by unit
- Performance by first-due
- Overall performance
- Review of performance by executive leadership

Phase 6: Make Adjustments and Repeat Process
Review changes to ensure service levels have been maintained or improved. Develop and implement a review program to ensure ongoing compliance.

- Annual Review and Evaluation
- Performance by unit, first due unit, and overall performance
- Compliance to time objectives established in SOC
- Look for trends
- Adjustment of service level as necessary
- Five-year review of Service Level Objectives
- Overall review of performance and process
- Adoption of performance measures by the Board of Fire Commissioners
- Establish a process to manage future changes within WPFR

Joint Training with US Coast Guard 2015

OVERALL EVALUATION

The Standard of Cover development process involved an in-depth evaluation of the department's entire community along with its operations. The analysis was broken down into the following sections: community overview, services provided, community expectations, risk assessment, historical perspective and performance, performance objectives, and measures and compliance methodology

Community Overview

This section included a brief history of each city and town served by WPFR and a history of WPFR itself. It analyzed the population of the community including age distribution, race, ethnicity, income, housing, education, and unemployment. It discussed WPFR's governance and funding mechanisms along with each community's plans for growth, redevelopment and land use. The topography and climate were discussed along with the location of parks, water supplies and the largest employers. The area transportation system was also analyzed to include, streets, waterways, rail and air traffic.

Serviced Provided

This section included the organizational chart along with a description of each division within WPFR. It also showed station locations, the apparatus available, minimum staffing and the deployment strategies for all these resources. Also included in this section are the different services provided by WPFR such as fire and EMS response, water rescue, public education, fire prevention, etc.

Community Expectations

A community survey was conducted to determine what types of services the community found to be important. The survey determined what neighborhoods respondents lived in, asked if they had received any of our services and if they had, how well they thought we were doing. The survey yielded mostly positive results about the services currently provided. One item that was identified in the survey is that community members would like to see faster response times, but this is difficult to do without additional resources.

Risk Assessment

A thorough analysis was completed on the risks faced within the response area for WPFR. This included physical risk factors such as population, community, response barriers, elevation changes, open space, transportation, utilities, and pipelines. I also included human risks, natural hazards and property risks.

Historical Perspective and Performance

Resource distribution and demand for service were analyzed in this section. It looked at where resources are located and the characteristics of the response areas. This section also looked at the historic workload of the system including the number of incidents, travel times, type of incidents, calls by month, day of the week, hour of the day, etc. Reliability of units was also considered in this section. In other words, how often WPFR units are unavailable to attend incidents in their response area. The final topic in this section was the concentration of units which means how WPFR's resources are placed so a full complement of resources can arrive at a scene within the established response time goals.

Performance Objectives and Measures

An explanation of fire dynamics was included in this section. It also included what percentage of the time did WPFR meet its performance goals for each type of risk including fires, emergency medical services, technical rescue, water rescue, and hazardous materials response.

Compliance Methodology

It will be important to continuously evaluate WPFR's performance. This section discussed what will be evaluated and how often.

The following are some of the findings observed during the development of the SOC:

- It was initially difficult to get the information needed to conduct this project because there was not a means in place to extrapolate the data that had been collected. This improved throughout the development of this document, but it continues to be a work in progress.
- The occupancy data was incomplete at the beginning of this process. It took firefighters visiting each structure to collect data such as square footage, the presence of an automatic extinguishing or fire alarm system, construction type, number of stories, etc. The data has been collected and is now stored in an electronic system that can be verified each year during fire inspections.
- The data being entered into the system for incident reporting can be improved to access more detailed information.
- WPFR does not always meet industry standards for call processing, turnout or travel times and these areas need improvement. Further studies would be necessary to determine why the standards are not being met and if there are things within the system that can be improved.
- Resource availability and reliability need improvement. Further studies would be necessary to determine why companies are unavailable. For example, are they at training, on a call, attending a public education event, etc.
- Some units have response issues involving turnout time performance. Further analysis would be needed to determine if there is an issue with station design, location, or inadequate performance by some personnel.

