

# Consultant Report

2022

## Community Risk Assessment and Standards of Coverage



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**Watsonville, California**

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—  
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## Introduction

The following document functions as Watsonville Fire Department's (WFD) All Hazard Community Risk Assessment and Standards of Cover statement. The Commission on Fire Accreditation International (CFAI) defines the process, known as "deployment analysis," as a written procedure which determines the distribution and concentration of fixed and mobile resources of an organization. The purpose of completing such a document is to assist the District in ensuring a safe and effective response force for fire suppression, emergency medical services (EMS), hazardous materials incidents, and technical rescues, and in facilitating activities for domestic preparedness, emergency planning, and disaster response.

Creating a Standards of Cover (SOC) document requires the research, study, and evaluation of a considerable array of community features. The following report will begin with a descriptive overview of WFD and the area that it serves. Following this overview, an all-hazards risk assessment provides an analysis of potential risks and describes activities the department employs to mitigate those risks. Current deployment and performance was assessed to determine the capabilities and capacities that are available. Benchmark statements and baseline performance support WFD's ability to meet distribution and concentration metrics. The report concludes with plans for maintaining and improving capabilities, as well as policy recommendations to address gaps in performance or desired outcomes.

### Core Competency or Performance Indicator

Description of the core competency or performance indicator with the most important phrases or words underlined for emphasis.

Throughout the document several "accreditation building blocks" will be highlighted, drawing a direct link between the community risk assessment-standards of coverage and the requirements of the fire department accreditation process as administered through CFAI.

This SOC is demonstrative of WFD's continued commitment to regular community risk assessment (CRA). The District has adopted a formal process of reviewing and assessing risk as an annual process. Watsonville Fire Department anticipates that regularly revisiting and revising the SOC and CRA will allow the department to stay on top of changes in the community as well as enable staff to efficiently distribute and plan for resources allocated throughout the jurisdiction.

Watsonville Fire Department would like to thank all members for their continued dedication to the citizens and visitors to the city and for the commitment to continuous improvement embodied by the accreditation process.



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## **Standards of Coverage Process**

A fire department's Standards of Cover (SOC) document is defined by the Commission on Fire Accreditation International (CFAI) as the "adopted written policies and procedures that determine the distribution, concentration and reliability of fixed and mobile response forces for fire, emergency medical services, hazardous materials and other technical types of responses." For the elected body and district administrators to have confidence that their fire department is meeting the needs of the community, a complete assessment of the risks must be honestly undertaken. Only after the application of a proven and consistent risk assessment model is made can a fire department develop an SOC performance contract.

It is the responsibility of district's decision makers to provide an educated calculation of the expected risk, what resources are available to respond to that risk, and what outcomes can be expected. All of these factors play a role in providing the community's emergency services. It is best practice that communities set response standards based on the identified risks within their jurisdictions. Fire departments that do not apply a valid risk assessment model to their community are not able to adequately educate their community leaders of their true needs. The application of a tested risk assessment model allows the fire department and elected officials to make educated decisions about the level of emergency service they desire.

## **Section A- Documentation of Area Characteristics**

The Watsonville Fire Department (WRD) is a full-service fire department providing fire suppression, emergency medical services (EMS), fire prevention, hazardous materials, and technical rescue services for approximately 53,800 people occupying over 6.8 square miles in Watsonville, CA. In addition to the City, WFD also provides service to the area around Watsonville which increases the area to 14 square miles and 60,000 people. WFD also provides service to Pajaro Valley Fire Protection District

Watsonville Fire Department utilizes a tiered strategy to organize response areas into geographical planning zones. The first, is at the first due area. These zones have specific resource allocation strategies based on measured risks. Secondly, each first due area is informed by more granular assessments of Geographic Planning Zones (GPZs).

## **Section B- Description of Agency Programs and Services**

The Watsonville Fire Department provides high quality fire suppression, emergency medical, technical rescue, and hazardous materials services from 2 fire stations staffed with a constant daily staffing level of 10 personnel. Additionally the organization delivers a full spectrum of fire and life safety services supported by administrative staff and training officers to ensure the first responders are well prepared for any hazard or situation they may face.

Watsonville Fire Department provides much more than emergency response to fires, medical events, hazardous material spills and technical rescues. The Division of Fire & Life Safety is home to the Office of the Fire Marshal where specially trained staff provide proactive fire safety inspections and fire code enforcement for the Watsonville and the Pajaro Valley Fire protection District.

### **Section C- All-Hazard Risk Assessment of the Community**

A comprehensive risk assessment analyzed the physical, economic, sociologic and demographic aspects of the jurisdiction. The factors that drive the service needs were examined in a precise and scientific manner to determine the capabilities necessary to adequately address the risks that are present.

Each of the major natural and manmade risks evaluated received a clearly defined probability and consequence ranking. Service areas that either had little quantitative data, or did not require that level of analysis, were evaluated through both retrospective analysis as well as structured interviews with department staff members. Final call types from the 2018/19—2020/21 CAD data file were classified into the program areas of EMS, Fire, Hazmat, and Rescue based on departmental leadership decisions, and were assigned a risk classification based on departmental leadership criteria as well as the medical priority dispatch system.

### **Section D- Community Feedback**

While the City has a well-developed strategic plan, the department does not currently have a community-driven strategic planning process in place. This section largely focused on describing what a quality strategic planning system would look like and the benefits to the organization. The development of a 3 to 5-year strategic plan is a primary recommendation for ongoing performance measurement, transparency, and accountability.

### **Section E- Program Goals and Objectives**

The City of Watsonville participated in the development of the Local Hazard Mitigation plan which included the local hazard mitigation planning committee, the city's public works department and members of the public. The plan is presently in draft mode and the fire department is on the steering committee.

### **Section F- Current Deployment and Performance**

This section analyzed the emergency response history of the jurisdiction, took a systems level view of current performance, established formal benchmark (what WFD strives to attain) performance measures, and analyzed actual (baseline) performance. Projected growth of the emergency call volume was also evaluated, along with an in depth look at the first due fire station area to identify areas of concern with elevated risks and lagging performance.

Simultaneous calls (call concurrency), Distribution (first unit on scene), Concentration (arrival of the full effective response force), Reliability (how often a unit can answer their own calls), and several other measures were used to paint a clear picture of WFD's emergency response performance as balanced against community risk and internally developed response time goals.

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## **Section G- Evaluation of Current Deployment and Performance**

It is imperative that agency's continuously evaluate their actual performance (baseline performance) versus their established goals (benchmark performance). This section takes a detailed look at the gaps where performance could be improved (noted in red) or is currently exceeding established goals (in green). Important trends can be discerned based upon the risk level (low, moderate, high, maximum) or where the incidents or occurring (urban or rural). Overall, the more granular approach of stratifying risk and performance by program area and risk severity proved challenging due to the relatively low call volumes. Therefore, a higher-order gap analysis was completed for each stations. A summary is also provided in Section I.

## **Section H- Plan for Maintaining and Improving Response Capabilities**

This plan is a living document that supports continuous improvement, rather than a static document that sits on the shelf. Meeting quarterly, the planning team will assess and report out to maintain ongoing transparency and accountability. Performance is examined to see if the target is still relevant, if more resources need to be allocated, or if adjustments to the strategy need to be undertaken; all in an effort to address existing gaps and variations between baseline and benchmark performance.

## **Section I- Conclusion and Recommendations**

Watsonville Fire Department is an organization that is committed to saving lives, protecting property, safeguarding the environment, and taking care of their people. This is accomplished by providing a full spectrum of emergency and non-emergency services that align with the risks present in the community. Population growth and future development made this an ideal time to undertake a comprehensive standards of coverage process (SOC) and assess the organization's performance.

A succinct list of recommendations and observations can be found in this section, further aiding WFD in charting a path towards continuous improvement.

## **Appendices**

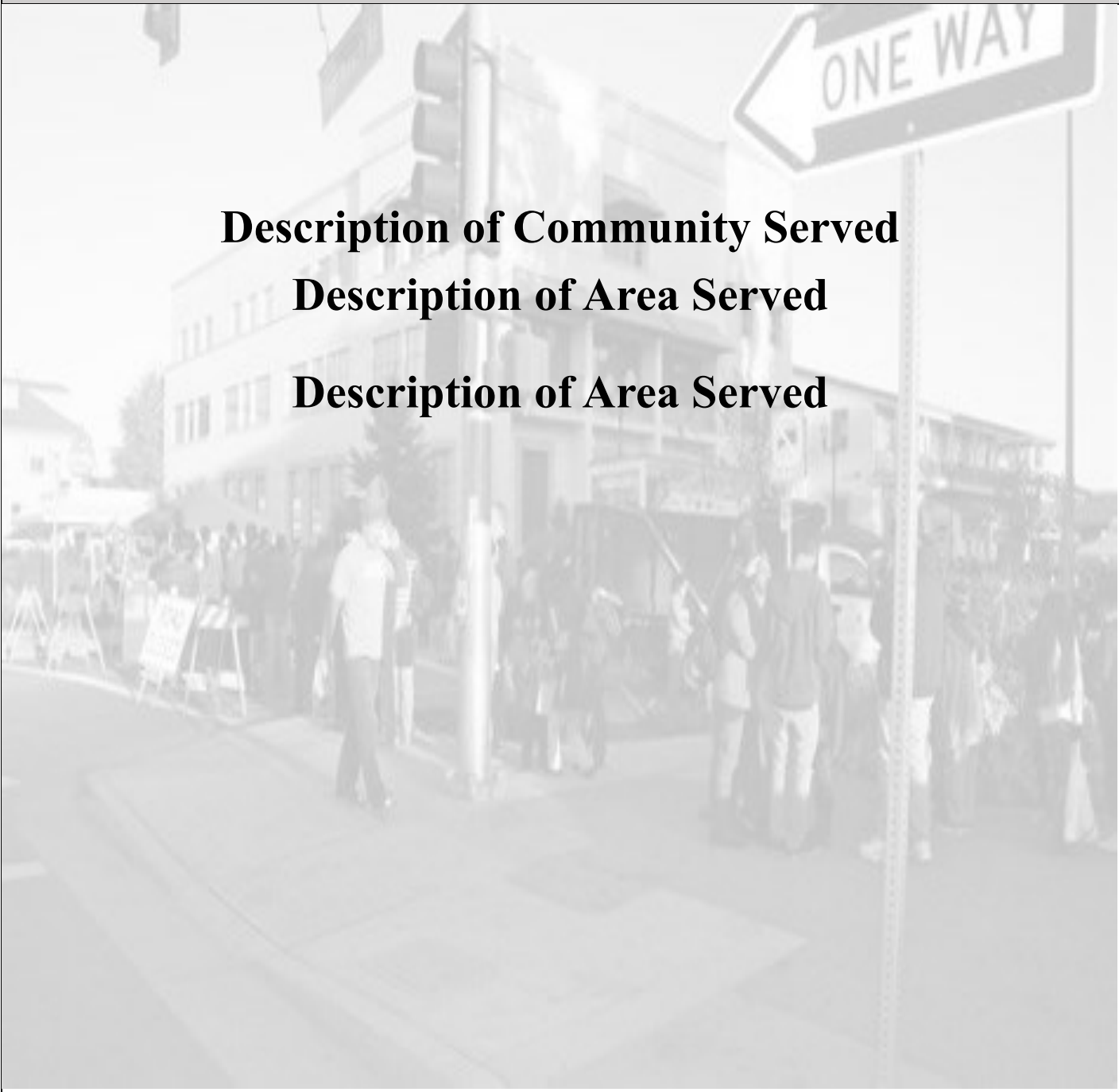
- Data Analysis Report
- GIS Report
- Risk Assessment Report
- Management Capacity Assessment

**Section A – Documentation of Area Characteristics**

**Description of Community Served**

**Description of Area Served**

**Description of Area Served**





## Description of Community Served

This section provides legal and historical background pertinent to the delivery of emergency service within jurisdiction for the Watsonville Fire Department (WFD). Included in this section are reviews of the legal and governmental structure, overview of the demographics and physical environment, and characteristics of particular areas for which WFD provides service.

### Introduction

Watsonville Fire Department (WFD) is a full-service fire department providing fire suppression, emergency medical services (EMS), fire prevention, hazardous materials, and technical rescue services for approximately 53,800 people occupying over 6.8 square miles in Watsonville, CA. WFD also serves parts of the surrounding areas and the Pajaro Valley Fire District.

Documentation of Area Characteristics as it relates to Criterion 2A

The agency collects and analyzes data specific to the distinct characteristics of its legally defined service area(s) and applies the findings to organizational services and services development.

The city Watsonville is located in the Monterey Bay area, approximately 95 miles south of San Francisco at the southern end of Santa Cruz County. The City of Watsonville was incorporated in 1868 and is located 6 miles inland of the Monterey Bay. Santa Cruz County is on the Pacific coast of the United States in the State of California.

40 personnel provide emergency and support functions for the department from 2 fire stations, there is also 3 administrative staff and the Fire Chief. The Fire Chief reports to the City Manager who reports to a 7 person City Council, one of who serves as Mayor, that are elected from the community at-large.

**Watsonville Fire Department Truck 71**



## Legal Basis

The Watsonville Fire Department is established under the charter of the City of Watsonville, CA . The City of Watsonville, California was incorporated in 1868 as a charter city and operates under the Council-Manager form of government. The City provides public safety (police, fire and building inspections). The Fire Chief is appointed by the city manager and has authority for policymaking, appointment and discipline, and overall day to day operations of the department.

### Performance Indicator 2A.1

Service area boundaries for the agency are identified, documented, and legally adopted by the authority having jurisdiction.

## History of the District<sup>1</sup>

The two story building below was in use by the Watsonville Fire Department from 1924 until 1982 and is now a museum operated by volunteers with the Watsonville Fire Fighters association.



## Watsonville Fire Department

Watsonville Fire Department (WFD) serves the citizens of Watsonville and the some surrounding areas along with the Pajaro Valley Fire Protection District. WFD is an agency of 38 career personnel; working out of 2 fire stations, serving an area of 14 square miles with a population of 60,000 people.

## Watsonville Fire Department

The city of Watsonville incorporated in 1868, On April 9, 1873, the city of Watsonville purchased property at 268 Main Street from Joseph Lynch for \$3,874.00, with the intention of constructing the first municipally-owned fire station. Construction began in 1874 from a plan by James Waters, who charged the city \$100.00 for the design. Thomas Beck was the contractor, and work was completed in August 1875, and the building was dedicated in a ceremony on October 4, 1875, according to a plaque on the station's wall. The new fire company, Pajaro Engine Company No. 1, moved in, and the old engine house was sold to Judge Holbrook, who lived next door, and remodeled it and moved his sister in. There is a tremendous amount of detail regarding the history of the Watsonville fire department which can be found in the Chief Gene Friend Museum.

In 2021 the WFD sought the need to evaluate its performance for fire service to evaluate its services to the community. WFD engaged with Fitch & Associates to help create the Department's first Standard of Cover document.

<sup>1</sup> Retrieved from <https://www.cityofwatsonville.org/465/History-of-the-Department>

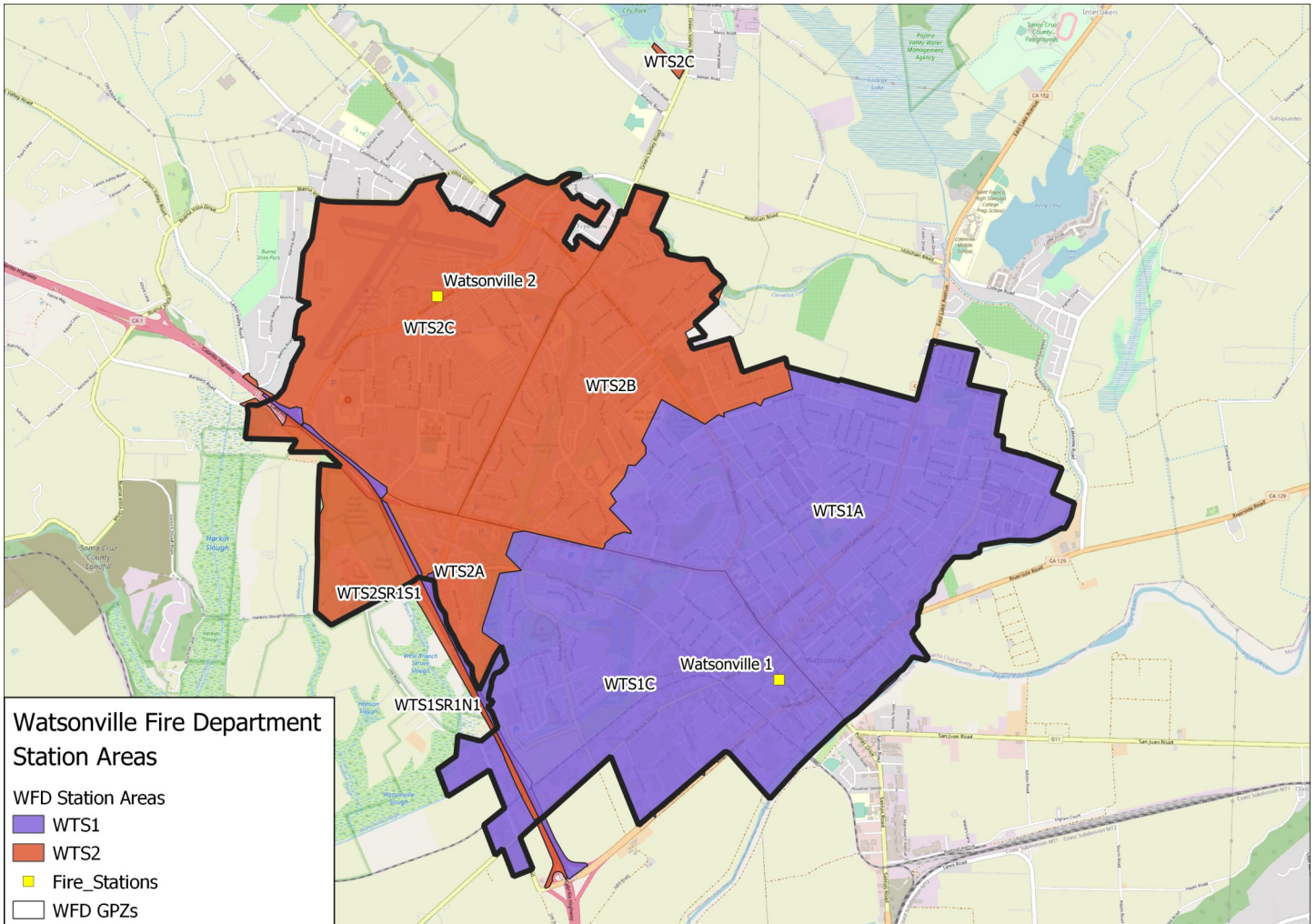
**Jurisdiction**

Watsonville Fire Department utilizes a tiered strategy to organize response areas into geographical planning zones. The first, is at the first due area. These zones have specific resource allocation strategies based on measured risks.

**Core Competency 2A.3**

The agency has a documented and adopted methodology for organizing the response area(s) into geographical planning zones.

**Watsonville Fire Department Station Areas**





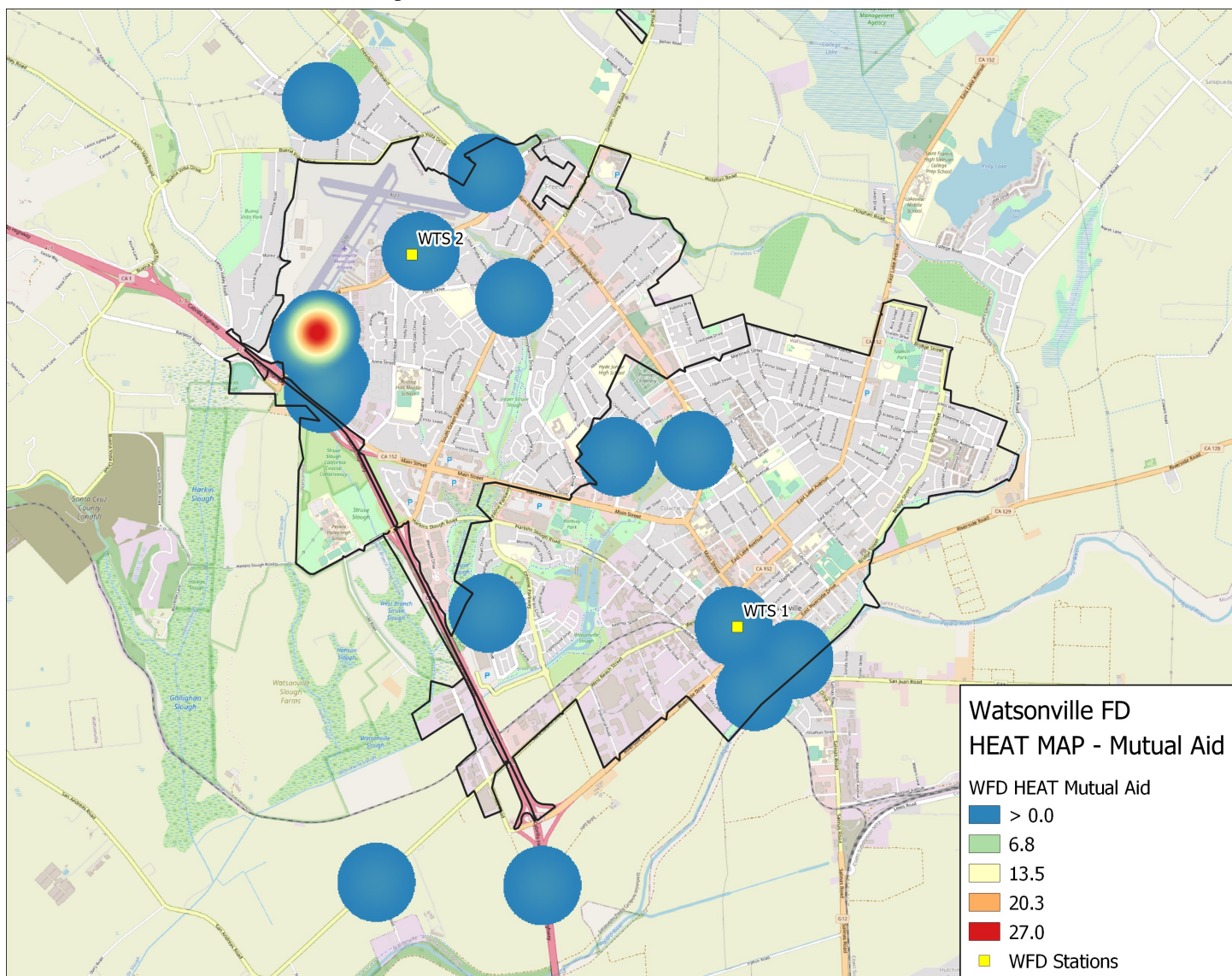
### Auto/Mutual Aid

WFD maintains an active relationship with the surrounding agencies through a countywide automatic-aid agreement. Aid calls received from automatic-aid partners and automatic aid provided from the Watsonville Fire Department are provided below. In total, the WFD provided 863 unit responses outside of the city boundaries in 2020/21.

**Performance Indicator 2A.2**

Boundaries for other service responsibility areas, such as automatic aid, mutual aid and contract areas, are identified, documented, and appropriately approved by the authority having jurisdiction.

**WFD Automatic-Aid Received Heat Map**



**Population Overview**

**Population and Density**

Watsonville Fire Department serves a population of 52,590 according to the 2020 U.S. Census Bureau data<sup>2</sup>. The department’s jurisdiction is within Santa Cruz County. Watsonville has observed manageable growth over the years, experiencing a 2.7% increase in population since the last U.S. Census dated April 1, 2010. Over the approximate 6.6 square miles, the population density within the City ranges from 6,832 people per square mile in Station 2’s area to 9,278 people per square mile in Station 1’s area, with the average population density of approximately 8,132 people per square mile.

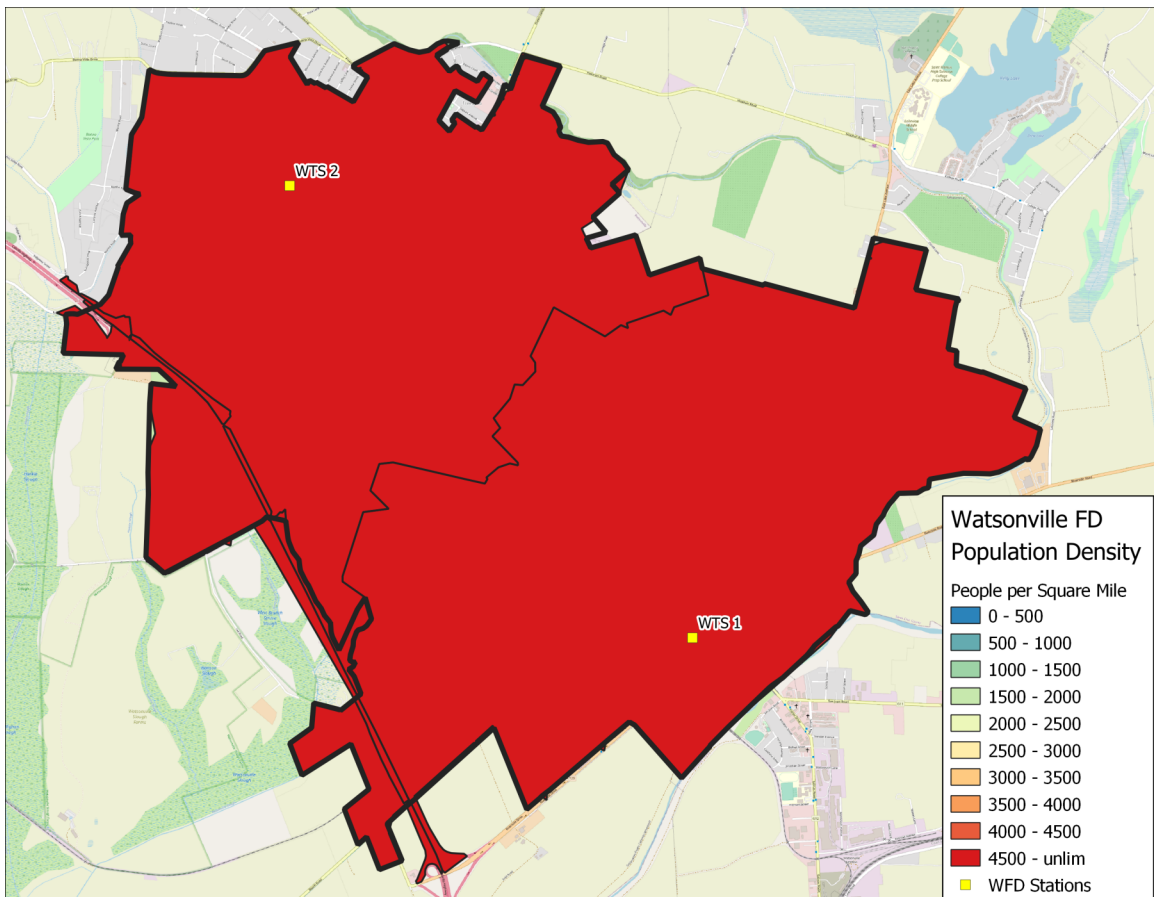
**Core Competency 2A.4**

The agency assesses the community by planning zone and considers the population density within planning zones and population areas, as applicable, for the purpose of developing total response time standards.

**Watsonville, CA Population Summary**

	Watsonville	Santa Cruz County
<b>Total Population</b>	52,590	270,861
<b>Population per Square Mile</b>	7657	589
<b>Land Area in Square Miles</b>	6.69	445.17

**WFD Population Density by GPZ Map**



<sup>2</sup>U.S. Census. (2020). Retrieved from <https://www.census.gov/quickfacts/fact/table/santacruzcountyarizona,watsonvillecitycalifornia/PST045221>



**Data Overview**

A 2018-2021 community demand snapshot indicates that the overall community demand for services has increased over the rating period with a little more than 11% increase in calls overall. Call density and distribution have the greatest concentration in Station 1's area..

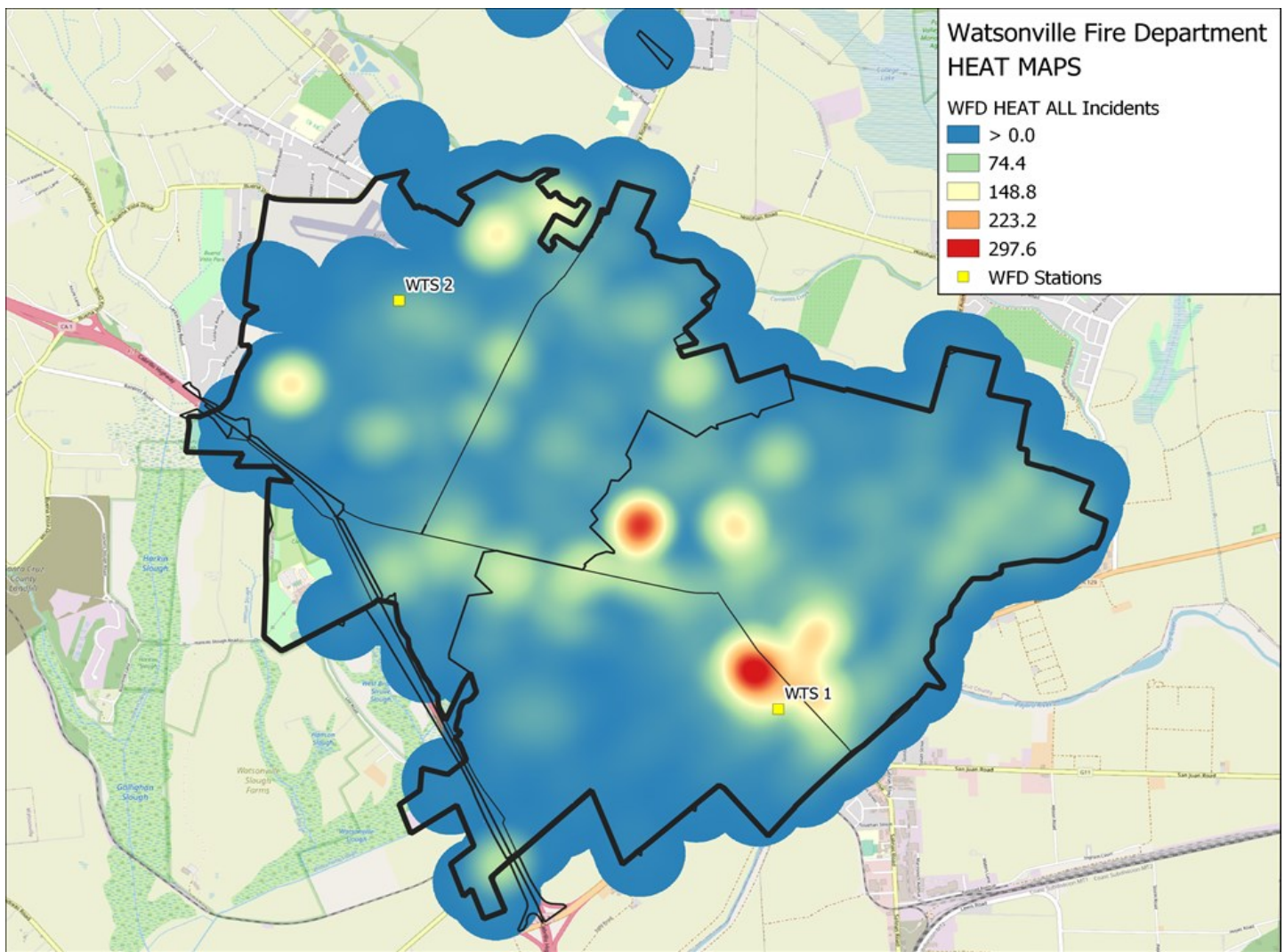
**Performance Indicator 2A.5**

Data that include property, life, injury, environmental and other associated losses, as well as the human and physical assets preserved and/or saved, are recorded for a minimum of three (initial accreditation agencies) to five (currently accredited agencies) immediately previous years.

**2018-2021 WFD Incident Demand**

Program	Number of Calls		
	2018-19	2019-20	2020-21
EMS	4,155	4,229	4,633
Fire Suppression	1,992	1,745	2,146
Hazmat	78	89	67
Technical Rescue	25	34	21
<b>Total</b>	<b>6,250</b>	<b>6,097</b>	<b>6,867</b>
<b>Calls per Day</b>	<b>17.1</b>	<b>16.7</b>	<b>18.8</b>
<b>YoY Growth</b>		<b>-2.4%</b>	<b>12.6%</b>

**2018-2021 WFD Incident Demand Heat Map for all calls**



## Description of Area Served

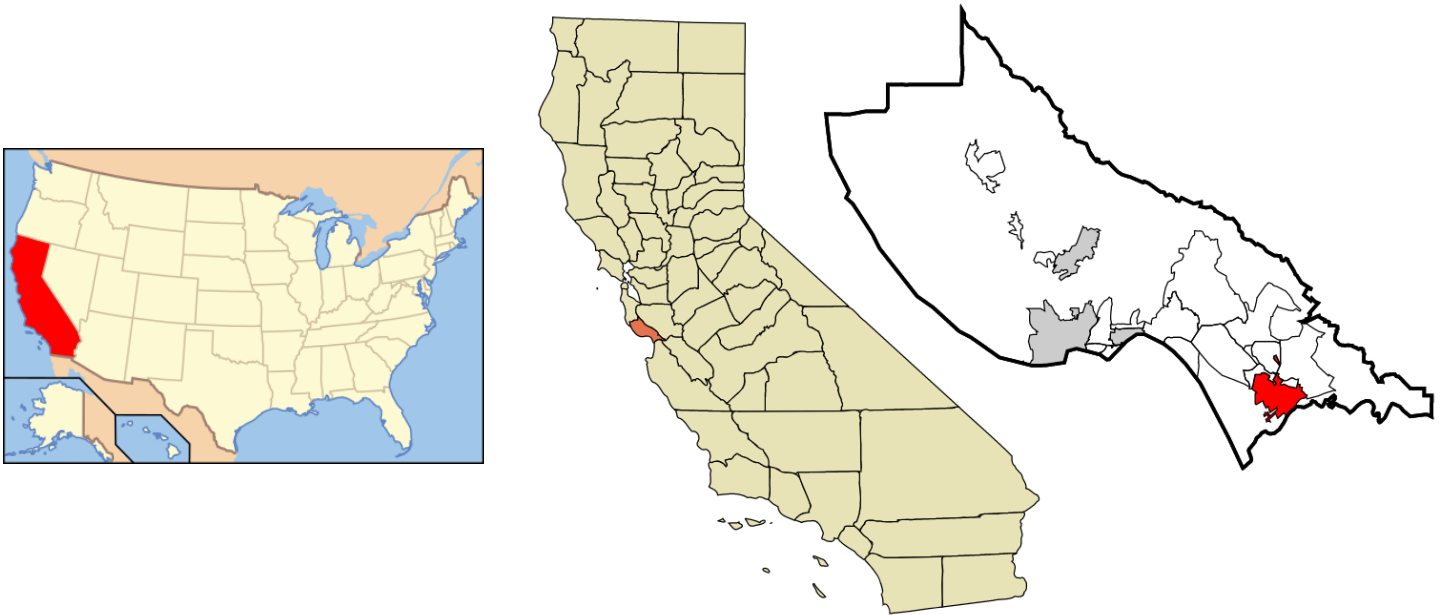
### Geography

The City of Watsonville is 16 miles southeast of Santa Cruz, 23 miles northeast of Monterey, and about 30 miles southwest of San Jose.

#### Performance Indicator 2A.6

The agency utilizes its adopted planning zone methodology to identify response area characteristics such as population, transportation systems, area land use, topography, geography, geology, physiography, climate, hazards, risks, and service provision capability demands.

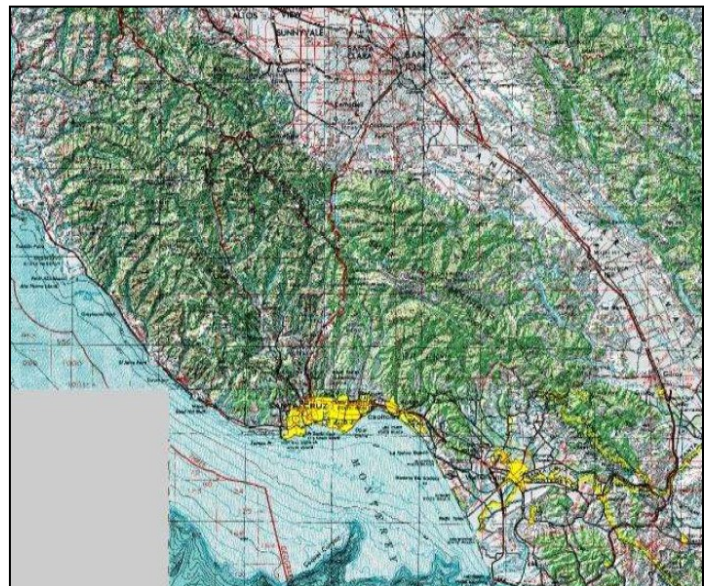
Map of Santa Cruz County, CA and Location as Compared to United States



### Topography

Watsonville shares the same geography and climatic conditions as the larger Pajaro Valley. The Pajaro Valley, the floodplain for the Pajaro River and its tributaries, is characterized by rich agricultural soils. The ridges of the Santa Cruz Mountains form the northeast extension of the Pajaro watershed, elevated terraces mark the northern and southern limits, and the Monterey Bay forms the westward extent of the valley. Elevations in the Pajaro Valley range from sea level to 1,897 feet above sea level at Mount Madonna. Within the Watsonville urbanized area, elevations range between 10 and 160 feet above sea level. Most of the developed area of Watsonville is within a range of 25 to 75 feet above sea level.

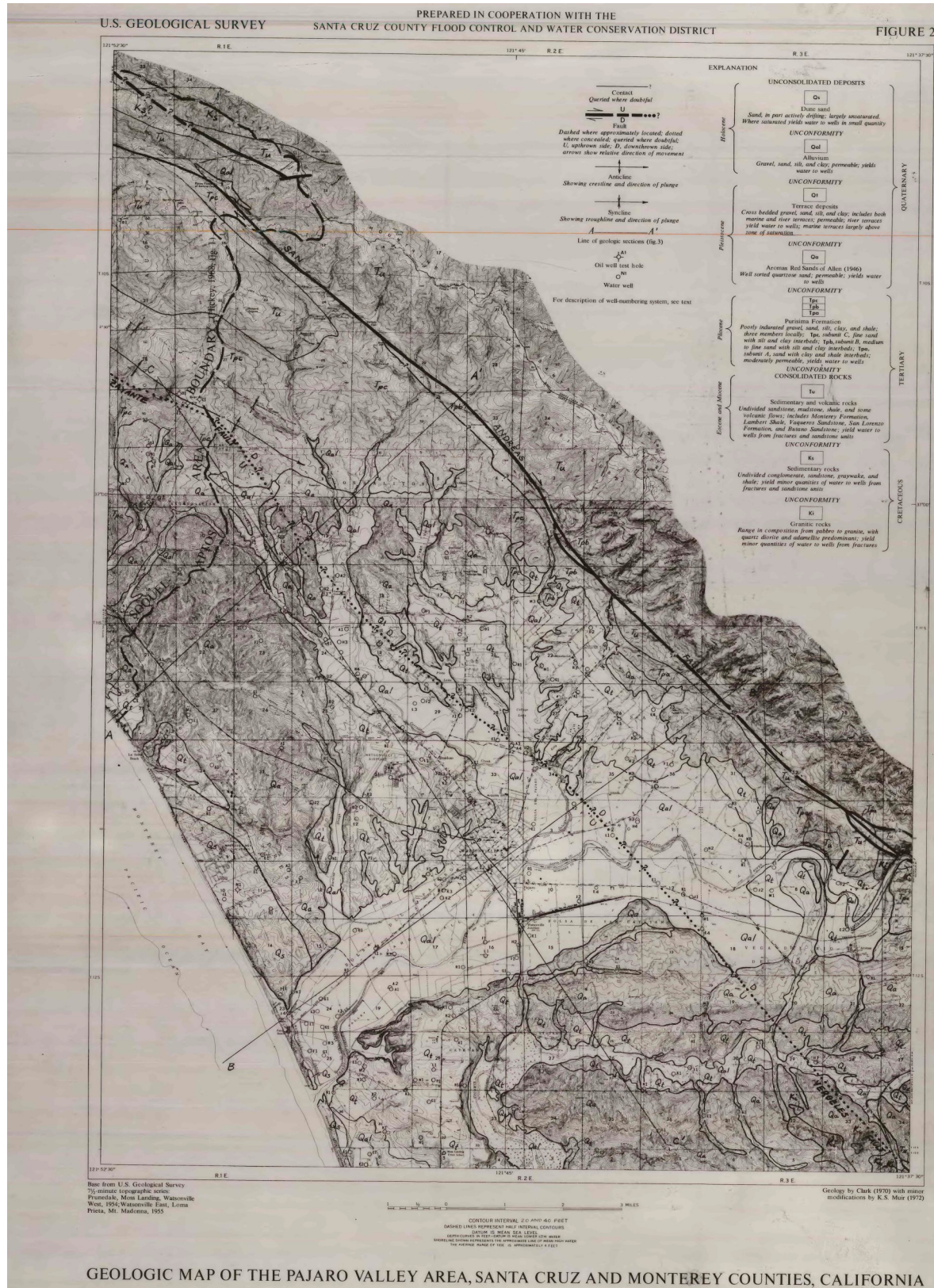
Topographical map of Santa Cruz County, CA





Geology

Geology and ground water of the Pajaro Valley Area<sup>4</sup>.



<sup>4</sup> Geologic Map retrieved from <https://pubs.usgs.gov/of/1973/0199/plate-1.pdf>



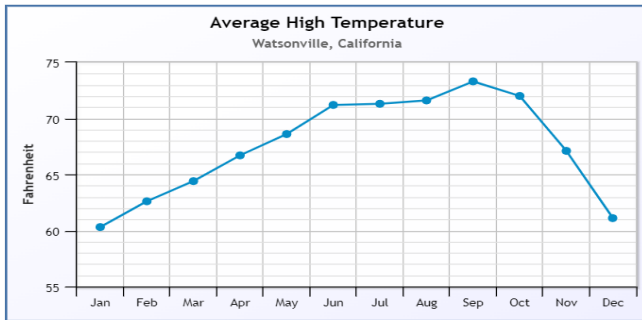
## Climate

The climate of Watsonville and Santa Cruz County has warm, dry summers and mild rainy winters. Warmer temperatures and low precipitation are the norm from April through October. Cooler temperatures and heavier rains are prevalent from November through March. During the year the average temperature is approximately 56°F and the average low temperature is 45°F and the average high temperature is 68°F. Rainfall varies throughout the county, from approximately 80 inches per year, to approximately 22 inches in Watsonville. Wind are generally northwesterly and seldom reach severe intensities. The Santa Cruz Mountains form a natural barrier to winds from the north<sup>4</sup>.

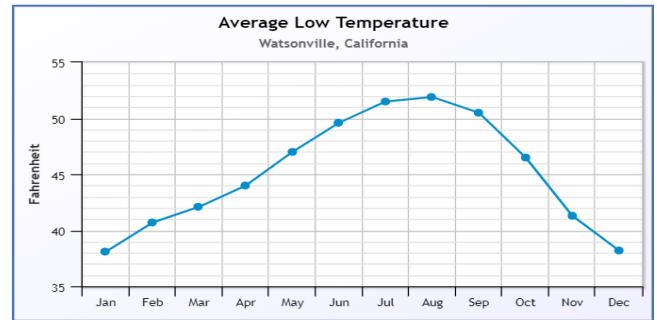
All-Hazard Risk Assessment and Response Strategies as it relates to Criterion 2B

The agency identifies and assesses the nature and magnitude of all hazards and risks within its jurisdiction. Risk categorization and deployment impact considers such factors as cultural, economic, historical, and environmental values, and operational characteristics.