Recommendations

- WPFR needs to continue to improve the records management system to include hardware, software and data input.
- Use the data presented in this document to make informed decisions for the organization and the public.
- Use the technology implemented for fire and life safety inspections to create a better database to be utilized in emergent and non-emergent situations.
- Although call processing is a function of South Sound 911, there needs to be an ongoing process of monitoring performance.
- Risk analysis should be an ongoing process so if service delivery changes are necessary they can be made using accurate information.
- Evaluate responses that do not meet the adopted standards and determine where the problem originates from. Issues such as traffic patterns, time of day, station location, call volume, staffing, training and other potential causes for poor performance should be evaluated.
- The data in this document should be utilized when analyzing changes to response models.
- The information in this document should be considered while creating the WPFR Strategic Plan.
- Re-evaluate RCW 52:33 standards as necessary to balance the daily challenges WPFR faces when responding to incidents and the community's expectations.

APPENDIX - OVAP SCORING

West Pierce Fire & Rescue		Station Response Area	
OVAP Data Collection Worksheet		Map Page	
Building Number			
Business Name			
Building Address			
After Hours Contact		After Hours Phone	
Number of Employees		Square Footage	
Needed Water Flow (gpm)		Actual Water Flow	
Gate Present YES NO	If yes, KNOX KEY OPTICOM NEITHER	Knox Box Present	YES NO
Basement Present	YES NO	**Occupancy Type**	

Construction Type –		**Access –** No insurmountable barriers such as masonry fencing, waterways, utilities, common walls with other structures, transportation corridors, etc.	
Type I Fire Resistive or II Non Combustible (no wood interior walls unless fire treated)		All sides	
Type III Joisted Masonry (Brick, CMU, concrete or steel exterior, wood frame interior walls)		3 sides	
Type IV Heavy Timber		2 sides	
Type V Wood Frame		1 side	
		Extra Ordinary Effort	
Exposure separation – The distance to the nearest adjacent building		**Stories** – Total stories present	
101'+		1-2	
61'-100'		3-4	
31'-60'		5-6	
11'-30'		7-9	
<11'		10+	
Warning Alarm System – If there is more than one occupancy in the structure, utilize No Alarm unless all of the occupancies in the group are protected by a warning alarm system. (Descriptions on back of form)		**Occupant Mobility** – Consider number of occupied stories and capability to exit the structure. For buildings not normally occupies, indicate that occupant mobility is not a factor. (Descriptions on back of form)	
Automatic – Central		Awake Ambulatory 1-2 stories	
Automatic – Local		Asleep Ambulatory 1-2 stories	
Manual – Central		Awake Ambulatory 3+ stories	
Manual – Local		Asleep Ambulatory 3+ stories	
No Alarm System		Non-Ambulatory or Restrained	
Occupant Load – For building with more than one occupancy utilize the occupant load of the occupancy with the highest occupancy load.		**Hazard Index** – Indicates the types of hazards present in the occupancy.	
0-10		Limited Hazards (Vacant or little contents)	
11-50		Common Hazards (Residential Type)	
51-100		Mixed Hazards (Business Type)	
101-300		Industrial Hazards	
300+		Multiple and complex hazards	
Exiting System – Exits that conform to the building code and those that do not. Most modern construction has conforming exits.		**Human Activity** – Indicates the capability of someone to access the occupancy	
Conforming		No Access to Unauthorized Persons (jail, etc.)	
Non-conforming		Controlled Access to Unauthorized Persons (mfg, banks, hospital)	
Sprinklers		Business Activity, Sales and Retail (shops and malls)	
Yes		Group Activity, Transient Population (hotels, churches)	
No		Domestic Activity, No Occupant Control (museums, public bldgs.)	
If building has sprinklers, FDC Location?		Not a factor (U-Storage facility, etc.)	