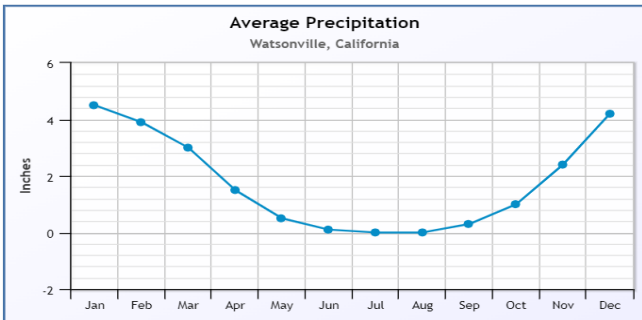
### Average Annual High Temperatures



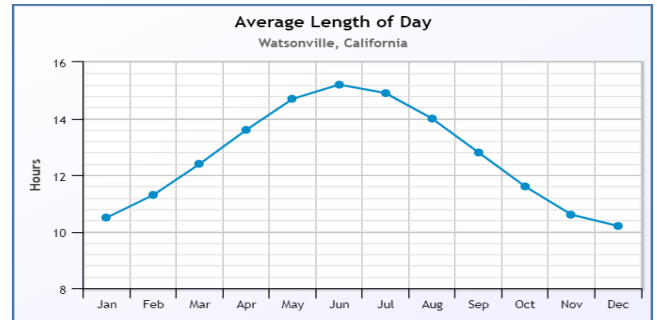
### Average Annual Low Temperatures



### Average Annual Precipitation



### Average Length of Day



<sup>4</sup> Weather information from [www.weatherbase.com](http://www.weatherbase.com)

**Physiography/Disaster Potentials**

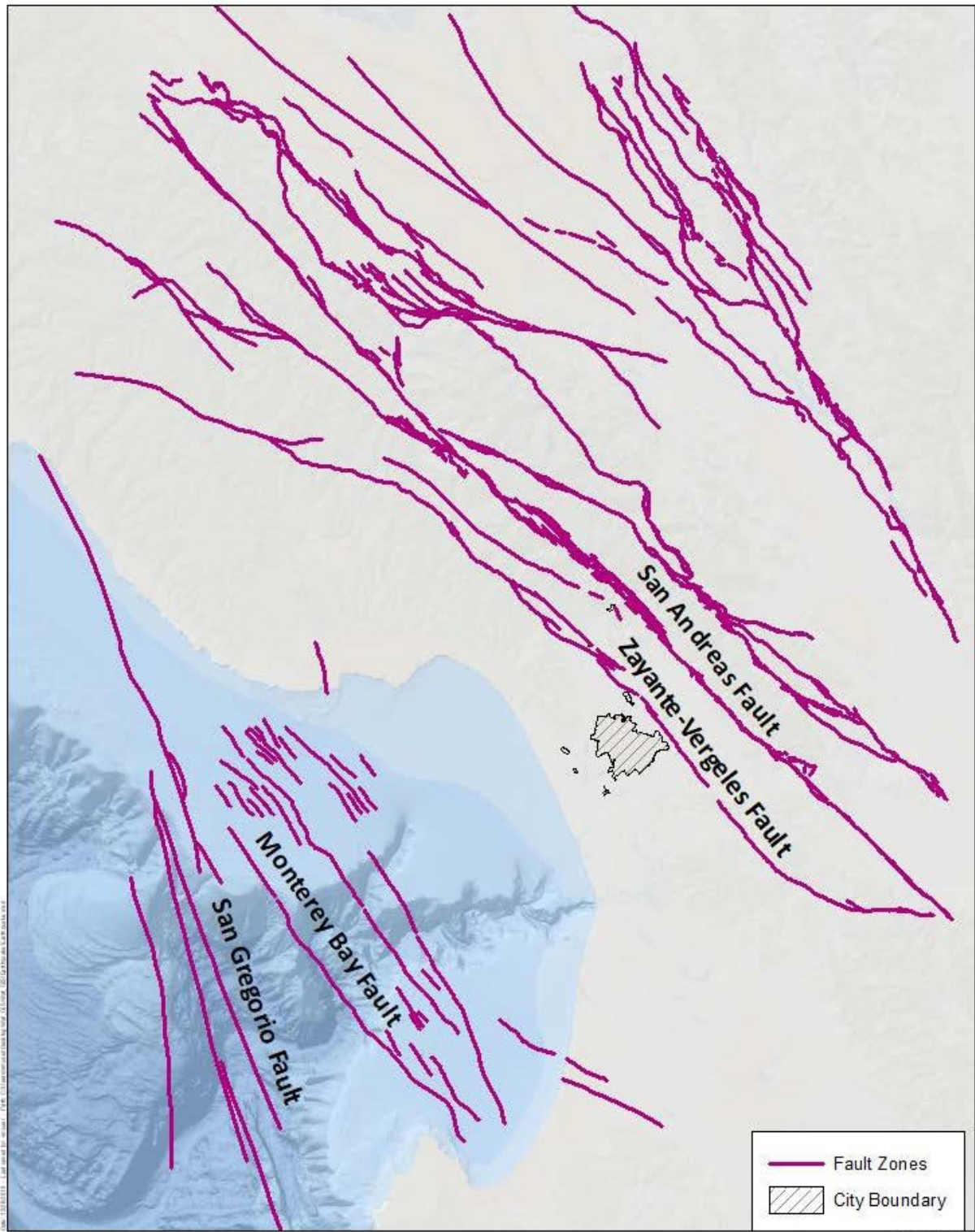
The City of Watsonville is with Santa Cruz County and is vulnerable to natural hazards of fires, thunderstorms, floods, droughts, Tsunami, and winter weather events. The City lies between two major fault zones: the San Andreas to the north and east and the San Gregorio offshore to the west. Other active fault zones which could impact the City include the Zayante-Vergeles in Pajaro Valley and the Monterey Bay to the west. The county wide risk review is a useful guide, but cannot predict the probability of all events with 100% accuracy. The Loma Prieta earthquake struck Santa Cruz county in 1989 and was the largest earthquake to hit an urban area since 1906. An overview of the overall hazard probability is referenced in the table on this page. These specific hazards are discussed in detail in the Santa Cruz Local Hazard Mitigation Plan.<sup>5</sup>

Hazard	Risk	Why/Why Not
Avalanche	No	The county is not in an avalanche area
<b>Climate Change</b>	<b>Major</b>	<b>Best available science indicates probability is high, potential for loss of life is low - potential for economic and infrastructure loss is high</b>
<b>Coastal Erosion</b>	<b>Major</b>	<b>Past history indicates probability is high, potential for loss of life is low - potential for economic and infrastructure loss is high</b>
<b>Coastal Storm</b>	<b>Included</b>	<b>Included in Flood Plan</b>
<b>Dam Failure</b>	<b>Lesser</b>	<b>Past history indicates that probability is low but potential loss of life is high</b>
<b>Drought</b>	<b>Major</b>	<b>Past history indicates probability is high</b>
<b>Earthquake</b>	<b>Major</b>	<b>Past history indicates probability is high</b>
<b>Expansive soils</b>	<b>Major</b>	<b>Past history indicates probability is high</b>
Extreme Heat	No	Past history indicates probability is low
<b>Flood</b>	<b>Major</b>	<b>Past history indicates probability is high</b>
Hailstorm	No	Past history indicates probability is low
Hurricane	No	Past history indicates probability is low
Land subsidence	No	Past history indicates probability is low
<b>Landslide</b>	<b>Major</b>	<b>Past history indicates probability is high</b>
<b>Liquefaction</b>	<b>Included</b>	<b>Included with earthquake</b>
Winter Snow Storm	No	Past history indicates probability is low
Tornado	No	Past history indicates probability is low
<b>Tsunami</b>	<b>Major</b>	<b>Past history (200 Years) indicates probability is low but potential for loss of life and property could be high</b>
Volcano	No	Does not affect county
<b>Wildfire</b>	<b>Major</b>	<b>Past history indicates probability is high</b>

<sup>5</sup> Risk probability table accessed from Santa Cruz County 2020 Hazard Mitigation Plan

### Faults near Watsonville

#### Major Faults Near the City of Watsonville<sup>5</sup>



Source: USGS

City of Watsonville

Local Hazard Mitigation Plan

<sup>5</sup> Retrieved from [https://www.cityofwatsonville.org/DocumentCenter/View/13999/00\\_Public-Review-Draft-Watsonville-LHMP?bidId=](https://www.cityofwatsonville.org/DocumentCenter/View/13999/00_Public-Review-Draft-Watsonville-LHMP?bidId=)

**Human Related Characteristics**

**Population Analysis**

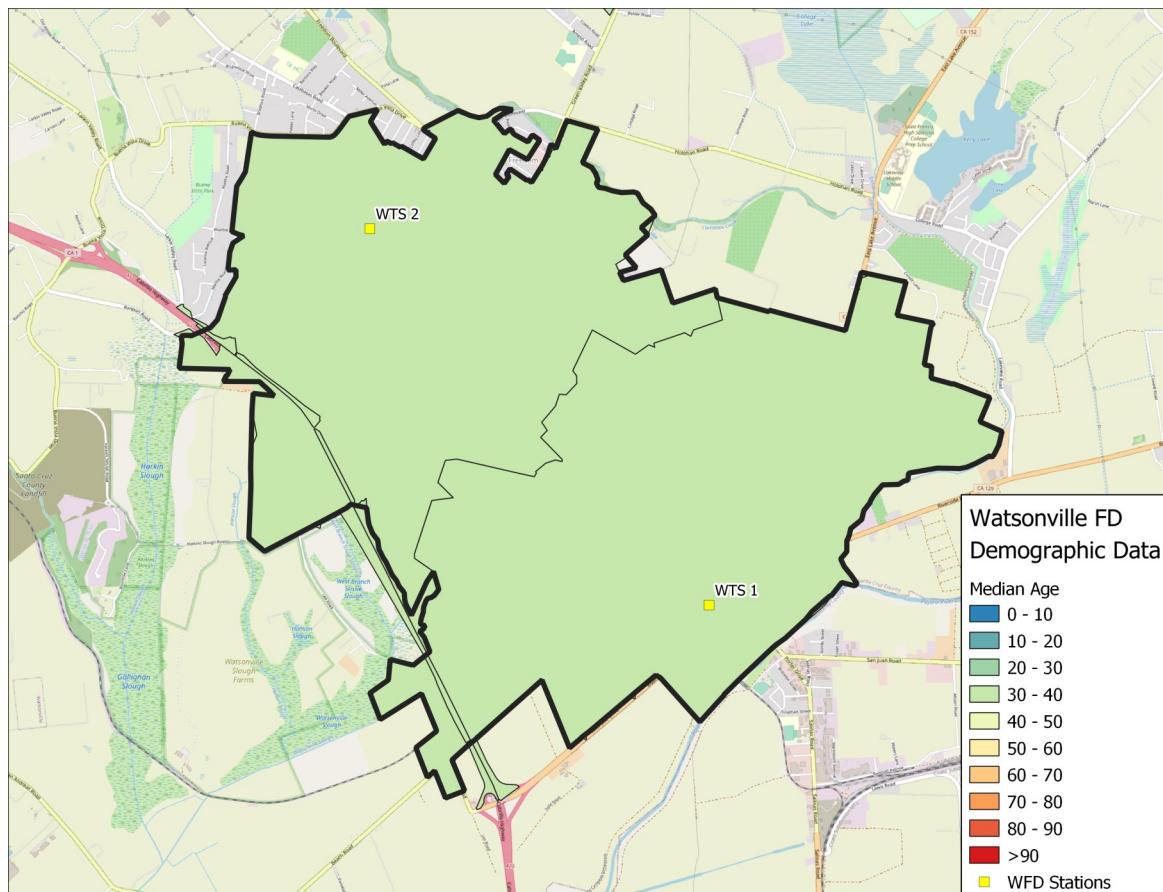
The City of Watsonville has experience a population growth over the last 2 decades, adding over an estimated 5,459 people to the city from 2000-2020<sup>7</sup>. Growth within Santa Cruz County rose approximately 6% since the April 1, 2010 Census.

**Demographics**

**Age**

According to the United States Census Bureau, persons under 5 years of age account for 8.1% of the population in Watsonville, CA, persons under 18 account for 30.6% of the population, and persons over 65 for 10.0% of the population<sup>7</sup>. The median age in Watsonville is approximately 32 years. Age demographics compared to Santa Cruz County are illustrated in the table below.

Years of Age	Watsonville	Santa Cruz
Under 5	9.6%	4.9%
Under 18	30.3%	30.3%
65 and Over	10.2%	10.2%



<sup>7</sup>U.S. Census. (2020). Retrieved from <https://www.census.gov/quickfacts>



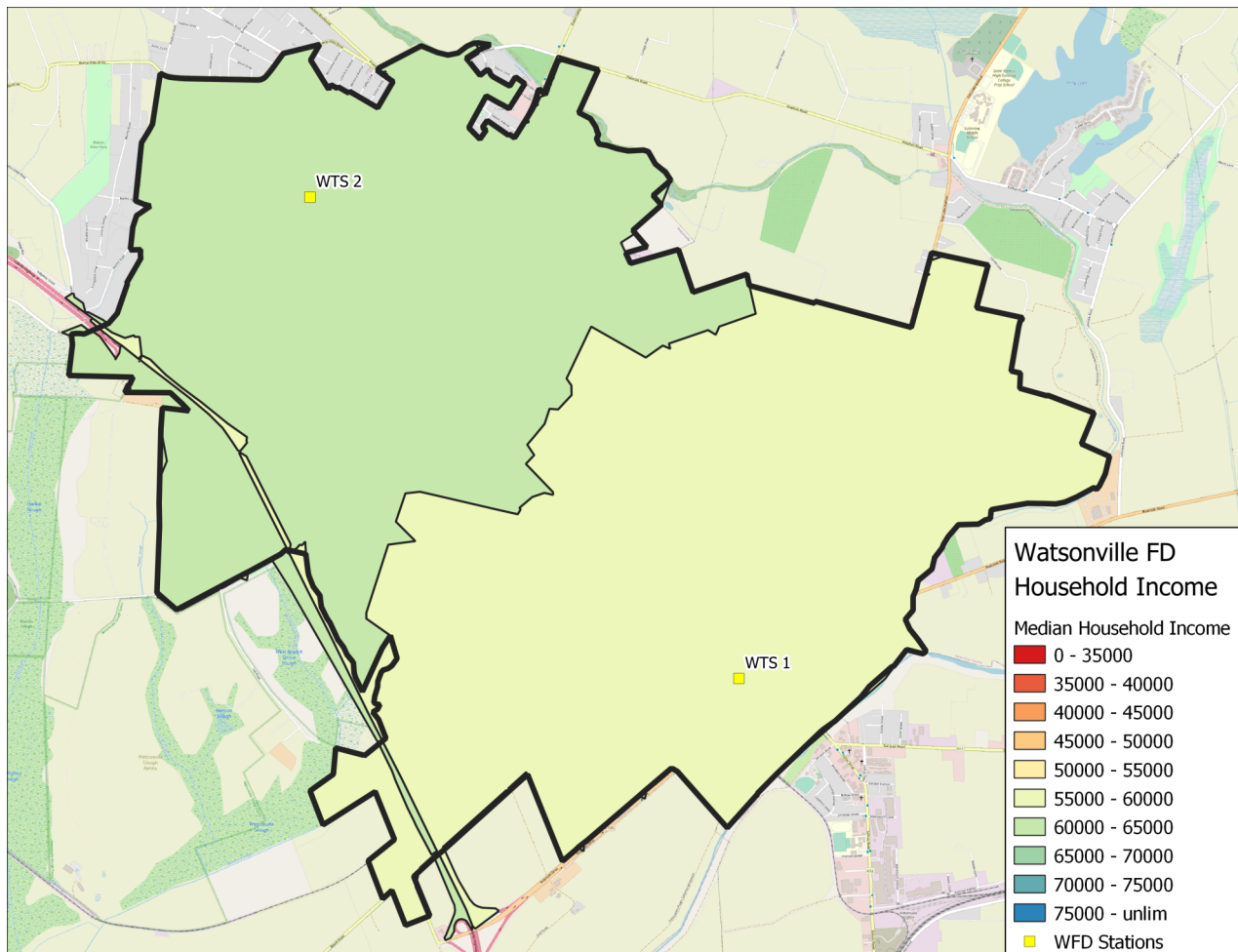
**Socioeconomic Characteristics**

Population alone is not the sole variable that influences demand for services, as socioeconomic and demographic factors can ultimately have a greater influence over demand. Median household income was evaluated to determine the degree to which the community had underprivileged populations. According to the U.S. Census Bureau, the 2020 adjusted median household income for Watsonville is reported at \$61,496 with approximately 13.8% of the population being at or below poverty levels. The median household income for Santa Cruz County, CA was \$89,986, with approximately 10.7% of inhabitants being at or below poverty levels<sup>8</sup>. Visualization of median household income also provides perspective of where economic disparities may exist within the jurisdiction.

**Summary of Income and Poverty**

	Watsonville	Santa Cruz County
Median Household Income	\$61,496	\$89,986
Per-capita Income	\$22,595	\$44,278
Persons in Poverty	13.9%	10.7%

**Jurisdictional Median Household Income**



<sup>7</sup>U.S. Census. (2020). Quick Facts retrieved from <https://www.census.gov/quickfacts/fact/table/santacruzcountycalifornia,watsonvillecitycalifornia/PST045221>

**Demographic Characteristics**

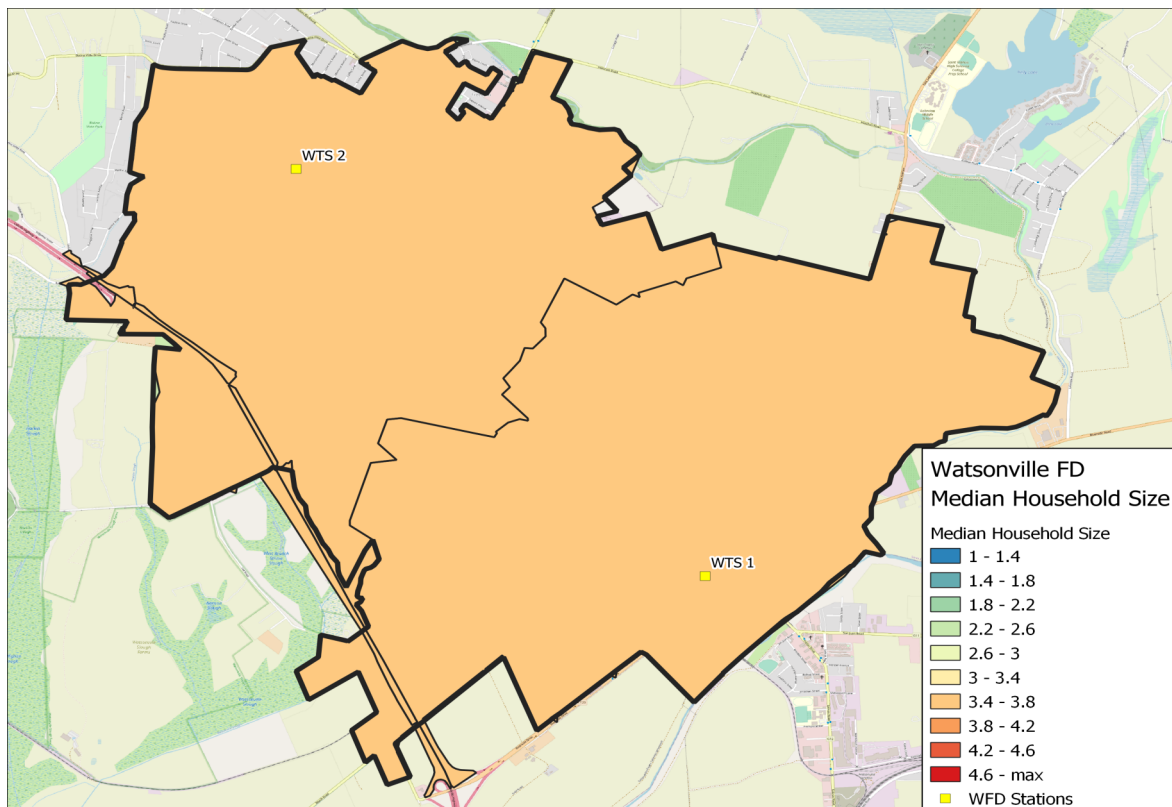
**Diversity**

Watsonville City is 50.8 % white, 1.8 % African American, .8 % American Indian, 2.8% Asian, 83.6% Hispanic or Latino, and 12.8% White alone, not Hispanic or Latino.

	Watsonville	Santa Cruz County, CA
White Alone	44%	87.0%
Black or African American	1.8%	1.5%
Indian & Alaska Native Alone	.8%	1.8%
Asian Alone	2.8%	5.3%
Hispanic or Latino	83.6%	34.0%
White alone-not Hispanic or Latino	12.8%	56.8%

**Household Size**

Household size is another socioeconomic factor, with more densely populated and inhabited areas often posing more life safety risks during certain types of emergencies.



<sup>8</sup>U.S. Census. (2020). Quick Facts retrieved from <https://www.census.gov/quickfacts/fact/table/santacruzcountycalifornia,watsonvillecitycalifornia/PST045221>

## Area Economics<sup>8</sup>

Economic conditions have a direct impact on the City's revenues and the demand for services. therefore, the information presented in the financial statements is perhaps best understood when it is considered from the broader perspective of the impacts realized from COVID-19. The pandemic ended what had been several years of steady revenue growth for the City of Watsonville.

### Performance Indicator 2A.7

Significant socioeconomic and demographic characteristics for the response area are identified, such as key employment types and centers, assessed values, blighted areas, and population earning characteristics.

Many of their business, including restaurants were temporarily closed and many recreational programs were suspended. Utility taxes had 6% growth due to sheltering in place. Tourism is not a large part of the Watsonville economy but there was a 15% decline in the transient occupancy tax.

### Graniterock's Corporate Office in Watsonville, CA

Despite the pandemic growth and building in Watsonville continues including housing, 2 hotels, and a major commercial project on Main Street. However, home sales have declines and prices have not risen when compared to the rest of Santa Cruz county. During the pandemic the city realized some of the lowest months of revue collections because of the refunds that needed to be processed.

The main industries in Watsonville are agriculture, construction, and manufacturing.

The City is home to several large national company headquarters within City limits such as Driscoll's Strawberries, Martinelli's, California Giant, Monterey Mushrooms, Graniterock Granite Construction, West marine, Vendwize, and Fox Racing Shox.



### Watsonville Community Hospital

The City of Watsonville also features a local business spotlight on the city website on a bimonthly basis. This puts positive recognition for businesses who have chosen Watsonville as their home and highlights benefits they provide to the city and its residents.

The Pajaro Valley Unified School District based out of Watsonville is the largest employer in the area followed by the Watsonville Community hospital who employees more than 620 employees and 200 doctors.



<sup>8</sup>Economics Information from the 2020 Watsonville CAFR and the Cities website Economic Profile | Watsonville (cityofwatsonville.org)

Property tax revenues is expected to be at a lower rate than previous years before the pandemic. Property tax collections for FY 2019-2020 hit a peak because they were driven by the assessments set before the onset of the COVID-19 pandemic. Sales tax revenues declined by 1% from the prior year and actually ended a streak of increases that were ongoing since FY 2010-11. Funding from general property tax is generated from the basic countywide levy, school districts, and retirement for a total 2020 levy of 1.164 per \$100.00 of assessed value.

## **Expenditure Controls and Restrictions**

The City of Watsonville is committed to maintaining a strong general fund balance and has a track record of making the hard decisions necessary to do so. During the 2020 budgetary process, the city knowing they would be facing both economic and public health challenges made some difficult decisions to control spending. These included a hiring freeze and other cost reductions without significant service reductions to residents and negative impact to full time staff. The savings were redirected toward readiness and preparation to adapt to environment created by the pandemic.

Some of the unexpected spending and purchases included personal protection equipment, plexiglass barriers, online and remote work technology, and additional FMLA leaves for employees. Overall despite the pandemic and through some of the decisions made the City, the net position and balances remained positive.

For fiscal year 2020, the city reported combined ending fund balances of \$38,820,000 an increase of \$5,432,000 in comparison with their prior fiscal year's balances. The City's net position increased by \$1,723,000.

Since March of 2020 the County has been adjusting to an anticipated decline to address the COVID 19 health emergency. Adjusting budgets to maintain necessary level of funds will maintain financial flexibility, which is critical in difficult financial times such as this. Similar to other cities across the country, Watsonville, will continue to face challenges meeting the demands for services. To ensure quality services are provided to the community, it is recognized that it will be incumbent on city officials to prioritize the services most important to the community.



It should be noted that these same fiscally responsible practices are also utilized for the Fire Department.

Below is a summary of the Fire Department budget showing actuals from FYT 2019-2020 and budgeted for 2020-2021, 2021-2022, and 2022-2023.

The Fire Department consists of Fire and Emergency Divisions. Fire provides the primary services of prevention, suppression, and education. In addition, the Department handles hazardous waste and emergency medical calls.

	<b>2019/20</b> <b>Actual \$</b>	<b>2020/21</b> <b>Budget \$</b>	<b>2021/22</b> <b>Budget \$</b>	<b>2022/23</b> <b>Budget \$</b>
FIRE	7,538,289	7,150,127	7,956,138	8,306,447
SALES TAX MEASURE Y - FIRE	1,369,582	1,417,446	1,724,317	1,713,988
CANNABIS REVENUE - FIRE	48,450	82,500	0	0
<b>Total Expenditures</b>	<b>8,956,321</b>	<b>8,650,073</b>	<b>9,680,455</b>	<b>10,020,435</b>

## Human-Made Characteristics

### Development

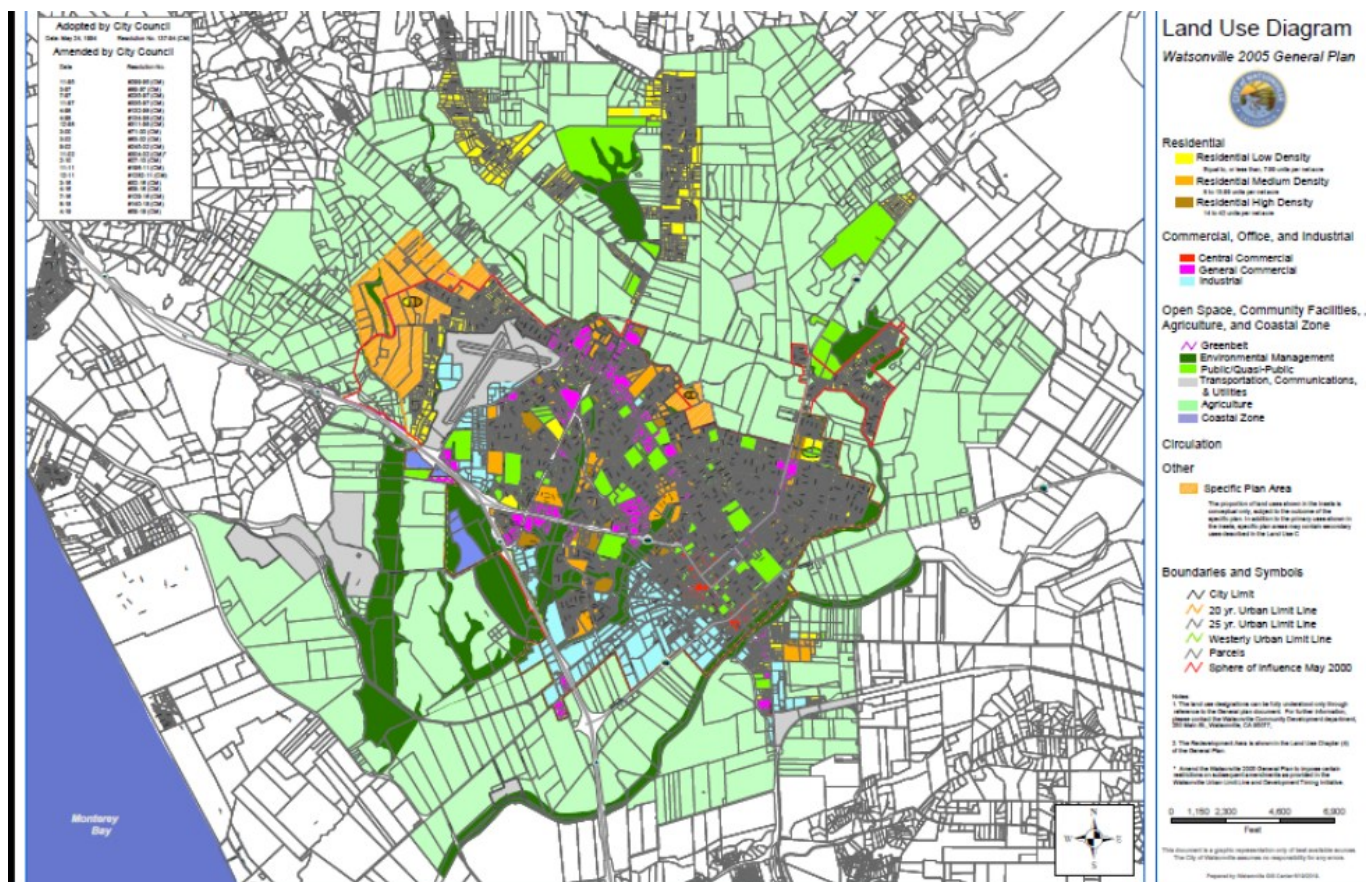
Watsonville is expected to continue to steadily grow in population and employment opportunities over the next 20 years, strategic development of land use will help in achieving goals<sup>9</sup>:

- Protect the area’s agricultural heritage, farmland and sensitive open spaces
- Facilitate development of more housing, particularly attainable workforce housing
- Produce ample room and infrastructure for businesses to grow
- Maintain and improve overall quality of life
- Preserve and protect open space, scenic, and cultural resources.

The Watsonville 2005 General Plan was adopted by City Council in 1994 and has not been replaced The Draft Watsonville 2030 General plan is the subject of ongoing litigation and has not replaced this document<sup>10</sup>.

Below is Land use diagram from the Watsonville 2005 General plan.

Map of Watsonville land use from 2005 General plan



<sup>9</sup> General Land use and Community development retrieved from [www.cityofwatsonville.org/documentcenter/view/139/03](http://www.cityofwatsonville.org/documentcenter/view/139/03)

<sup>10</sup> Land use from Watsonville 2005 General plan retrieved from [www.cityofwatsonville.org/documentcenter/view/106](http://www.cityofwatsonville.org/documentcenter/view/106)

## Infrastructure

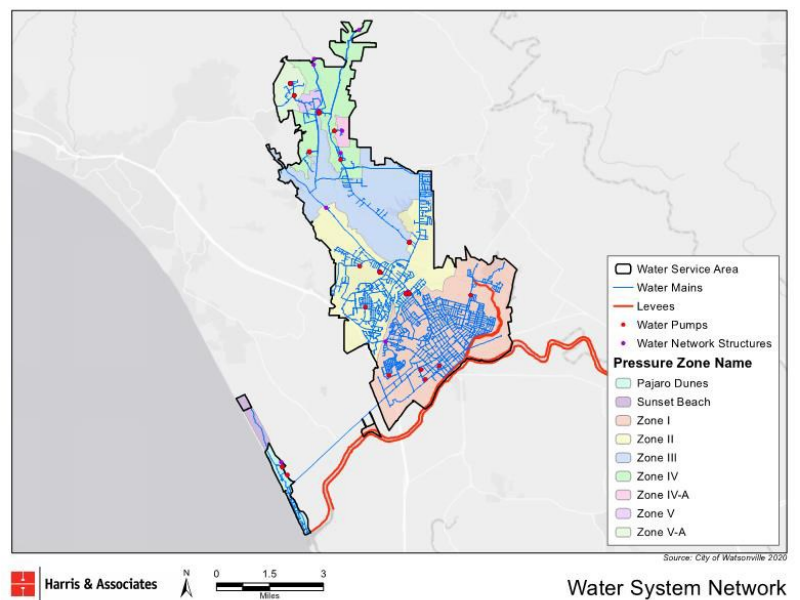
### Electric<sup>11</sup>

Pacific Gas and Electric Company incorporated in California in 1905 and is one of the largest combined gas and electric energy companies in the United States. They are based in San Francisco and is a subsidiary of the PG&E Corporation. The company provides Natural Gas and Electrical service to approximately 16 million people throughout a 70,000 square-mile service area in northern and central California.

### Water

The Water Division is responsible for one of life's most valuable resources: drinking water. The City provides service to residential, commercial, industrial, and institutional customers assuring delivery of the highest quality of potable water serving Watsonville and parts of unincorporated areas of Santa Cruz County. The City's regional water system consists of 190 miles of pipelines, 14 wells, 8 reservoirs and the Corralitos Filtration Plant treatment plant that delivers clean, safe water to our service population of 66,000 customers.

Map of Watsonville water service area



<sup>11</sup> Utility information was retrieved from [www.cityofwatsonville.org](http://www.cityofwatsonville.org)

### Major Transportation Features<sup>13</sup>

**Roadways**– Watsonville’s central location at the junctures of Highways 1, 129, and 152 allows for easy access for ground transportation.

**Air**– In addition to having its own general aviation airport (Watsonville Municipal KWVI), Watsonville is located within an hour of San Jose International Airport and within 2 hours of San Francisco International Airport. Other general airports in the surrounding area include Monterey and Marina.

**Rail**– Rail runs through the West side industrial area. Presently, the closest Caltrain station is in Gilroy, 20 miles west on Highway 152. There are plans to bring a station to Pajaro, just over the bridge from Watsonville in the next few years.

**Bus**– A bus transit center is located near downtown Watsonville. The transit center offers residents access to Greyhound, Santa Cruz Metro and Monterey-Salinas Transit bus lines.

Map of Watsonville and surrounding airports and roads



**Performance Indicator 2A.9**

The agency defines and identifies infrastructure that is considered critical within each planning zone.

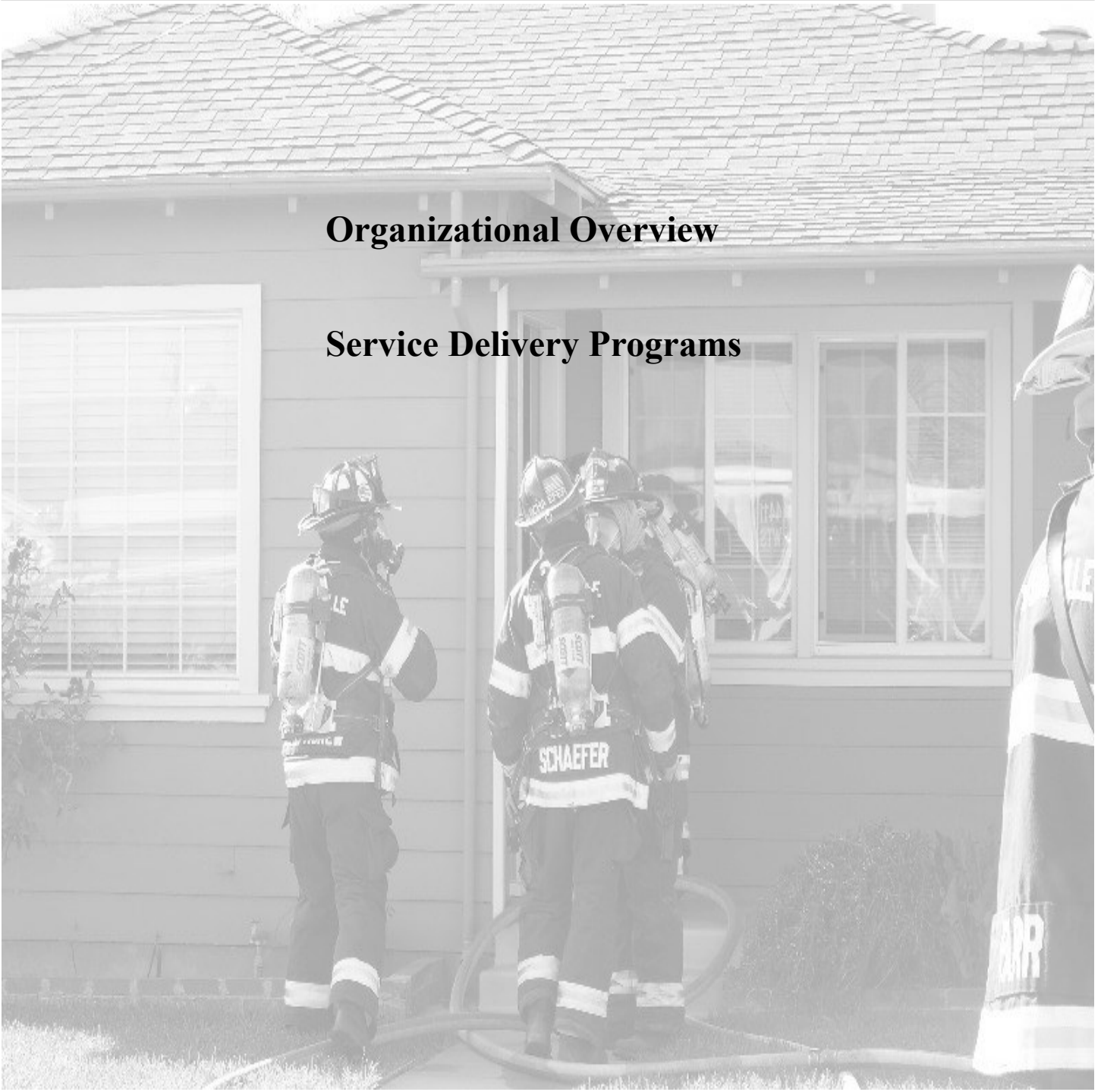
<sup>13</sup>Transportation and main highways retrieved from [www.cityofwatsonville.org/1495](http://www.cityofwatsonville.org/1495)



## **Section B - Description of Agency Programs and Services**

### **Organizational Overview**

### **Service Delivery Programs**



## Organizational Overview

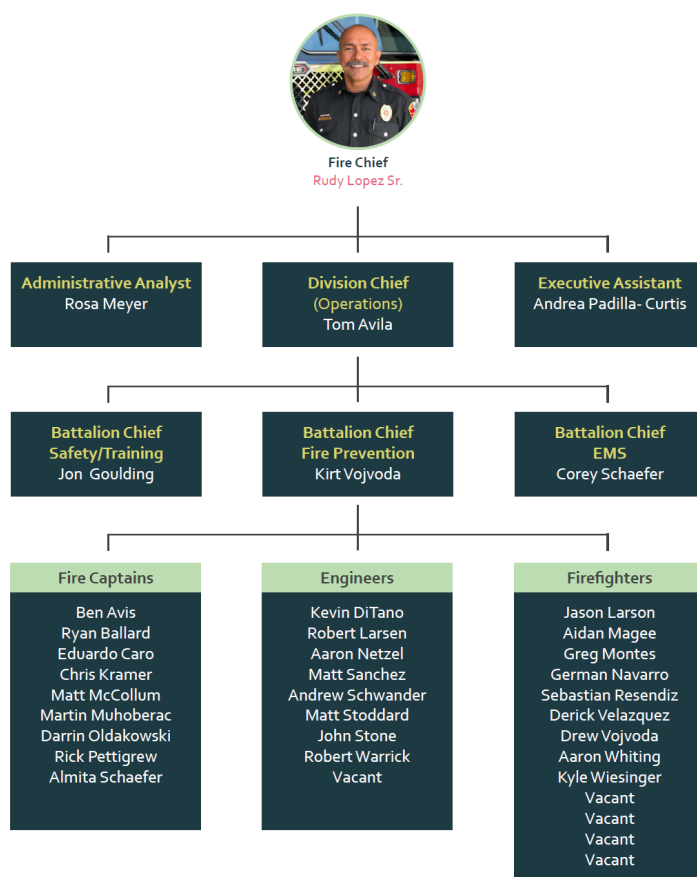
The Watsonville Fire Department provides high quality fire suppression, emergency medical, technical rescue, and hazardous materials services from 2 fire stations staffed with a constant daily staffing level of 10 personnel. Additionally the organization delivers a full spectrum of fire and life safety services supported by administrative staff and training officers to ensure the first responders are well prepared for any hazard or situation they may face.

## Human Resources

### 2021 WFD Organizational Chart

# FIRE DEPARTMENT

Organizational Structure - Fiscal years 2021-2023



The Department’s organizational structure reflects a fairly typical, paramilitary organization. The Administrative Staff is comprised of seven senior personnel, including the Fire Chief, a Division Chief, an Administrative Analyst, and Executive Assistant and three Battalion Chiefs. The three Battalion Chiefs each are assigned an additional responsibility which includes Safety/Training, Fire Prevention, and EMS.

Primary responsibility for the administration and management of the department's budget rests with the Fire Chief. The next level of supervision is the Operations Division Chief who supervises the three Battalion Chiefs (one per shift). Personnel at the rank of Captain are used as functional supervisors in support roles within departments day to day activities and responses.

## Physical Resources-Apparatus



### Battalion Chief

There is a battalion chief are on duty each shift. In addition to emergency responses and personnel management, they also supervise many non-emergency programs.



### Engine

A piece of fire apparatus that carries water, medical equipment and tools to the scene of an emergency. The primary function of this crew at fires is to establish a water supply, search for people in the interior of a structure and apply water with hose lines to extinguish the fire. Engines are in service at both stations.



### Aerial Water Tower

This fire apparatus extends to approximately 100 feet in the air and is capable of providing an elevated stream of water. The apparatus responds from Station 1



**Physical Resources-Fire**

**Fire Station 1**

Constructed in 1966

115 Second Street  
Watsonville, CA 95077



**Fire Station 2**

Constructed in 1978

370 Airport Boulevard  
Freedom, CA 95019



**Fire Administration**

372 Airport Boulevard  
Freedom, CA 95019



**Training Center**

370 Airport Boulevard  
Freedom, CA 95019





## Service Delivery Programs

### Fire Prevention and Services

The benefits of a safer community are achieved through a variety of programs and services offered by the Watsonville Fire Department:

**Education** — Whether our firefighters are helping a business owner understand the hazards created by overloading an electrical cord, or reminding senior adults about trip hazards in their home, education is one of our strongest tools for prevention.

Fire/Life Safety inspections are conducted on an annual basis. These inspections often prevent incidents from occurring in the first place. Some of these engineering controls are fire sprinkler systems, hazardous materials spill prevention efforts, heat-regulating systems, and others. Inspections are also conducted in response to a complaint or from a request from the business owner.



**Car Seat Inspections** — Car safety inspections are available with certified technicians. These inspections take approximately 30 minutes and the technician instructs the parent/guardian on how to properly install the car seat and reviews child safety information.

**Operations**— The Operations Division responds to calls for service, maintains our apparatus and stations, provides public education, and develops target hazard pre-incident plans. The Operations Division also responds to incidents both in the city and surrounding areas as well as out of county responses during major events. The Operations Division strives to keep our community and surrounding communities safe at all times. We will continue to strive to reach excellence in applying our core values toward our common purpose.



## Fire Prevention

The Fire Prevention Division is responsible for administering and enforcing the Fire Code, developing and implementing hazard mitigation, monitoring and overseeing the target hazard program, coordinating the Fireworks Task Force, as well as Title 19 fire inspections, investigation oversight, and overseeing the self-inspection program for low hazard businesses within the City.

## Fire Youth Academy

The Watsonville Youth Academy is for local youth who are incoming 9th graders to graduating high school seniors who live in the greater Pajaro Valley and are interested in learning about the fire service. The Youth Academy is a very condensed version of what new firefighters go through in our Fire Academy. The teens learn: Hose pulls and Ladders; Vehicle Extrication; Ropes and Knots; Self-Contained Breathing Apparatus; Victim Rescue; Introduction to CPR and First Aid; Forcible Entry; History of the Watsonville Fire Department; and they also learn the steps to becoming a firefighter.



## Fire Cadets

The Watsonville Fire Department conducts a program committed to reach out to the youth of the community by providing them an environment to promote character building, personal growth, responsibility, and accountability. The purpose of the program is to introduce local residents 15-21 year of age to the fire service and provide them learning opportunities and challenges to have them realize their potential and become productive members of the community.



## Ride Along program

The Watsonville Fire Department offers members of the public who are interested in what the fire service does an opportunity to ride as a guest/observer with the crews. This program is open to all members of the public and students 16 years and older can also participate.



## Emergency Preparedness

Watsonville Fire Department is committed to community emergency preparedness and offers several programs for the community to participate in partnering with Santa Cruz County.



## Community Emergency Response Team (CERT)

The CERT program teaches community members disaster and emergency preparedness for those times when the fire department may not be immediately available and for when a disaster may impact their areas. They are trained in:

- Basic disaster response skills
- Disaster medical operations
- Fire Safety
- Light search and rescue
- Team organization



## Community Support

Trained CERT members are also able

to assist their neighbors and community members when the professional responders are not immediately available such as earthquakes and other shelter in place incidents. CERT members are also encouraged and offered opportunities to take a more active role in the emergency preparedness with the community.



## Domestic Preparedness

The City of Watsonville developed a Local Hazard Mitigation Plan (LHMP) to identify and establish an all-hazards preparedness program that includes a coordinated multiagency response plan designed to provide the community preparedness and resiliency in response to terrorist threats or attacks, major disasters, and other large-scale emergencies occurring at or in the immediate area.

## Fire Suppression

The Watsonville Fire Department provides high quality fire suppression services within the city and the Pajaro Valley. Fire suppression services are provided from 2 fixed facility fire stations located in the Watsonville community. All Watsonville operational personnel members are trained as firefighters and Emergency Medical Technicians (EMTs). The department utilizes a constant staffing strategy with staffing per day of 10.

In total, the Watsonville Fire Department operates the following response units:

- 2 fire paramedic engine companies (3 personnel)
- 1 truck company (3 personnel)
- 1 Battalion Chief command units (1 person)





## Emergency Medical Services (EMS)

On June 10, 2003, the Santa Cruz County Board of Supervisors approved a countywide ambulance service with American Medical Response West (AMRW) to provide Emergency Medical services to the citizens of Santa Cruz County, including the City of Watsonville. AMRW has been providing uninterrupted service in Santa Cruz since 1978 and was formerly known as Santa Cruz Ambulance.

All firefighters within the Watsonville Fire department are cross-trained as EMTs or paramedics and provide first response to emergency medical incidents with AMRW providing transport service. This response and emergency transport is for response to 9-1-1 calls twenty-four hours a day, seven days a week without regard to individual patient's financial status.

AMRW's mission is to provide the highest quality, evidence based, pre-hospital medical care to the community. This is accomplished through:

- Integrating internal data and external evidence quarterly to assess key performance indicators against the 90% fractal response time goals.
- Utilizing quarterly reports to guide, develop and implement strategies that are the most effective and produce the greatest value to the organization and public.
- Communicating findings to the organization and public to increase awareness and educate on ways to improve overall health.

AMRW also participates in the EMS system's public education and information program including press relations, explanation regarding rates, regulations and system operations, increasing public awareness of the EMS system. AMRW Ambulance staffing is a minimum of one State of California licensed Paramedic ( EMT-P) and one licensed Sate of California Emergency Medical Technician (EMT).



## Technical Rescue

Watsonville Fire Department relies on the Monterey County USAR team for technical rescue incidents. Watsonville units will initially respond and evaluate the situation and request the services from the USAR team as needed. There is a significant amount of training and specialized equipment needed for these types of incidents and having a regional technical rescue response team to better serve the jurisdictions both from a training aspect and a financial one. Having a regional team combines these rescue resources and reduces duplication to provide a seamless and efficient emergency response. These highly trained professionals are ready to assist with tasks associated with the following rescue disciplines: trench, rope, urban search & rescue (USAR), water/ice, and confined space.



## Hazardous Materials

Watsonville Fire Department responds to hazardous material incidents which can include toxic, flammable, corrosive, radioactive materials in addition to materials that can cause health hazards. The department can mitigate small incidents and relies on the Santa Cruz Hazardous Materials Interagency Team (SCHMIT).



## Training Division

The Watsonville Fire Department's Training Division is committed to preparing fire rescue personnel to deliver excellent customer service to the citizens of the Watsonville while adhering to training requirements that are mandated by law. This is accomplished by proactively responding to changes, solving problems, collaborating on issues, assessing the needs of the community and personnel, and developing viable solutions. The training division accomplishes this by incorporating the best instructional and training methods, as well as continuously evaluating the capabilities of the personnel. The training division oversees the departments training programs:

- Entry-level training for new firefighters
- In-service training to ensure all personnel continue to meet local, state, and federal training mandates.
- Professional training and development for personnel seeking career advancement.



**Section C - All Hazard**  
**Community Risk Assessment**

**Risk Assessment Process**

**Geospatial Risk Factors**

**Natural Risk Hazards**

**Human-made Hazards**

**Physical Assets Protected**

**Development and Population Growth**

**Historical Service Demand and Probability Analysis**

## Risk Assessment Process

The purpose of this section is to describe the process used in performing an analysis of the community served and its potential risks using real world factors that are both physical and theoretical. To perform a comprehensive risk assessment, it was necessary to analyze physical, economic, sociologic and demographic aspects of the area served. The factors that drive the service needs are examined in a precise and scientific manner to determine the capabilities necessary to adequately address the risks that are present. The assessment of risk is critical for the determination of the number and placement of resources, and the mitigation measures that are required by the community.

The risks that the department faces can be natural or human-made and fall in various locations on the consequence, probability and impact matrix. Where these risks are located on the matrix has a direct impact on how resources are located around the jurisdiction (distribution) and the overall amount of resources required to mitigate the incident (concentration) effectively through the use of the staffing and deployment model.

Each of the major natural and human-made risks evaluated received a clearly defined probability and consequence ranking. Service areas that either had little quantitative data, or did not require that level of analysis, were evaluated through both retrospective analysis as well as structured interviews with Department staff members. “Call Type” variable entries from the 2018-19 to 2020-21 data file from Watsonville Fire Department were classified into the program areas of EMS, fire, hazmat, mutual aid, and rescue based on departmental leadership decisions, and records were additionally assigned a risk classification based on departmental leadership criteria depending upon available data. Risk classifications were assigned based on determinant, when available, and based on call type when determinant was not available.

### All-Hazard Risk Assessment and Response Strategies as it relates to Criterion 2B:

The agency identifies and assesses the nature and magnitude of all hazards and risks within its jurisdiction. Risk categorization and deployment impact considers such factors as cultural, economic, historical, and environmental values, and operational characteristics.

### Core Competency 2B.1

The agency has a documented and adopted methodology for identifying, assessing, categorizing and classifying all risks (fire and non-fire) throughout the community or area of responsibility.

### MPDS Determinant Risk Classification

Determinant	Risk Classification
A	Low
B	Moderate
C	Moderate
D	High
E	Maximum



**Risk Assessment Process Cont.**

Data presented in the table below were based on 16,936 incidents originating from the WFD community across the three reporting periods, as 226 incidents reported a “TypeInfo” value that was identified by WFD leadership for exclusion from risk assessment classification (i.e., “TypeInfo” values of COPW, CRASH, DINFO, EVENT, FINFO, FIREWORK, MEDTR, MEDTR3, MINFO, MP, NOTIFY, NURSE2, and NURSE3).

**Number of Incidents by Reporting Period, Program, and Risk Rating – 2018-19 to 2020-21 WFD**

Reporting Period	Program	Number of Incidents Risk Rating					Percentage of Incidents' Risk Rating				
		Low	Moderate	High	Maximum	Total	Low	Moderate	High	Maximum	Total
2018-19	EMS	1,115	1,302	1,237	63	3,717	30.0	35.0	33.3	1.7	100.0
	Fire	989	234	484	2	1,709	57.9	13.7	28.3	0.1	100.0
	Hazmat	0	29	40	0	69	0.0	42.0	58.0	0.0	100.0
	Rescue	0	25	0	0	25	0.0	100.0	0.0	0.0	100.0
	<b>Total</b>	<b>2,104</b>	<b>1,590</b>	<b>1,761</b>	<b>65</b>	<b>5,520</b>	<b>38.1</b>	<b>28.8</b>	<b>31.9</b>	<b>1.2</b>	<b>100.0</b>
2019-20	EMS	1,058	1,511	1,172	44	3,785	28.0	39.9	31.0	1.2	100.0
	Fire	907	232	329	18	1,486	61.0	15.6	22.1	1.2	100.0
	Hazmat	0	44	24	0	68	0.0	64.7	35.3	0.0	100.0
	Rescue	0	30	1	0	31	0.0	96.8	3.2	0.0	100.0
	<b>Total</b>	<b>1,965</b>	<b>1,817</b>	<b>1,526</b>	<b>62</b>	<b>5,370</b>	<b>36.6</b>	<b>33.8</b>	<b>28.4</b>	<b>1.2</b>	<b>100.0</b>
2020-21	EMS	1,253	1,537	1,276	66	4,132	30.3	37.2	30.9	1.6	100.0
	Fire	1,224	214	375	24	1,837	66.6	11.6	20.4	1.3	100.0
	Hazmat	0	29	29	0	58	0.0	50.0	50.0	0.0	100.0
	Rescue	0	19	0	0	19	0.0	100.0	0.0	0.0	100.0
	<b>Total</b>	<b>2,477</b>	<b>1,799</b>	<b>1,680</b>	<b>90</b>	<b>6,046</b>	<b>41.0</b>	<b>29.8</b>	<b>27.8</b>	<b>1.5</b>	<b>100.0</b>

**Risk Classifications for Records Based on Determinant – Other Values**

Determinant'	Risk Classification	Determinant'	Risk Classification
2MED	Moderate	MEDCAN	Low
3MED	High	MOVEUP	Low
AID	High	MVA	High
AIRCRAFT	High	NOEMD	Moderate
ASSAULT	High	OVERD	Moderate
BOMBTH	Maximum	PSYCH2	Moderate
BREATH	Low	PSYCH3	High
CHEST	Low	PUBSER	Low
COLSTR	High	RESCUE	Moderate
ECHO	Maximum	SCHMIT	High
ETOH	Moderate	SMOKE	Low
EXPLOS	Maximum	STAGE	Low
FALARM	Low	STRIKE	High
FINC	Low	STROKE	Low
GAS	Moderate	STRUCT	High
GSWMED	High	WATVAC	low
HAZMAT	High	WILDLAND	High
MED	Low	WIRES	High

## Risk Assessment Process Cont.

## Risk Classifications for Records Based on Incident Description Plus Modifying Circumstance

Program	Risk Classification	Incident Description Plus Modifying Circumstance <sup>1</sup>
EMS	Low	"MEDICAL AID" DISORIENTED SUBJECT
		"MEDICAL AID" SUBJECT DOWN/UNK MED AID
		"MEDICAL AID" UNKNOWN
Fire	Low	"FIRE" DUMPSTER
		"FIRE" DUMPSTER FIRE
		"FIRE" EXTINGUISHED
		"FIRE" EXTINGUISHED FIRE
		"FIRE" ILLEGAL BURN
		"FIRE" OTHER
		"FIRE" OTHER TYPE
		"FIRE" OTHER TYPE FIRE
		"FIRE" TRASH
		"FIRE" TRASH FIRE
		"FIRE" UNKNOWN
	Moderate	"FIRE" VEHICLE
		"FIRE" VEHICLE FIRE
	High	"FIRE" LARGE VEHICLE
		"FIRE" LARGE VEHICLE FIRE
		"FIRE" UNCONFIRMED STRUCTURE
		"FIRE" WILDLAND
	Maximum	"FIRE" CONFIRMED STRUCTURE

**Community Risk Input Factors**

Risk factors in the community were analyzed with historical and statistical data, and trending was established based on the type of call and location of the incident. General categories of risk included overall geospatial characteristics of the community, natural hazards and Human-made hazards.

**Geospatial risk factors**

- Political Boundaries
- Growth Boundaries
- Construction Limitations
- Topography and Response Barriers
- Critical Infrastructure
- Electrical
- Water System
- Emergency Communications
- Rural Interface

**Natural Hazards**

- Tornado
- Flood
- Earthquake
- Contagious Diseases
- Wildfire
- Landslide

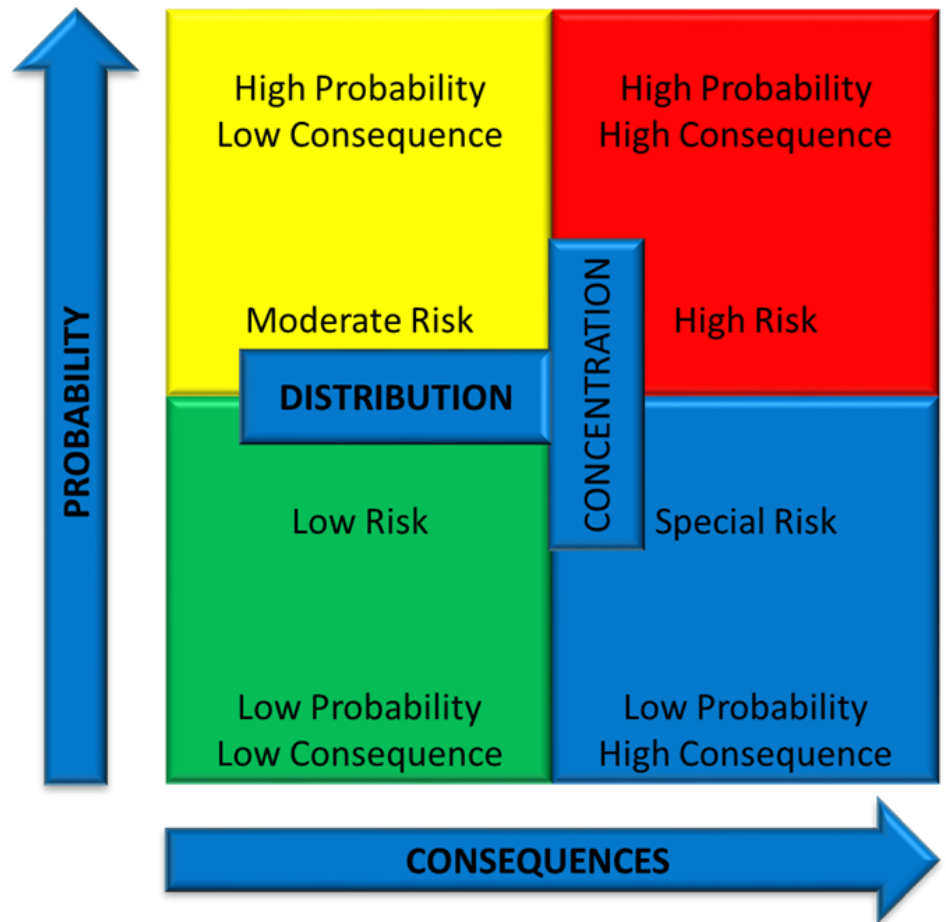
**Human-made risk hazards**

- Airport
- Passenger and Freight Rail Lines
- Road Networks
- Fires
- EMS
- Hazardous Materials
- Technical Rescue

**Core Competency 2B.6**  
 The agency assesses critical infrastructure within the planning zones for capabilities and capacities to meet the demands posed by the risks.

**Core Competency 2B.4**  
 The agency’s risk identification, analysis, categorization, and classification methodology has been utilized to determine and document the different categories and classes of risks within each planning zone.

**Risk Assessment Factors**



## Geospatial Risk Factors

**Low Risk**

**Low Probability**

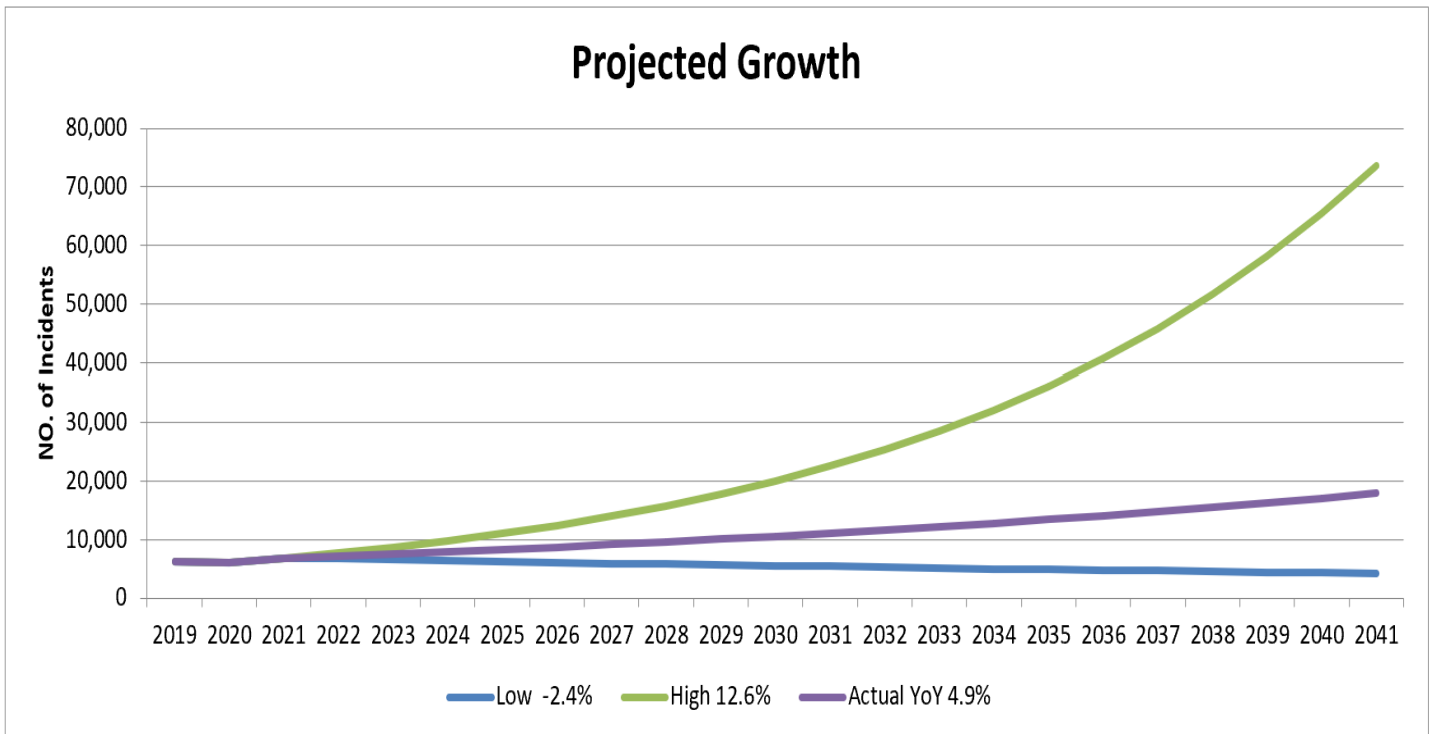
**Low Consequence**

### Political and Growth Boundaries

The Departments service requirements are expected to change significantly. From this perspective, increases in population density may only serve to eventually require a greater concentration of resources to meet the demand rather than expanding the distribution model. In other words, if the Department does not anticipate creating a larger geographic coverage area through annexations, the likely result of population growth will require additional resources within the existing distribution model rather than by expanding the number of stations. Assuming that future demands may not be reasonably distributed across the various stations in the system, the system may ultimately require a redistribution of workload and ultimately reinvestment in resources to meet the growing demand.

While the system should be evaluated continuously for performance and desired outcomes, the department should specifically re-evaluate workload and performance indicators for every 1,000-call increase to ensure system stability. The available data set included five reporting periods of data, representing FY 2019 - 2021. From FY 2019 to FY 2021, calls for WFD services increased from 6,250 to 6,867, with an average growth rate of 4.9% per year. The figure below depicts observed call volume during the last three year reporting periods and various hypothetical growth scenarios for the next 20 years. These projections should be used with caution due to the variability in growth observed across prior calendar years. In all cases, data should be reviewed annually to ensure timely updates to projections and utilize a five-year rolling average.

**Watsonville Future Incident Growth Projection**





**Low Risk**

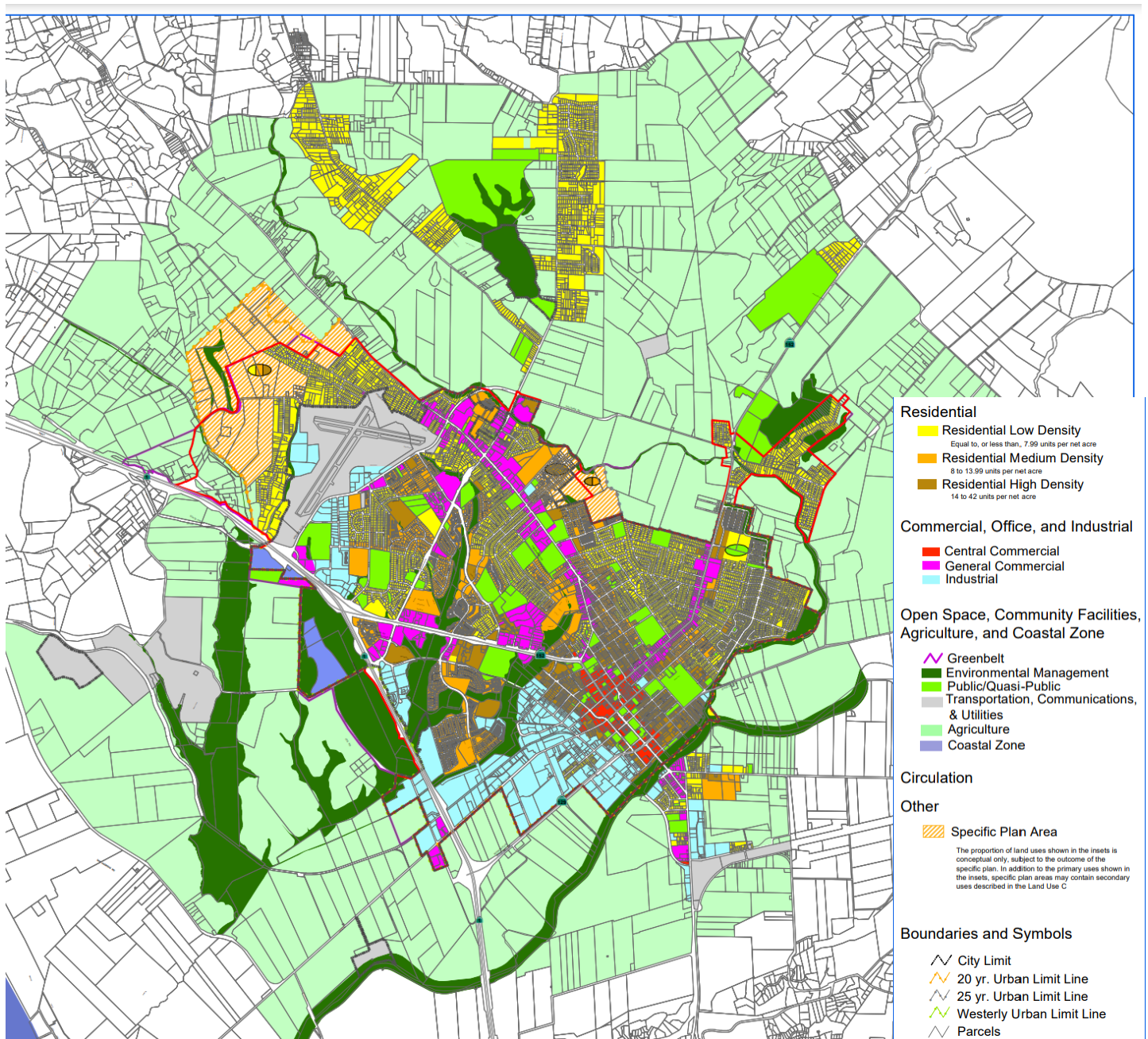
**Low Probability**

**Low Consequence**

**Construction Limitations**

The future land use map demonstrates that limitations have been accounted for, and that generally new growth has the potential to occur at a high rapid rate within the Departments boundaries.

**Land Use Map Watsonville, CA.**



**Moderate Risk**

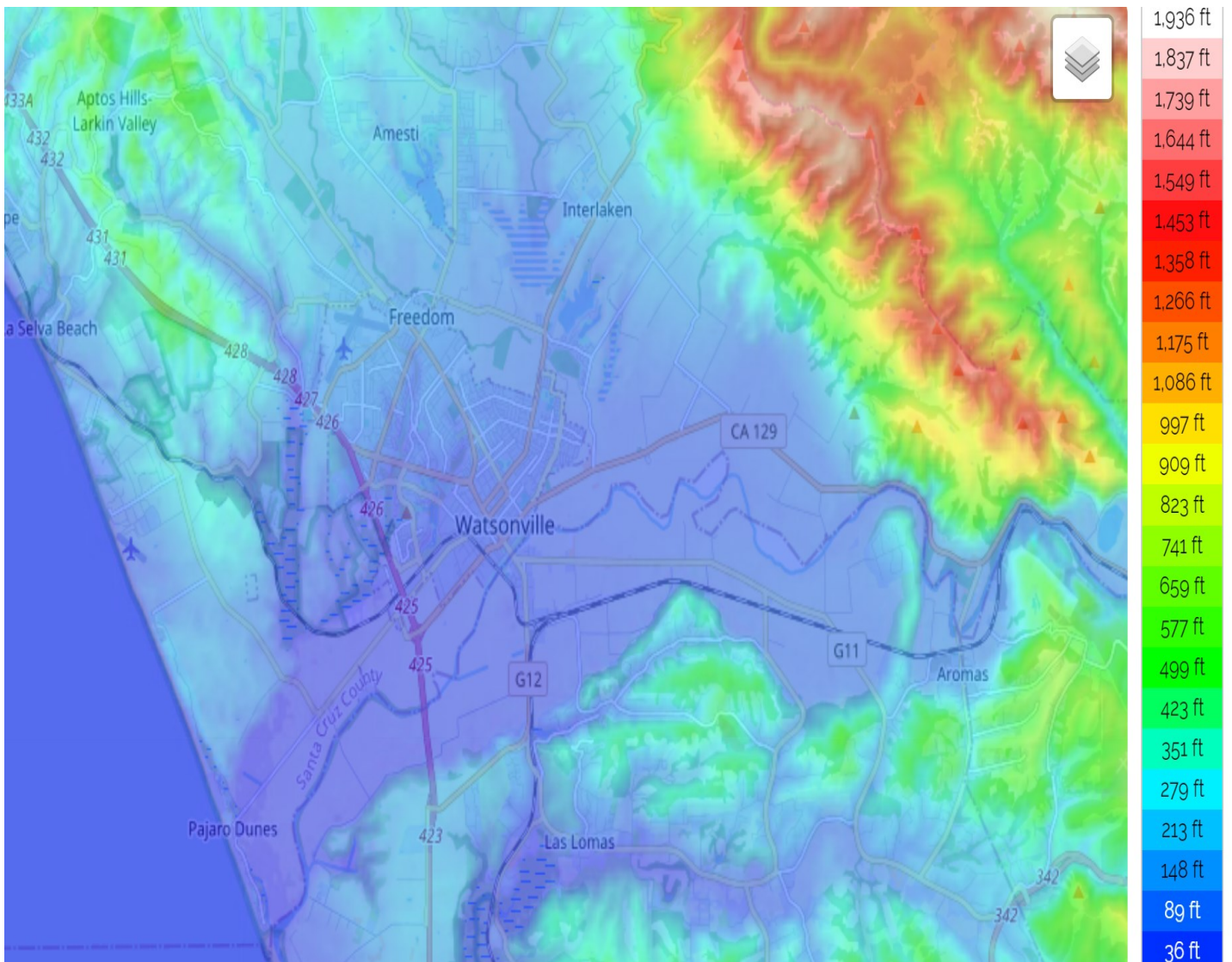
**High Probability**

**Low Consequence**

## Topography—Response Barriers

Primarily response barriers are associated with interaction with mountainous areas, as well as foothills that can be inhibited during secondary events such as severe weather, flooding, and wildfire. Much of the response area is a lower-lying area with an elevation ranging from 80 to 213 feet above sea-level.

**Watsonville, Ca Topography**



<https://en-us.topographic-map.com/maps/e3u7/Watsonville/>



**Moderate Risk**

**High Probability**

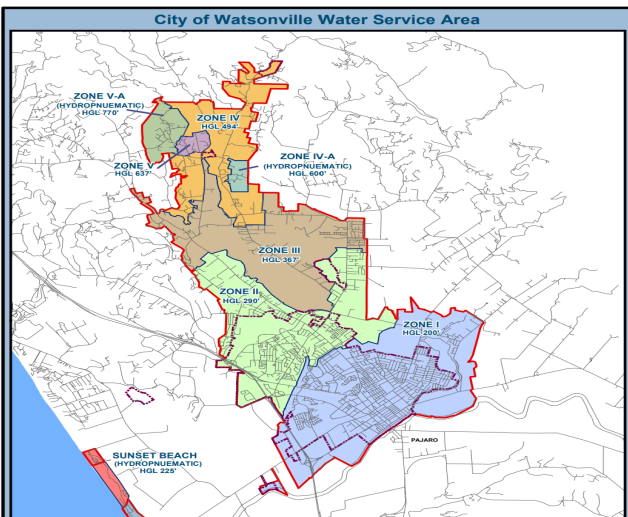
**Low Consequence**

**Critical Infrastructure**

**Overview**

Failure of critical public or private utility infrastructure can result in a temporary loss of essential functions and/or services that last from just a few minutes to days or more at a time. Public and private utility infrastructure provides essential life supporting services such as: electric power, natural gas, heating and air conditioning, water, sewage disposal and treatment, storm drainage, communications and transportation.

**Water Distribution**



**Water Treatment**



**Electric Service**



**Transportation—Major Roads**



<https://www.cityofwatsonville.org/DocumentCenter/View/1908/City-of-Watsonville-Water-Service-Area-Map-PDF>

**Moderate Risk**

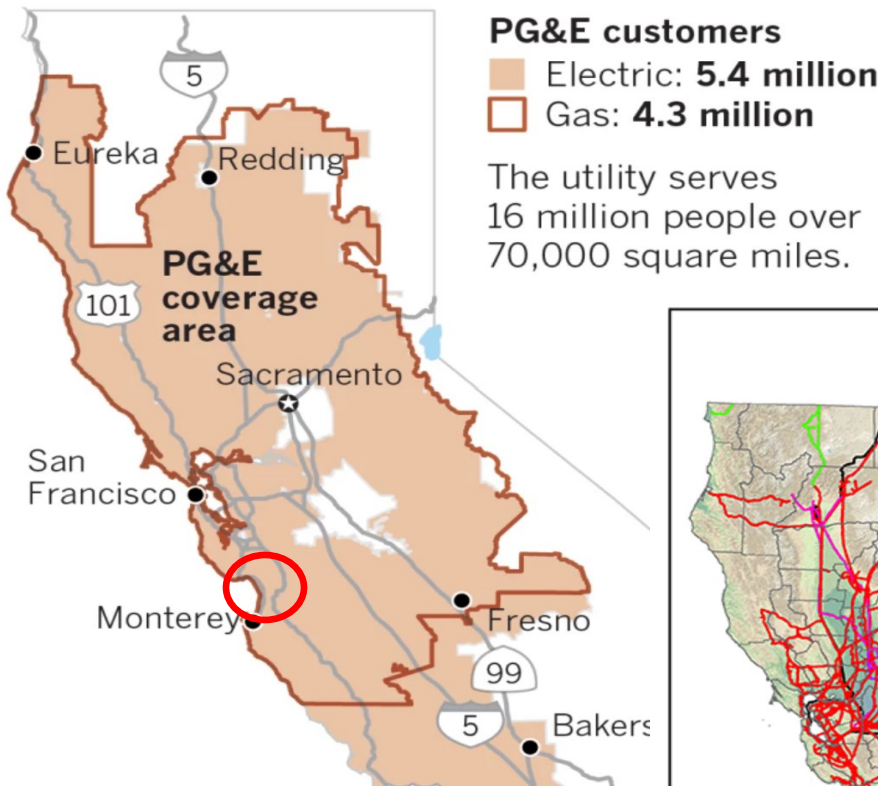
**High Probability**

**Low Consequence**

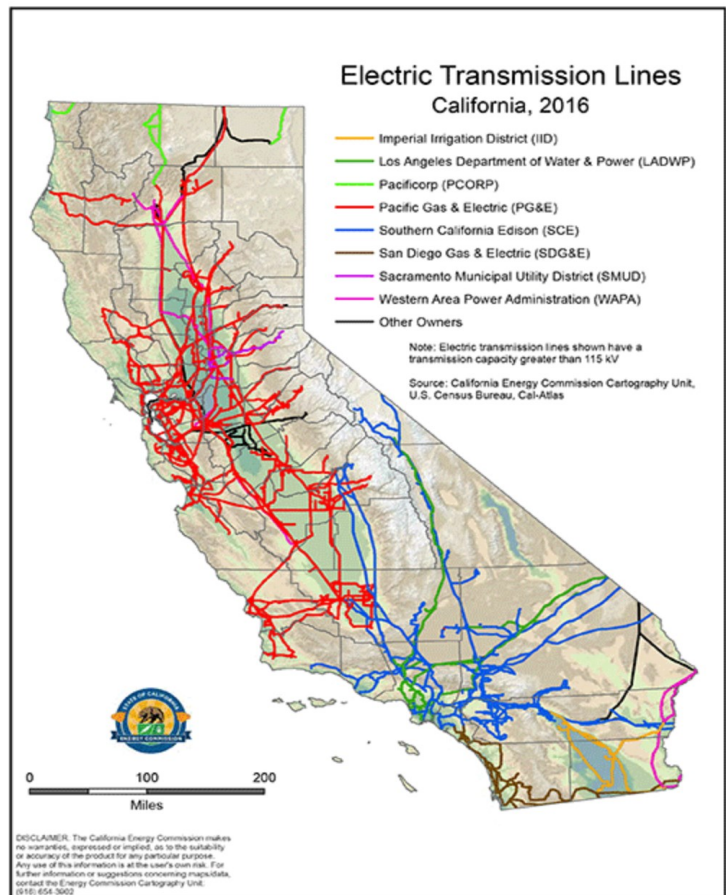
**Electrical Power Grid**

The City of Watsonville falls within the Pacific Gas & Electric Service area (PG&E). The Service has been and could continue to be impacted. In California, fires are burning more intensely than ever before, and some have grown into megafires that have destroyed entire neighborhoods. Some of the deadliest fires have been caused by the electrical grid. In general though, all fires are burning more intensely because of climate change and an unhealthy forest landscape due to drought.

**PG&E Service Coverage Area including Watsonville, CA.**



**Electrical Transmission Lines**



<https://www.latimes.com/business/la-fi-pge-wildfires-bankruptcy-sale-20190108-story.html>

<https://www.energy.ca.gov/search/site?keys=transmission+lines>



**Moderate Risk**

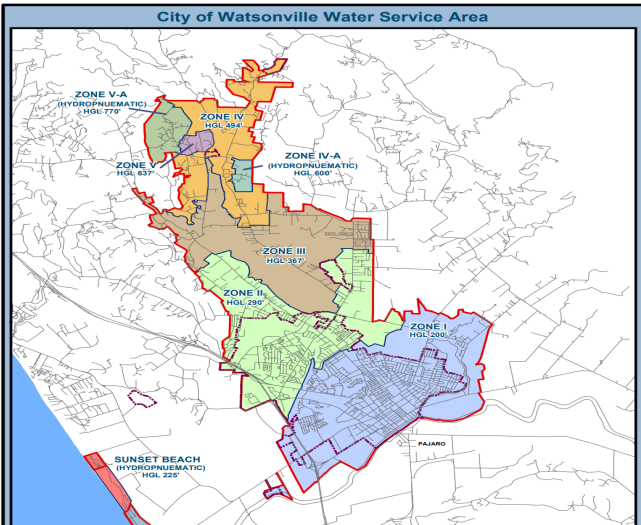
**High Probability**

**Low Consequence**

**Water System**

The Pajaro Valley Water Management Agency (PV Water) partnered with the City of Watsonville to introduce the Watsonville Area Water Recycling Facility (WRF) as part of PV Water’s long-term plan to meet the water needs of our region. This RWF will provide nearly a quarter of the water needed to stop

**Watsonville Water Service Area**



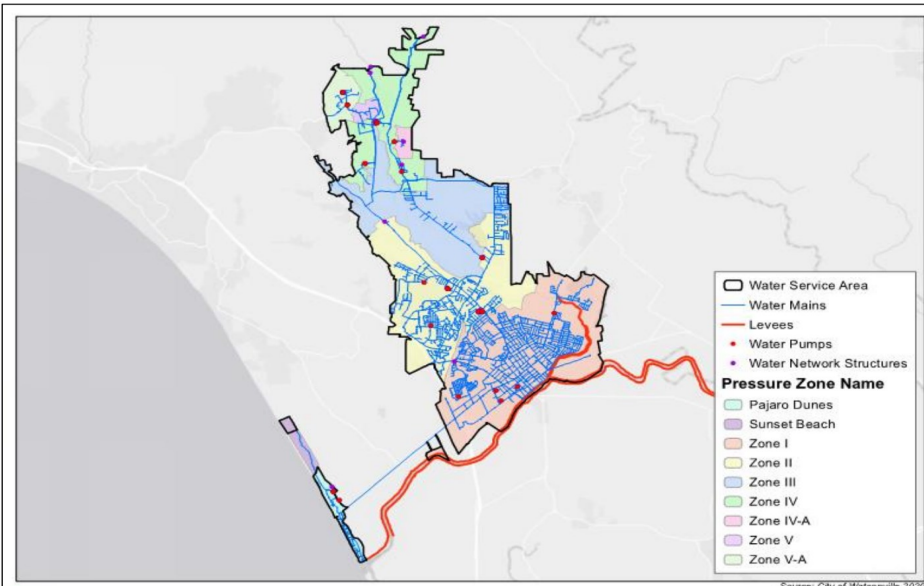
seawater intrusion on coastal lands and is a cost-effective way to maximize local resources before turning to other supplemental projects. The RWF exemplifies municipal and agricultural cooperation to protect water resources.

**Figure 12: Water Treatment Plant**



The Water Division is responsible for one of life's most valuable resources: drinking water. The City provides service to residential, commercial, industrial, and institutional customers assuring delivery of the highest quality of potable water serving Watsonville

**Water Service Area Watsonville, CA**



and parts of unincorporated areas of Santa Cruz County. The City's regional water system consists of 190 miles of pipelines, 14 wells, 8 reservoirs and the Corralitos Filtration Plant treatment plant that delivers clean, safe water to our service population of 66,000 customers. The City's combined rates for water, sewer, and garbage/recycling services are the lowest in the area.

<https://www.cityofwatsonville.org/DocumentCenter/View/1908/City-of-Watsonville-Water-Service-Area-Map-PDF>

**Low Risk****Low Probability****Low Consequence****Emergency Communications**

Santa Cruz Regional 9-1-1 is dedicated to serving as the vital link between the public and public safety organizations through responsiveness and technical excellence while in partnership with its users and employees.

**Santa Cruz Regional 9-1-1**

9-1-1 was established as a national number for notifications of emergencies in late January, 1968 by a Congressional declaration. In 1972, the FCC established that 9-1-1 should be implemented nationwide to provide expedient, professional assistance to citizens in need.

Santa Cruz Regional 9-1-1 Dispatchers must be able to field hundreds of incoming calls each day, determine the best course of action, and forward that information to the appropriate resource. Most people only call 9-1-1 once or twice in their lifetime. The Dispatchers are trained to know what questions to ask that will save valuable time in getting you the assistance you may require, and to gather the necessary information to send the appropriate resources quickly and efficiently.



**Low Risk**

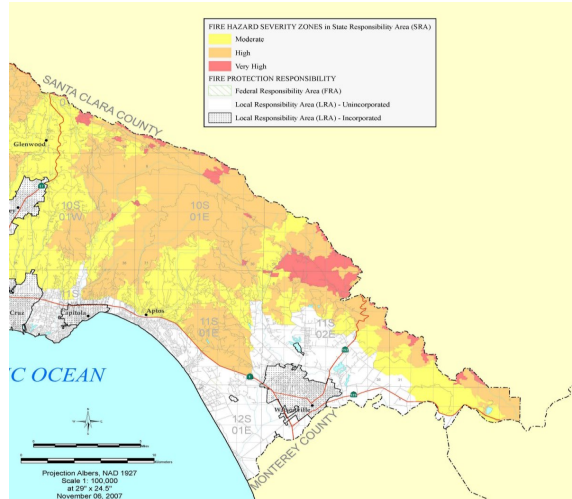
**Low Probability**

**Low Consequence**

**Rural Interface**

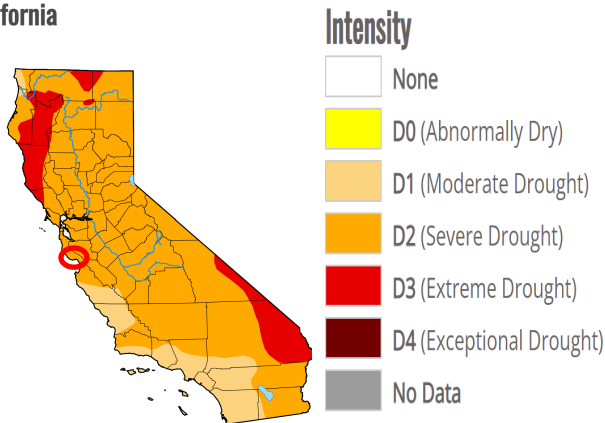
Wild, or undeveloped, lands and any surrounding urban areas (WUI - wildland-urban interface) are most at risk to fires. Potential risks include destruction of land, property, and structures as well as injuries and loss of life. Although rare, deaths and injuries usually occur at the beginning stages of wildfires when sudden flare-ups occur from high wind conditions. In most situations, however, people have the opportunity to evacuate the area and avoid bodily harm. Financial losses related to wildfires include destroyed or damaged houses, private facilities and equipment, loss of commercial timber supplies, and local and State costs for response and recovery.

**California Drought Index**



**California Drought Index**

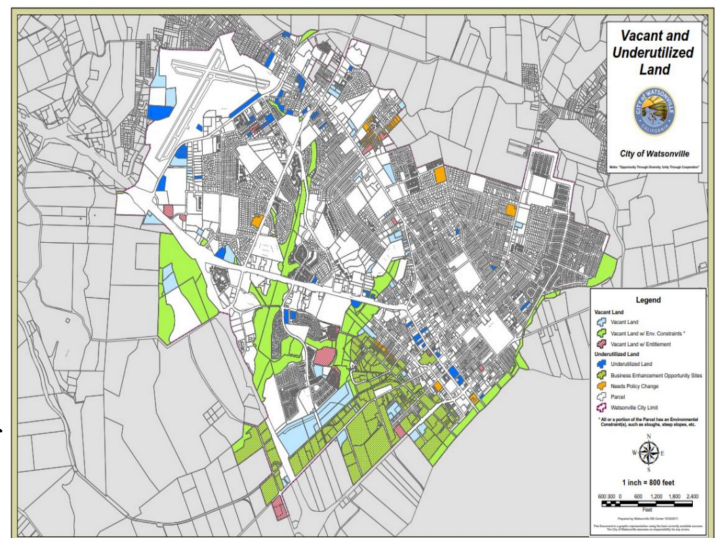
**California**



California continues to experience longer wildfire seasons as a direct result of Climate Change. Extended dryness originating from January is expected to continue into the Spring with little perception leaving most of the state in moderate to extreme drought conditions prior to Summer. These continued dry conditions with above normal temperatures through Spring and can leave fuel moisture levels lower than normal increasing the potential for wildland fire activity.

Scientists estimated that in 1990, 31 million homes were located in “wildland-urban interface” (WUI) areas throughout the United States—areas with houses that are in or near wildland vegetation, which imparts a greater risk of wildfire due to the proximity to flammable vegetation. Twenty years later, in 2010, that number increased by 41 percent to 43 million homes. The increase is fueled by a number of factors, including urban sprawl and the hunt for a lower cost of living.

**Vacant and Underutilized Land**



[https://osfm.fire.ca.gov/media/6768/fhszs\\_map44.pdf](https://osfm.fire.ca.gov/media/6768/fhszs_map44.pdf)



**High Risk****Low Probability****High Consequence**

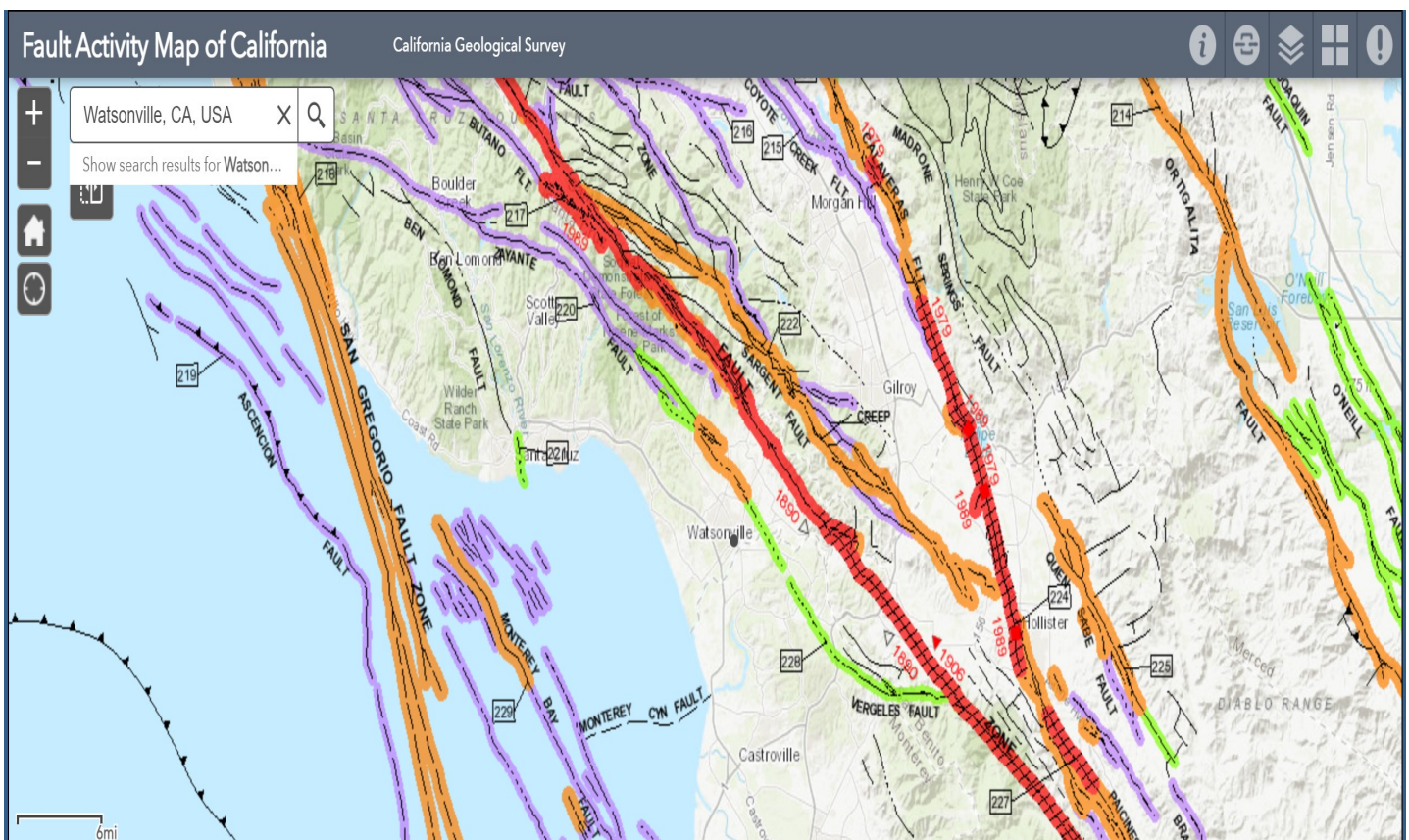
## Fault Activity

### Natural Risk Hazards

Most earthquakes are caused by the sudden release of built-up stress along faults, fractures in the Earth's crust where large blocks of crustal rock move against one another. An earthquake's size can be measured by the amount of energy released by that movement. While scientists can't predict earthquakes, they are developing earthquake early warning systems that can provide seconds to minutes of warning when an earthquake occurs. Scientists can also estimate the likelihood of future quakes and use that information to design safer buildings and roads.

In the United States, large earthquakes pose a substantial threat along the West Coast. A single event can be devastating: for example, the 1994 Northridge, CA, magnitude 6.7 earthquake caused at least \$40 billion in direct damage and killed around sixty people. The city of Watsonville and surrounding area has various active faults in close proximity.

### Fault Activity, Watsonville CA

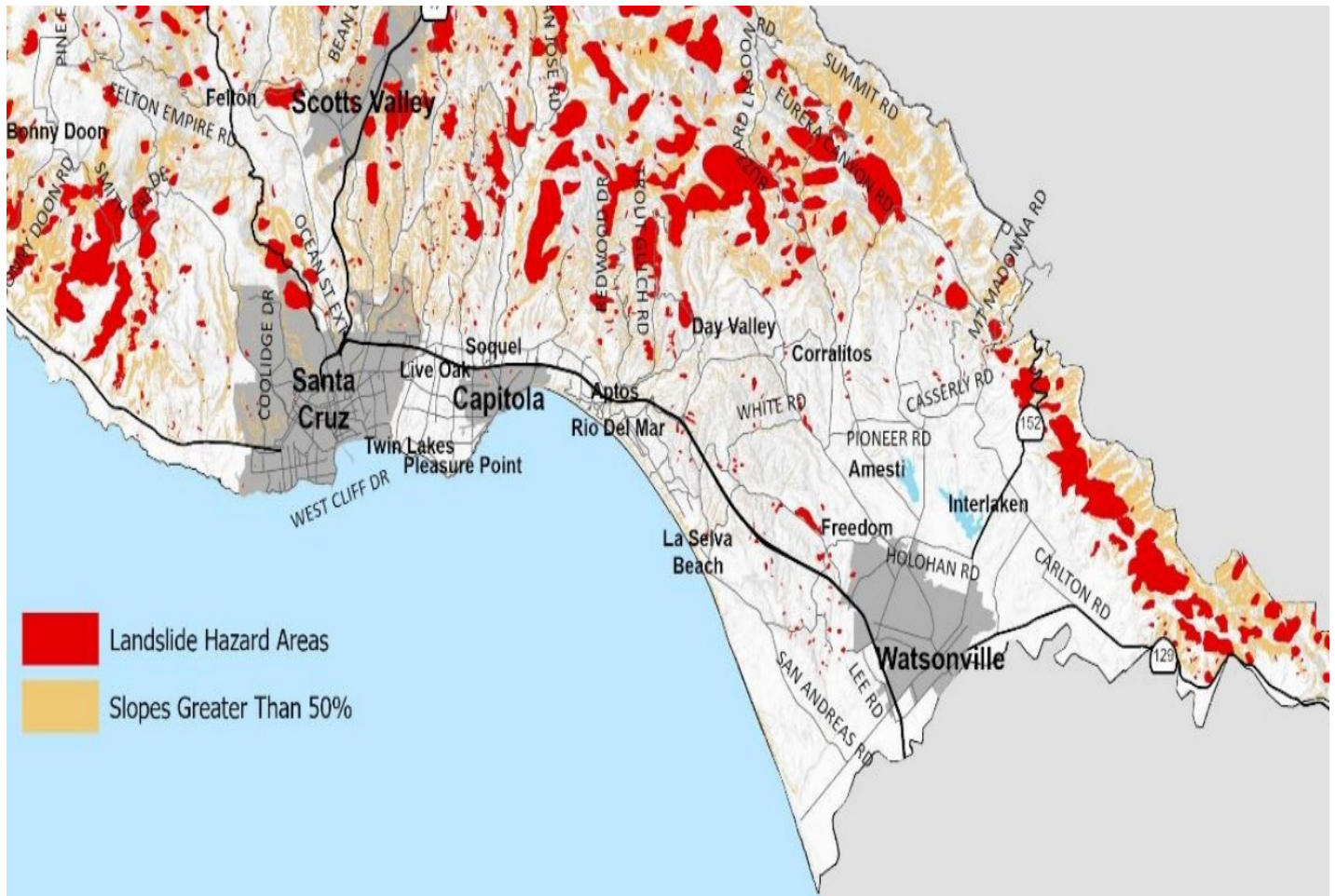




**High Risk****High Probability****High Consequence****Landslides**

Landslides are masses of earth, rock, or debris that move down slopes. Landslides are triggered by one event, but many causes can weaken slopes over time and make them more likely to fail when there is a triggering event. These causes can be both natural and artificial. Landslides often occur in areas with over steepened slopes, weak soils/bedrock, or de-vegetated slopes (whether by human deforestation or natural events such as wildfires). Some of the most damaging landslides are triggered by water, typically from intense short-term rainfall or long-term saturation of the slope. Both natural and human activities (such as irrigation or seepage) can saturate hillsides. Earthquakes and volcanic eruptions also cause damaging landslides.

Landslides are a serious geologic hazard common to almost every State in the United States. It is estimated that in the United States, they cause in excess of \$1 billion in damages and from about 25 to 50 deaths each year. The City of Watsonville and the surrounding area are considered to be in a area prone to potential Landslides, and have had previous events requiring evacuation.

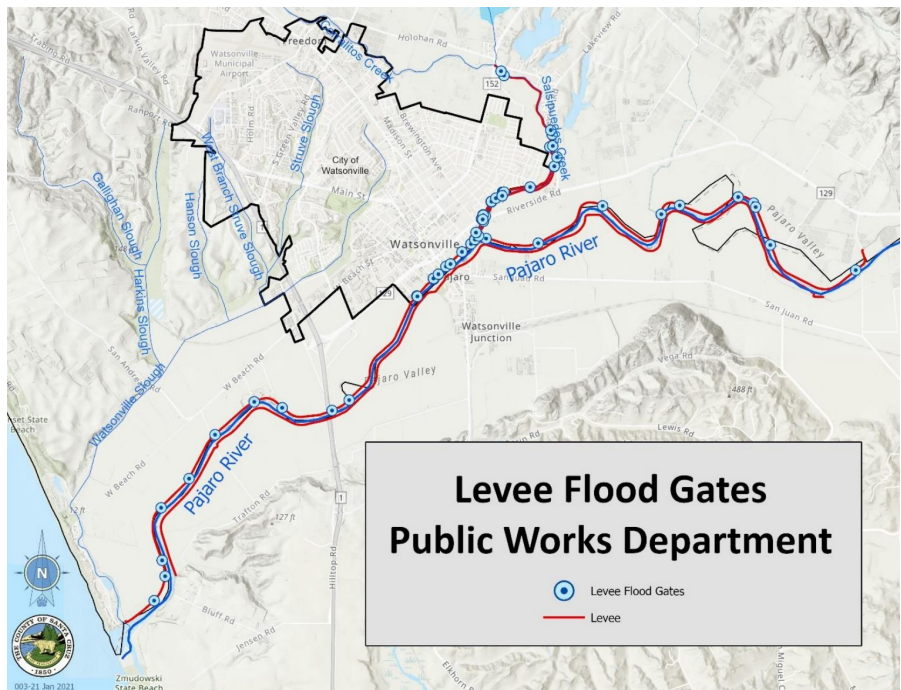
**Watsonville Landslide Areas**

5 Retrieved from: <https://www.sccoplanning.com/Portals/2/County/Planning/policy/LHMP/County%20of%20Santa%20Cruz%20LHMP%202021-2026.pdf>

**High Risk****High Probability****High Consequence****Flooding**

There are numerous areas subject to flooding due to rivers, creeks, or coastal storms. The two main rivers in the County that are subject to flooding are the Pajaro River and the San Lorenzo River. The Pajaro River and its floodplain runs through agricultural lands within the Pajaro Valley and, downstream, through downtown Watsonville.

The City of Watsonville and its boundaries fall within the County of Santa Cruz. County supervisors voted unanimously to include the county in a new Pajaro Regional Flood Management Agency triggered in part by a \$2.8 million commitment from the federal government. The new agency aims to prevent flooding in Watsonville, Pajaro and other areas by renewing the Pajaro River levee to withstand a 100-year flood.

**Levee Flood Gates****Levee Flood Gates  
Public Works Department****The Pajaro River floods its levee banks  
(County of Santa Cruz)**

A levee was built in 1949, but flood water breached it in the 1960s and 1990s. The Pajaro Regional Flood Management Agency is expected to include county authorities from Monterey and Santa Cruz County because the project is on the county line. It also will include representatives from the city of Watsonville, Zone 7 Flood Control District and the Monterey County Water Resources Agency. The new flood management agency will have the authority to construct, manage and maintain infrastructure as well as issue bonds and collect assessments, fees and taxes.

<https://www.sccoplanning.com/Portals/2/County/Planning/policy/LHMP/County%20of%20Santa%20Cruz%20LHMP%202021-2026.pdf>

<https://santacruzlocal.org/2021/01/26/long-awaited-flood-control-project-to-start-in-watsonville-pajaro/>



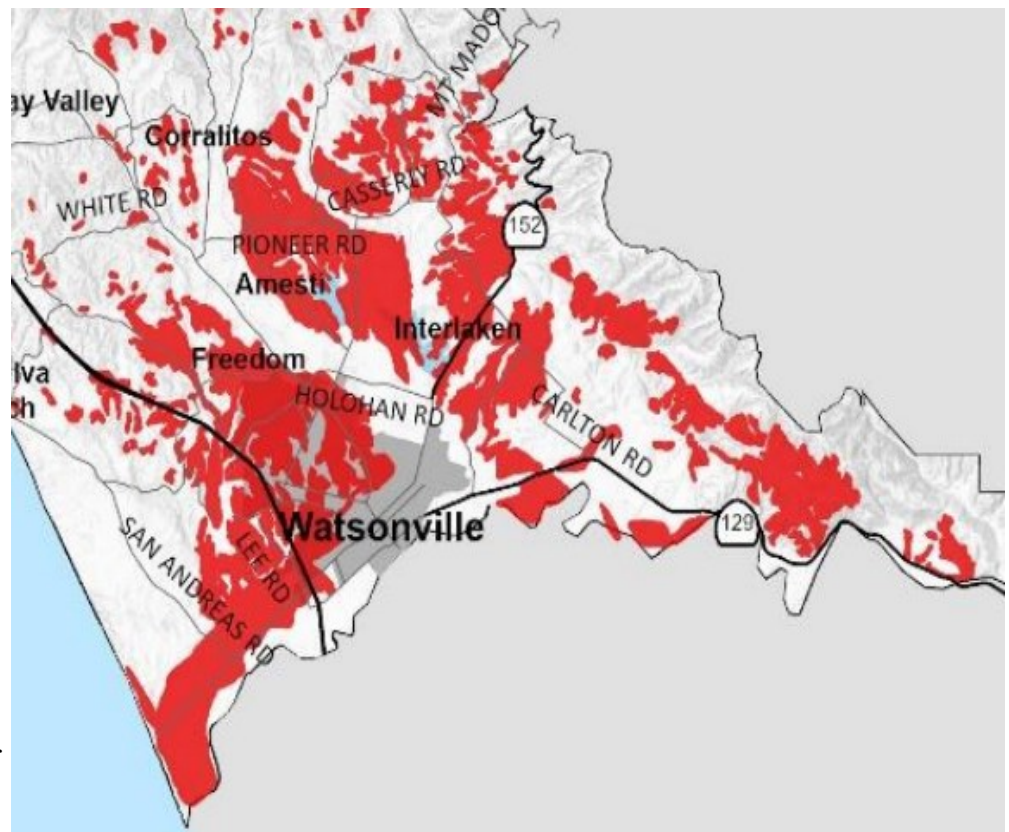


**High Risk****High Probability****High Consequence****Expansive Soils**

Each year in the United States, expansive soils cause billions of dollars in damage to buildings, roads, pipelines, and other structures. This is more damage than that caused by floods, hurricanes, tornadoes, and earthquakes combined (FEMA 1997).

Expansive soils are generally clays or sedimentary rocks derived from clays, which experience volume changes as a result of moisture variation. The hazard that expansive soils create can be significant. Many of the expansive soils do not create large areas of destruction; however, they can disrupt supply lines (i.e. roads, power lines, railways, and bridges) and damage structures. The effects on structures can be dramatic if expansive soils supporting structures are allowed to become too wet or too dry. Lightly loaded one-story or two-story buildings, warehouses, residences, and pavements are especially vulnerable to damage because these structures are less able to suppress the differential heave of the swelling foundation soil than heavy, multistory structures. Patios, driveways, and walkways may also crack and heave as the underlying expansive soils become wet and swell. Expansive soils do not change size quickly; observing damage in real-time can sometimes be difficult. Although the damage might not occur in a matter of minutes, it still has the potential to severely damage structures and roads over a matter of time if not sufficiently mitigated.