Regulatory Oversight	
Highly regulated, mandatory compliance (Hospital, Jail, etc.)	
Moderately regulated, inspections scheduled (Schools, A occupancies)	
Regulated, Random or voluntary inspections (Inspections normally conducted by fire crews)	
Unregulated, Uninspected	

Fire Load (Descriptions on back of form)	
Non-Combustible	
Limited Combustible	
Combustible	
Free Burning	
Rapid Burning	

Electrical shutoff location	Side A B C D
Gas shutoff location	Side A B C D

Property Value	
Personal/Family loss (residential type property)	
Business loss, minor casualty exposure (small business impact)	
Moderate economic impact, severe casualty exposure (moderate sized business impact)	
Severe economic impact, tax base or job loss (large corporation)	
Irreplaceable loss to community (historic buildings)	

Capacity to Control Fire	
Control within building of origin	
Exposure to the same complex (strip mall, etc.)	
Major Deployment (high rise, large warehouse, etc.)	
Extreme Resistance to Control (Oil Refinery/Storage facility, etc.)	
Hazardous to Firefighting Activities (chemical plant, abandoned buildings, etc.)	

Water shutoff location	Side A B C D

Category Descriptions

Warning Alarm System –	
Automatic – Central (Alarm rings at third party location)	
Automatic – Local (Local alarm sounds only)	
Manual – Central (must initiate device, alarm rings at third party location)	
Manual – Local (must initial device, local alarm only)	
No Alarm System	
Occupant Mobility –Consider number of occupied stories and capability to exit the structure. For buildings not normally occupies, indicate that occupant mobility is not a factor.	
Awake Ambulatory (can escape with no assistance) 1-2 stories	
Asleep Ambulatory (can escape on own once awakened) 1-2 stories	
Awake Ambulatory (can escape with no assistance) 3+ stories	
Asleep Ambulatory (can escape on own once awakened) 3+ stories	
Non-Ambulatory or Restrained	
Fire Load	
Non-Combustible (churches, clubs, educational, hospitals, libraries, nursing homes, office, restaurant seating areas)	
Limited Combustible (automobile parking, bakeries, electronic plants, glass products or manufacturing, laundries, restaurant service areas)	
Combustible (chemical plants, distilleries, dry cleaners, machine shops, metal working, paper processing, printing, wood manufacturing and assembly)	
Free Burning (plywood, particle board manufacturing, rubber reclaiming, saw mills, upholstering w/ plastic foams)	
Rapid Burning (asphalt saturating, flammable liquids spraying, plastics processing, solvent cleaning, varnish and paint dipping)	
Occupant Load Determination – Utilize the following chart to determine approximate occupant load. Divide the floor area of the building by the function of the building as listed in the following chart. **Gross floor area** is the area within the inside perimeter of the exterior walls, without deduction for corridors, stairways, closets, columns or other features. **Net floor area** is the actual occupied area not including unoccupied accessory areas such as corridors, stairways, toilet rooms, mechanical rooms and closets.	
Accessory storage areas, mechanical equipment room	300 gross
Agricultural building	300 gross
Aircraft hangars	500 gross
Assembly Gaming floors (keno, slots, etc)	11 gross
Assembly with fixed seats	Count the chairs
Assembly without fixed seats Concentrated (chairs only – not fixed) Standing space Unconcentrated (tables and chairs)	 7 net 5 net 15 net
Bowling centers, allow 5 persons per lane, and for additional areas	7 net
Business areas	100 gross
Daycare	35 net
Educational Classroom area Shops and other vocational areas	 20 net 50 net
Exercise rooms	50 gross
Industrial areas	100 gross
Institutional areas Inpatient treatment areas Outpatient areas Sleeping areas	 240 gross 100 gross 120 gross
Kitchens, commercial	200 gross
Library Reading rooms Stack area	 50 net 100 gross
Locker rooms	50 gross
Mercantile Areas on other floors Basement and grade floor areas Storage, stock, shipping areas	 60 gross 30 gross 300 gross
Parking garages	200 gross
Swimming pools Pool Deck	 50 gross 15 gross
Stages and platforms	15 net
Warehouses	500 gross

OVAP Score Development

Building Score

Construction Type	Access – Unimpeded access to the building. No insurmountable barriers such as masonry fencing, waterways, utilities, common walls with other structures, transportation corridors, etc.
Type I Fire Resistive or II Non Combustible 1 point	All Sides 1 point
Type III Joisted Masonry 3 points	3 sides 2 points
Type IV Heavy Timber 4 points	2 sides 3 points
Type V Wood Frame 5 points	1 side 4 points
	Extraordinary Effort 5 points
Exposure Separation – The distance, in feet, to the nearest adjacent building	Stories – Total stories present
100'+ 1 point	1-2 stories 1 point
61' – 100' 2 points	3-4 stories 2 points
31' – 60' 3 points	5-6 stories 3 points
11' – 30' 4 points	7-9 stories 4 points
<11' 5 points	10+ stories 5 points
Square Footage – Total square feet for the occupancy including all stories.	
0-7,500 1 point	
7,501 – 15,000 2 points	
15,001 – 25,000 3 points	
25,001 – 40,000 4 points	
40,001+ 5 points	