It is estimated that Santa Cruz County has thousands of homes built on expansive soils. Typically, the structures that experience problems with expansive soils are older homes, but newer homes (built within the last 15 years) may also experience problems due to expansive soils. The types of problems associated with expansive soils are generally not catastrophic, but the effects result in cracked foundations, cracked walls, cracked concrete slabs, cracks around windows and doors, as well as jammed windows and doors. Cracks to foundations may lead to additional problems if other catastrophic events were to occur (such as earthquakes).

**Landslide Hazard Areas**

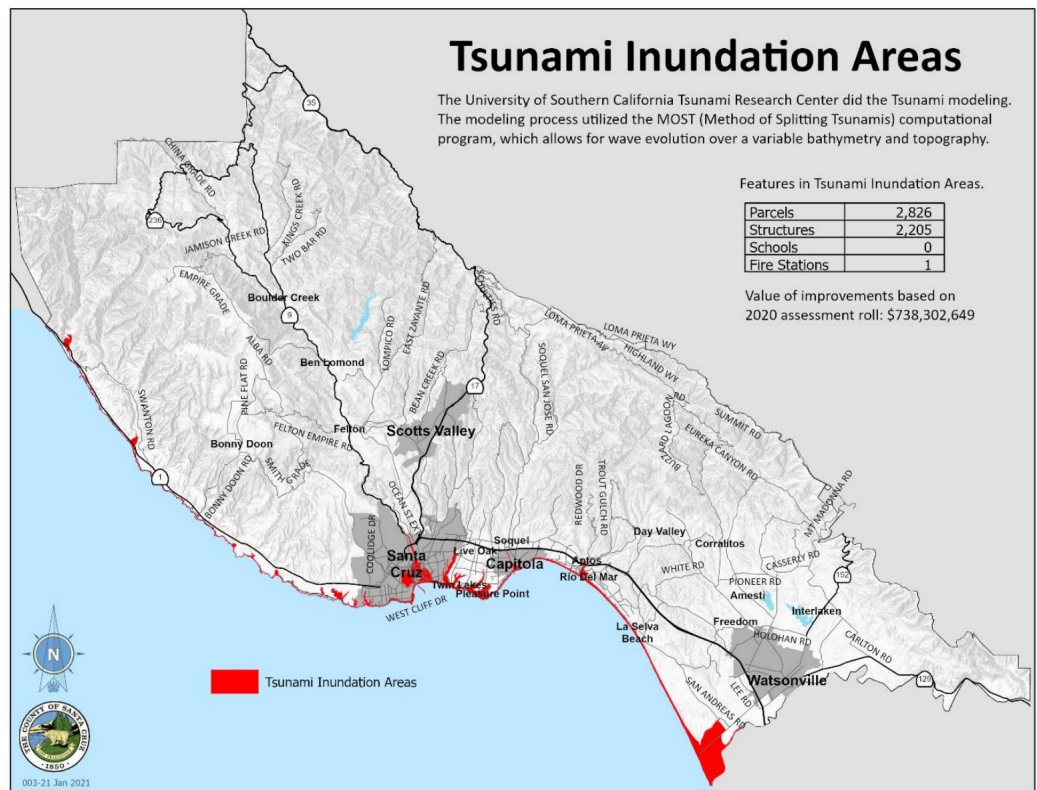
Retrieved from: [https://www.sccoplanning.com/Portals/2/County/Planning/policy/LHMP/County%20of%20Santa%20Cruz%](https://www.sccoplanning.com/Portals/2/County/Planning/policy/LHMP/County%20of%20Santa%20Cruz%20County.pdf)



**Moderate Risk****High Probability****Low Consequence****Tsunami**

A tsunami is one of nature's most powerful and destructive forces. It's a series (more than one) of extremely long waves caused by a large and sudden displacement of the ocean (after an earthquake, for example). A tsunami radiates outward in all directions from its source and can move across entire oceans in less than a day. Tsunamis are produced when movement occurs on faults in the ocean floor, usually during very large earthquakes. Sudden vertical movement of the ocean or lake floor by a fault, landslide or similar movement displaces the overlying water, creating a wave that travels outward from the source. The waves can travel across oceans and maintain enough energy to damage distant shorelines. The hazard posed by tsunamis came to the attention of the world during the 2004 Indian Ocean tsunami that killed as many as 300,000 people who lived more than a thousand miles from the source of the earthquake. An earthquake anywhere in the Pacific Ocean can cause tsunamis around the entire Pacific basin, including offshore of Santa Cruz County. Since the Pacific Rim is highly seismically active, tsunamis are not uncommon, but historically have been only a few meters in height. Significant damage occurred in the Santa Cruz Harbor as a result of a 9.0 earthquake in Japan. While the tsunami caused massive damage and casualties in Japan, the Santa Cruz Harbor suffered approximately \$20 million in damage. However, the historic record is short, and may not reflect the true tsunami hazard to the County. The potential outcome of a tsunami could be more significant damage and loss of life.

Santa Cruz County is located on Monterey Bay, and has several active and potentially active earthquake faults located within or near Santa Cruz County. An earthquake occurring in or near any of the nearby faults could result in local source tsunamis from submarine landsliding in Monterey Bay. Additionally, distinct-source tsunamis from the Cascadia Subduction Zone to the north, or teletsunamis from elsewhere in the Pacific Ocean, are also capable of causing significant destruction.

**Tsunami Inundation Map Santa Cruz County**

**High Risk****High Probability****High Consequence****Communicable and Chronic Disease****Communicable Disease**

The Division of Communicable Disease Control (DCDC) works to promptly identify, prevent and control infectious diseases that pose a threat to public health, including emerging and re-emerging infectious diseases, vaccine-preventable agents, bacterial toxins, bioterrorism, and pandemics.

**Chronic Disease**

Chronic diseases, including heart disease, stroke, cancer, and diabetes, rank among the most common, costly, and preventable of all health problems throughout the United States. According to the CDC, nearly 1 out of every 2 adults has at least 1 chronic illness and 7 out of 10 deaths among Americans each year are due to chronic diseases. Access to high-quality and affordable prevention measures, including screening and appropriate follow-up care, are also essential steps in disease prevention.

**Community Characteristics**

## Community Characteristics for Santa Cruz County, California

Characteristic	County Estimate	Statewide Estimate	US Total Estimate
<b>Population:</b>	273,213	39,512,223	331,996,199
<b>Population density (people per sq. mile):</b>	613.83	253.64	94
<b>Household size:</b>	2.73	2.96	2.52
<b>Percent uninsured:</b>	6.2	8.5	9.2
<b>Percent living in poverty:</b>	14.3	14.3	10.5
<b>Percent population 65yrs and over:</b>	17.28	14.78	16.3
<b>CDC Social Vulnerability Index (SVI):</b>	0.543	N/A	N/A
<b>COVID-19 Community Vulnerability Index (CCVI):</b>	0.71	N/A	N/A
<b>Metropolitan Classification:</b>	Metro	N/A	N/A
<b>NCHS Urban/Rural Classification:</b>	Medium metro	N/A	N/A
<b>Rural-Urban Continuum Code Classification:</b>	Counties in metro areas of 250,000 to 1 million population	N/A	N/A

11 Retrieved from: [https://covid.cdc.gov/covid-data-tracker/#county-view?list\\_select\\_state=California&data-type=Risk&list\\_select\\_county=6087](https://covid.cdc.gov/covid-data-tracker/#county-view?list_select_state=California&data-type=Risk&list_select_county=6087)

**Moderate Risk****High Probability****Low Consequence****Wildfires**

Each year, thousands of acres of wildland and many homes are destroyed by fires that can erupt at any time of the year from a variety of causes, including arson, lightning, and debris burning. Adding to the fire hazard is the growing number of people living in new communities built in areas that were once wildland. This growth places even greater pressure on the state's wildland firefighters. As a result of this growth, fire protection becomes everyone's responsibility. Drought conditions and other natural disasters increase the probability of wildfires by producing fuel in both urban and rural settings.

Adding to the danger is the frequency of large fires and wildfire damage which has increased in the U.S. since the 1980s, coinciding with increased drought and temperatures, particularly in the Western U.S. In parts of both the Eastern and Western U.S., fire seasons have increased in length in recent decades due to warming temperatures and drier conditions. Human activities provide ignition sources year-round, not just during the dry season or periods of intense lightning, which has expanded the fire season far beyond its historical length. U.S. federal agencies spent a record \$2.9 billion on wildfire suppression activities during a particularly severe fire season in 2017.

**Santa Cruz County Wildfires**

<https://patch.com/california/watsonville/22-fires-reported-regionally-past-day-latest-acreage-updates>



**Moderate Risk**

**High Probability**

**Low Consequence**

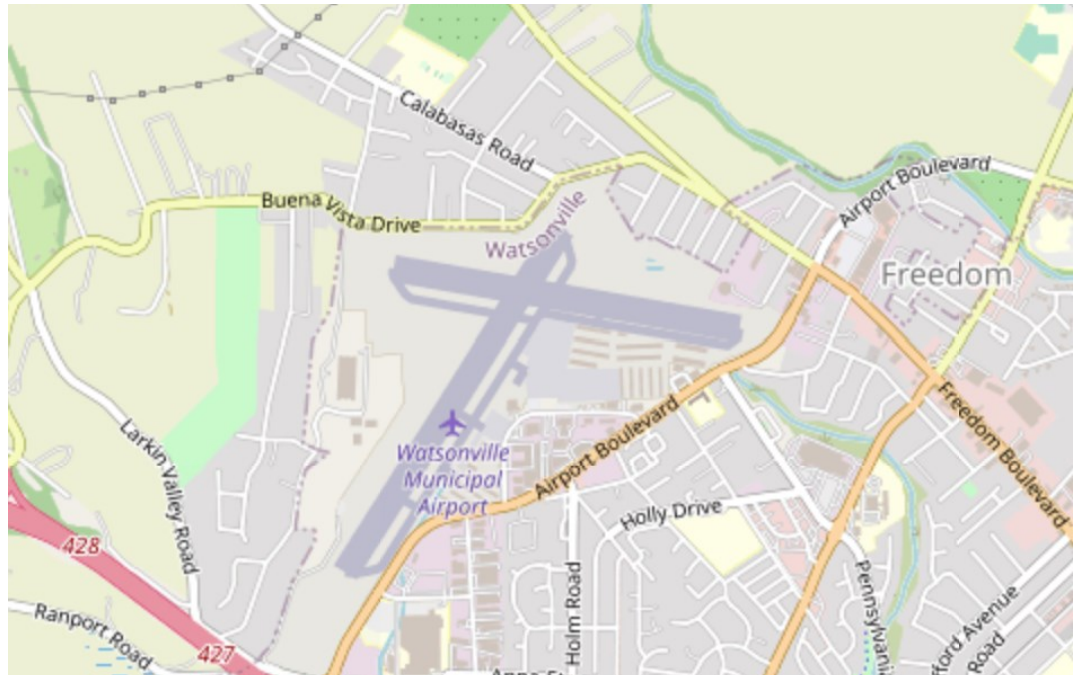
**Transportation Network**

**Human-made Risk Hazards**

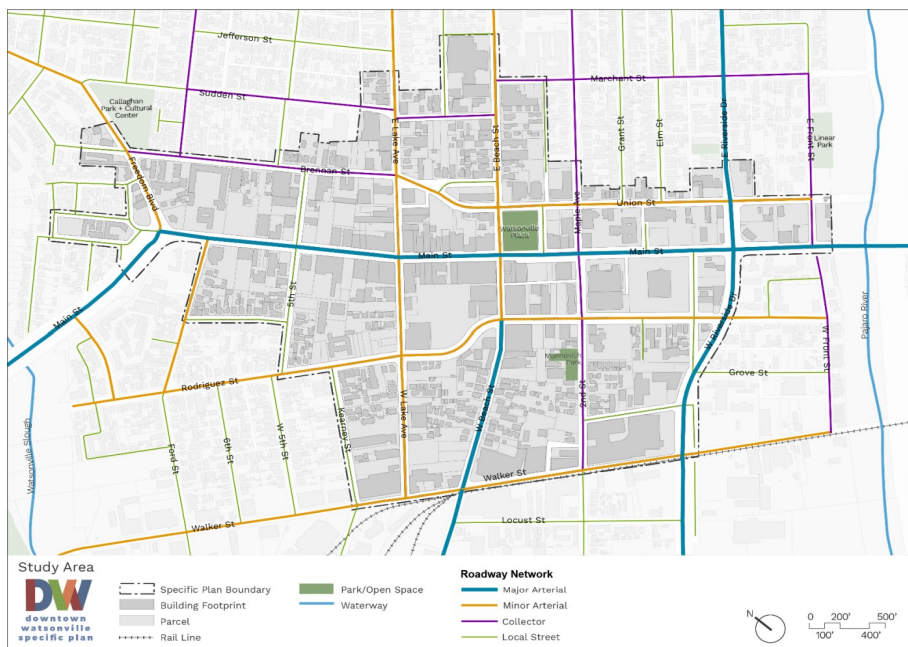
**Aviation**

The Municipal Airport, owned by the City of Watsonville, is a self sustaining "enterprise operation" with a staff of nine full time employees. The Airport is home to 333 aircraft and is used extensively by various businesses and specifically the agri-business community. The four runways (2-20 and 9-27) accommodate over 55,000 operations per year including an estimated 5,000 instrument approaches.

**Critical Infrastructure and Facilities**



**Critical Infrastructure and Facilities**



**Roadway**

Two state highways pass through the City of Watsonville on surface streets, Highway 152 and Highway 129. These highways bring high volumes of automobile and freight traffic through the City. There has been interest in rerouting Highway 152 away from the center of Watsonville and relinquishing the existing Highway 152 alignment to the City.



**Low Risk**

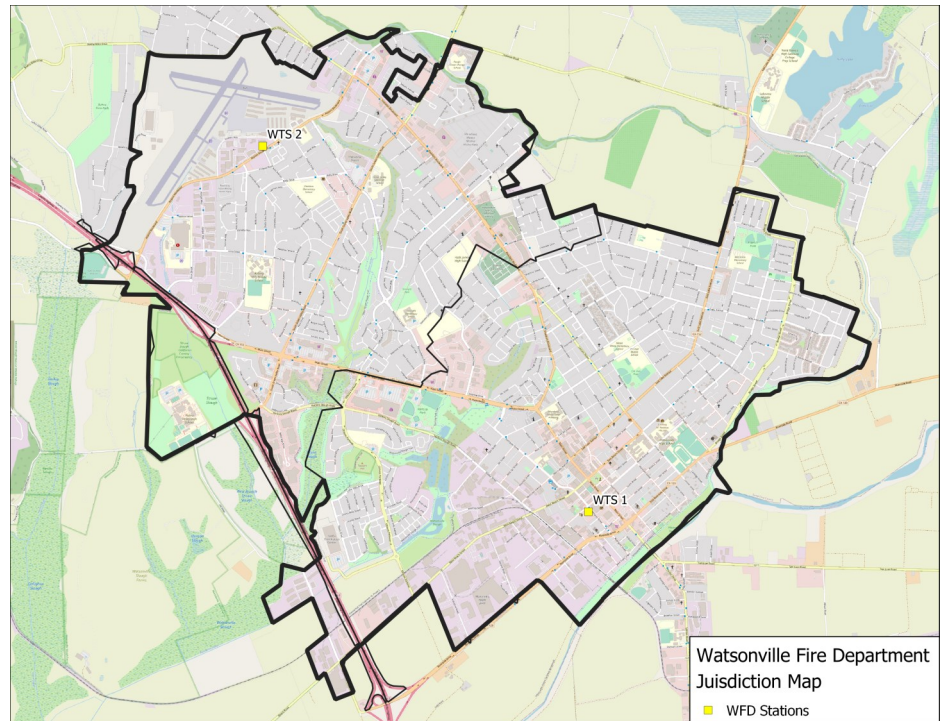
**Low Probability**

**Low Consequence**

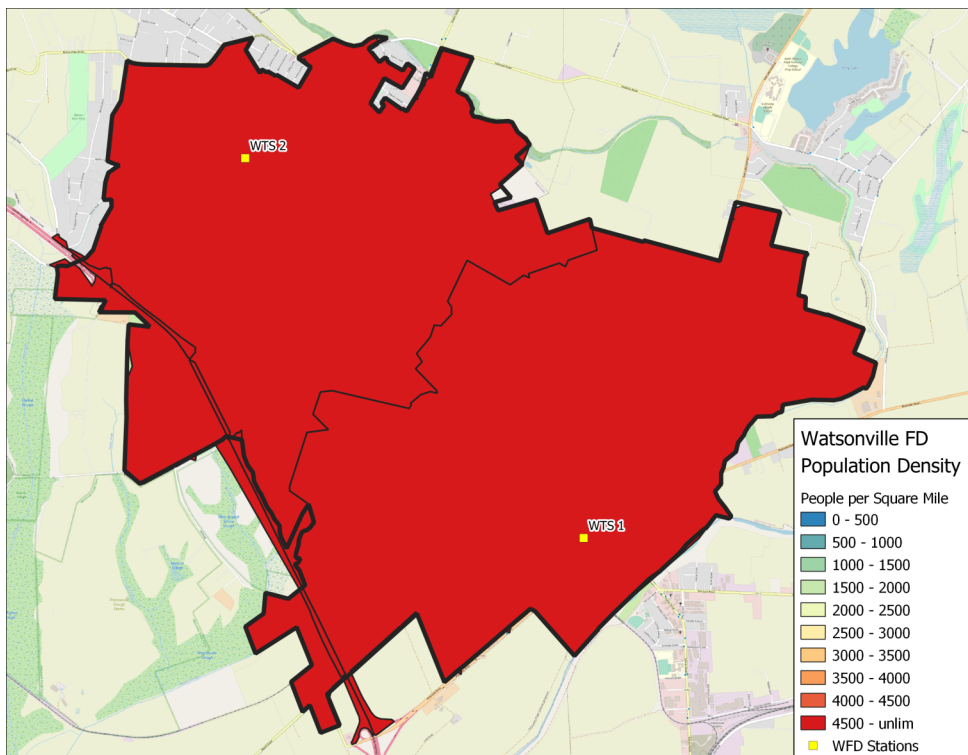
**Population Growth**

**Critical Infrastructure and Facilities**

The available data set included five reporting periods of data, representing FY 2019 - 2021. From FY 2019 to FY 2021, calls for WFD services increased from 6,250 to 6,867, with an average growth rate of 4.9% per year.



**Critical Infrastructure and Facilities**



The majority of census block areas in the District have population densities of over 4500 people per square mile, a critical factor to watch as population numbers continue to

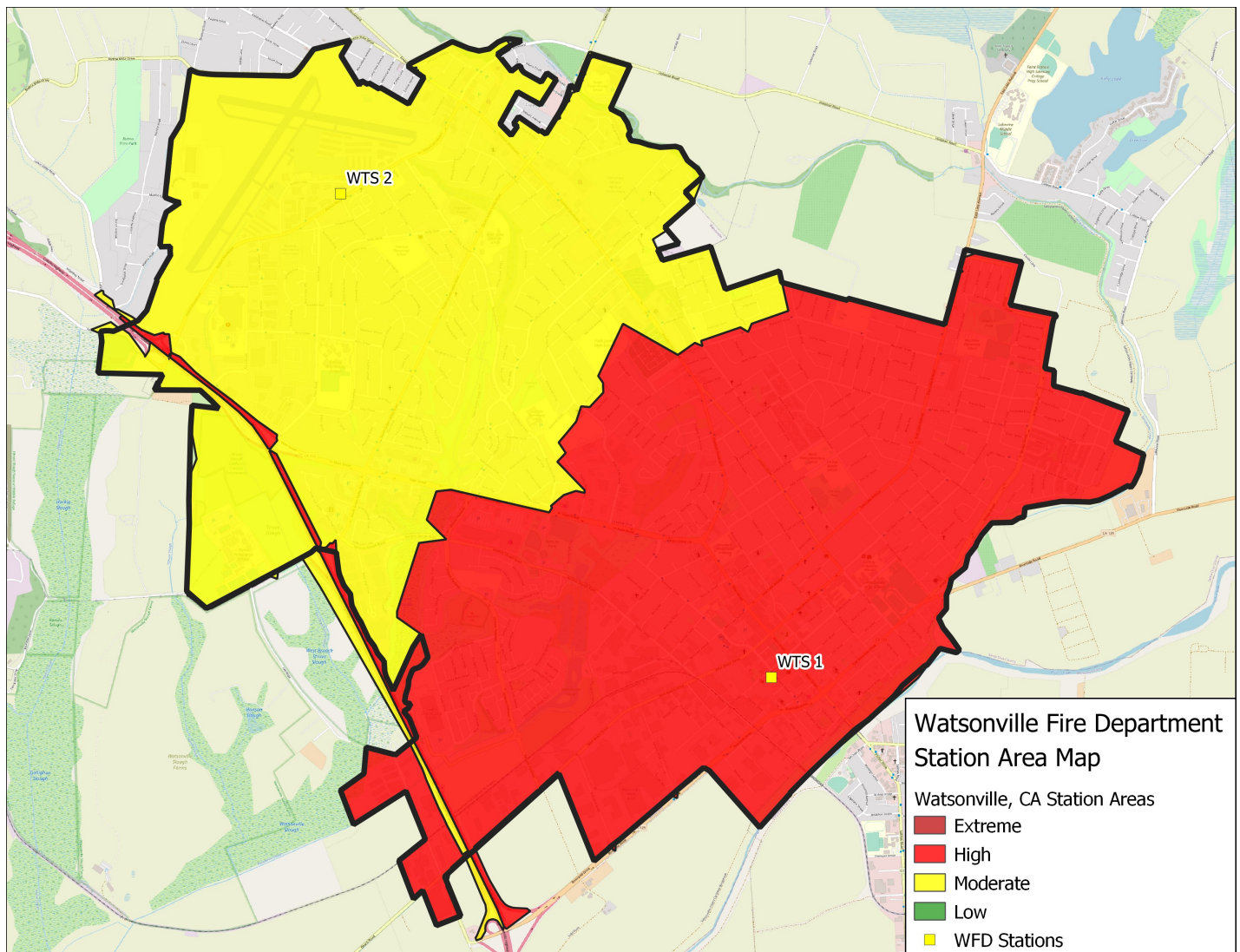
## First Due Station Area Summary Risk Rating

Viewing risk at multiple levels is a best practice within the fire service. Much of the risk in this section is viewed at a jurisdictional level and then moving to first due districts as the main lens, turning to the most granular view; individual risk ratings for buildings located within a community.

Below is the First due zone ratings for WFD, indicating that Station 1 is considered high risk, and Station 2 considered moderate for the following factors:

- Population density
- Median household income
- Unemployment rate
- Square miles
- Median age
- Percentage of home greater than 50 years old
- Community Demand
- Call concurrency rate

**Watsonville Fire Department Station Area Map**



**Risk Scoring by First Due Station**

Once all first due stations were assigned scores for all three variables—average census variables score or “Homogenized Risk (R)” score, “Community Demand (D)” score, and “Call Concurrency (C)” score, the values were placed into a formula to yield a final risk score, as follows:

**Risk Score Formulas**

Risk Level	Community Demand (D)		Call Concurrency (C)		Homogenized Risk (R)		Total Risk Score $\sqrt{\frac{[(CD)^2 + (CR)^2 + (DR)^2]}{2}}$
	Value	Scale (Average Calls per Period)	Value	Scale (%)	Value	Scale (Average Score)	
Maximum	10	> 4,049	10	> 26.99	10	10	≥ 99.5
High	7 to 9	> 2,699 to 4,049	7 to 9	> 17.99 to 26.99	7 to 9	7 to < 10	44.5 to < 99.5
Moderate	4 to 6	> 1,349 to 2,699	4 to 6	> 8.99 to 17.99	4 to 6	4 to < 7	12 to < 44.5
Low	1 to 3	≤ 1,349	1 to 3	≤ 8.99	1 to 3	< 4	< 12

**Risk Score Formula Variable Census Factors**

First Due Station	Component Risk Scores for Census Variables							2018-19 to 2020-21 Call Data				Final Scoring		
	Population Density	Square Miles	Median Age of Residents	Median Household Income	Unemployment Rate	Percentage of Homes > 50 Years Old	Census Average Score	Total Number of Calls	Average Number of Calls per Period	Demand Risk Score	Call Concurrency Rate	Concurrency Risk Score	Final Risk Score	Final Risk Level
1	10	5	4	5	5	10	6.50	10,827	3,609.0	9	14.2	5	57.02	High
2	10	5	4	4	6	10	6.50	6,335	2,111.7	5	8.6	3	28.82	Moderate



## Critical Tasking Methodology for Fire, EMS, HazMat and Technical Rescue

The department utilizes annual risk assessment and critical tasking review meetings for the fire, EMS, hazardous materials, and technical rescue programs to determine and document categories and classes of risks throughout the district.

### Core Competency 2C.4

A critical task analysis of each risk category and risk class has been conducted to determine first due and effective response force capabilities and a process is in place to validate and document the results.

These meetings are also used to assess whether the current effective response force (ERF) can perform the critical tasking necessary to mitigate the hazards associated with each hazard and risk level. The department uses after action reviews for structure fires, technical rescues, and hazardous material incidents to evaluate the effectiveness of first due and initial assignments in achieving incident goals.

The EMS program evaluates hands on training activities for critical tasking, and monitors metrics such as return of spontaneous circulation (ROSC) to assess the effectiveness of initial assignments for cardiac arrest incidents. Changes to critical tasking and ERF's are documented in annual updates to the standards of coverage. Dispatch recommendations are modified to reflect the ERF's identified during the critical tasking reviews.





**High Risk**

**High Probability**

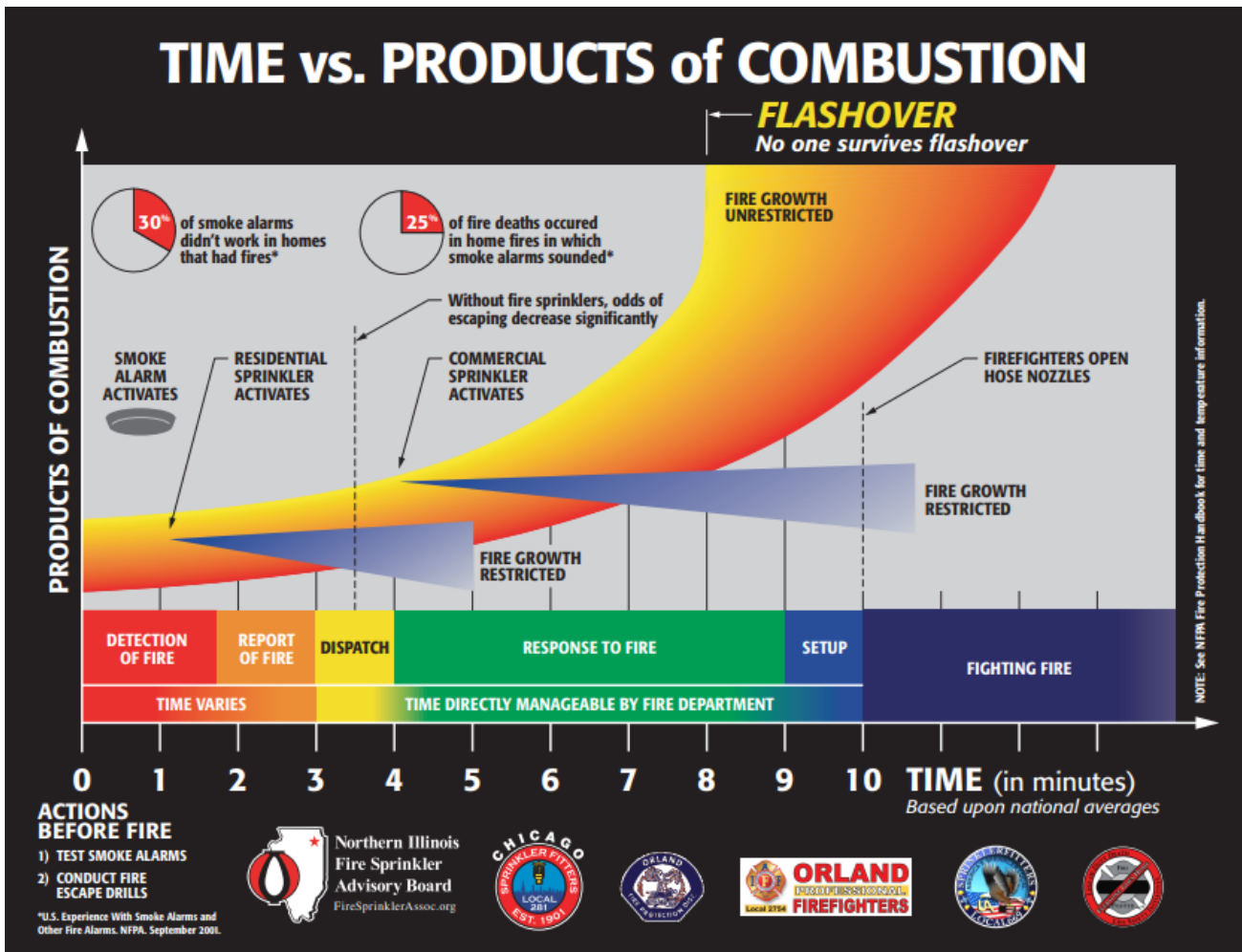
**High Consequence**

# Structure Fires

Fire suppression is one of the most visible response services that a fire department provides, and at the very core of our existence. As evidenced by the flashover curve and exacerbated by modern furnishings and construction methods, fires are an extremely time sensitive emergency.

The agency has classified the risk of fires into four levels of severity: low, moderate, high, maximum. These rankings would be typically applied to individual occupancies and to areas of like type buildings, however at this time the department did not have sufficient data to complete an occupancy level analyses.

Recent studies by Underwriter’s Laboratories (UL) have found that in compartment fires such as structure fires, flashover occurs within four minutes in modern fire environment. In addition, the UL research has identified an updated time temperature curve due to fires being ventilation-controlled rather than fuel-controlled as represented in the traditional time temperature curve. While this ventilation-controlled environment continues to provide a high risk to unprotected occupants to smoke and high heat, it does provide some advantage to property conservation efforts, as water may be applied to the fire prior to ventilation and the subsequent flashover.



### Call Data WFD Hour of Day

Hour of Day	Number of Calls	Average Calls per Day	Call Percentage
0	50	0.14	2.3
1	31	0.08	1.4
2	49	0.13	2.3
3	32	0.09	1.5
4	49	0.13	2.3
5	41	0.11	1.9
6	54	0.15	2.5
7	86	0.24	4.0
8	95	0.26	4.4
9	110	0.30	5.1
10	114	0.31	5.3
11	108	0.30	5.0
12	83	0.23	3.9
13	142	0.39	6.6
14	133	0.36	6.2
15	108	0.30	5.0
16	137	0.38	6.4
17	110	0.30	5.1
18	100	0.27	4.7
19	142	0.39	6.6
20	97	0.27	4.5
21	114	0.31	5.3
22	89	0.24	4.1
23	72	0.20	3.4
<b>Total</b>	<b>2,146</b>	<b>5.9</b>	<b>100.0</b>

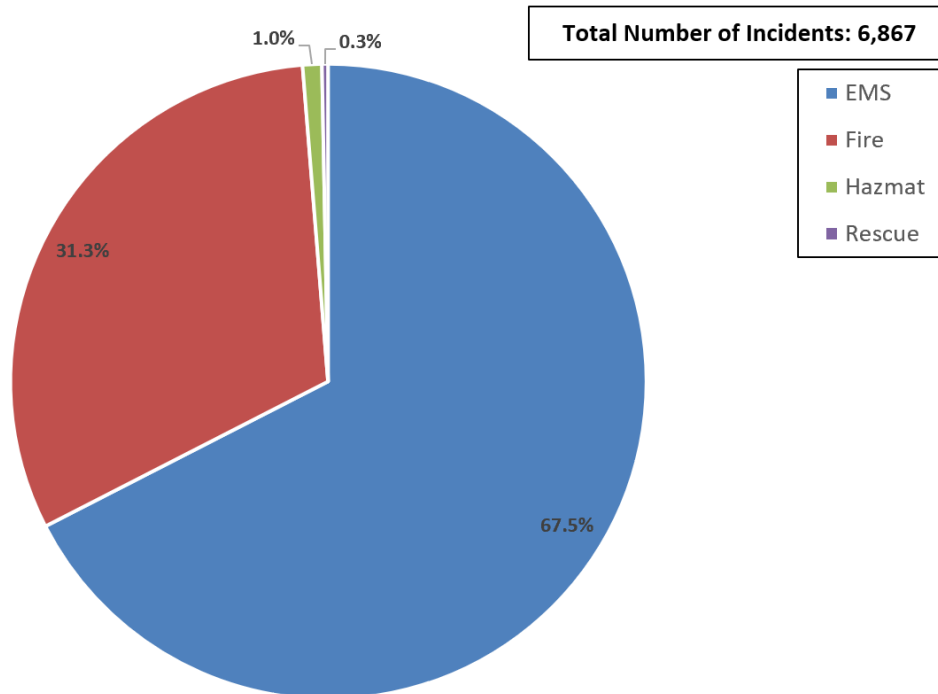
### Call Data WFD Day of Week

Day of Week	Number of Calls	Average Calls per Day	Call Percentage
Sunday	278	5.3	13.0
Monday	305	5.9	14.2
Tuesday	335	6.4	15.6
Wednesday <sup>1</sup>	332	6.3	15.5
Thursday	319	6.1	14.9
Friday	307	5.9	14.3
Saturday	270	5.2	12.6
<b>Total</b>	<b>2,146</b>	<b>5.9</b>	<b>100.0</b>

### Call Data WFD Monthly

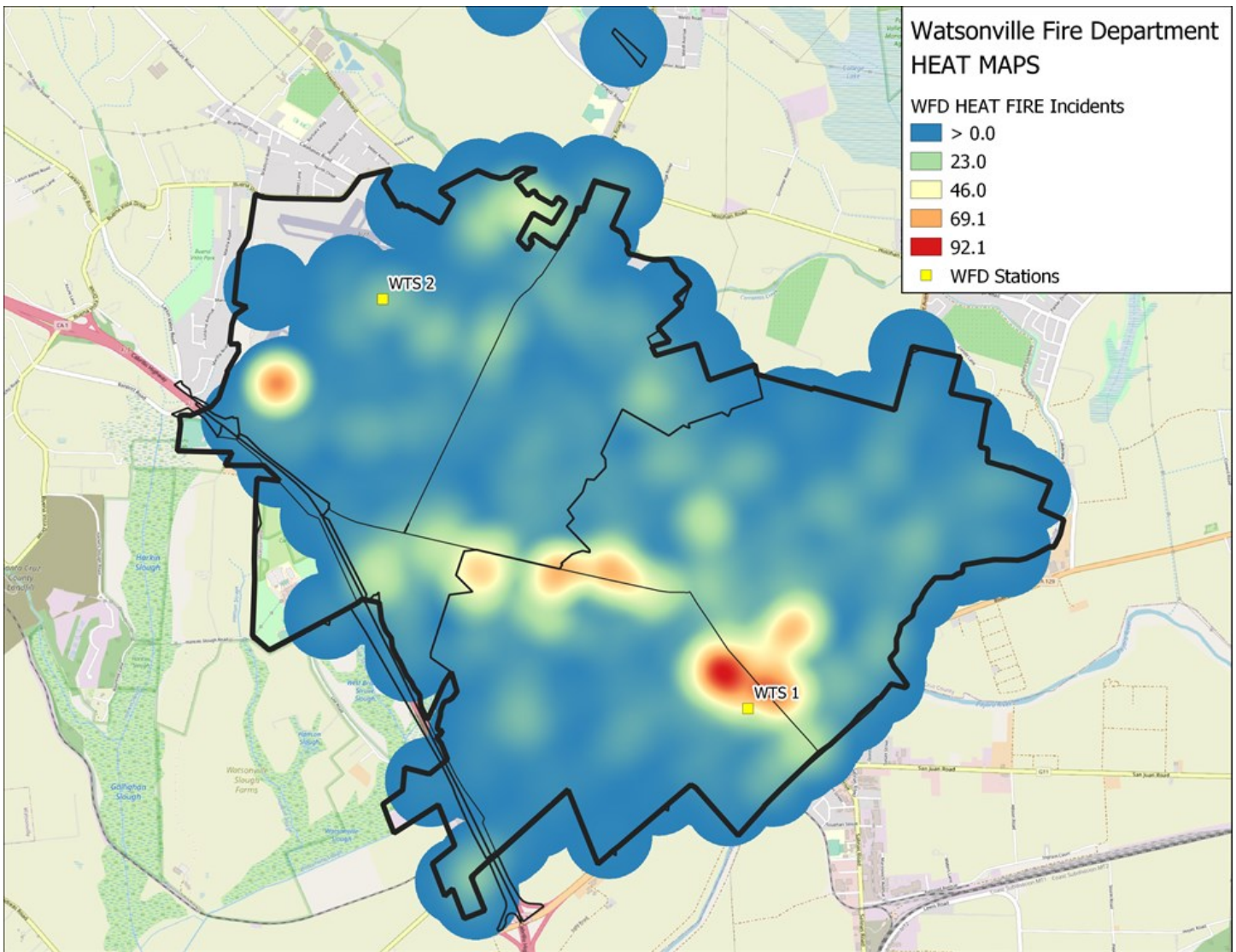
Month	Number of Calls	Average Calls per Day	Call Percentage
January	208	6.7	9.7
February	159	5.7	7.4
March	139	4.5	6.5
April	153	5.1	7.1
May	177	5.7	8.2
June	183	6.1	8.5
July	154	5.0	7.2
August	165	5.3	7.7
September	165	5.5	7.7
October	202	6.5	9.4
November	218	7.3	10.2
December	223	7.2	10.4
<b>Total</b>	<b>2,146</b>	<b>5.9</b>	<b>100.0</b>

### Watsonville Fire Department Incident Breakdown



The distribution and concentration of fire related incidents are provided in the heat map presented below.

### Heat Map for Fire Service Calls



## Critical Tasking and Effective Response Forces for Fire Incidents

**General Description** - The agency approaches response to fires in a tiered fashion. Below is the description of what a low, moderate, high, and maximum risk is, with corresponding critical tasking in the Effective Response Force for Fires table.

**Low** – This type of fire is a low risk/value incident such as a dumpster, extinguished fire, an illegal burn, and other investigations to lower level incidents. It requires a single unit with pumping capability and three personnel effectively respond and mitigate.

**Moderate** – This type of fire is typically a passenger vehicle fire typically responded to with a one engine and a total of three personnel.

**High** – Fire calls within this level of risk include unconfirmed structure fires, large vehicle fires, and wildland fires. This type of response calls for four apparatus; typically two engines, one ladder truck, and a Battalion Chief for a total of 11 personnel.

**Maximum** – Fire calls within this level of risk includes confirmed structure fire requiring additional personnel to accomplish multiple simultaneous tasks for high acuity incidents. This type of response calls for seven apparatus; typically five engines, one ladder truck, and a Battalion Chief for a total of 20 personnel.

Effective Response Force for Fire Incidents				
Task	Maximum	High	Moderate	Low
Command	1	1	1	1
Safety	1		1*	1*
Investigation/			1	1
Pump Operation	2	1	1	1
Fire Attack 1	2	2		
Fire Attack 2				
Water Supply	2	1		
Search / Forcible Entry	3			
Ventilation	3			
Back-up Line	2	2		
On-Deck / RIC	3	3		
Medical Standby / Rehab	1	1		
ERF Personnel	20	11	3	3
ERF Vehicles	7	4	1	1

\* For low or moderate risk incidents, the command and safety tasks may be combined in one position.



**Moderate Risk**

**High Probability**

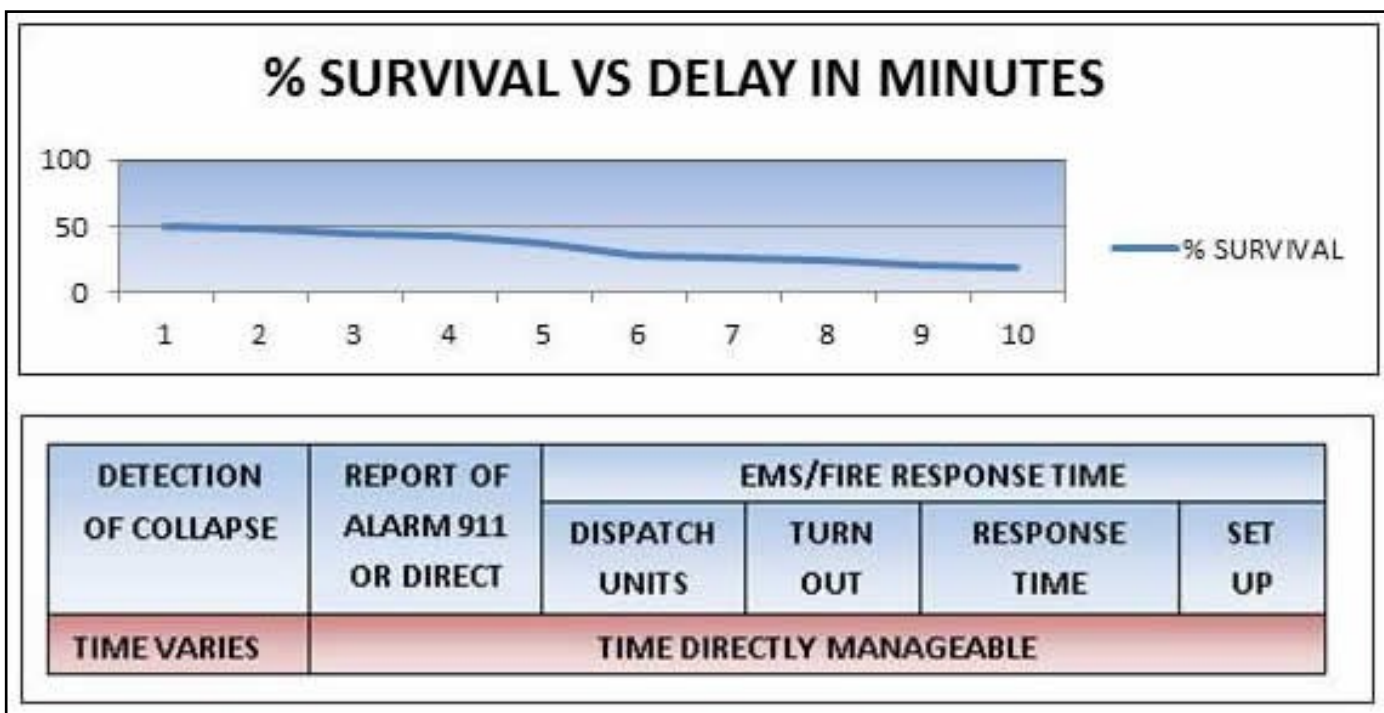
**Low Consequence**

## Emergency Medical Services

Time is a critical element when responding to true medical emergencies, with the chance of survival for a cardiac arrest dropping precipitously with every passing minute.

The potential survival rate for cardiac arrests, which is one of the most serious medical emergencies an individual can experience, is only about 50% by the time a fire apparatus leaves the station, making prevention efforts a crucial piece of achieving positive patient outcomes.

When evaluating the steady rise in emergency medical calls over the last few decades, it is readily apparent that the workload demand of these calls will continue to rise. The agency is actively working with community partners to reduce or eliminate many of the lower risk/severity calls for help by channeling the patient into a more appropriate method of care.



**Call Data WFD Hour of Day**

Hour of Day	Number of Calls	Average Calls per Day	Call Percentage
0	123	0.34	2.7
1	98	0.27	2.1
2	94	0.26	2.0
3	86	0.24	1.9
4	64	0.18	1.4
5	87	0.24	1.9
6	119	0.33	2.6
7	151	0.41	3.3
8	176	0.48	3.8
9	216	0.59	4.7
10	247	0.68	5.3
11	263	0.72	5.7
12	270	0.74	5.8
13	257	0.70	5.5
14	292	0.80	6.3
15	298	0.82	6.4
16	268	0.73	5.8
17	292	0.80	6.3
18	292	0.80	6.3
19	222	0.61	4.8
20	227	0.62	4.9
21	191	0.52	4.1
22	154	0.42	3.3
23	146	0.40	3.2
<b>Total</b>	<b>4,633</b>	<b>12.7</b>	<b>100.0</b>

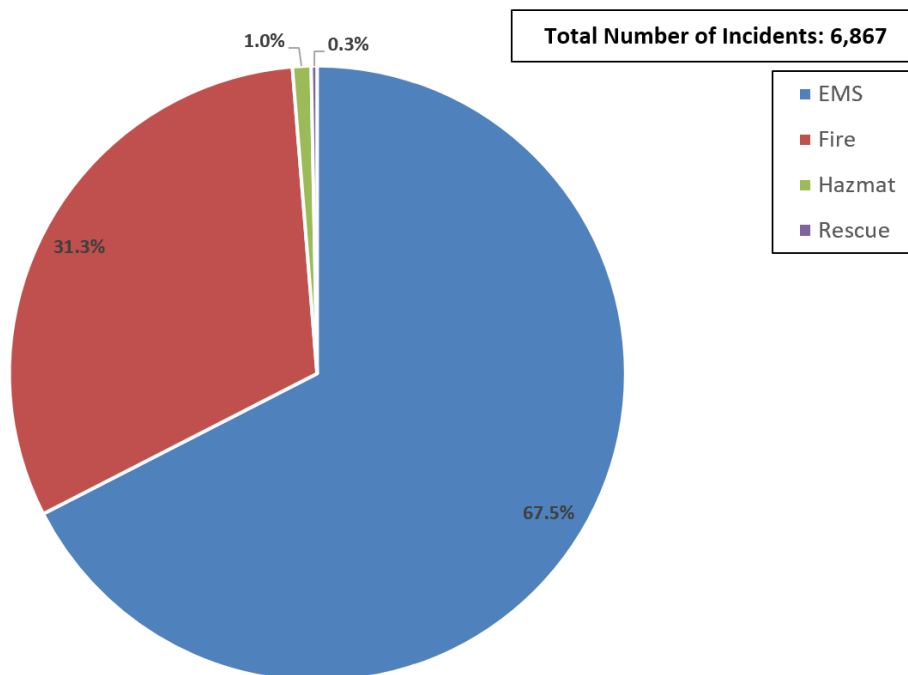
**Call Data WFD Day of Week**

Day of Week	Number of Calls	Average Calls per Day	Call Percentage
Sunday	610	11.7	13.2
Monday	684	13.2	14.8
Tuesday	608	11.7	13.1
Wednesday	705	13.3	15.2
Thursday	651	12.5	14.1
Friday	739	14.2	16.0
Saturday	636	12.2	13.7
<b>Total</b>	<b>4,633</b>	<b>12.7</b>	<b>100.0</b>

**Call Data WFD Monthly**

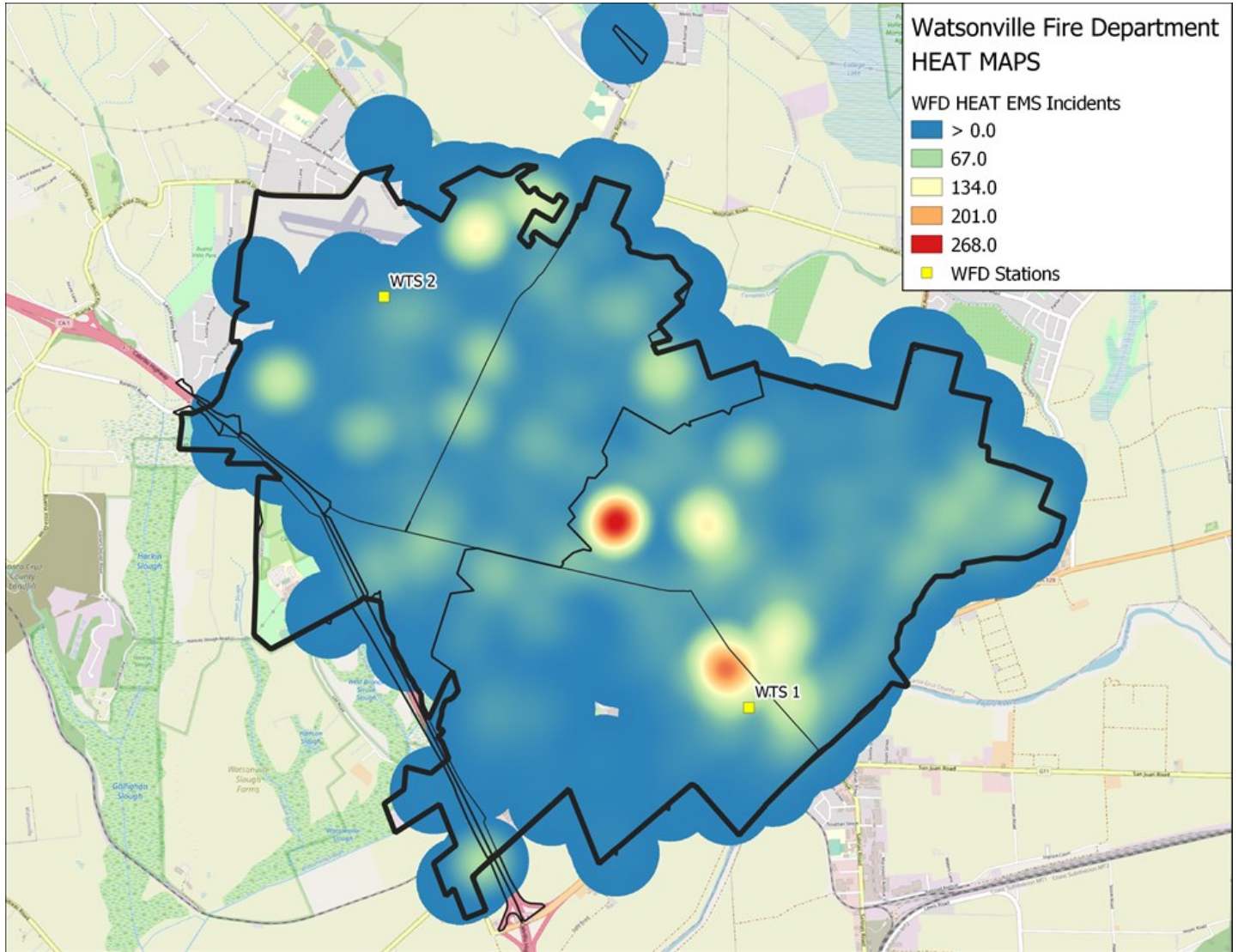
Month	Number of Calls	Average Calls per Day	Call Percentage
January	407	13.1	8.8
February	334	11.9	7.2
March	350	11.3	7.6
April	345	11.5	7.4
May	388	12.5	8.4
June	430	14.3	9.3
July	391	12.6	8.4
August	391	12.6	8.4
September	382	12.7	8.2
October	419	13.5	9.0
November	375	12.5	8.1
December	421	13.6	9.1
<b>Total</b>	<b>4,633</b>	<b>12.7</b>	<b>100.0</b>

**Watsonville Fire Department Incident Breakdown**



The distribution and concentration of EMS related incidents are provided in the heat map presented below. The greatest density of EMS incidents occur in Station 1s area.