Building Factor Score – Total this section

Life Safety Score

Occupant Load – For building with more than one occupancy, utilize the occupant load of the occupancy with the highest occupant load.	Occupant Mobility – Denotes the mobility characteristics of the occupants. Consider the number of occupies stories and capability to exit the structure.
0-10 1 point	Awake Ambulatory 1-2 stories 1 point
11-50 2 points	Asleep Ambulatory 1-2 stories 2 points
51-100 3 points	Awake Ambulatory 3+ stories 3 points
101-300 4 points	Asleep Ambulatory 3+ stories 4 points
300+ 5 points	Non-Ambulatory or Restrained 5 points
Warning Alarm System – Type of fire protection alarm system. If there is more than one occupancy in the structure, utilize No Alarm unless all of the occupancies in the group are protected by a warning alarm system.	Exiting System – Exits that conform to the building code and those that do not. Most modern construction will have conforming exits.
Automatic – Central 1 point	Conforming X1
Automatic – Local 2 points	Non-conforming X2
Manual – Central 3 points	
Manual – Local 4 points	
No Alarm System 5 points	

Life Safety Score – Add Occupant Load, Occupant Mobility and Warning System. Multiply the sum by the exiting system.

Risk Score

Frequency/Likelihood Score

Regulatory Oversight – Indicates the level of code enforcement for the occupancy

Highly Regulated, Mandatory Compliance	1 point
Moderately Regulated, Inspections Scheduled	2 points
Regulated, Random or voluntary inspections	3 points
Unregulated, Uninspected	4 points

Human Activity – Indicates the capability of someone to access the occupancy

No access to unauthorized persons	1 point
Controlled access to unauthorized persons	2 points
Business activity, sales and retail	3 points
Group activity, transient population	4 points
Domestic activity, no occupant control	5 points
Not a factor	0 points

Frequency/Likelihood Score – Average the two scores above

Consequence Score

Capacity to Control Fire – An estimation of the degree of difficulty that can be expected during firefighting efforts.

Control within building of origin	1 point
Exposure to the same complex	2 points
Major deployment	3 points
Extreme resistance to control	4 points
Hazardous to firefighting activities	5 points

Hazard Index – Indicates the types of hazards present in the occupancy.

Limited hazards	1 point
Common hazards	2 points
Mixed hazards	3 points
Industrial hazards	4 points
Multiple and complex hazards	5 points

Fire Load – Fire load characteristics

Non-combustible	1 point
Limited combustible	2 points
Combustible	3 points
Free Burning	4 points
Rapid burning	5 points

Consequence Score – Average the above three scores

Risk Score – Multiply Frequency/Likelihood score with Consequence Score

Water Demand Score

Required Fire Flow – Indicate the required fire flow for 100% fire involvement for the first floor only, in gallons per minute.

0-1750 gpm	1 point
1751-3250 gpm	2 points
3251-4750 gpm	3 points
4751-6250 gpm	4 points
6251 gpm +	5 points

Fire Flow Available

Yes	X1
No	X2

Water Demand Score – Required Fire Flow score multiplied by Fire Flow Available.

Value Score

Property Value

Personal/Family loss	1.0 point
Business loss, minor casualty exposure	1.1 points
Moderate economic impact, severe casualty exposure	1.2 points
Severe economic impact, tax base or job loss	1.3 points
Irreplaceable loss to community	1.4 points

Occupancy Vulnerability Assessment Profile (OVAP) Final Score/Risk Category

Total score = Building Score + Life Safety Score + Risk Score + Water Demand Score and multiply the sum by the Value Score.

Risk Category

Special	60+
High	40-59
Moderate	15-39
Low	14 or less