Heat Map for EMS Calls



### Critical Tasking and Effective Response Forces for EMS Incidents

**General Description** - The agency approaches an emergency medical incident in a tiered fashion. Below is the description of what a low, moderate, high, and maximum response is, with corresponding critical tasking in the Effective Response Force for EMS table. Risk classifications were determined from the Medical Priority Dispatch System (MPDS) call determinants within the internationally researched call triage process.

**Low – Incidents within the Alpha level of risk.** This type of medical incident constitutes the lowest acuity incidents and could be a non-emergency response and consists of an Engine with three personnel.

**Moderate – Incidents within the Bravo or Charlie level of risk.** This type of medical incident includes breathing problems, chest pain discomfort, seizures, or diabetic problems without the lost of pulse or respirations. This would also include motor vehicle crashes without major trauma. Typically this response is handled by a single Engine with three personnel.

**High – Incidents within the Delta level of risk.** This level of medical emergency includes cardiac chest pain and respiratory distress. Three units respond to this type of incident to accomplish the critical tasks needed in a timely manner. Typical response is with an Engine with three personnel.

**Maximum – Incidents within the Echo level of risk.** This level of medical emergency includes cardiac or respiratory arrest. Typically, this level of response for medical incidents requires an Engine with three personnel.

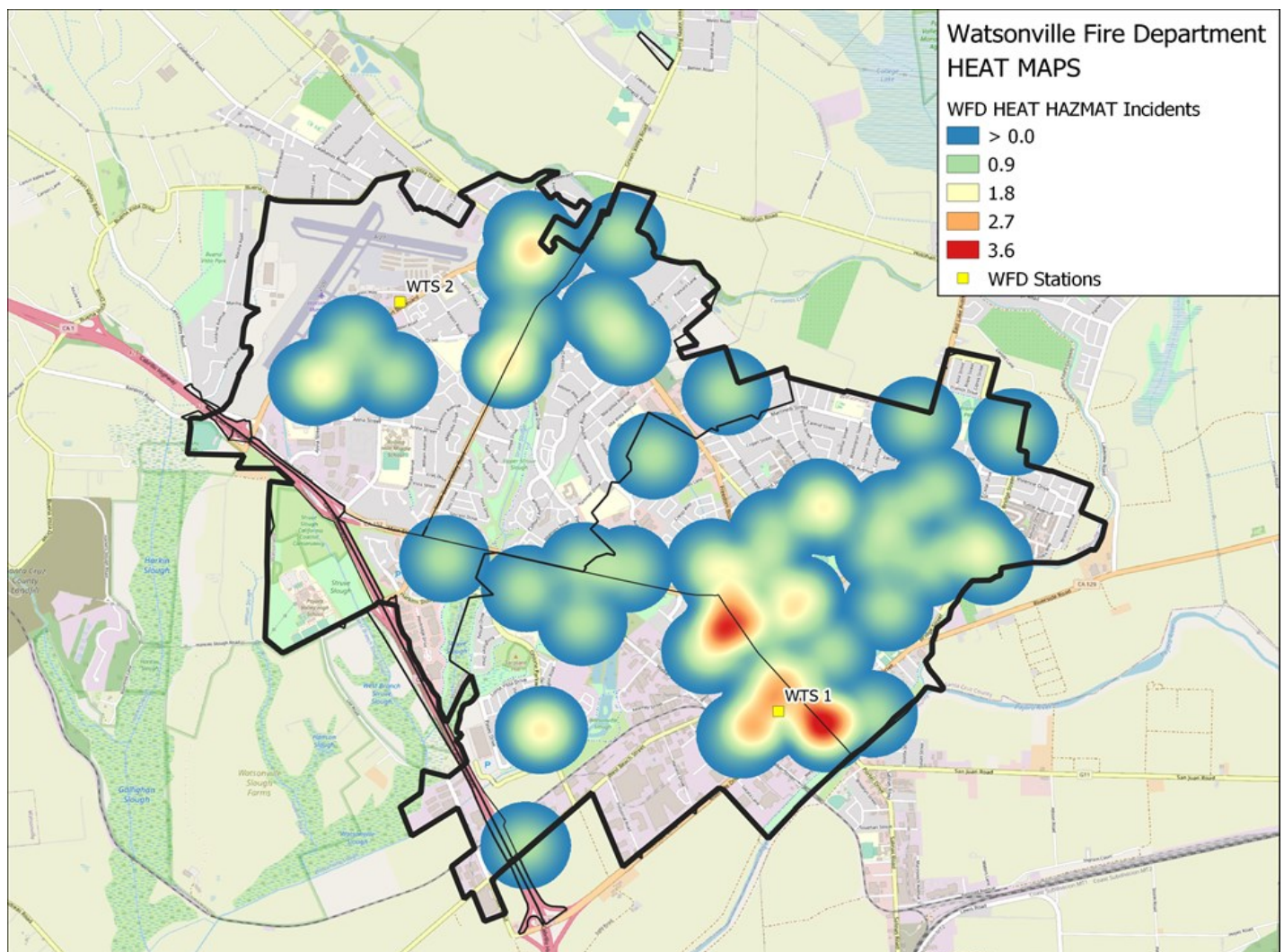
Effective Response Force for EMS Incidents				
Task	Maximum—E	High—D	Moderate—B/C	Low—A
Command Safety				
Patient Information	1	1	1	1
Patient Assessment/Treatment	2	2	2	2
Patient Packaging for Transport				
ERF Personnel	3	3	3	3
ERF Vehicles	1	1	1	1

However, it is noted that for vehicle accidents, that may be categorized at multiple risk severity levels, the department has a critical tasking of eight personnel by response one engine, one truck, and a battalion chief.



**Special Risk****Low Probability****High Consequence****Hazardous Materials**

The potential release of hazardous materials exists wherever that material may be located. A higher potential for release coincides with storage sites at fixed facilities and along transportation routes, such as major roadways and rail lines. Hazardous materials are chemical substances which, if released or misused, can pose a threat to people, property, or the environment. These chemicals are used in industry, agriculture, medicine, research, and consumer goods.

**Heat Map for Hazmat Calls**

As many as 500,000 products pose physical or health hazards and can be defined as "hazardous chemicals." Each year, over 1,000 new synthetic chemicals are introduced. Hazardous materials come in the form of explosives, flammable and combustible substances, poisons, and radioactive materials. These substances are most often released as a result of transportation accidents or because of chemical accidents in manufacturing plants. Hazardous materials are contained and used at fixed sites and are shipped by all modes of transportation, including transmission pipelines.

## Critical Tasking and Effective Response Forces for HazMat Incidents

**General Description** - The agency approaches a hazardous materials response in a tiered fashion. Below is the description of what a low, moderate, or high response is, with corresponding critical tasking in the Effective Response Force table.

**Low** – Small spills of less than 5-gallons from a passenger type vehicle of common hydrocarbon materials such as gasoline, fuel oil or diesel fuel. The material can be diked or absorbed utilizing equipment normally carried on a first due engine, rescue or ladder/platform company. Small spills of antifreeze, transmission fluid, etc. at the scene of a motor vehicle accident would also fall under this category. This is responded to by a single Ladder Truck with four personnel.

**Moderate** – Large spills over 5-gallons of common hydrocarbon materials such as gasoline, fuel oil, or diesel fuel from a large commercial vehicle and reported gas leaks. This level of response requires a total of eight personnel assembled with a Ladder Truck, one Engine, and a battalion chief.

**High/Maximum** – Confirmed or unconfirmed chemical spill, leak or release; Chemical, Biological, Radiological, Nuclear, or Explosive (CBRNE) incidents within the highest risk levels. This level of call requires an ERF of 20 personnel. Equipment required is one Ladder Truck, four Engines, two Battalion Chiefs, and a hazardous materials unit. Maximum risk events are escalated from the high risk by on-scene commanders.

Effective Response Force for Hazmat Incidents				
Task	Maximum	High	Moderate	Low
Command	1	1	1	1*
Safety	1	1	1*	
Air Monitoring	1	1	1	
Recon	2	2	1	2
HazMat Group Supervisor	1	1		1
HazMat Safety	1	1		1
Entry Team Leader	1	1	1	
Entry Team	2	2	2	
Backup Team	2	2		
Decon	3	3		
Research	1	1		
ALS Treatment	2	2		
ALS Triage	1	1		
Support	1	1	1	
Technical Assistance			1	
<b>ERF Personnel</b>	<b>20</b>	<b>20</b>	<b>8</b>	<b>4</b>
<b>ERF Vehicles</b>	<b>9</b>	<b>9</b>	<b>3</b>	<b>1</b>

\* For low and moderate risk incidents, the command, safety, and team leader tasks may be combined in one position. For high risk incidents, team leaders may be combined in team total.



**Special Risk**

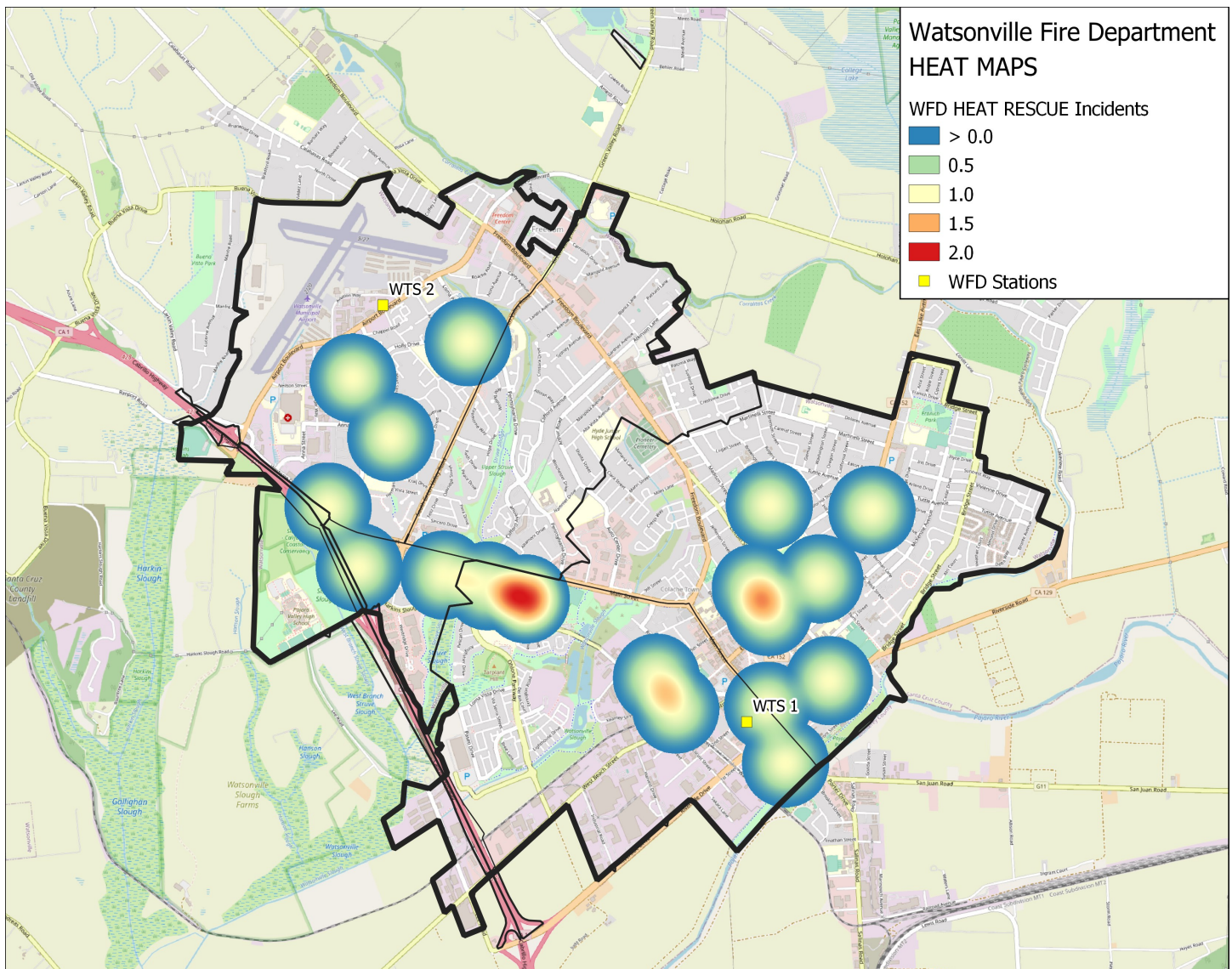
**Low Probability**

**High Consequence**

**Technical Rescue**

Technical rescue is a relatively broad term and includes responses to a wide variety of incidents such as confined space rescue, high angle rescues, and structural collapse. Similar to the analyses for hazardous materials, the demand for technical rescue services is low in relation to fire or EMS calls within the service area.

**Heat Map for Rescue Calls**



### Critical Tasking and Effective Response Forces for Rescue Incidents

**General Description** - The agency approaches a technical response incidents in a tiered fashion. Below is the description of what a low, moderate, high, and maximum response is, with corresponding critical tasking in the Effective Response Force table.

**Low** – Low risk incidents may include elevator malfunctions with/without occupants inside, elevator alarms, and other simple low risk investigations. This is responded to by a single Engine with 3 personnel.

**Moderate** – Moderate risk incidents may include elevator incidents with an unknown situation, escalator incidents with no injuries, entrapment with unknown situation, high angle rescue with unknown situation, and other lower risk investigation level incidents. This is responded to by three personnel on a single engine.

**High** – High risk incidents may include incidents such as confined space and structural collapse with entrapment. This response requires eight personnel among three units. Resources include a Battalion Chief, an Engine, and a Ladder Truck.

**Maximum** – High risk incidents may include escalated incidents such as confined space and structural collapse with entrapment. This response requires 11 personnel among four units. Resources include a Battalion Chief, two engines, and a ladder truck.

Effective Response Force for Rescue Incidents				
Task	Maximum	High	Moderate	Low
Command	1	1	1	1
Triage			2	2
Safety	1	1	1*	1*
Rescue Group Supervisor	1	1		
Rescue Safety Officer	1*	1*		
ALS Treatment				
Entry/Rescue Team	2	2		
Entry Team Leader	1*			
Backup Team				
Air Monitoring	1	1		
Shoring/Stabilization	2	2		
Support	2			
<b>ERF Personnel</b>	<b>11</b>	<b>8</b>	<b>3</b>	<b>3</b>
<b>ERF Vehicles</b>	<b>4</b>	<b>3</b>	<b>1</b>	<b>1</b>

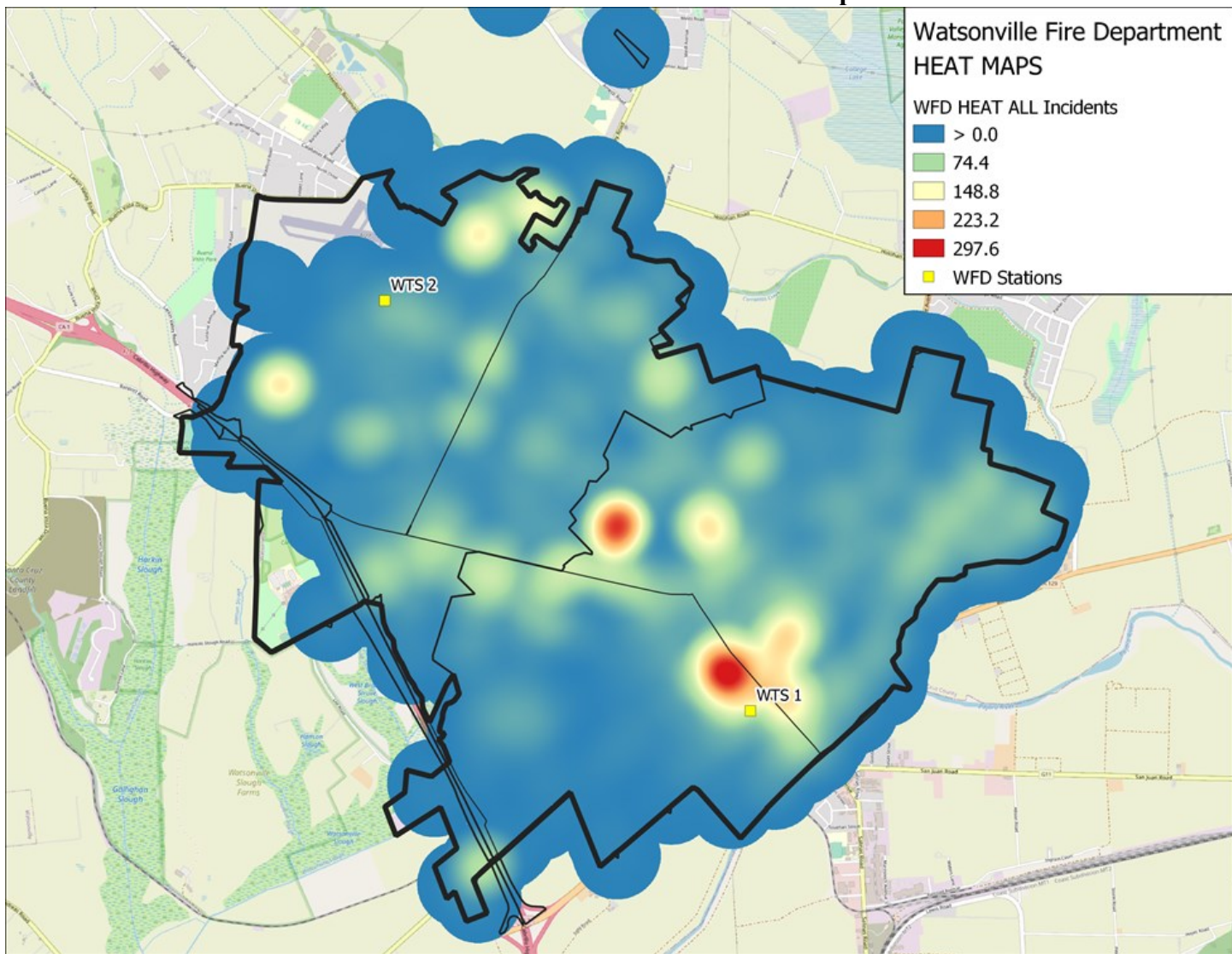
All of the High and Maximum risk incidents require a reliance on the Monterey County USAR Team for assistance.

\* For low and moderate risk incidents, the command, safety, and team leader tasks may be combined in one position. For high risk incidents, team leaders may be combined in team total.



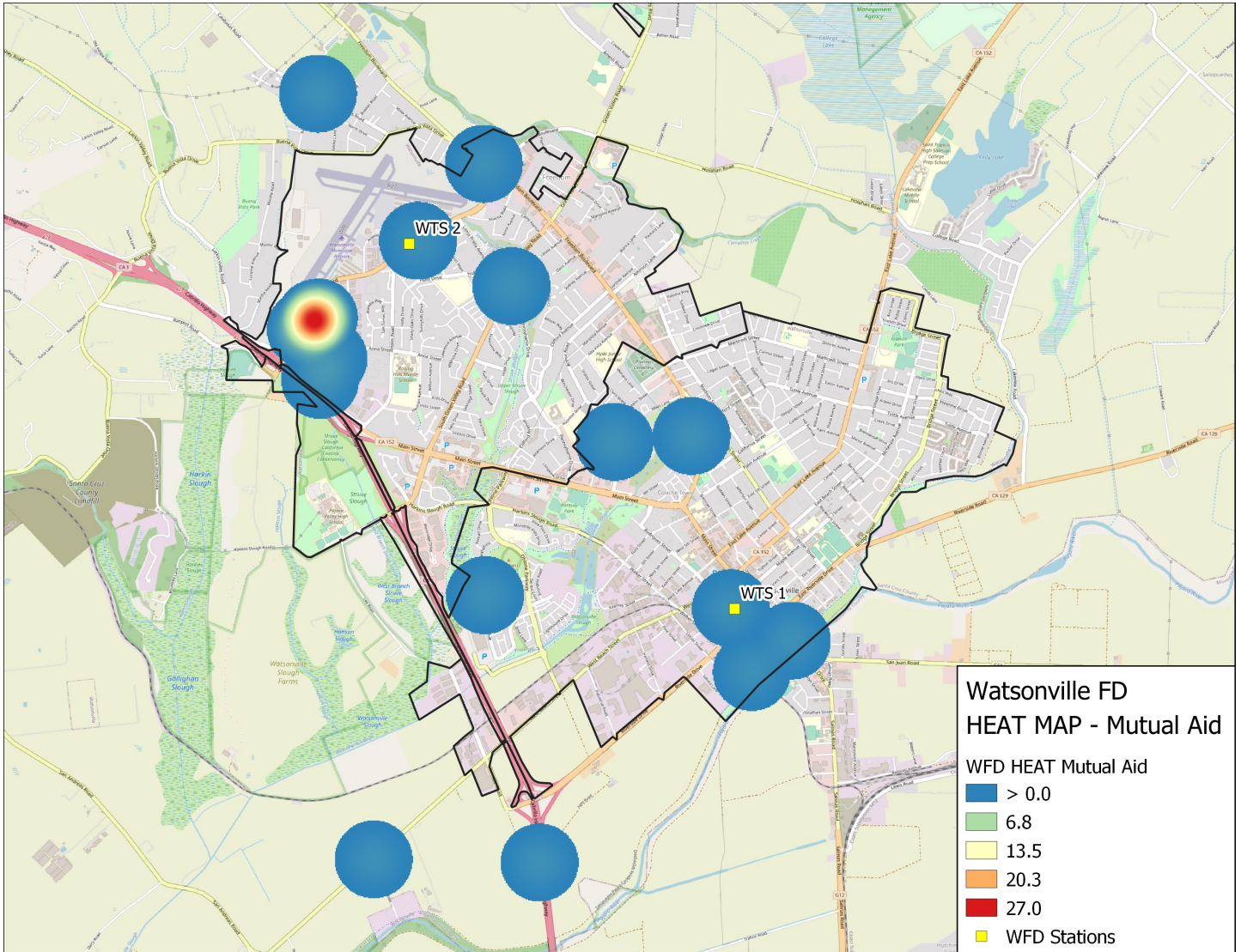
The distribution and concentration of all incidents are provided in the heat map presented below.

**Watsonville FD All Incidents Heat Map**



The distribution and concentration of mutual-aid incidents are provided in the heat map presented below.

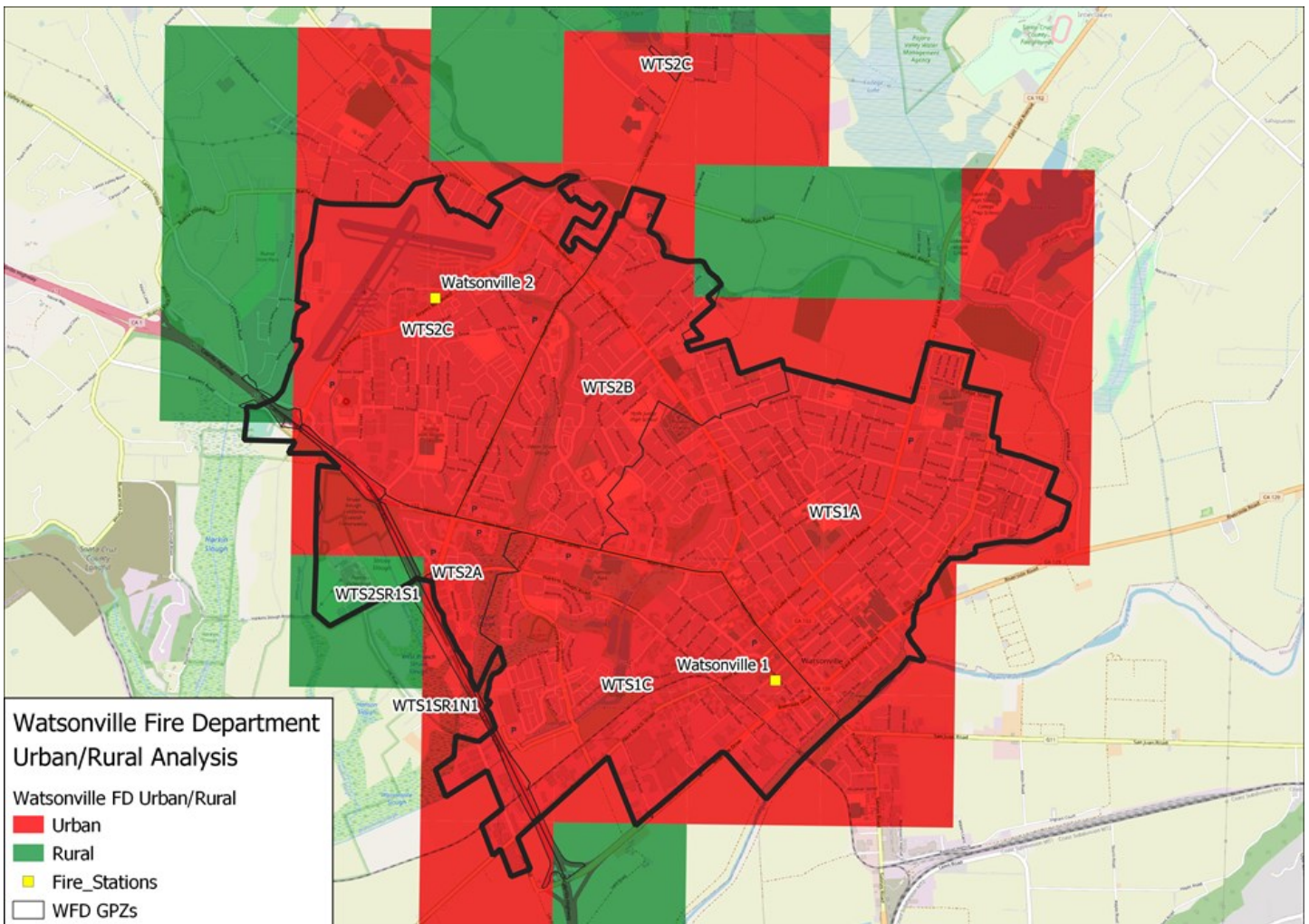
**Watsonville FD Heat Map - Mutual Aid**





Additionally, we calculated call density based on the relative concentration of incidents based on approximately 0.5-mile geographic areas as well as the adjacent 0.5-mile areas. The results demonstrate an urban and rural designation based on call density for services and not based on population. The red areas are designated as urban service areas and the green areas are designated as rural service areas. Any area that is not colored has less than one call every six months in the 0.5-mile area and the adjacent areas.

**Urban and Rural Call Density Map**



**Section D - Community Feedback**



**Community Feedback**



## Strategic Planning Process

During the development of the community risk assessment and the standards of cover document, the department recognized that it would be valuable to engage the community in strategic planning efforts in the future.

The most successful strategic planning processes include a high level of involvement from key leaders, both formal and informal, from within the organization, such as the fire chief and labor group leadership. While their participation is not required at each and every step, their buy-in along the way provides the highest chances of a successful project for all stakeholders in the end.

With the agency's support, the final product would be designed to meet the needs of the client in the following ways:

- The strategic plan should be accepted and supported from a broad base of stakeholders, most importantly the community, the employees, and elected officials.
- The strategic plan should follow the best practices established by the Commission on Fire Accreditation International (CFAI) for community driven strategic planning.
- The agency should include a group of community members and advocates that can be of assistance for future outreach and feedback after the conclusion of the inclusive and transparent planning process.

### Performance Indicator 2B.7

The agency engages other disciplines or groups within its community to compare and contrast risk assessments in order to identify gaps or future threats and risks.

### Performance Indicator 2D.10

The agency interacts with external stakeholders and the AHJ at least once every three years to determine the stakeholders' and AHJ's expectations for types and levels of services provided by the agency.

### Core Competency 3B.3

The agency solicits feedback and direct participation from internal and external stakeholders in the development, implementation and evaluation of the agency's goals and objectives.



A robust community driven plan would include an analysis of the strengths, weaknesses, opportunities, and threats/challenges (SWOT). Overall, the following four objectives should be met:

1. Establish Vision, Mission, and Value statements that are seamlessly aligned with the city governance.
2. Complete internal and external assessments.
3. Establish goals and objectives
4. Establish and adopt performance measurements

## **Section E - Program Goals and Objectives**



**Annual Program Appraisal**

## Annual Program Appraisal

Once a community driven strategic plan has been completed and adopted, the department will complete an annual appraisal. This section would list the strategic goals and objectives directly from the strategic planning document for the reader’s convenience.

The goals, objectives, and progress will be reviewed and addressed by goal owners in regular leadership reviews, including a quarterly review conducted with the executive leadership team. Annually, a documented report-out will be created by the Fire Chief to share with the city administration for transparency and accountability. The annual reviews will identify any gaps in current capabilities, capacity, and the level of service provided within each service delivery area. Additionally, program goals to mitigate identified risks within the service area will also be discussed. Executive staff and program/goal owners will work collaboratively to ensure an accurate and useful annual appraisal process is performed, documented, and presented, ensuring transparency and trust is maintained between the department and the community they serve.

The annual report will include at a minimum the following specific elements:

- Program name, Program owner and backup personnel
- Strategic goals, objectives, and critical tasks
- Metrics and outcomes of the program
- Applicable Policy and SOG review
- Program Budget Review
- Report notes from strategic planning meetings, annual report submissions, program meetings, etc. as an appendix.

### Core Competency 5A.7

The agency conducts a formal and documented program appraisal, at least annually, to determine the program’s impacts and outcomes, and to measure performance and progress in reducing risk based on the community risk assessment/standards of cover.

### Core Competency 5E.3

The agency conducts a formal and documented program appraisal, at least annually, to determine the impacts, outcomes, and effectiveness of the program, and to measure its performance toward meeting the agency’s goals and objectives.

### Core Competency 8B.6

The agency conducts a formal and documented program appraisal, at least annually, to determine the program’s effectiveness and compliance with meeting the needs of the organization.

### Core Competency 2C.6

The agency identifies outcomes for its programs and ties them to the community risk assessment during updates and adjustments of its programs, as needed.





## **Section F - Current Deployment and Performance**

**Community Response History**

**Review of System Performance**

**Baseline and Benchmark Analysis**

**Projected Growth**

**First Due and Geographic Planning Zone  
Analysis**

### Community Response History

Day of Week	Number of Calls	Average Calls per Day	Call Percentage
Sunday	898	17.3	13.1
Monday	999	19.2	14.5
Tuesday	960	18.5	14.0
Wednesday <sup>1</sup>	1,049	19.8	15.3
Thursday	981	18.9	14.3
Friday	1,059	20.4	15.4
Saturday	921	17.7	13.4
<b>Total</b>	<b>6,867</b>	<b>18.8</b>	<b>100.0</b>

### Community Response History Discussion

WFD answers approximately 6,867 emergency calls per year, with a variable dispersion with regards to type of call and month of year demonstrating a “steady” demand for the Department. Sundays are the lowest call volume day for fires, EMS, and other calls which include mutual aid, and Fridays have the highest call volume.

#### Performance Indicator 2B.2

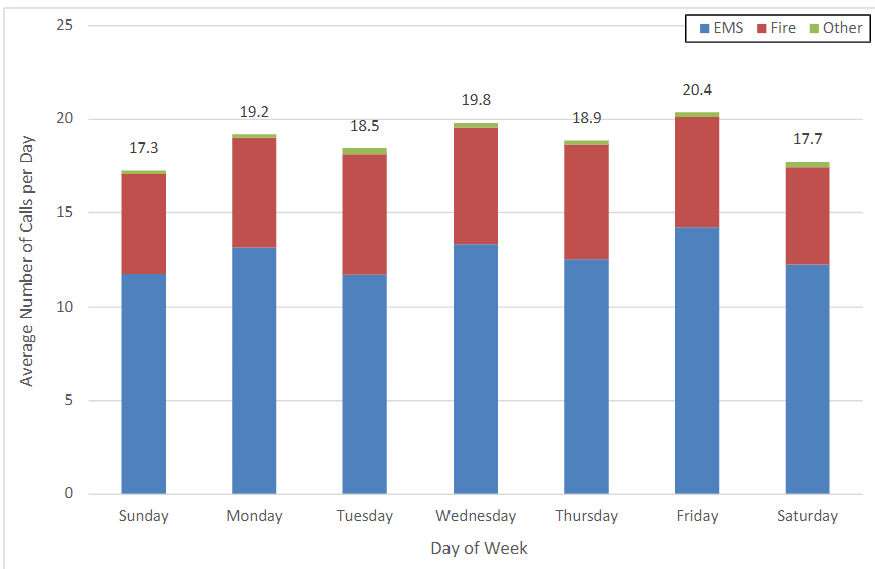
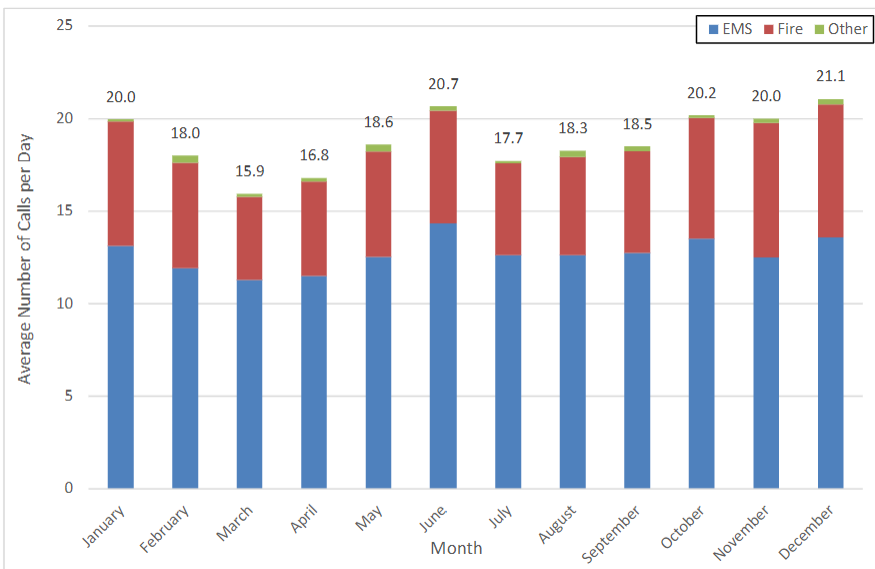
The historical emergency and nonemergency service demands frequency for a minimum of three immediately previous years and the future probability of emergency and nonemergency service demands, by service type, have been identified and documented by planning

#### Current Deployment and Performance as it relates to Criterion 2C:

The agency identifies and documents the nature and magnitude of the service and deployment demands within its jurisdiction. Based on risk categorization and service impact considerations, the agency’s deployment practices are consistent with jurisdictional expectations and with industry research. Efficiency and effectiveness are documented through quality response measurements that consider overall response, consistency, reliability, resiliency, and outcomes throughout all services areas. The agency develops procedures, practices, and programs to appropriately guide its resource deployment.

#### Core Competency 2C.1

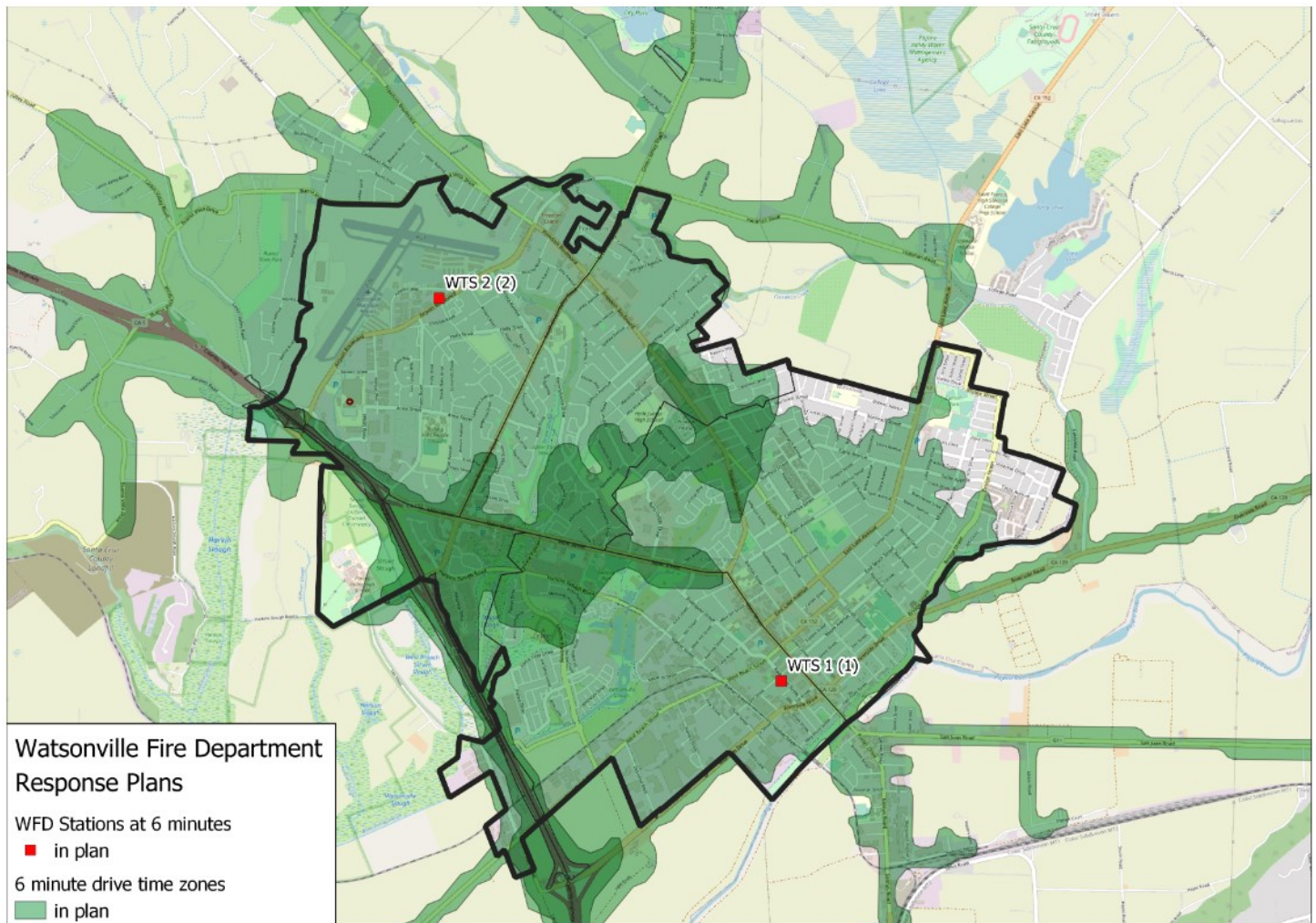
Given the levels of risks, area or responsibility, demographics, and socioeconomic factors, the agency has determined, documented, and adopted a methodology for the consistent provision of service levels in all service program areas through response coverage strategies.



## Distribution—Geographical Drive Time Analysis

Analysis shows a 6 minute drive time (in green) and giving a good visual depiction of who can get where within the specified amount of time.

The first step in this validation analysis is to utilize the historical performance to validate the planning analyses utilized by the GIS system. The FY21 historical performance demonstrated a 6.1-minute overall department travel time performance at the 90th percentile. The planning assessments estimated 94.44% risk coverage by two stations within 6-minutes travel time. One station could only cover 60.32% of the incidents within 6-minutes. Therefore, there is a high degree of agreement between the planning tools and actual historical performance.





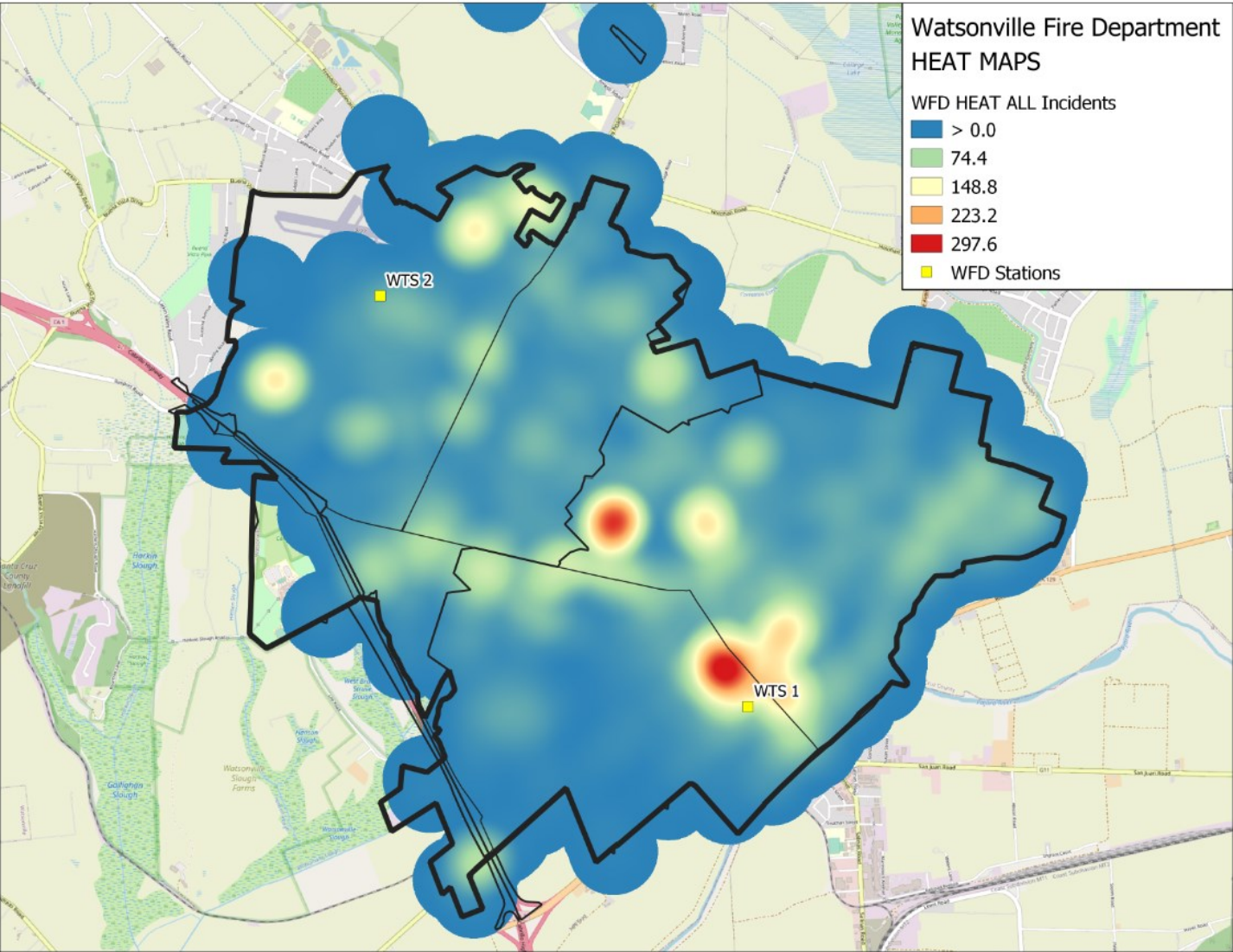
**Distribution – Percent of Incidents Captured by Station**

The planning assessments estimated 94.44% risk coverage by two stations within 6-minutes travel time. One station could only cover 60.32% of the incidents within 6-minutes. Therefore, there is a high degree of agreement between the planning tools and actual historical performance.

Rank	Station	Station Capture	Total Capture	Percent Capture
1	WTS 1	11,687	11,687	60.32%
2	WTS 2	6,610	18,297	94.44%

**Distribution – Heat Map Analysis Indicating Increased Frequency of Incidents.**

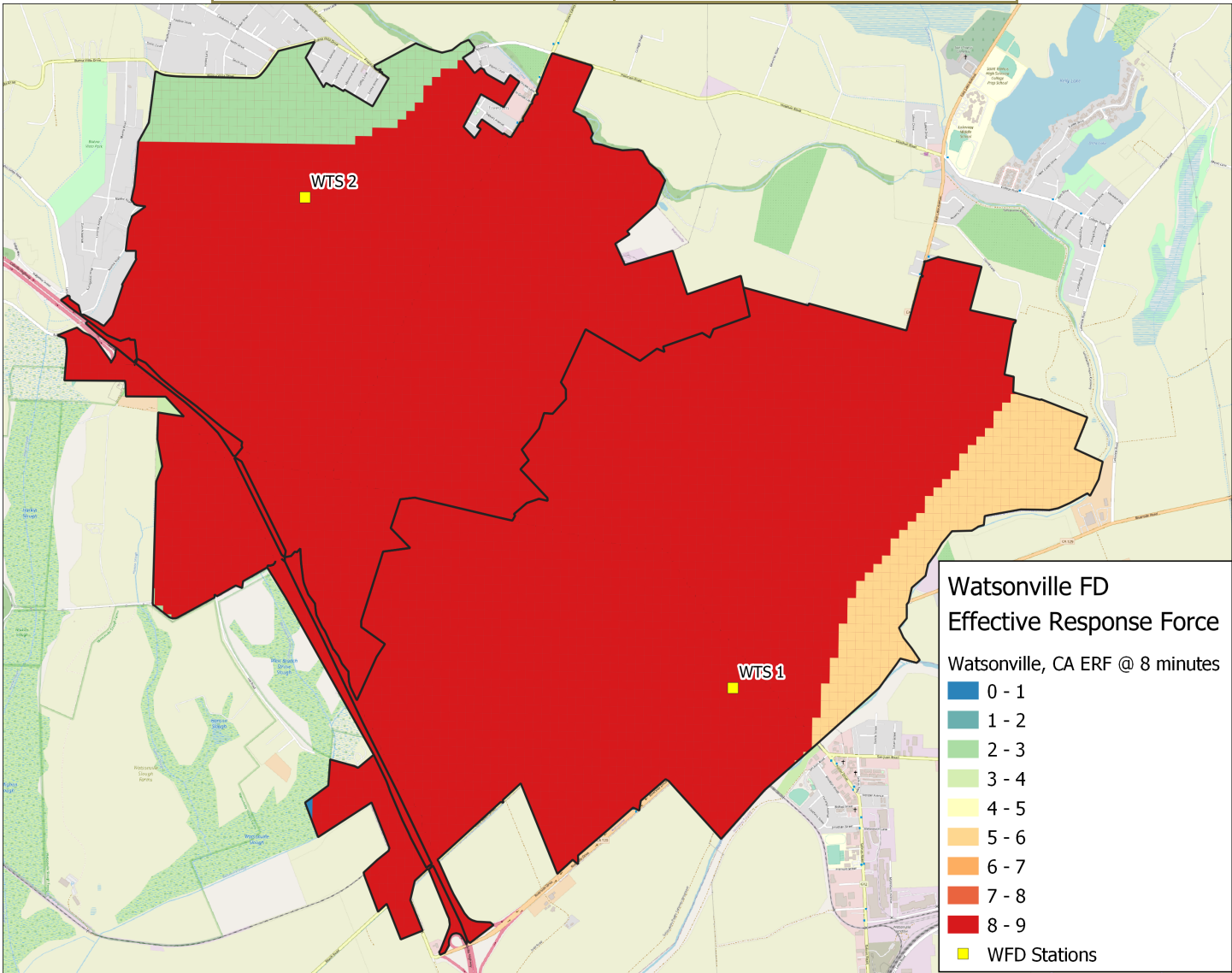
Station 1 has the highest density of emergency incidents as compared to Station 2.



### Concentration (Effective Response Force Analysis)

These analyses are modeled using GIS data in order to more accurately assess capabilities. The tabular data demonstrates the saturation for ERF at various travels times for the district wide coverage with a 9-person ERF. The mapping is representative of the concentration of personnel within 8-minutes utilizing WFD resources.

ERF Travel Time Objective	Citywide Coverage
6-Minute	46.91%
8-Minute	90.84%
10-Minute	99.98%



## Reliability Analysis -Department Wide

The first step in assessing the reliability of the deployment model or system performance is to understand the department's availability to handle the requests for service that occur within the jurisdiction. **WFD is available to respond to 88% of the requests for service that are originating within the jurisdiction.** Additional details related to the 821 calls to which WFD did not dispatch a valid unit. Of the 821 calls, 222 (27.0%) were classified as "Sick Person," 165 (20.1%) were classified as "EMS Other," and 161 (19.6%) were classified as "Fire Alarm." When reviewing these calls based on determinant, 478 of 821 calls (58.2%) were not associated with a determinant value, and 318 of 821 calls (38.7%) were EMS Alpha-level (A) calls.

Program	No Valid WFD Unit Dispatch	Valid WFD Unit Dispatch	Total Calls	Percent Valid Unit Dispatch
EMS	553	4,080	4,633	88.1
Fire	266	1,880	2,146	87.6
Hazmat	1	66	67	98.5
Rescue	1	20	21	95.2
<b>Total</b>	<b>821</b>	<b>6,046</b>	<b>6,867</b>	<b>88.0</b>

## Reliability Analysis –First Due Zone

The reliability of the distribution model is a factor of how often the response model is available and able to respond to a call within the assigned demand zone. Responses were considered compliant when the first arriving unit was assigned to the station within the demand zone.

Of the 1,189 units from outside agencies arriving first to calls related to any program in Station 1's demand zone during 2020-21, 1,171 of the responses were from units assigned to AMR – Santa Cruz County (98.5%); of the 558 units from outside agencies arriving first to calls related to any program in Station 2's demand zone, 545 of the responses were from units assigned to AMR – Santa Cruz County (97.7%).

Program	Demand Zone (First Due Station)	First Arriving Unit's Assigned Station				Total	Percent Compliance
		1	2	Admin	Outside Agency		
Total	1	2,236	85	2	1,189	3,512	63.7
	2	276	1,058	1	558	1,893	55.9
EMS	1	1,336	35	0	1,084	2,455	54.4
	2	139	748	1	495	1,383	54.1
Fire	1	853	48	2	104	1,007	84.7
	2	117	308	0	63	488	63.1
Hazmat	1	37	1	0	1	39	94.9
	2	15	1	0	0	16	6.3
Rescue	1	10	1	0	0	11	90.9
	2	5	1	0	0	6	16.7



## Overlapped (Simultaneous) Incidents

Overlapped or simultaneous calls are defined as another call being received in a demand zone (or first due station's area) while one or more calls are already ongoing for the same demand zone (or first due station's area). For example, if there is an ongoing call in Station 1's demand zone wherein all units have not yet been cleared, and one or more requests for service subsequently occur in Station 1's demand zone, the subsequent call or calls would be captured as overlapping.

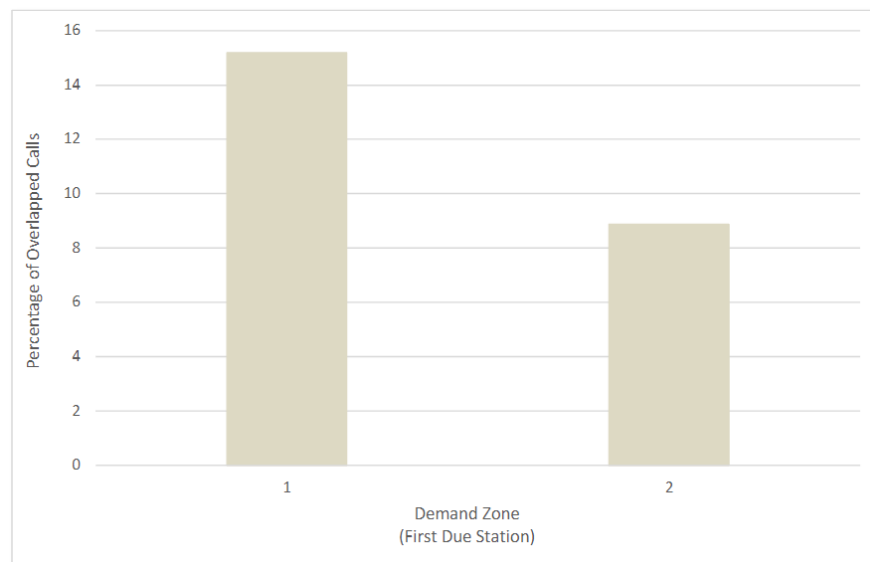
Understanding the percentage of overlapped calls may help to determine the number of units to staff for each station. In general, the larger the call volume for a demand zone, the greater the likelihood of overlapped calls occurring. The distribution of the demand throughout the day will impact the chance of having overlapped calls. Additionally, the duration of a call plays a significant role; the longer it takes to clear a request, the greater the likelihood of having an overlapping request.

Because WFD did not respond to all calls received from the community, the analysis included only calls to which WFD dispatched a valid unit. Sample sizes were further reduced where calls had no unit maximum clear date and time available, and where call duration values were greater than 24 hours (i.e., 1,440 minutes). To reflect all overlapped occurrences for the department during 2020-21, the "Total" row in Table 34 includes calls from jurisdictions outside of WFD to which a valid WFD unit was dispatched. As such, the overlapped and total call values in the first due station rows will not sum to the total values.

First due station 1 experienced 15.2% overlapped calls during 2020-21, whereas first due station 2 experienced 8.9% overlapped calls. Across the entire department, given all calls to which WFD dispatched a valid unit, the overlapped call rate during 2020-21 was 25.4%

Demand Zone (First Due Station)	Overlapped Calls	Total Calls	Percentage of Overlapped Calls
1	523	3,442	15.2
2	165	1,860	8.9
<b>Total<sup>1</sup></b>	<b>1,534</b>	<b>6,032</b>	<b>25.4</b>

<sup>1</sup>Total includes all calls to which a valid WFD unit was dispatched, including calls from jurisdictions outside of WFD. As such, the overlapped and total call values in the first due station rows will not sum to the total values.



## Workload Demand Departmentally

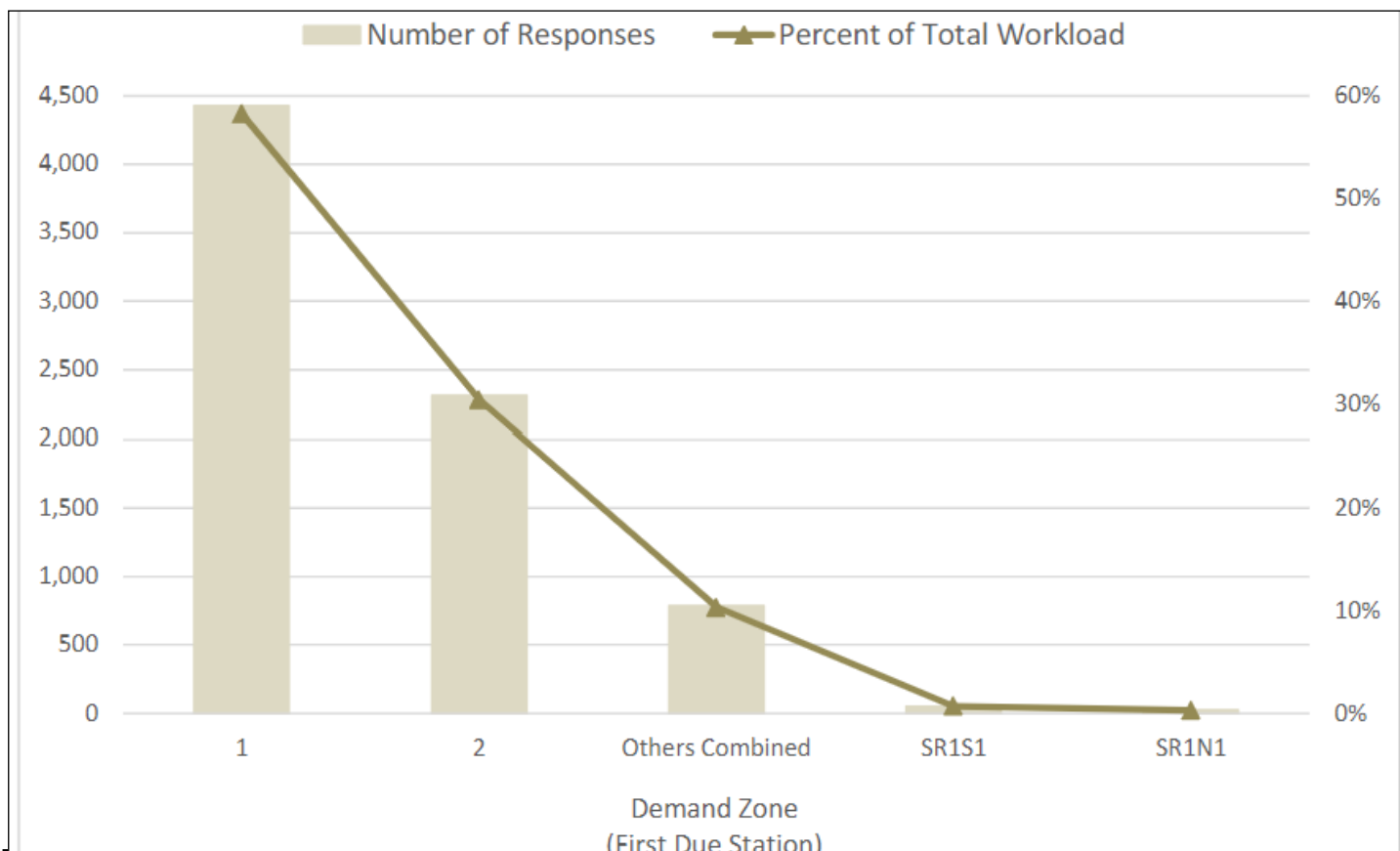
Workload was also assessed at the demand zone level based on the first due station areas. Station 1's demand zone had the highest volume of responses made by departmental units to the area (4,429 responses), requiring 58.3% of WFD's total responses during 2020-21.

Jurisdiction	Demand Zone (First Due Station)	Number of Calls Incoming to Demand Zone	Number of Responses Made by Department in Demand Zone <sup>1</sup>	Percent of Department Workload <sup>2</sup>
Within WFD	1	3,446	4,429	58.3
	2	1,865	2,311	30.4
Outside of WFD	SR1N1	10	24	0.3
	SR1S1	29	54	0.7
	Others Combined	696	785	10.3
<b>Total</b>		<b>6,046</b>	<b>7,603</b>	<b>100.0</b>

## Workload Demand By Station

The station-level demand is more reflective for deployment decisions, and the unit-level workload will help evaluate the utilization of physical apparatus, and assist with apparatus procurement or maintenance decisions.

Station 1 was the busiest station during 2020-21 based on number of responses made by units assigned to the station (5,229 responses), and based on total busy hours (1,610.4 hours; 66.5% of departmental busy hours).

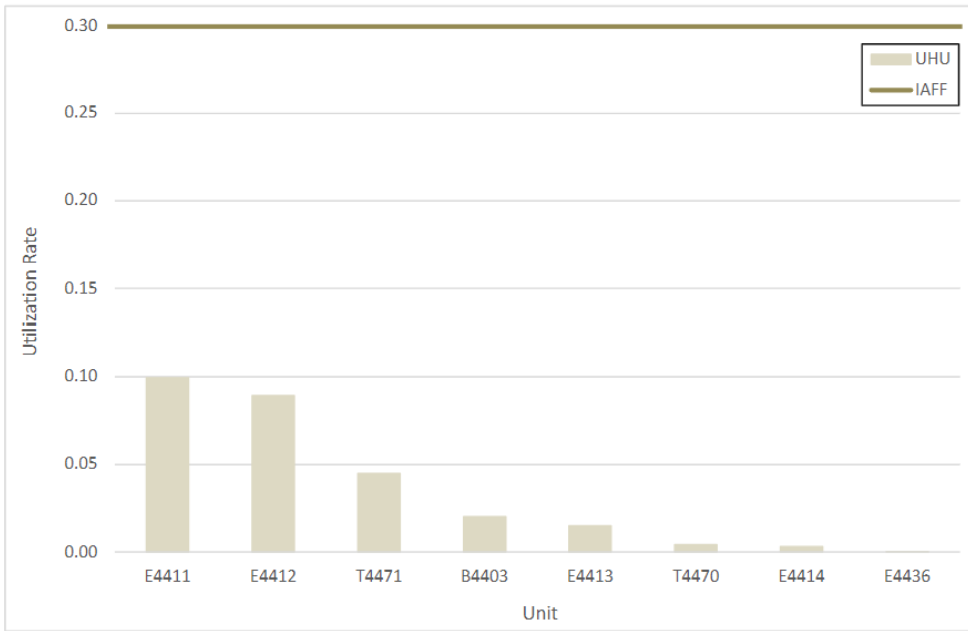


### Apparatus Deployed Hours

Another measure, time on task, is necessary to evaluate best practices in efficient system delivery and consider the impact workload has on personnel. Unit Hour Utilization (UHU) values represent the proportion of the work period (e.g., 24 hours) that is utilized responding to requests for service.

Historically, the International Association of Fire Fighters (IAFF) has recommended that 24-hour units utilize 0.30, or 30%

workload as an upper threshold.<sup>1</sup> In other words, this recommendation would have personnel spend no more than 7.2 hours per day on emergency incidents. These thresholds take into consideration the necessity to accomplish non-emergency activities such as training, health and wellness, public education, and fire inspections. The 4th edition of the IAFF EMS Guidebook no longer specifically identifies an upper threshold. However, FITCH recommends that an upper unit utilization threshold of approximately 0.30, or 30%, would be considered best practice. In other words, units and personnel should not exceed 30%, or 7.2 hours, of their work day responding to calls. These recommendations are also validated in the literature. For example, in their review of the City of Rolling Meadows, the Illinois Fire Chiefs Association utilized a UHU threshold of 0.30 as an indication to add additional resources.<sup>2</sup> Similarly, in a standards of cover study facilitated by the Center for Public Safety Excellence, the Castle Rock Fire and Rescue Department utilizes a UHU of 0.30 as the upper limit in their standards of cover due to the necessity to accomplish other non-emergency activities.<sup>3</sup>



Station	Unit ID	Unit Type	UHU Value	Total Busy Hours
Admin	B4402	Chief	--	< 0.1
	C4400	Fire Chief	--	0.2
	C4402	Chief	--	0.6
	C4404	Division Chief	--	2.4
	<b>Total</b>			--
1	B4403	Battalion Chief	0.02	176.9
	E4411	Engine (Type 1)	0.10	872.4
	E4413	Engine (Type 1)	0.01	131.3
	T4470	Tractor Drawn Aerial Truck	< 0.01	36.8
	T4471	Tractor Drawn Aerial Truck	0.04	392.9
<b>Total</b>			--	<b>1,610.4</b>
2	E4412	Engine (Type 1)	0.09	782.1
	E4414	Engine (Type 1)	< 0.01	26.5
	E4436	Engine (Type 3)	< 0.01	0.3
<b>Total</b>			--	<b>808.9</b>

Unit busy time analyses included all WFD units designated by the WFD leadership team as valid units, whereas UHU calculations are only reported for units identified by WFD leadership as 24-hour-per-day units.



## Community Demand

From the reporting periods of 2018-19 to 2020-21, year-over-year (YoY) growth related to total call volume across all jurisdictions ranged from -2.4% to 12.6% (Table 35). Average number of calls per day increased from 17.1 in 2018-19 to 18.8 in 2020-21.

Program and Call Type <sup>1</sup>	Reporting Period <sup>2</sup>			Program and Call Type <sup>1</sup>	Reporting Period <sup>2</sup>		
	2018-19	2019-20	2020-21		2018-19	2019-20	2020-21
<b>EMS</b>	<b>4,155</b>	<b>4,229</b>	<b>4,633</b>	Stroke	81	101	91
Abdominal Pain	119	111	105	Suicide	4	6	1
Allergies	22	11	22	Transfer	149	296	428
Animal Bite	2	3	4	Traumatic Injury	44	55	36
Assault	87	71	92	Unconscious/Fainting	254	249	265
Back Pain	40	38	40	<b>Fire</b>	<b>1,992</b>	<b>1,745</b>	<b>2,146</b>
Breathing Problems	436	389	529	Agency Assist	499	409	450
Burns	1	6	2	Aircraft Accident	1	0	1
Carbon Monoxide/Inhalation	1	1	1	Fire Alarm	562	457	566
Cardiac/Respiratory Arrest	52	32	71	Fire Other	442	444	614
Chest Pain	195	195	165	Mutual Aid	106	72	85
Choking/Obstruction	4	10	8	Public Service	138	127	153
Convulsion/Seizure	151	141	119	Strike Team	4	3	6
Death	9	23	18	Structure Fire	116	103	83
Diabetic Problem	71	94	85	Vehicle Fire	47	42	30
Electrocution	0	1	1	Wildland Fire	77	88	158
EMS Other	341	279	652	<b>Hazmat</b>	<b>78</b>	<b>89</b>	<b>67</b>
Eye Problems	0	3	3	Hazmat	78	89	67
Fall	497	496	517	<b>Rescue</b>	<b>25</b>	<b>34</b>	<b>21</b>
Headache	23	27	19	Rescue	25	34	21
Heart Problems	33	61	70	<b>Total</b>	<b>6,250</b>	<b>6,097</b>	<b>6,867</b>
Heat/Cold Exposure	1	0	1	<b>Average Calls per Day<sup>3</sup></b>	<b>17.1</b>	<b>16.7</b>	<b>18.8</b>
Hemorrhage/Laceration	106	96	115	<b>YoY Growth</b>	<b>N/A</b>	<b>-2.4%</b>	<b>12.6</b>
MVA	362	341	376				
Overdose/Poisoning	46	61	60				
Person Down	437	422	141				
Pregnancy	13	8	19				
Psychiatric/Abnormal Behavior	53	55	45				
Sick Person	511	539	527				
Stabbing/Gunshot	10	8	5				

## Workload by Station and Unit

The station-level demand is more reflective for deployment decisions, and the unit-level workload will help evaluate the utilization of physical apparatus, and assist with apparatus procurement or maintenance decisions.

Station 1 was the busiest station during 2020-21 based on number of responses made by units assigned to the station (5,229 responses), and based on total busy hours (1,610.4 hours; 66.5% of departmental busy hours).

Station	Number of Responses Made by Units Assigned to Station <sup>1</sup>	Responses with Time Data <sup>2</sup>	Total Busy Hours	Average Busy Minutes per Response	Percentage of Total Busy Hours
Admin	16	15	3.2	12.8	0.1
1	5,229	5,223	1,610.4	18.5	66.5
2	2,358	2,349	808.9	20.7	33.4
<b>Total</b>	<b>7,603</b>	<b>7,587</b>	<b>2,422.5</b>	<b>19.2</b>	<b>100.0</b>

## Response Volume and Busy Time

From the reporting periods of 2018-19 to 2020-21, the total number of responses to calls made by units assigned to WFD across all jurisdictions increased from 7,157 (average 19.6 responses per day) to 7,603 (average 20.8 responses per day; Table 36). Total busy hours increased from 2,368.3 hours in 2018-19 to 2,422.5 hours in 2020-21. Average number of responses per call has remained consistent across the three reporting periods at 1.3

Jurisdiction	Reporting Period <sup>1</sup>	Number of Calls <sup>2</sup>	Number of Responses <sup>3</sup>	Average Responses per Call	Total Busy Hours	Responses with Time Data <sup>4</sup>	Average Busy Minutes per Response	Average Calls per Day <sup>5</sup>	Average Responses per Day <sup>5</sup>
Within WFD	2018-19	4,759	6,371	1.3	2,043.1	6,356	19.3	13.0	17.5
	2019-20	4,776	6,239	1.3	1,900.3	6,227	18.3	13.0	17.0
	2020-21	5,311	6,740	1.3	2,101.2	6,731	18.7	14.6	18.5
Outside of WFD	2018-19	654	786	1.2	325.3	786	24.8	1.8	2.2
	2019-20	651	796	1.2	350.9	792	26.6	1.8	2.2
	2020-21	735	863	1.2	321.3	856	22.5	2.0	2.4
All	2018-19	5,413	7,157	1.3	2,368.3	7,142	19.9	14.8	19.6
	2019-20	5,427	7,035	1.3	2,251.2	7,019	19.2	14.8	19.2
	2020-21	6,046	7,603	1.3	2,422.5	7,587	19.2	16.6	20.8

From the reporting periods of 2018-19 to 2020-21, the total number of responses to calls made by units assigned to outside agencies increased from 5,583 (average 15.3 responses per day) to 6,012 (average 16.5 responses per day). Total busy hours increased from 3,112.1 hours in 2018-19 to 3,625.6 hours in 2020-21. Average number of responses per call has remained consistent across the three reporting periods at 1.2 to 1.3.

Reporting Period <sup>1</sup>	Number of Calls <sup>2</sup>	Number of Responses <sup>3</sup>	Average Responses per Call	Total Busy Hours	Responses with Time Data <sup>4</sup>	Average Busy Minutes per Response	Average Calls per Day <sup>5</sup>	Average Responses per Day <sup>5</sup>
2018-19	4,270	5,583	1.3	3,112.1	5,530	33.8	11.7	15.3
2019-20	4,242	5,299	1.2	3,123.7	5,271	35.6	11.6	14.5
2020-21	4,636	6,012	1.3	3,625.6	5,976	36.4	12.7	16.5

## Benchmark and Baseline Statements and Tables

The agency has established benchmark performance objectives and baseline measurements for four major categories of emergency responses including fires, emergency medical services, hazardous materials and technical rescue incidents. These objectives and measures are also tailored by risk level classification for low, moderate, and high risks, including the amount of personnel required (effective response force) to perform the required critical tasking that aligns with both the needs of the incident and departmental policies and standard operating guidelines.

In simple terms, the benchmark is the desired level of performance and the baseline is the current level of performance. Rather than using averages for response times, these goals are measured against 90% fractals, aligning with best practices in the fire industry for both the Center for Public Safety Excellence and National Fire Protection Association standards. This measurement style affords a much more accurate view of performance.

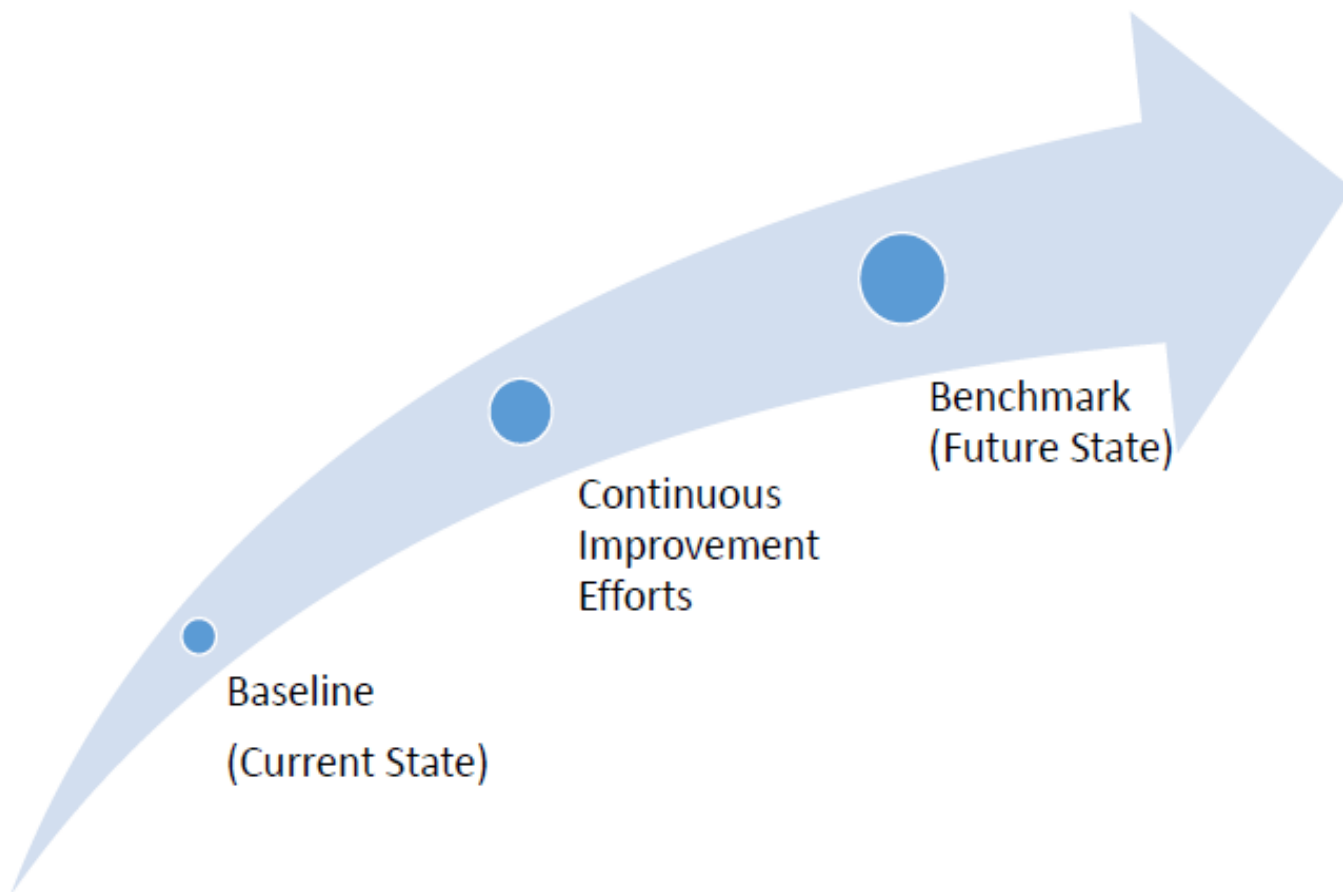
Currently, the department has adopted a 10% improvement benchmark over the observed values presented below.

### Core Competency 2C.5

The agency has identified the total response time components for delivery of services in each service program area and found those services consistent and reliable within the entire response area.

### Performance Indicator 2C.7

The agency has identified the total response time components for delivery of services in each service program area and assessed those services in each planning zone.



## Performance Statements

Jurisdiction	Program	Dispatch Time (Minutes)	Turnout Time (Minutes)	Travel Time (Minutes)	Response Time (Minutes)	Sample Size <sup>1</sup>
All	EMS	3.6	2.3	6.2	10.3	3,147
	Fire	2.5	2.4	7.7	10.7	876
	Hazmat	3.7	2.6	11.6	16.3	58
	Rescue	--	--	--	--	3
	<b>Total</b>	<b>3.5</b>	<b>2.3</b>	<b>6.6</b>	<b>10.5</b>	<b>4,084</b>
Within WFD	EMS	3.6	2.2	5.9	9.7	2,859
	Fire	2.3	2.4	7.0	9.9	776
	Hazmat	3.8	2.7	10.9	14.3	53
	Rescue	--	--	--	--	3
	<b>Total</b>	<b>3.4</b>	<b>2.3</b>	<b>6.1</b>	<b>9.8</b>	<b>3,691</b>

### Baseline Statements

For **All Fire Suppression Risk Levels**, the 90th percentile of total response time for the arrival of the first due unit, staffed with a minimum of three firefighters, was 9-minutes and 54-seconds. The first due unit is capable of establishing command, sizing up the incident, utilizing appropriate tactics in accordance with departmental standard operating guidelines, developing an initial action plan, extending an appropriate hose line and beginning initial fire attack or rescue.

For **All Emergency Medical Services Risk Levels**, the 90th percentile of total response time for the arrival of the first due unit, staffed with a minimum of three firefighters, was 9-minutes and 42-seconds. The first due unit is capable of establishing command, sizing up the incident, conducting an initial patient assessment, obtaining vitals and patient medical history, initiating basic life support measures in accordance with departmental standard operating guidelines and transferring to, or assisting in, transport to an appropriate health care facility.

For **All Hazardous Materials Risk Levels**, the 90th percentile of total response time for the arrival of the first due unit, staffed with a minimum of three firefighters, was 14-minutes and 18-seconds. However, due to the relatively low sample size, a 10-minute baseline response time should be considered. The first due unit is capable of establishing command, sizing up the incident, developing an incident action plan in accordance with departmental standard operating guidelines, isolating the hazard, and calling for regional resources if needed.

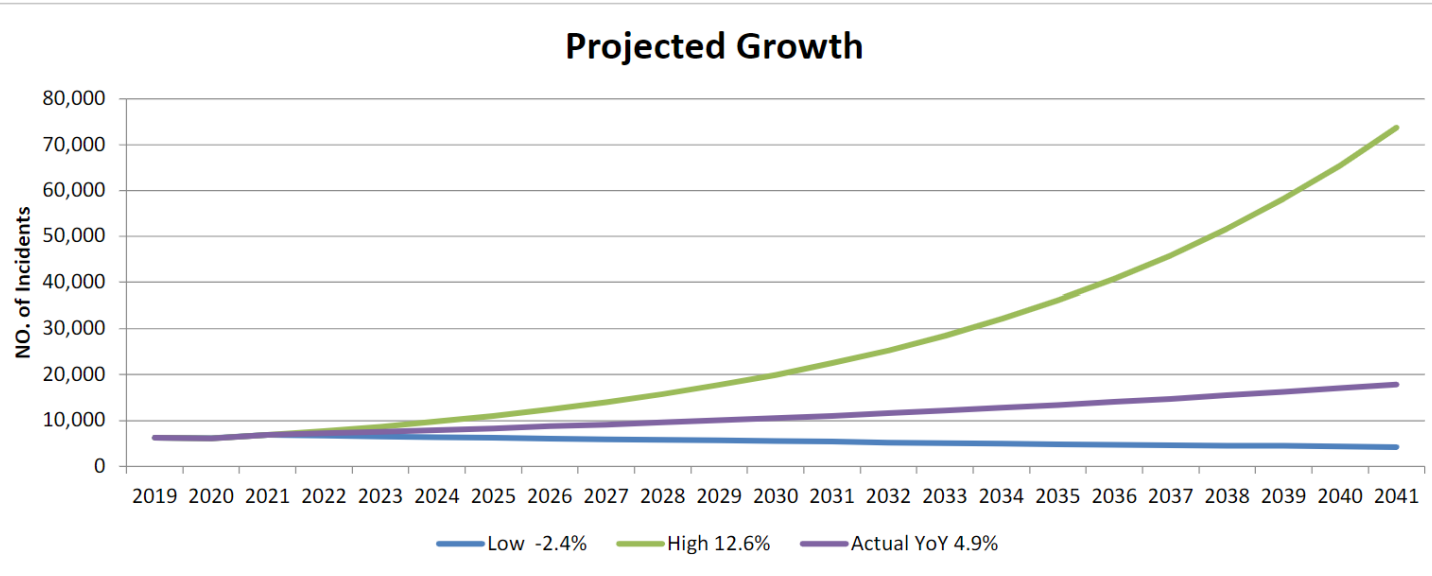
For **All Technical Rescue Risk Levels**, the 90th percentile of total response time for the arrival of the effective response force, consisting of 3 responders, was not statistically relevant due to insufficient data. Therefore, the overall department capability of 10-minutes should be utilized. The first due unit is capable of establishing command, performing an assessment of the incident, and initiating mitigation activities such as isolating the hazard, deploying primary and belay rope systems, stabilizing the trench and/or structure, and setting up a safe operating zone to perform patient assessment and treatment prior to the arrival of the regional USAR team.



### Projected Growth

The available data set included five reporting periods of data, representing FY 2019 - 2021. From FY 2019 to FY 2021, calls for WFD services increased from 6,250 to 6,867, with an average growth rate of 4.9% per year. The figure below depicts observed call volume during the last three year reporting periods and various hypothetical growth scenarios for the next 20 years. These projections should be used with caution due to the variability in growth observed across prior calendar years. In all cases, data should be reviewed annually to ensure timely updates to projections and utilize a five-year rolling average.

Assuming that future demands may not be reasonably distributed across the various stations in the system, the system may ultimately require a redistribution of workload and ultimately reinvestment in resources to meet the growing demand. While the system should be evaluated continuously for performance and desired outcomes, the department should specifically re-evaluate workload and performance indicators for every 1,000-call increase to ensure system stability.



**Section F - Current Deployment and Performance**  
**at the First Due Station Area**

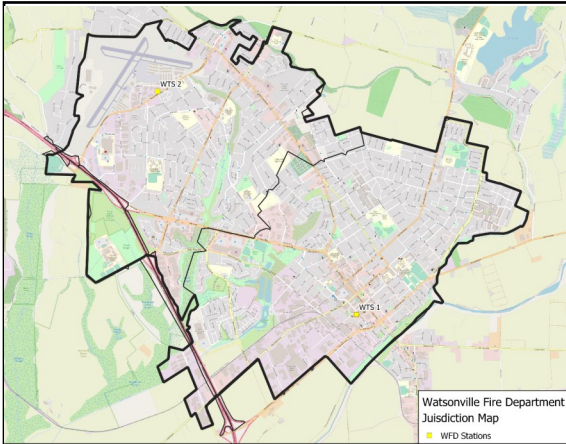


## First Due Station Area Analysis

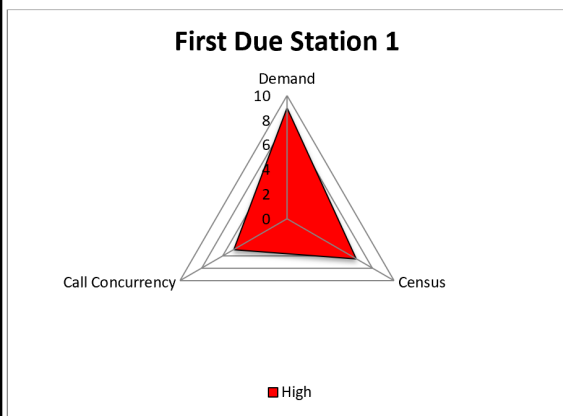
Taking a more granular approach, each of WFD’s two stations received a comprehensive analysis including maps and data to highlight the planning zones, risk, and past performance on all types of emergency incidents. Below is a master legend to assist in navigating the large amount of analysis on the following pages.

Core Competency 2C.7

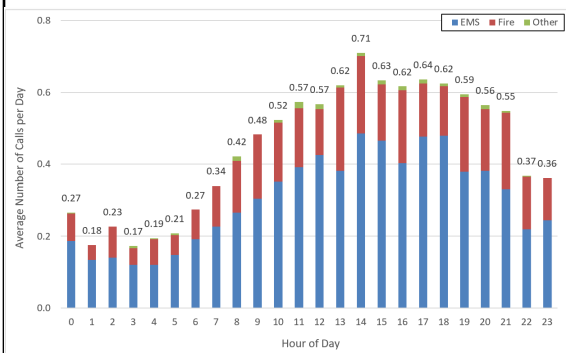
The agency has identified the total response time components for delivery of services in each service program area and assessed those services in each planning zone.



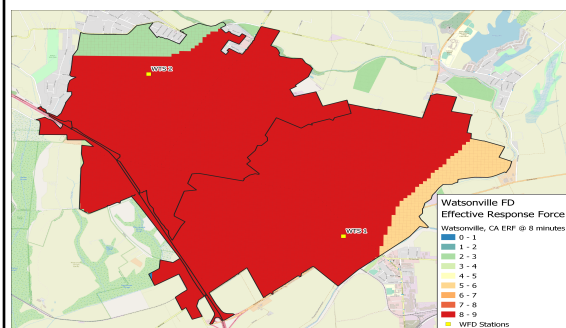
**First Due Station Area** - This page contains a basic overview of the department and contains a map which shows the organization’s boundaries, units based out of the station with full or cross staffing, and an overall station risk rating based upon risk, demand, and call concurrency.



**3D Risk Assessment** - Risk for each first due station area was evaluated by incident type (fire, EMS, hazmat, and technical rescue) and by demand, call concurrency, and risk; providing a comprehensive and visual way to ascertain the risk of certain incident types within the first due station areas. The 3D model graphically shows the event probability, the consequences to the community, and the impact on the District.



**Temporal Analysis** - This graph shows the frequency of incidents within the first due station areas by hour of day and incident type, a very useful set of data when making deployment decisions.



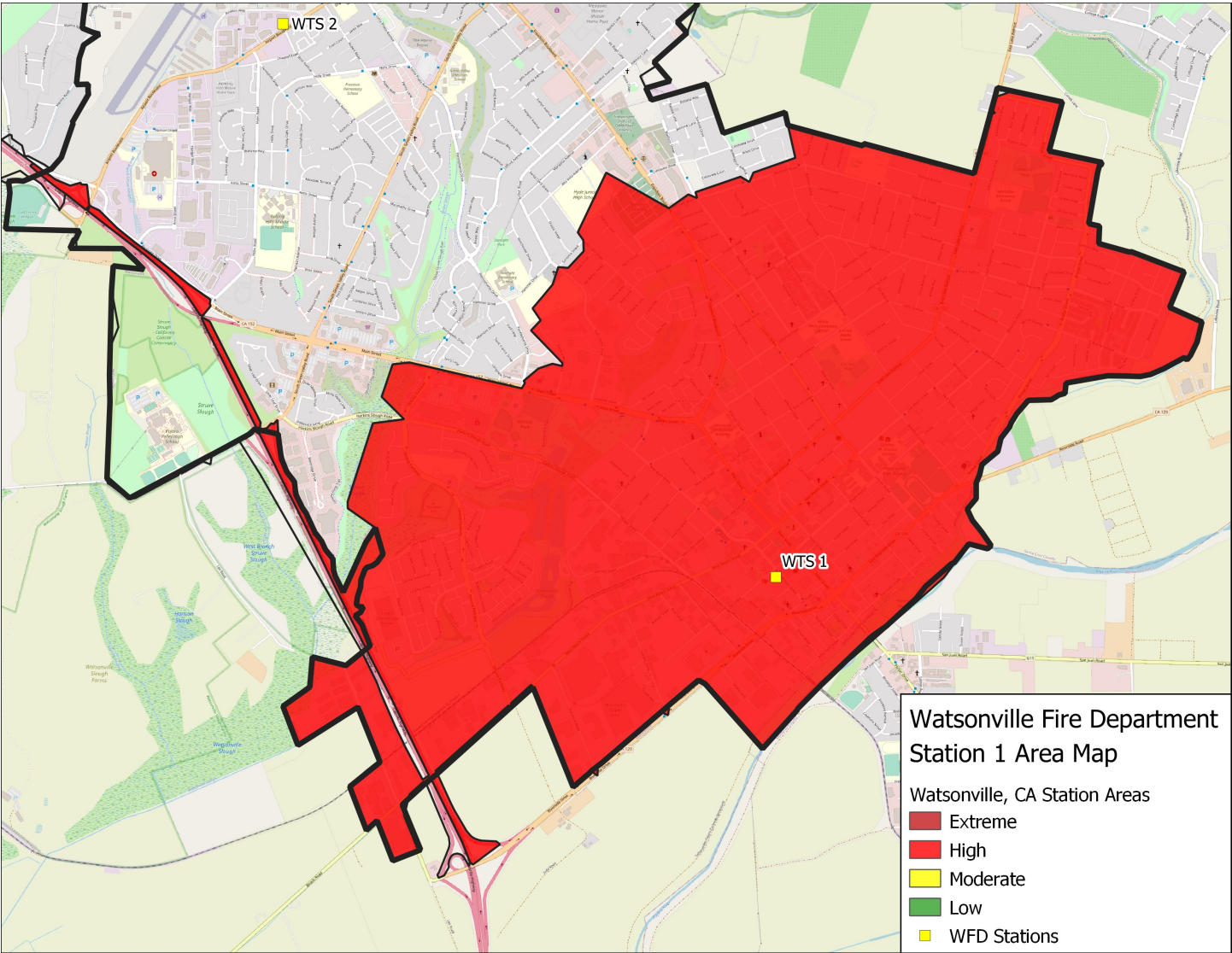
**Concentration** - This shows the ability to assemble an effective response force (ERF) within an 8-minute travel time if the first due areas.

Station 1	Unit Identifier	Unit Type
	BC 4403	Battalion Chief
	E4411	Engine
	T4471	Ladder Truck

**First Due Station 1**

Legend: ■ High

Station 1 staffs three primary units; Engine, Truck, and Battalion Chief. The first due station area has high risk level and is adjacent to Station 2.

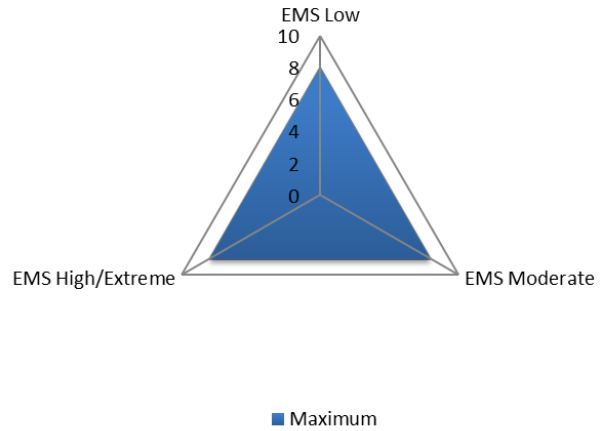




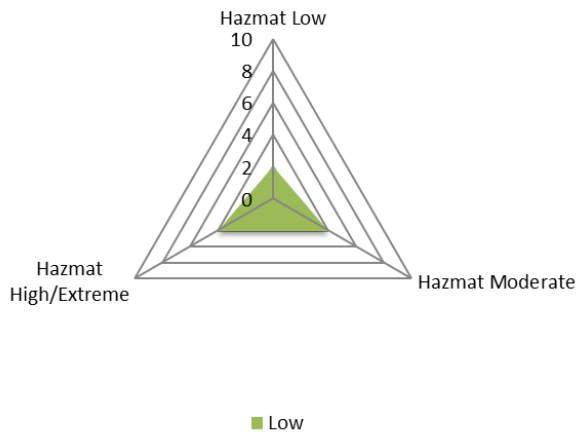
**First Due Station 1**



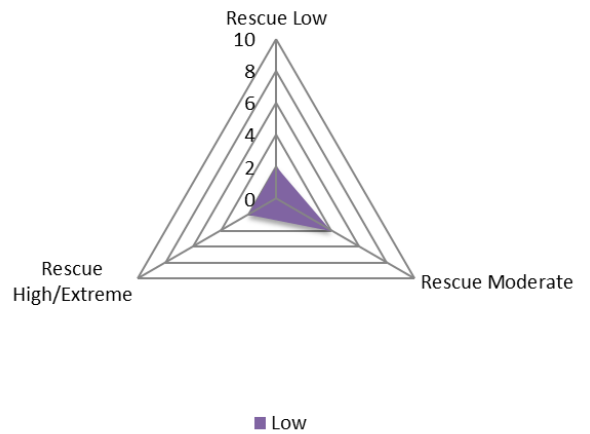
**First Due Station 1**



**First Due Station 1**



**First Due Station 1**



## Station Level Analysis cont'd

**Historical Data Analysis** - three years of data for WFD was evaluated for station 1, including number of incidents, number of unit responses, and baseline response times.

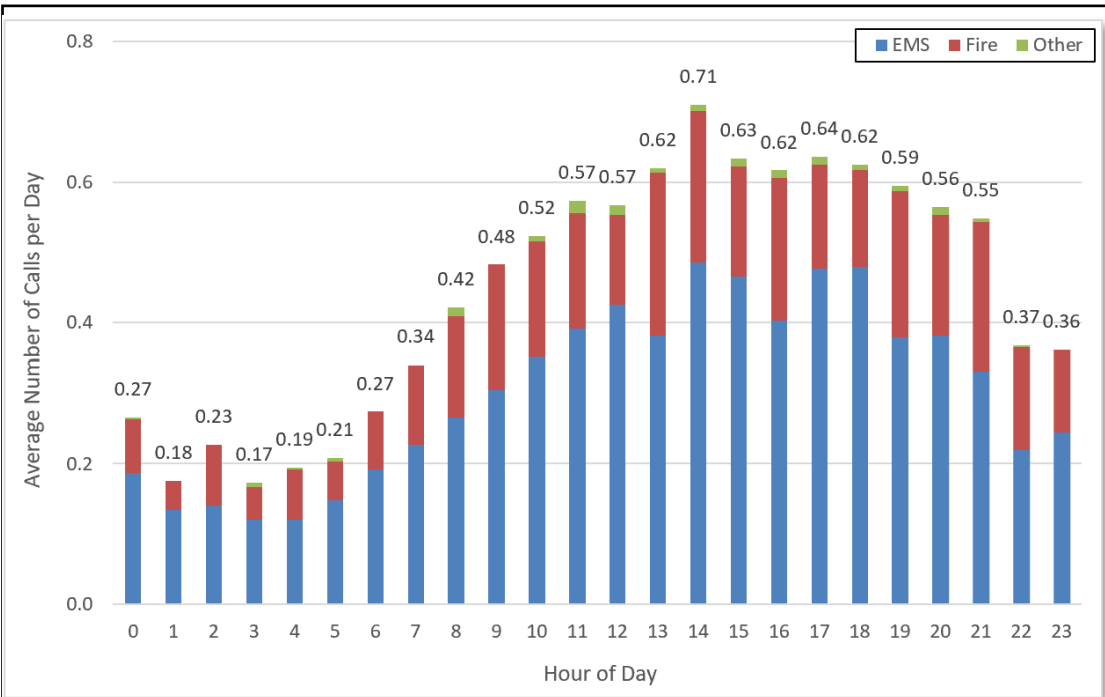
Station 1 First Due Area Incidents by Call Category	Reporting Period			
	2018-19	2019-20	2020-21	All
EMS Total	2,337	2,450	2,646	7,433
Fire Total	1,058	962	1,204	3,224
Hazmat Total	37	40	42	119
Technical Rescue Total	17	21	13	51
Total	3,449	3,473	3,905	10,827
Average Calls per Day	9.4	9.5	10.7	9.9
YoY Growth	N/A	0.7%	12.4%	6.6%

Unit ID	Reporting Period <sup>1</sup>		
	2018-19	2019-20	2020-21
B4403	376	405	524
E4411	2,952	2,829	2,926
E4413	570	322	397
T4470	383	654	136
T4471	811	689	1,246
<b>Total</b>	<b>5,092</b>	<b>4,899</b>	<b>5,229</b>
<b>Average Responses per Day<sup>2</sup></b>	<b>14.0</b>	<b>13.4</b>	<b>14.3</b>

First Due Station 1: 1 <sup>st</sup> Arriving Baseline Performance		2018-19 to 2020-21	2018-19	2019-20	2020-21	2018-19 to 2020 -21 Benchmark	2018-19 to 2020-21 Compliance
<b>Alarm Handling</b>		3:38	3:54	3:30	3:25	3:14	86.2%
<b>Turnout Time</b>		2:28	2:37	2:28	2:16	2:12	84.7%
<b>Travel Time</b>	Urban	5:52	5:46	5:52	5:58	5:51	89.9%
	Rural	N/A	N/A	N/A	N/A	N/A	
<b>Total Response Time</b>	Urban	9:51	9:57	9:53	9:45	9:32	88.8%
		<i>n</i> = 6,208	<i>n</i> = 1,959	<i>n</i> = 1,978	<i>n</i> = 2,271		
	Rural	N/A	N/A	N/A	N/A	N/A	
		N/A	N/A	N/A	N/A		

Color coding legend: green fill = 90%; yellow fill = 70% to < 90%; red fill < 70%

**Station Level Analysis cont'd**

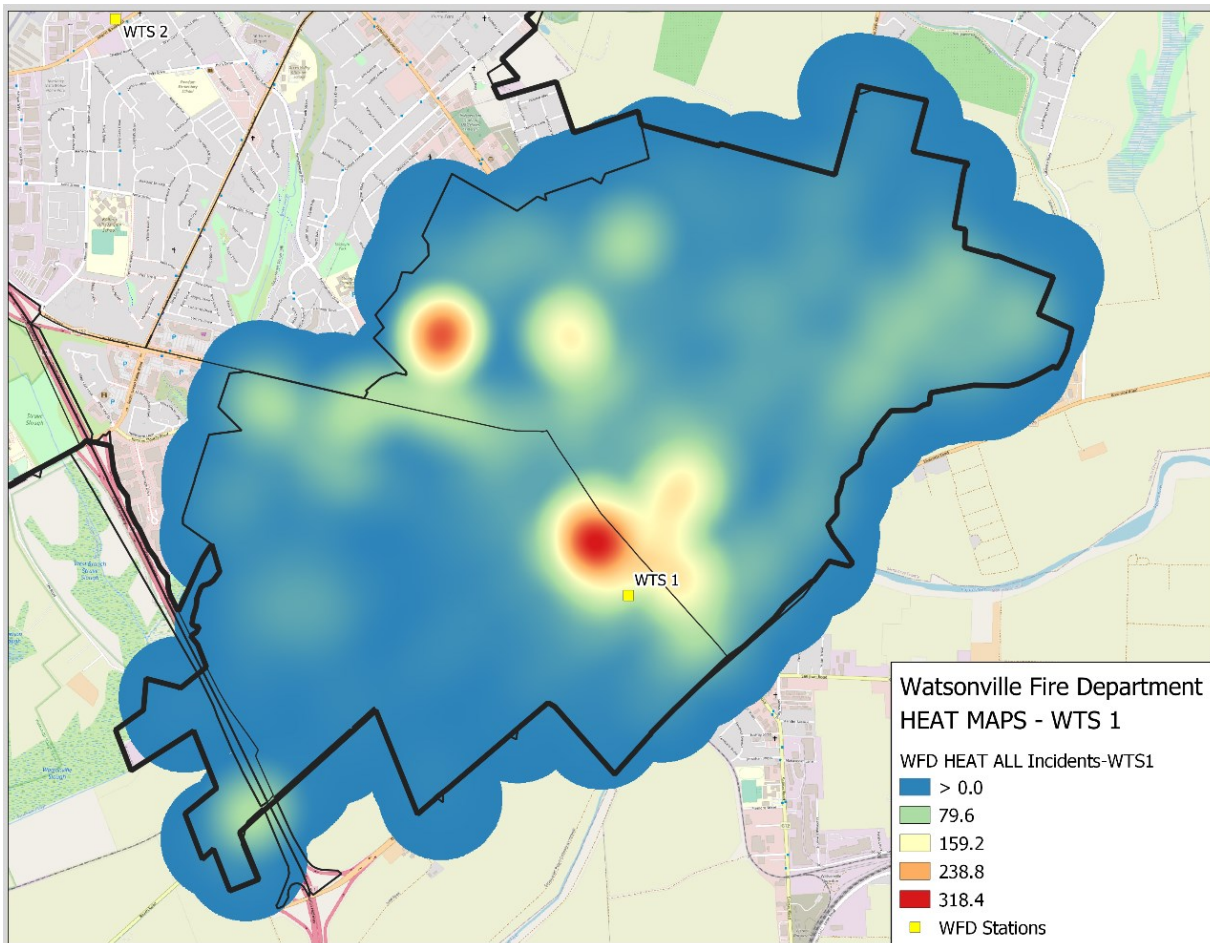


**Temporal Analysis**

Incident volume by time of day and by type of call shows Station 1's busiest times are from 9 am to 9 pm.

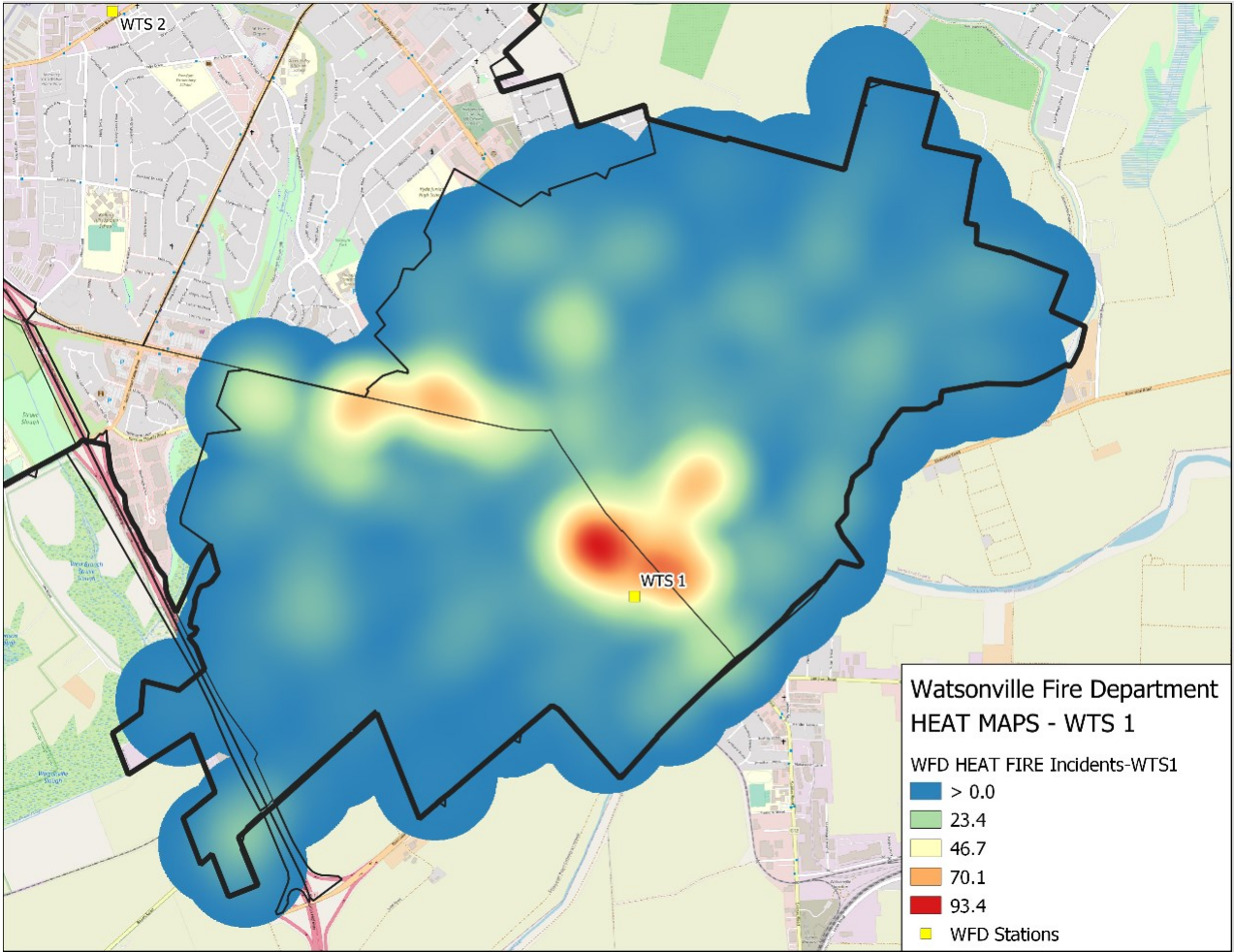
**Overall Hot Spot Map**

Shows the most call volume is adjacent to the station and at the NW end of the first due area.



### Fire Hot Spot Map

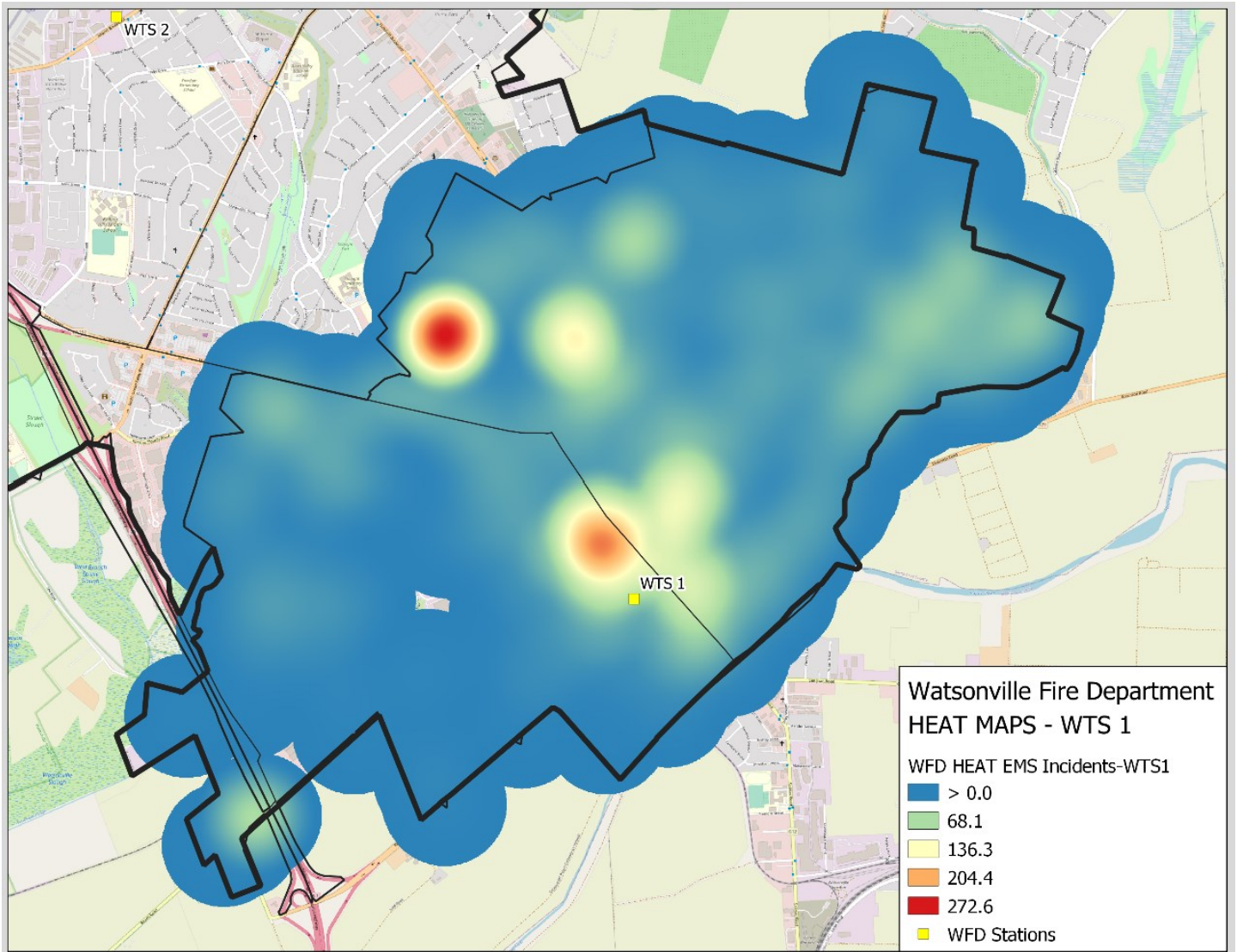
Most of the call volume for fire related calls is in close proximity to Station 1.





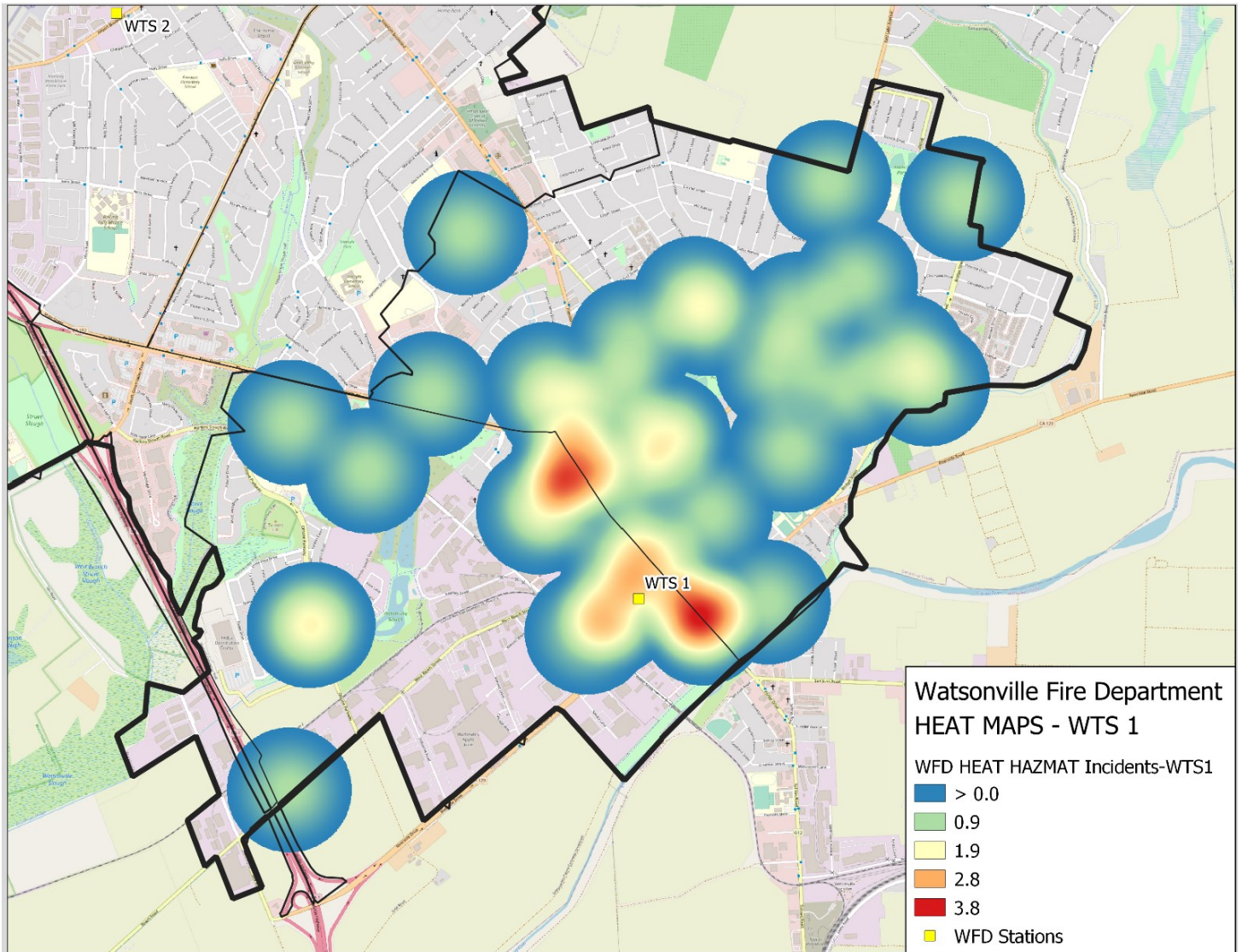
### EMS Hot Spot Map

Shows the highest call volume for EMS related calls is surrounding the physical location of Station 1. Calls spread out in an even fashion over the rest of the first due station area.



### HazMat Hot Spot Map

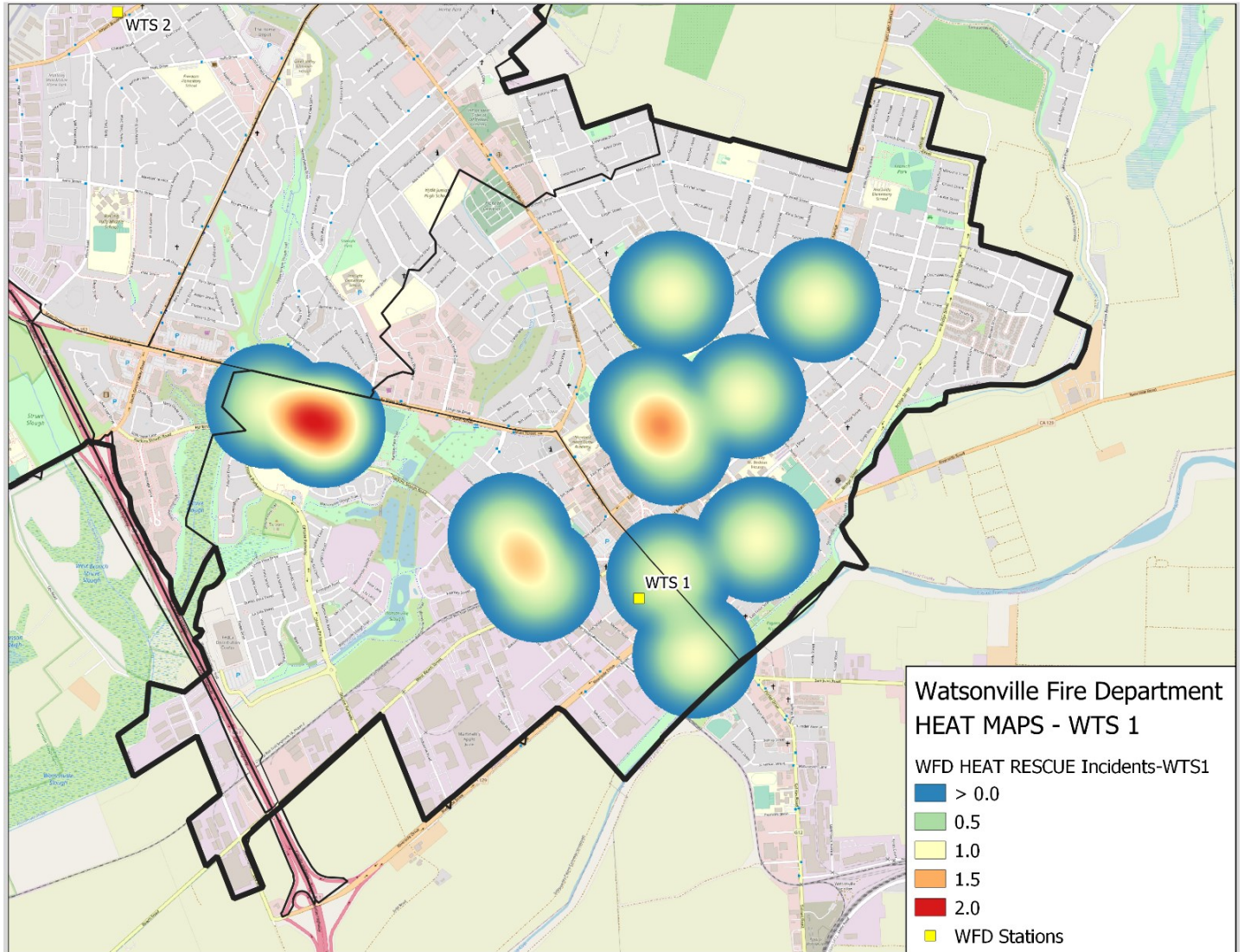
Like fire and EMS, the hazmat hot spot map for Station 31 shows the greatest call volume surrounding the station.





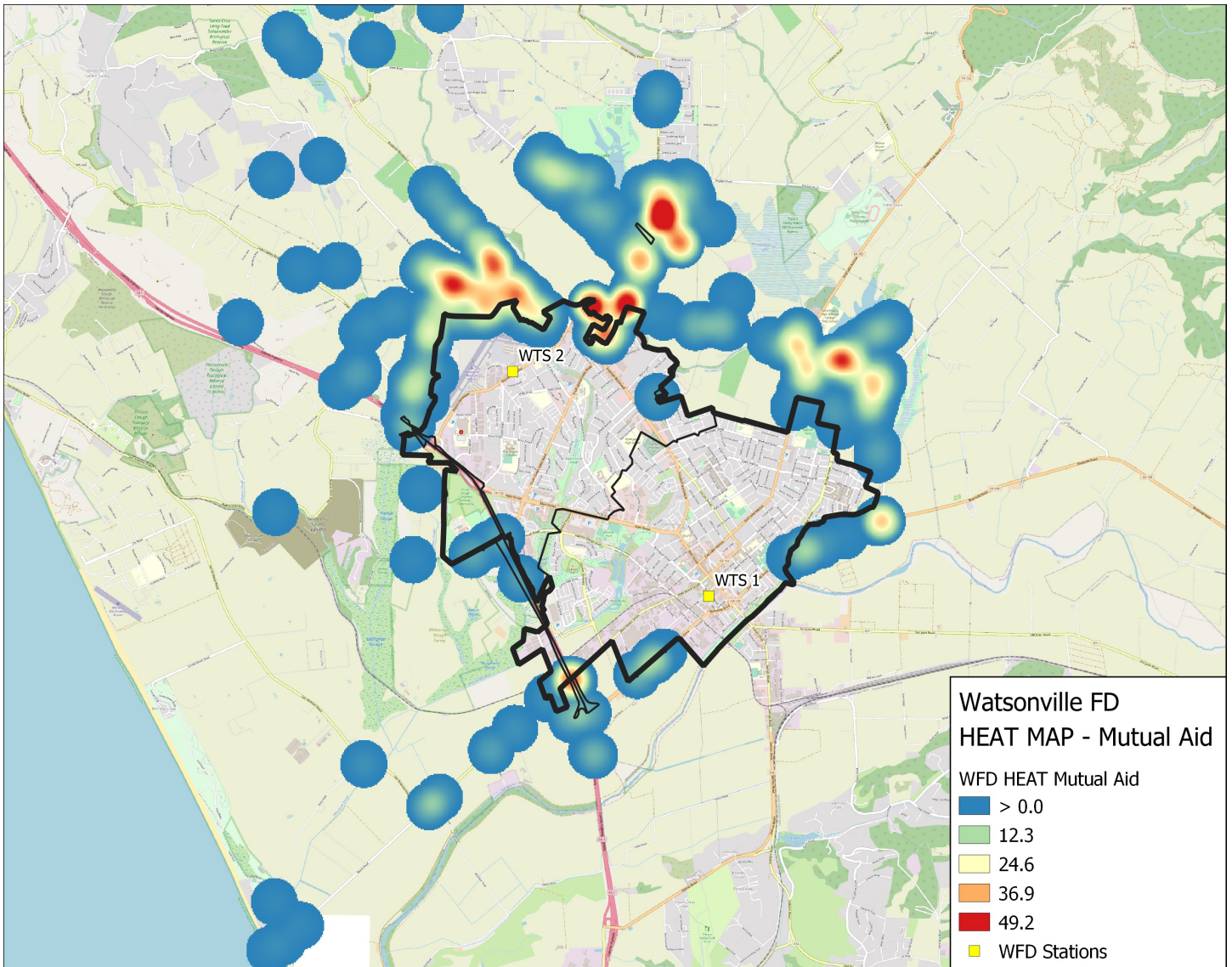
### Rescue Hot Spot Map

Other related calls appear in close proximity to Station , and a hot spot is located on the border of Station 2 to the Northwest.



### Mutual Aid Hot Spot Map

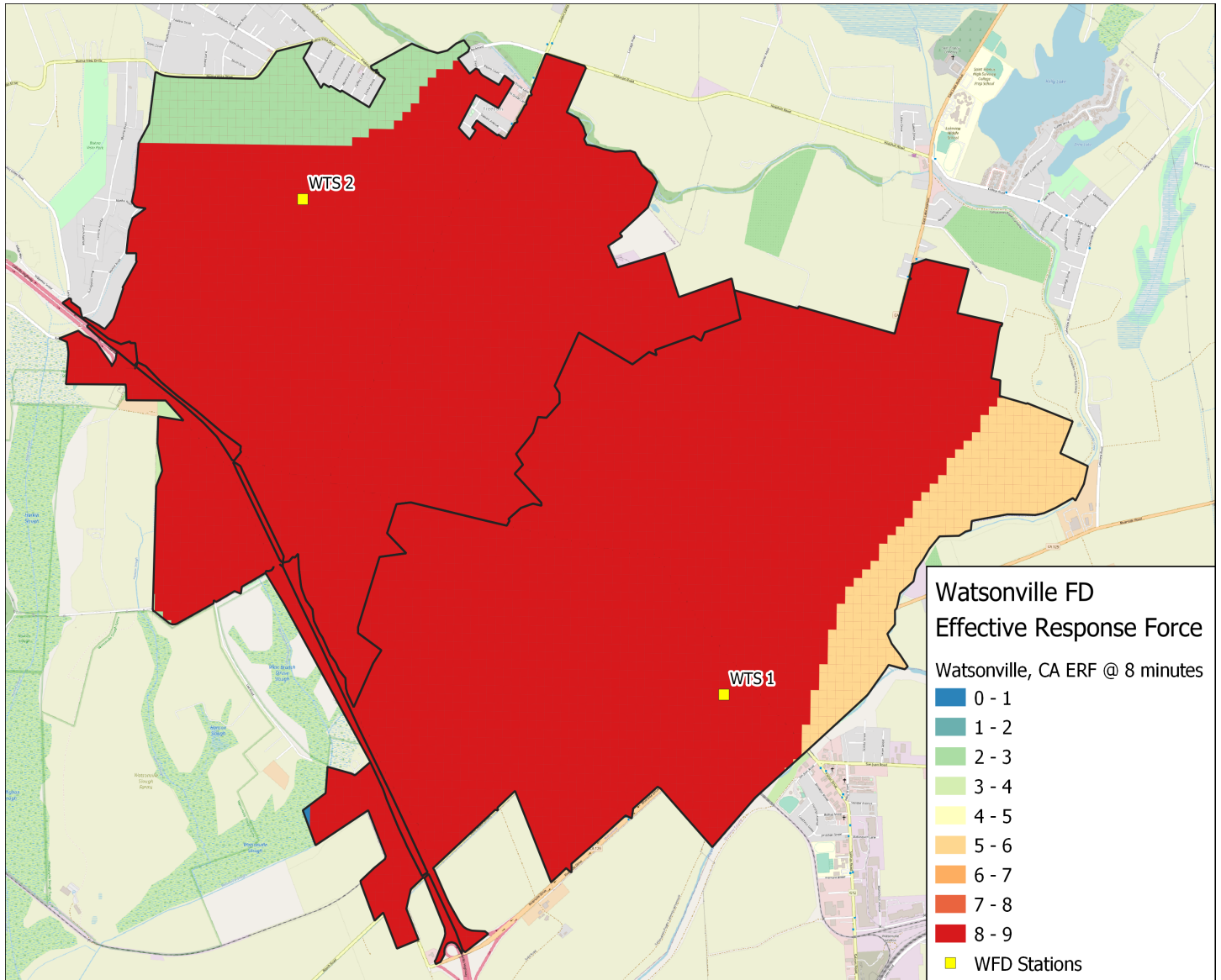
Considering Station 1, the highest concentration of Mutual/Automatic-Aid incidents that WFD provided occurred to the east northeast of the city boundary adjacent to Station 1s area.





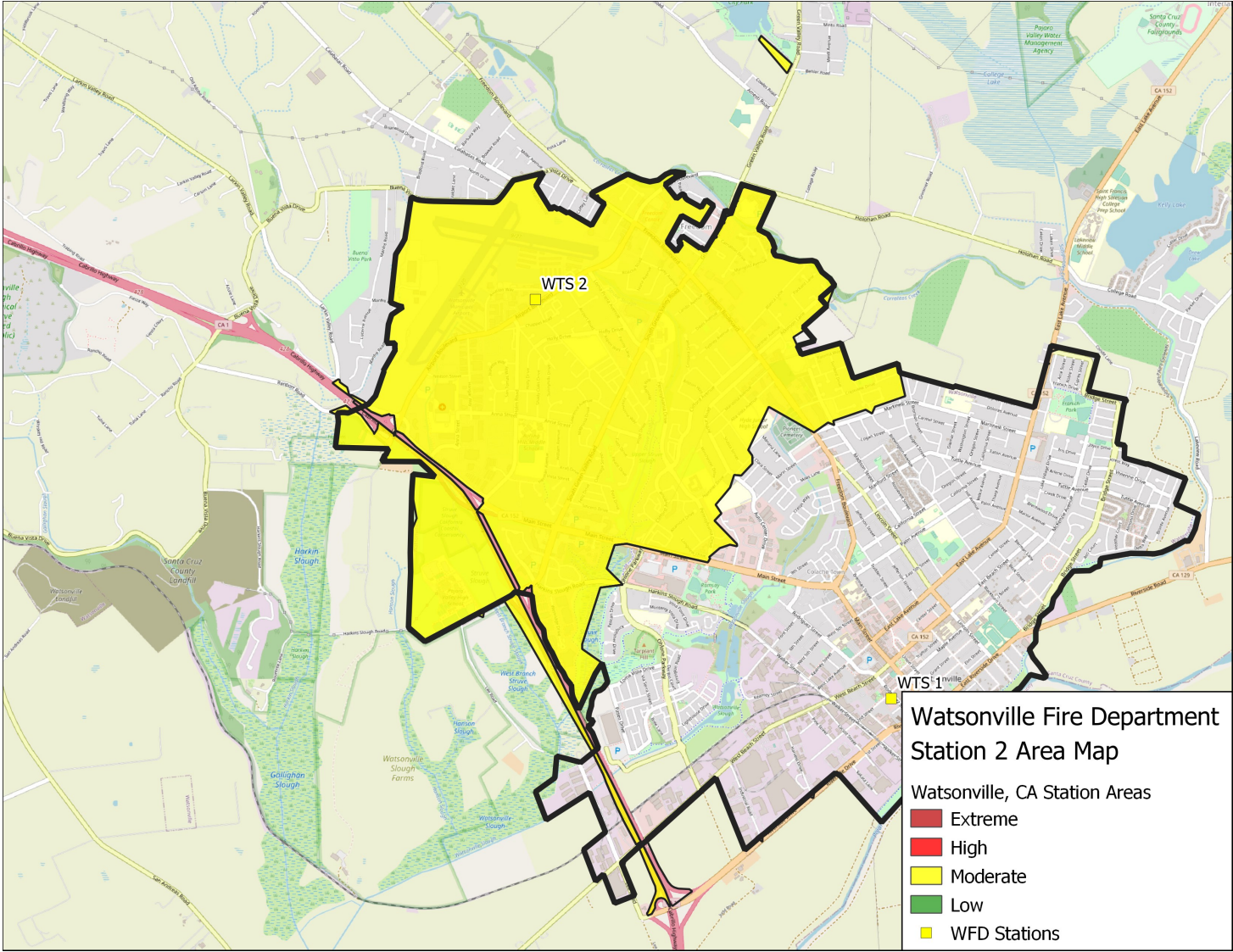
### Effective Response Force Mapping

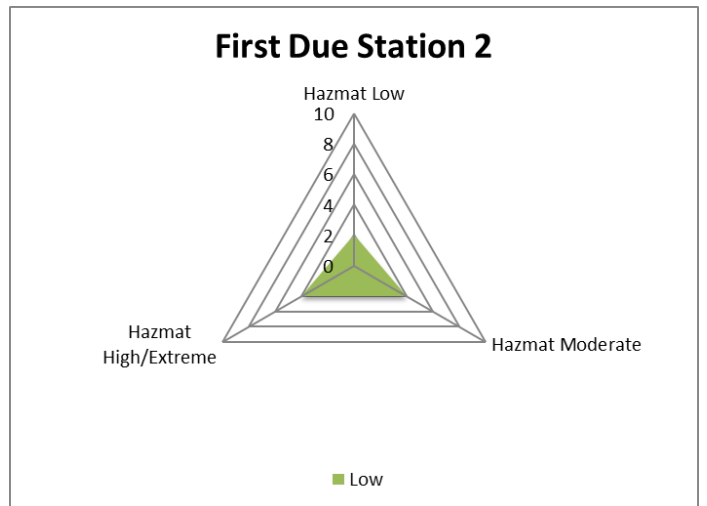
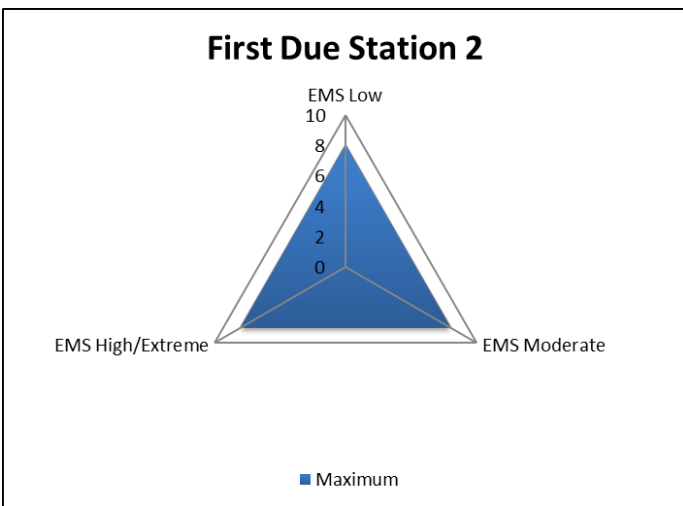
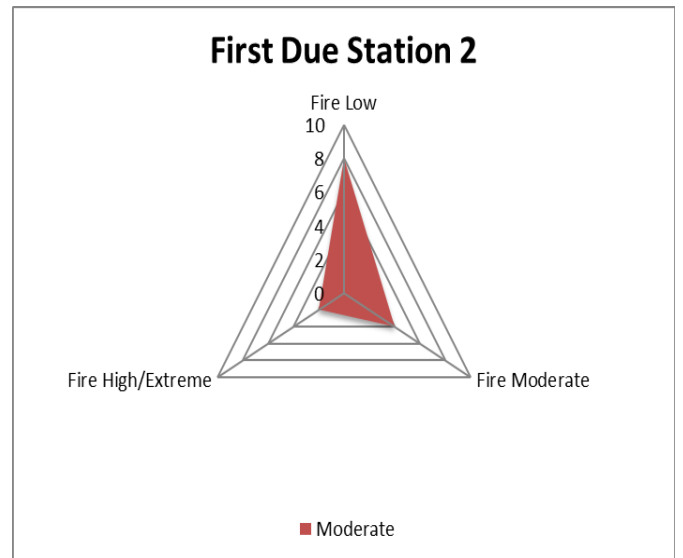
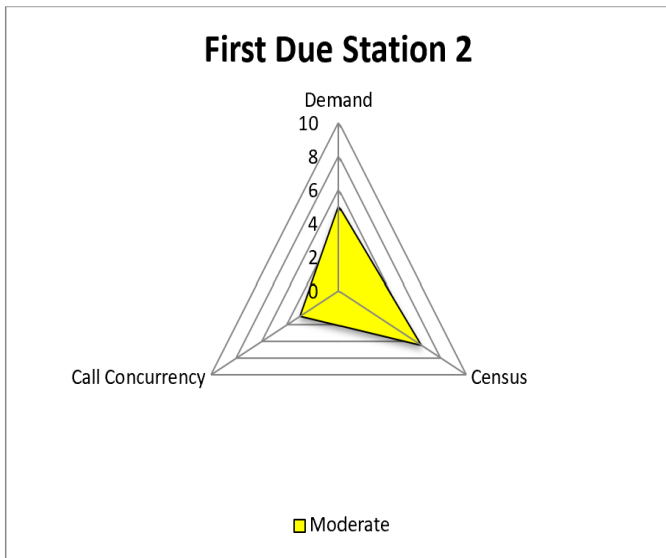
Over 90% of the City can achieve an assembly of nine personnel within an 8 minute travel time. Within Station 1's area, the east to northeastern region is the most challenged.



Station 2	Unit Identifier	Unit Type	<p><b>First Due Station 2</b></p>
	E4412	Engine	

Station 2 staffs one primary unit, Engine, 4412. The first due station area has moderate risk level and is adjacent to Station 1.





## Station 2 First Due Area Historical Data Analysis

**Historical Data Analysis** - three years of data for WFD was evaluated for Station 2, including number of incidents, number of unit responses, and baseline response times.

Station 2 First Due Area Incidents by Call Category	Reporting Period			
	2018-19	2019-20	2020-21	All
EMS Total	1,451	1,406	1,570	4,427
Fire Total	651	524	633	1,808
Hazmat Total	32	28	16	76
Technical Rescue Total	8	10	6	24
<b>Total</b>	<b>2,142</b>	<b>1,968</b>	<b>2,225</b>	<b>6,335</b>
Average Calls per Day	5.9	5.4	6.1	5.8
YoY Growth	N/A	-8.1%	13.1%	1.9%

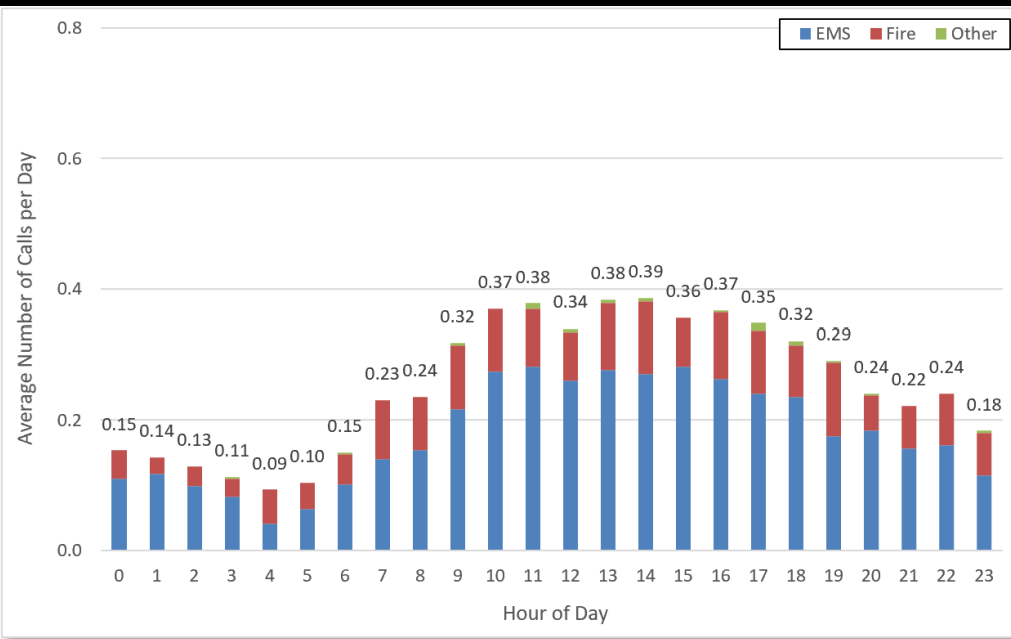
Unit ID	Reporting Period <sup>1</sup>		
	2018-19	2019-20	2020-21
E4412	1,734	1,358	2,273
E4414	314	754	77
E4415	2	0	0
E4436	0	17	8
U4495	1	1	0
<b>Total</b>	<b>2,051</b>	<b>2,130</b>	<b>2,358</b>
Average Responses per Day <sup>2</sup>	5.6	5.8	6.5

First Due Station 2: 1 <sup>st</sup> Arriving Baseline Performance		2018-19 to 2020-21	2018-19	2019-20	2020-21	2018-19 to 2020-21 Benchmark	2018-19 to 2020-21 Compliance
<b>Alarm Handling</b>		3:22	3:32	3:11	3:21	3:14	88.9%
<b>Turnout Time</b>		2:23	2:34	2:19	2:19	2:12	86.3%
<b>Travel Time</b>	Urban	6:20	6:24	6:20	6:16	5:51	85.7%
	Rural	N/A	N/A	N/A	N/A	N/A	
<b>Total Response Time</b>	Urban	10:17	10:46	10:00	9:58	9:32	86.0%
		n = 3,535	n = 1,157	n = 1,142	n = 1,236		
	Rural	N/A	N/A	N/A	N/A	N/A	
		N/A	N/A	N/A	N/A		

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Section F - Current Deployment and Performance

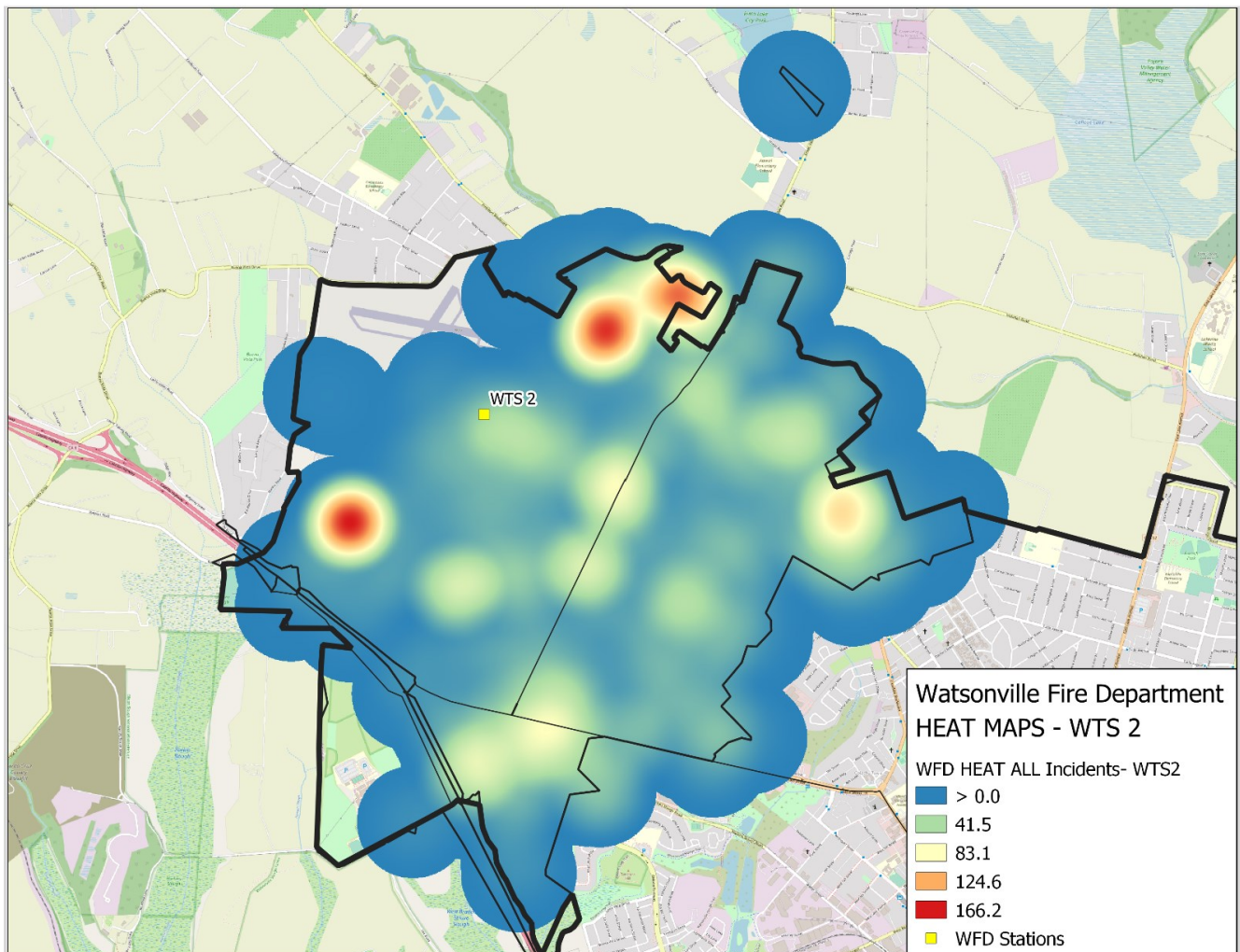


**Temporal Analysis**

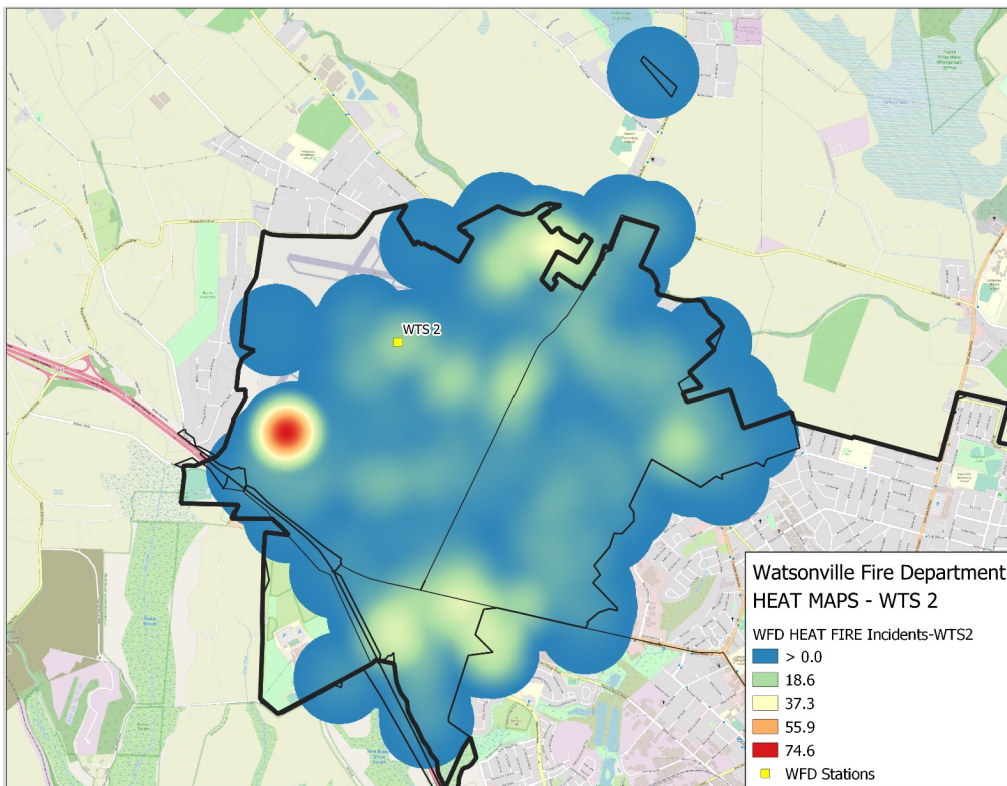
Incident volume by time of day by type of call shows Station 2's busiest times are from 8 am to 8 pm.

**Overall Hot Spot Map**

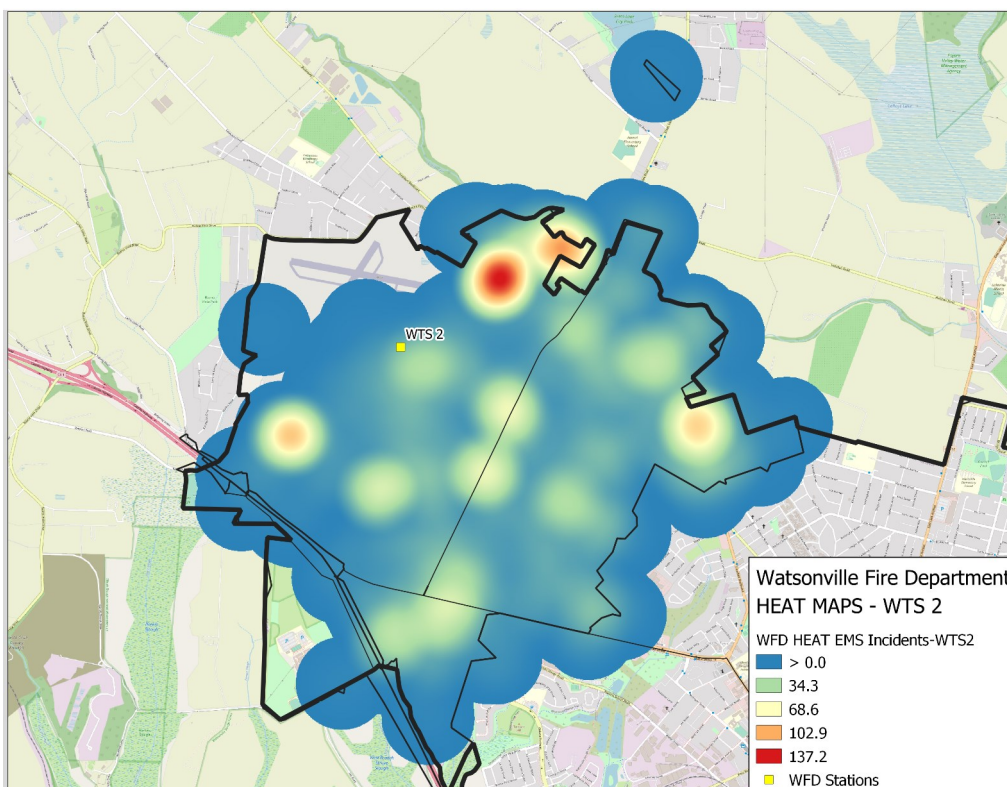
Two distinctive areas of call volume are occurring northeast of the station to the city border and west to southwest of the station.



**Fire Hot Spot Map**– This map indicates a fairly even distribution of fire calls with most located Southwest of Station 2.

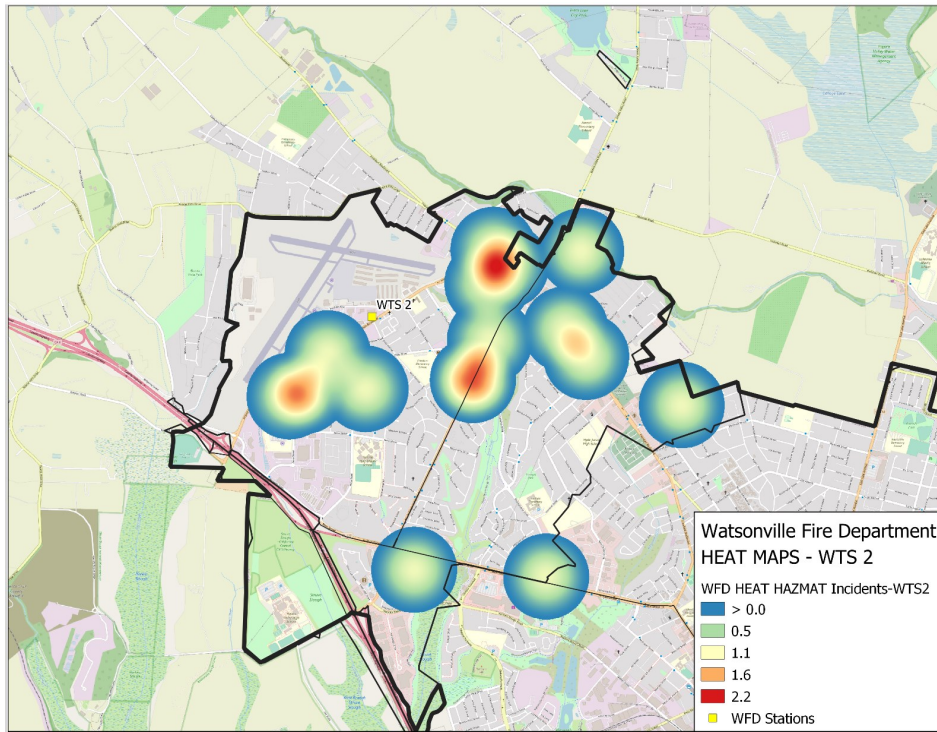


**EMS Hot Spot Map**– Indicates a reasonably even distribution of EMS calls with most located north-east of Station 2.

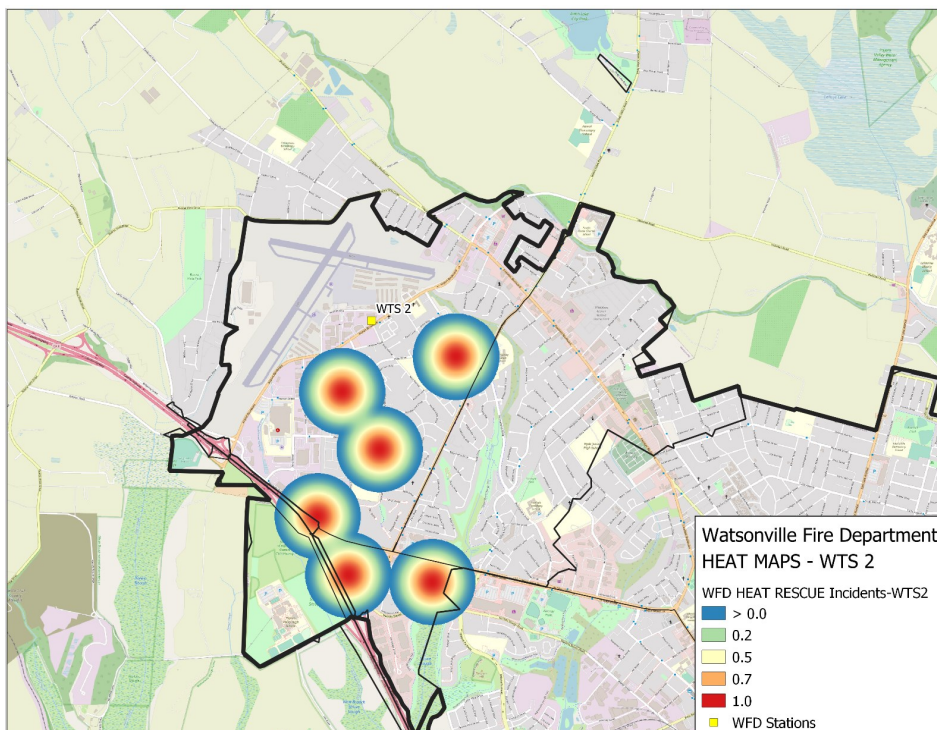




**Haz Mat Hot Spot Map**– Haz Mat calls are located throughout the first due area. However, the call density is less than 3 calls for a hotspot.

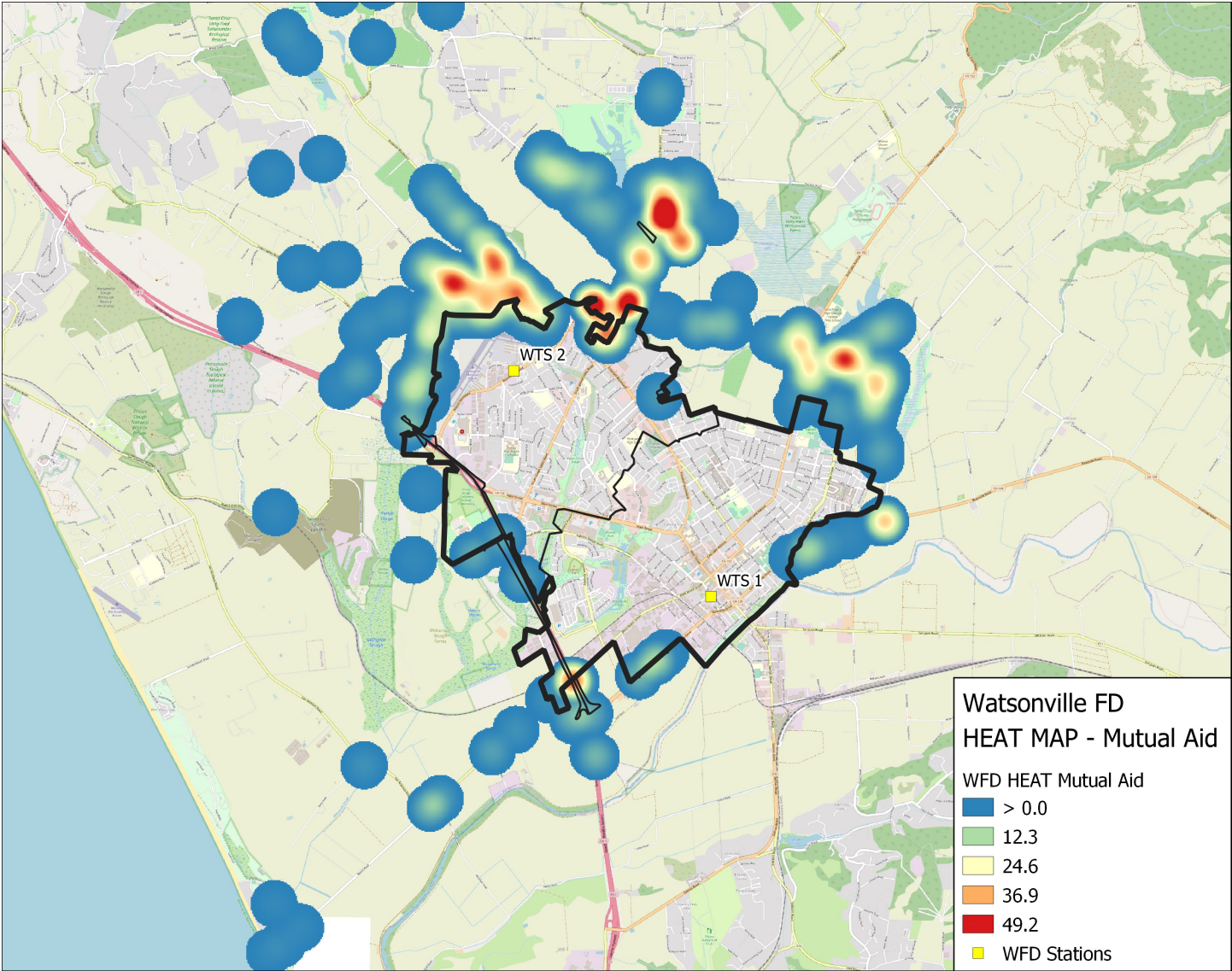


**Rescue Hot Spot Map**– Indicates a distribution of Rescue calls throughout the first due area to south and west of the station. However, the call density for a hotspot is only a single incident.



### Mutual Aid Hot Spot Map

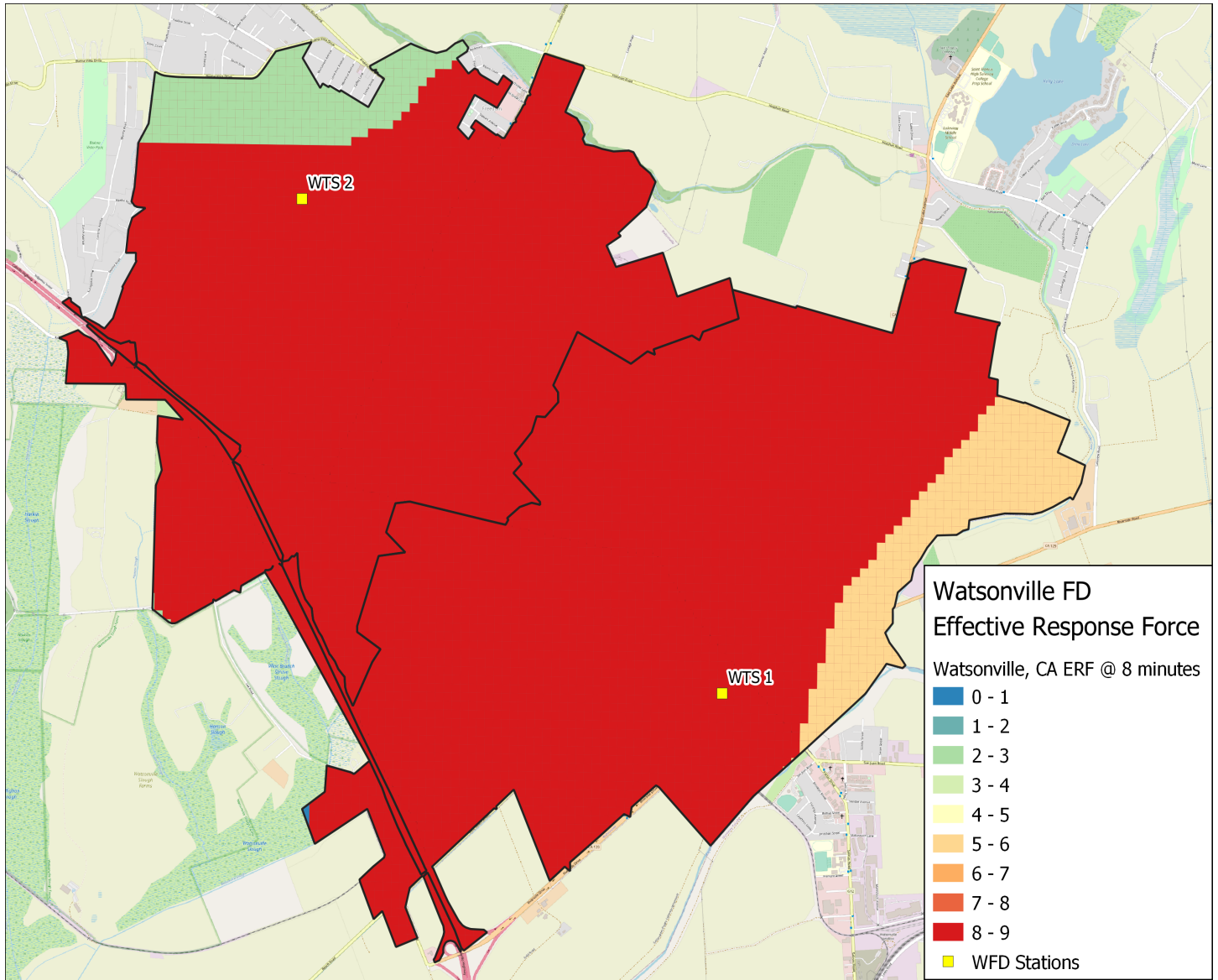
Considering Station 2, the highest concentration of Mutual/Automatic-Aid incidents that WFD provided occurred to the east, northeast, and north of the city boundary adjacent to Station 2s area.



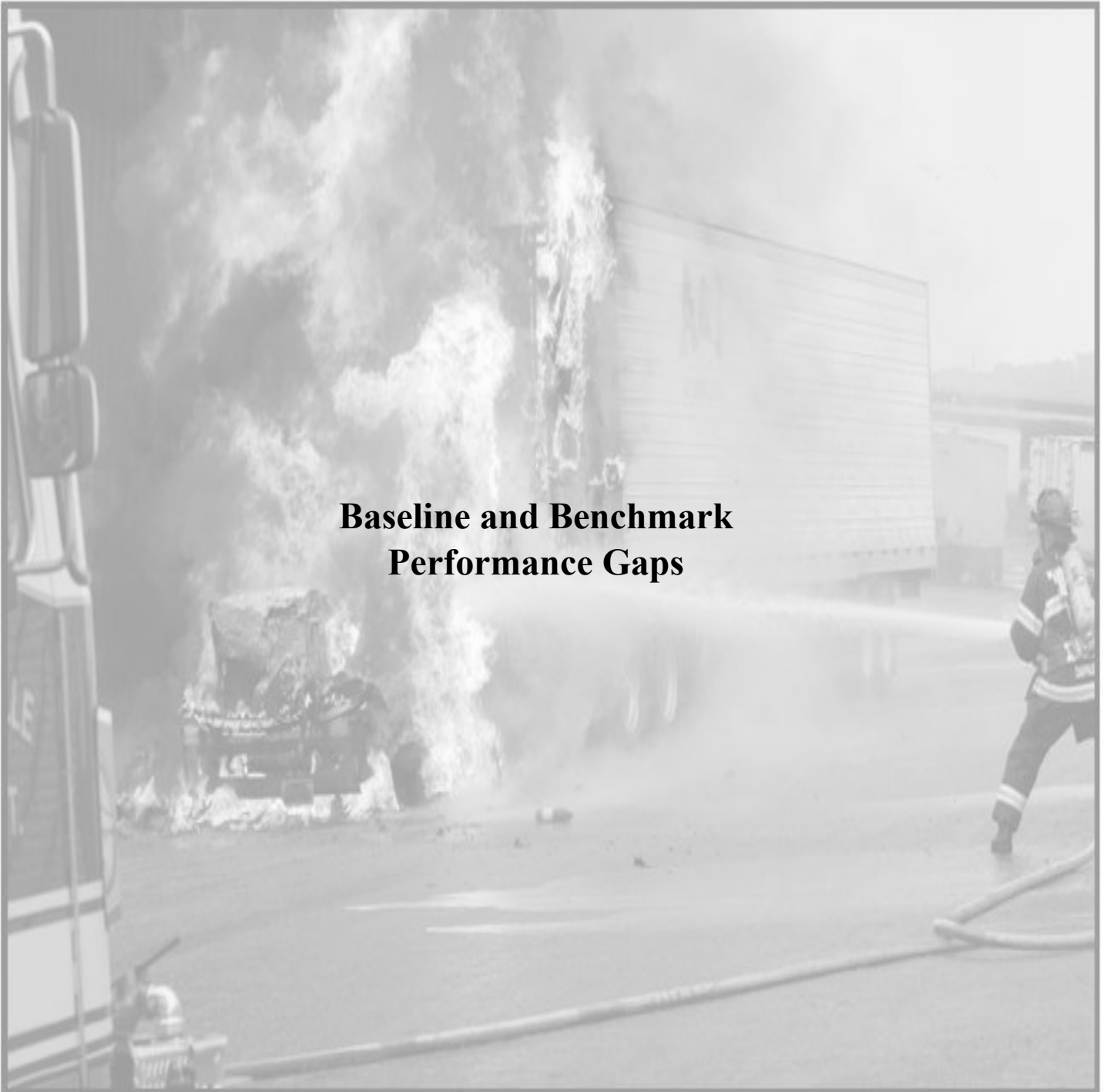


### Effective Response Force Mapping

Over 90% of the City can achieve an assembly of nine personnel within an 8 minute travel time. Within Station 2's area, the east to north and northeastern region is the most challenged.



## **Section G - Evaluation of Current Deployment and Performance**



**Baseline and Benchmark  
Performance Gaps**

## Baseline and Benchmark Performance Gaps

### Performance Gap Analysis

It is imperative that Department’s continuously evaluate their actual performance (baseline performance) versus their established goals (benchmark performance). This section takes a detailed look at the reasonableness of the gap between current and desired performance by station area.

#### Evaluation of Current Deployment and Performance as it relates to Criterion 2D:

The agency has assessed and provided evidence that its current deployment methods for emergency services appropriately address the risk in its service area. Its response strategy has evolved to ensure that its deployment practices have maintained and/or made continuous improvements in the effectiveness, efficiency, and safety of its operations, notwithstanding any external influences beyond its control. The agency has identified the impacts of these external influences and communicates them to the authority having jurisdiction.

First Due Station 1:		2018-19	2018-19	2019-20	2020-21	2018-19 to	2018-19 to
1 <sup>st</sup> Arriving Base-		to 2020-				2020-21	2020-21
line Performance		21				Benchmark	Compliance
<b>Alarm Handling</b>		3:38	3:54	3:30	3:25	3:14	86.2%
<b>Turnout Time</b>		2:28	2:37	2:28	2:16	2:12	84.7%
<b>Travel Time</b>	Urban	5:52	5:46	5:52	5:58	5:51	89.9%
	Rural	N/A	N/A	N/A	N/A	N/A	
<b>Total Re- sponse Time</b>	Urban	9:51	9:57	9:53	9:45	9:32	88.8%
		<i>n</i> = 6,208	<i>n</i> = 1,959	<i>n</i> = 1,978	<i>n</i> = 2,271		
	Rural	N/A	N/A	N/A	N/A	N/A	
		N/A	N/A	N/A	N/A		

Color coding legend: green fill ≥ 90%; yellow fill ≥ 70% to < 90%; red fill < 70%

First Due Station 2:		2018-19	2018-19	2019-20	2020-21	2018-19 to	2018-19 to
1 <sup>st</sup> Arriving Base-		to 2020-				2020-21	2020-21
line Performance		21				Benchmark	Compliance
<b>Alarm Handling</b>		3:22	3:32	3:11	3:21	3:14	88.9%
<b>Turnout Time</b>		2:23	2:34	2:19	2:19	2:12	86.3%
<b>Travel Time</b>	Urban	6:20	6:24	6:20	6:16	5:51	85.7%
	Rural	N/A	N/A	N/A	N/A	N/A	
<b>Total Re- sponse Time</b>	Urban	10:17	10:46	10:00	9:58	9:32	86.0%
		<i>n</i> = 3,535	<i>n</i> = 1,157	<i>n</i> = 1,142	<i>n</i> = 1,236		
	Rural	N/A	N/A	N/A	N/A	N/A	
		N/A	N/A	N/A	N/A		

Color coding legend: green fill ≥ 90%; yellow fill ≥ 70% to < 90%; red fill < 70%



**Section H - Plan for Maintaining and Improving  
Response Capabilities**

**Planning Team**

**Continuous Improvement Plan**

**Annual Appraisal Process**

## Performance Evaluation and Compliance Strategy

This SOC document is designed to guide the Department to continuously monitor performance, seek areas for improvement, and to clearly articulate service levels and performance to the community we have the privilege of serving. Therefore, the Fire Chief has established a Compliance Team to continuously monitor elements of this SOC and make recommendations for system adjustments or improvement quarterly.

### Compliance Team and Responsibility

The Compliance Team will consist of the following Department members and will have the responsibility of continuously monitoring changes in risk, community service demands, and Department performance in each program area, fire department demand zone, and/or risk category.

Chair - Fire Chief

Vice Chair - Deputy Chief of Operations

Member – Battalion Chief

Member – Labor Representative

Member – Senior Administrative Assistant

## Performance Evaluation and Compliance Strategy

Fire Rescue will evaluate system performance by measuring first due unit performance at the 90<sup>th</sup> percentile quarterly and annually. In addition, the Department will evaluate first due performance by each individual fire GPZ and by program area. Measures for the ERF by each program area, fire GPZ, and risk category will be evaluated annually. Annual reviews will be conducted in January of each year regarding the previous year. All response performance monitoring will exclusively evaluate emergency responses.

The Compliance Team will determine the strengths, weaknesses, opportunities, and threats of the system performance annually and make recommendations for system adjustments to the Fire Chief. Finally, Fire Rescue will annually update and evaluate the risk assessment matrices for relevancy and changes in community risk.

Ultimately, it is recommended that outcome measures are adopted and serve as the primary evaluation tool and that the traditional performance objectives and measures presented previously are utilized primarily as a management tool. In this manner, the Department will not be overly sensitized to incremental changes in performance criteria if the outcomes continue to be met.

### Core Competency 2D.1

The agency has a documented and adopted methodology for assessing performance adequacy, consistency, reliability, resiliency and opportunities for improvement for the total response area.

### Performance Indicator 2D.2

The agency continuously monitors, assesses, and internally reports at least quarterly, on the ability of the existing delivery system to meet expected outcomes and identifies and prioritizes remedial actions.

### Core Competency 2D.3

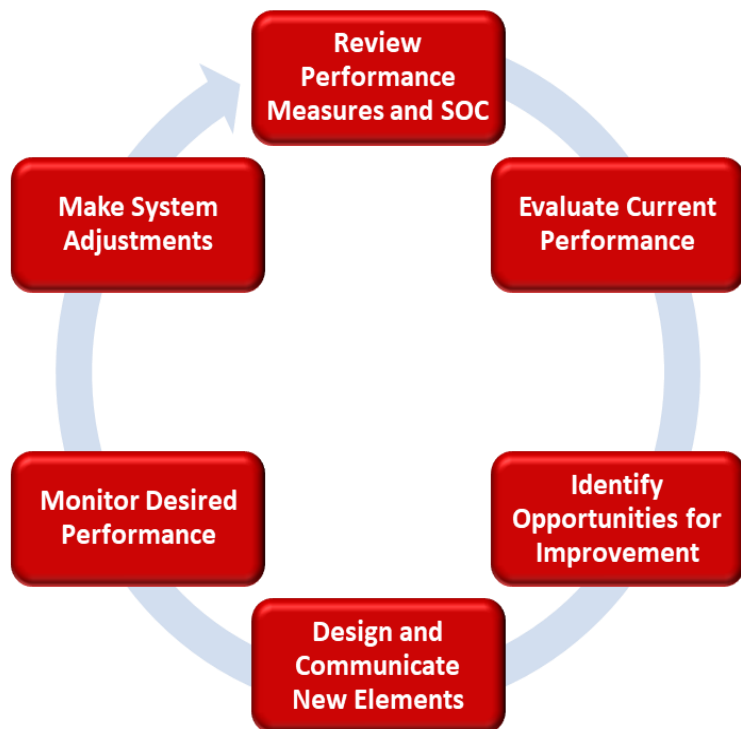
The performance monitoring methodology identifies, at least annually, future external influences, altering conditions, growth and development trends, and new or evolving risks, for purposes of analyzing the balance of service capabilities with new conditions or demands.

## Compliance Verification Reporting

The Compliance Team will communicate results of the period evaluations to the Fire Chief. The Fire Chief will disseminate the quarterly and annual results and any system adjustments in a timely manner so that both performance measurement and continuous improvement becomes part of the organization’s culture. All performance and risk measures will be reported through the Fire Chief to the Town Manager and the City Council and made available to the community annually.

## Constant Improvement Strategy

The Department utilizes the following conceptual model to facilitate both compliance and continuous improvement.



**Core Competency 2D.7**  
 The agency has systematically developed a continuous improvement plan that details actions to be taken within an identified timeframe to address existing gaps and variations.

**Performance Indicator 2D.8**  
 The agency has systematically developed a continuous improvement plan that details actions to be taken within an identified timeframe to address existing gaps and variations.

**Core Competency 2C.8**  
 The agency has identified efforts to maintain and improve its performance in the delivery of its emergency services for the past three (initial accreditation agencies) to five (currently accredited agencies) immediately previous years.

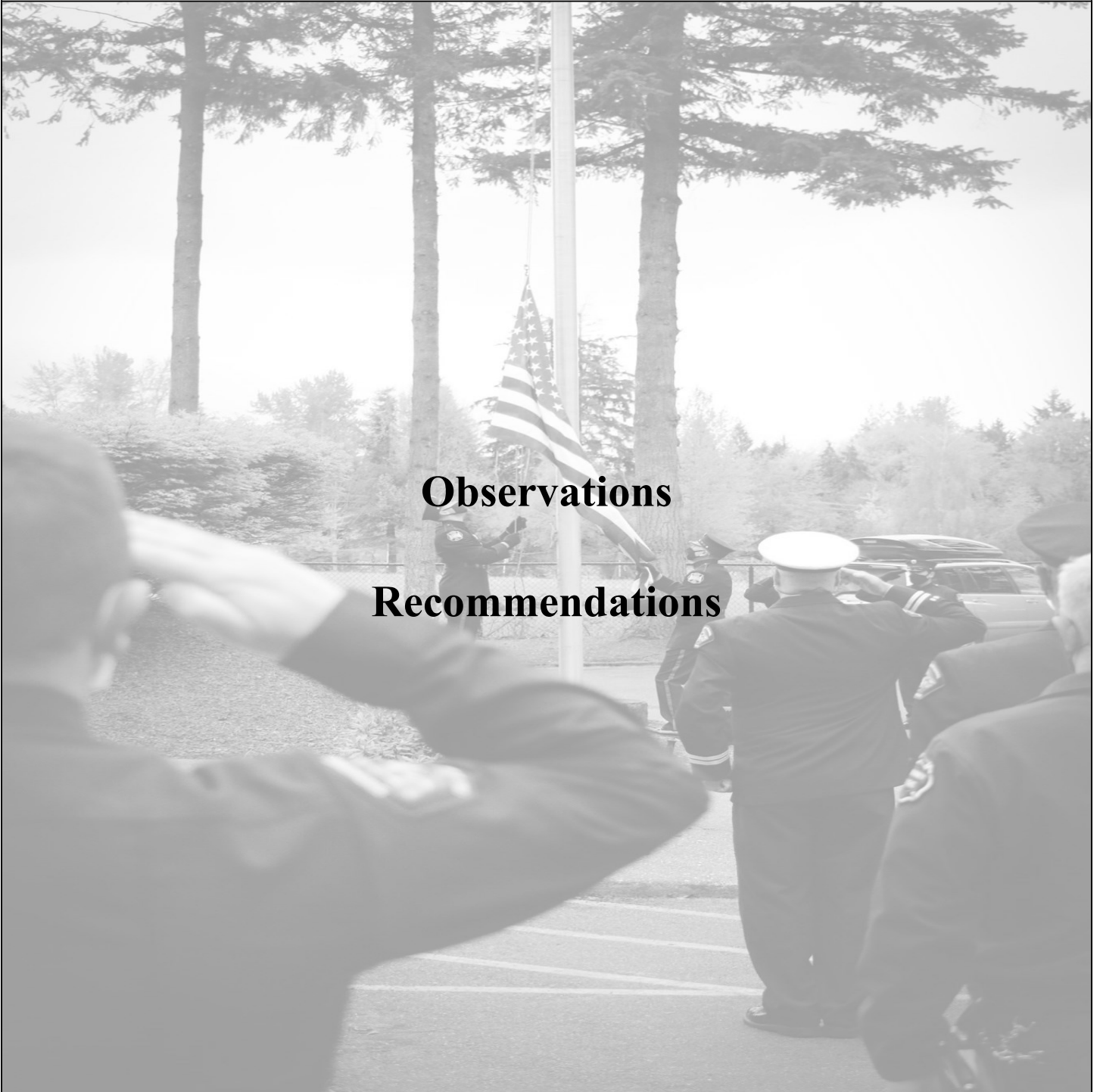
**Performance Indicator 2D.4**  
 The performance monitoring methodology supports the assessment of the efficiency and effectiveness of each service program at least annually in relation to industry research.

**Core Competency 2D.6**  
 Performance gaps for the total response area, such as inadequacies, inconsistencies, and negative trends, are determined at least annually.

**Core Competency 2D.9**  
 On at least an annual basis, the agency formally notifies the AHJ of any gaps in current capabilities, capacity, and the level of service provided within its delivery system to mitigate the identified risks within its service area, as identified in its community risk assessment/standards of cover.

**Performance Indicator 2D.10**  
 The agency interacts with external stakeholders and the AHJ at least once every three years to determine the stakeholders’ and AHJ’s expectations for types and levels of services provided by the agency.

## **Section I - Observations and Recommendations**



**Observations**

**Recommendations**



# **OVERALL EVALUATION, CONCLUSIONS, AND RECOMMENDATIONS**

## **Overall Evaluation**

The overall evaluation is the final component of the Standards of Cover (SOC) process. As a risk-based process that incorporates risk, mitigation, and outcomes measures, both the Department and the City leadership can more easily discuss service levels, outcomes, and the associated cost allocations based on community risk.

Overall, the department is performing well within the current system. The community enjoys high quality services from a professional and well-trained department. The City per unit workload is both reasonable ( $\leq 10\%$ ) and well below the upper recommended threshold ( $< 30\%$ ). In other words, the department has a robust deployment strategy, and the existing resources can absorb more work prior to reinvestment due to workload. This provides considerable cost avoidance and long-term expenditure sustainability within the current resource allocation.

The City's distribution and concentration delivery models are appropriately aligned with the City's unique risks. The quantity and locations of the fire stations are well-planned and performing well. However, there are areas that have been identified that the Department could make incremental system adjustments to improve.

## **General Observations**

### ***Total Response Time***

The department has established baseline and benchmark performance objectives during the development of this SOC. The individual station demand zone performance provides understanding of the compartmentalized performance. While it is up to the department to establish policy related to meeting or exceeding community expectations, there are opportunities to better align goals and baseline objectives.

Observations and remedies:

- The department could impact the total response time in most instances with incremental improvement of crew turnout time that is more closely aligned with best practices.
  - Department could improve by approximately 1 minute on EMS incidents.
  - Department could improve by approximately 1 minute on Fire incidents.
- Turnout time performance is typically within personnel and management control.
- Improvement of turnout times at no cost would receive the same system benefit as substantive monetary investments in the response distribution model.

## Station Locations and Current Performance

The City's current total response time of 9.8 minutes at the 90<sup>th</sup> percentile is well aligned with the national experience. Both stations have a relatively commensurate level of performance as the performance varies by approximately 12 seconds between stations. This confirms a well-designed station placement.

**Table 1: 90<sup>th</sup> Percentile Dispatch, Turnout, Travel, and Response Times by Jurisdiction and Program – First Arriving WFD Units**

Jurisdiction	Program	Dispatch Time (Minutes)	Turnout Time (Minutes)	Travel Time (Minutes)	Response Time (Minutes)	Sample Size <sup>1</sup>
Within WFD	EMS	3.6	2.2	5.9	9.7	2,859
	Fire	2.3	2.4	7.0	9.9	776
	Hazmat	3.8	2.7	10.9	14.3	53
	Rescue	--	--	--	--	3
	<b>Total</b>	<b>3.4</b>	<b>2.3</b>	<b>6.1</b>	<b>9.8</b>	<b>3,691</b>

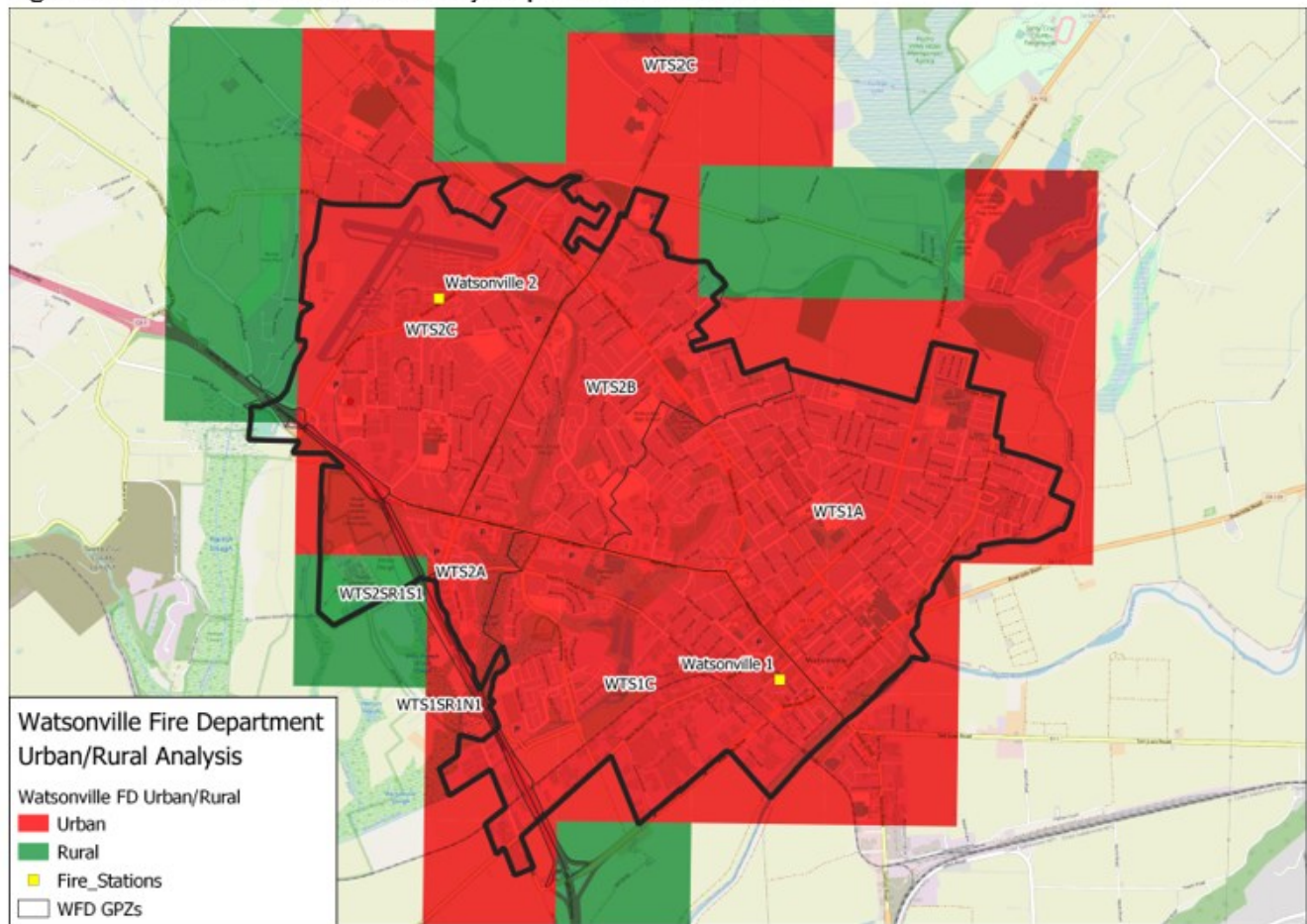
<sup>1</sup>Sample sizes reflect the number of responses made by first arriving primary front-line units assigned to WFD; due to missing or excluded time data, sample sizes corresponding to individual table metrics may be smaller.

**Table 2: 90<sup>th</sup> Percentile Performance Times by Demand Zone (First Due Station) – First Arriving WFD Units**

Demand Zone (First Due Station)	Dispatch Time (Minutes)	Turnout Time (Minutes)	Travel Time (Minutes)	Response Time (Minutes)
1	3.4	2.3	6.0	9.8
2	3.3	2.3	6.3	10.0
<b>Total</b>	<b>3.4</b>	<b>2.3</b>	<b>6.1</b>	<b>9.8</b>

The current performance is both expected and reasonable from a system design perspective when considering the differences in demand and geographic areas across the City. Urban/Rural call density is calculated based on the relative concentration of incidents based on approximately 0.5-mile geographic areas as well as the adjacent 0.5-mile areas. The results demonstrate an urban and rural designation based on call density for services and not based on population. The red areas are designated as urban service areas and the green areas are designated as rural service areas. Any area that is not colored has less than one call every six months in the 0.5-mile area and the adjacent areas. When referring to the Figure below, this confirms that each of the station locations are strategically located with the community demand. This strategy is well aligned, and more responsive, as a commensurate risk model than the current census definition of urban and rural.

Figure 81: Urban and Rural Call Density Map with Current Stations



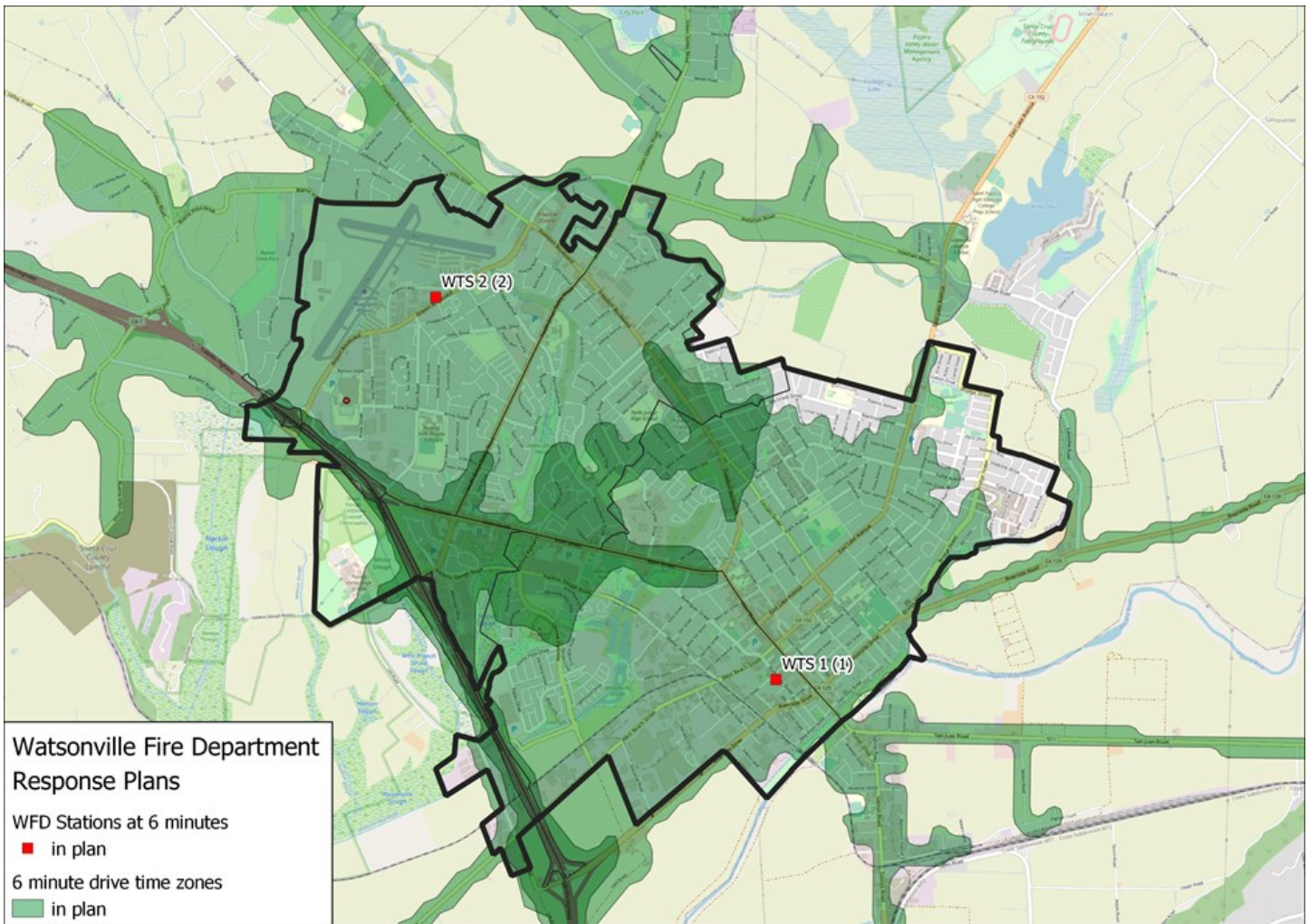
### Validation of Planning Analysis

The first step in this validation analysis is to utilize the historical performance to validate the planning analyses utilized by the GIS system. The FY21 historical performance demonstrated a 6.1-minute overall department travel time performance at the 90<sup>th</sup> percentile. The planning assessments estimated 94.44% risk coverage by two stations within 6-minutes travel time. One station could only cover 60.32% of the incidents within 6-minutes. Therefore, there is a high degree of agreement between the planning tools and actual historical performance.

**Table 3: Marginal Station Contribution for 6-Minute Travel Time – All Calls**

Rank	Station	Station Capture	Total Capture	Percent Capture
1	WTS 1	11,687	11,687	60.32%
2	WTS 2	6,610	18,297	94.44%



**Current Station Bleed Map for 6-Minute Travel Time – All Calls****Establishing Benchmark Performance Objectives**

The benchmarking and gap analyses completed within this SOC process served difficult to the relatively low call volumes over the four program areas and four risk levels. In other words, the sample sizes were unusable for establishing 90<sup>th</sup> percentile performance in a meaningful way stratified by risk level and program.

Therefore, in discussions with the department, the aggregate performance with a total population was utilized to establish usable baseline objectives and to create a 10% improvement for the benchmarking. A gap analysis of current aggregate performance and proposed benchmarking were provided in Section H.

Overall, the performance is within a reasonable goal that is achievable if desired. For example, the improvement of dispatch time and turnout time by 30 seconds to one minute would meet or exceed benchmarked performance.



## Comparison to National References

There are two notable references for travel time available to the fire service in National Fire Protection Association (NFPA) 1710<sup>1</sup> and the Commission on Fire Accreditation International (CFAI)<sup>2</sup>. NFPA 1710 suggests a 4-minute travel time at the 90<sup>th</sup> percentile for first due arrival of Basic Life Support (BLS) and fire incidents, and the CFAI recommends a 5 minute and 12 seconds travel time for first due arrival in an urban/suburban population density. The arrival of an Advanced Life Support (ALS) unit is recommended at 8 minutes travel time by NFPA 1710. It is important to note that the previous edition (9<sup>th</sup> edition) of the CFAI guidelines have de-emphasized response time and only reference the legacy standards with a separately provided companion document<sup>3</sup>. There is no reference for response times in the most recent publication.<sup>4</sup>

The following analysis evaluates the 4-minute travel time at the 90<sup>th</sup> percentile within NFPA 1710.

When referring to the marginal utility analyses provided in the tables on the following pages, ascending rank order is the station's capability to cover risk (incidents) for all calls in relation to the total historical call volume of the sample period FY21 (July 1, 2020 – June 30, 2021). Station is the identifier for the current WFD station; station capture is the number of calls the station would capture within the specified travel time parameter; total capture is the cumulative number of calls captured with the addition of each station; and percent capture is the cumulative percentage of risk covered with the addition of each station.

The goal would be to achieve at least 90% capture. Figures depict drive time mapping.

Results suggest that with two stations, 65.07% of all calls could be responded to within 4-minutes or less travel time (Table 2; Figure 1). One station could only cover 34.68% of the incidents within 4-minutes.

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<sup>1</sup> National Fire Protection Association. (2010). *NFPA 1710, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*. Boston, MA: National Fire Protection Association.

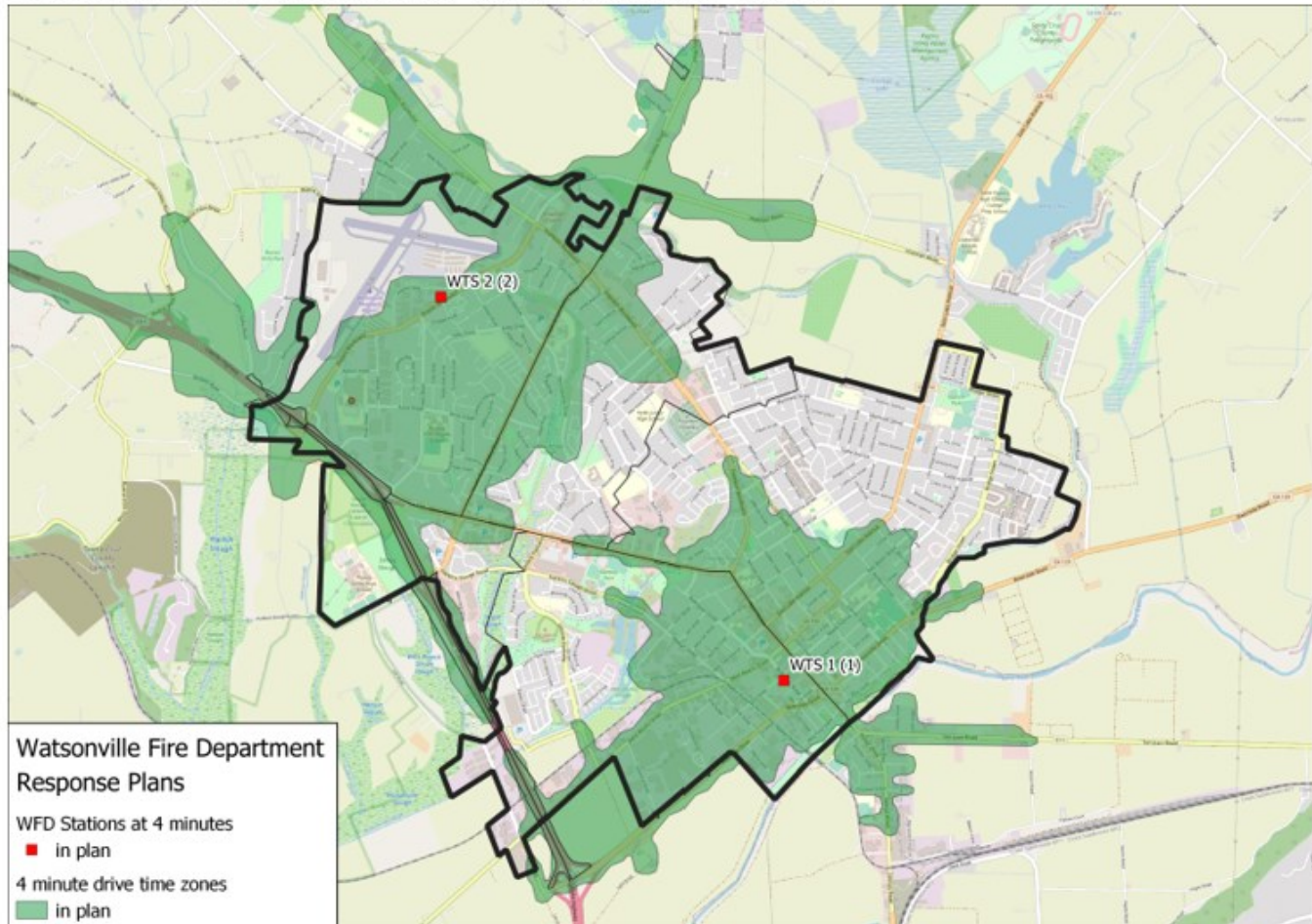
<sup>2</sup> CFAI. (2009). *Fire & emergency service self-assessment manual*, (8<sup>th</sup> ed.). Chantilly, Virginia: Author. (page 71)

<sup>3</sup> CFAI. (2016). *Fire & emergency service self-assessment manual*, (9<sup>th</sup> ed.). Chantilly, Virginia: Author.

<sup>4</sup> CFAI. (2020). *Quality improvement for the fire and emergency services*. Chantilly, Virginia: Author.

**Table 2: Marginal Station Contribution for 4-Minute Travel Time – All Calls**

Rank	Station	Station Capture	Total Capture	Percent Capture
1	WTS 1	6,718	6,718	34.68%
2	WTS 2	5,888	12,606	65.07%

**Figure 1: Current Station Bleed Map for 4-Minute Travel Time – All Calls**

## NFPA 1710 Analysis

### Travel Time

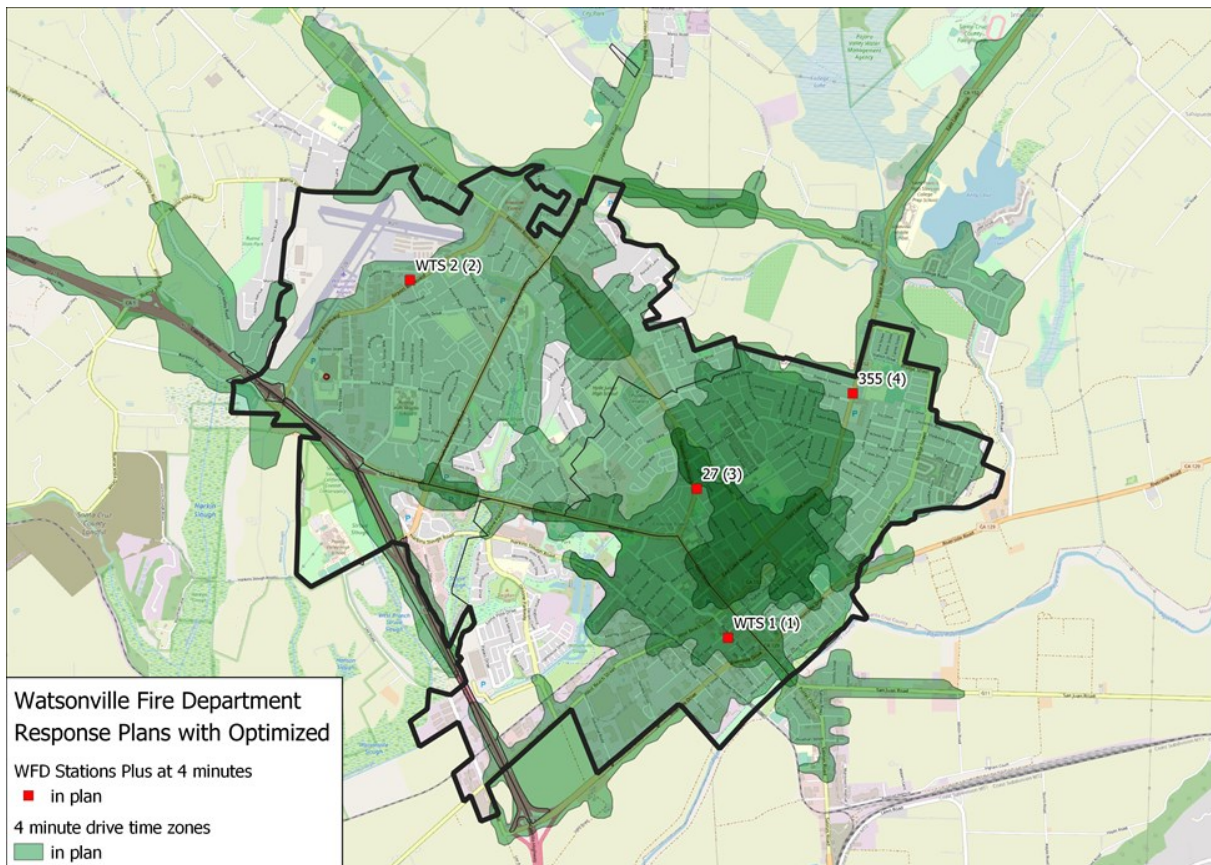
This analysis utilized both Stations 1 and 2 current placement and capabilities and then optimized additional stations until at least 90% of the incidents could be responded to within 4-minutes travel time. Results found that at least four stations would be required to meet the NFPA 1710 response time parameters.

Results suggest that with a four-station configuration, 90.81% of all calls could be responded to within 4-minutes or less travel time.

**Marginal Station Contribution for 4-Minute Travel Time – All Calls**

Rank	Station	Station Capture	Total Capture	Percent Capture
1	WTS 1	6,718	6,718	34.68%
2	WTS 2	5,888	12,606	65.07%
3	27	3,440	16,046	82.82%
4	355	1,548	17,594	90.81%

**Current Station Bleed Map for 4-Minute Travel Time – All Calls**



**Dispatch Time**

NFPA standards that speak to dispatch time (1225/1710) continue to recommend a 60 second call processing time. However, in our experience best practice for call processing that includes a formal call triage process is 2-minutes or less at the 90<sup>th</sup> percentile. Therefore, opportunities may exist to partner with the 911 provider and explore solutions that may bring down the call processing time.

**Turnout Time**

NFPA standards that speak to dispatch time (1710) continue to recommend 60 seconds for EMS incidents and 80 seconds for fire, hazmat, and rescue incidents. Therefore, as previously described, opportunities exist that are within management control to improve turnout time with little to no-investment.. However, WFD does recognize that idiosyncrasies may exist that are influencing the results due to connectivity issues.. Therefore, the department is conducting further investigation prior to improvement efforts.



## Efficacy of a Three-Station Deployment Model

One of the tenants of the study was to evaluate the efficacy of a three-station solution for the City. The following sections examined the City's pilot study location and a commuter generated location. Overall, the results found that the third station would still fall short of meet NFPA 1710 at 4-minutes. At 5-minutes travel time, the pilot station would provide the ability to improve travel time from 6-minutes to 5-minutes. The computer-generated location provided similar results, but with approximately a 3% improvement over the pilot study location. However, at the 6-minute travel time, the third location was not necessary to cover greater than 90% of the incidents within 6-minutes or less.

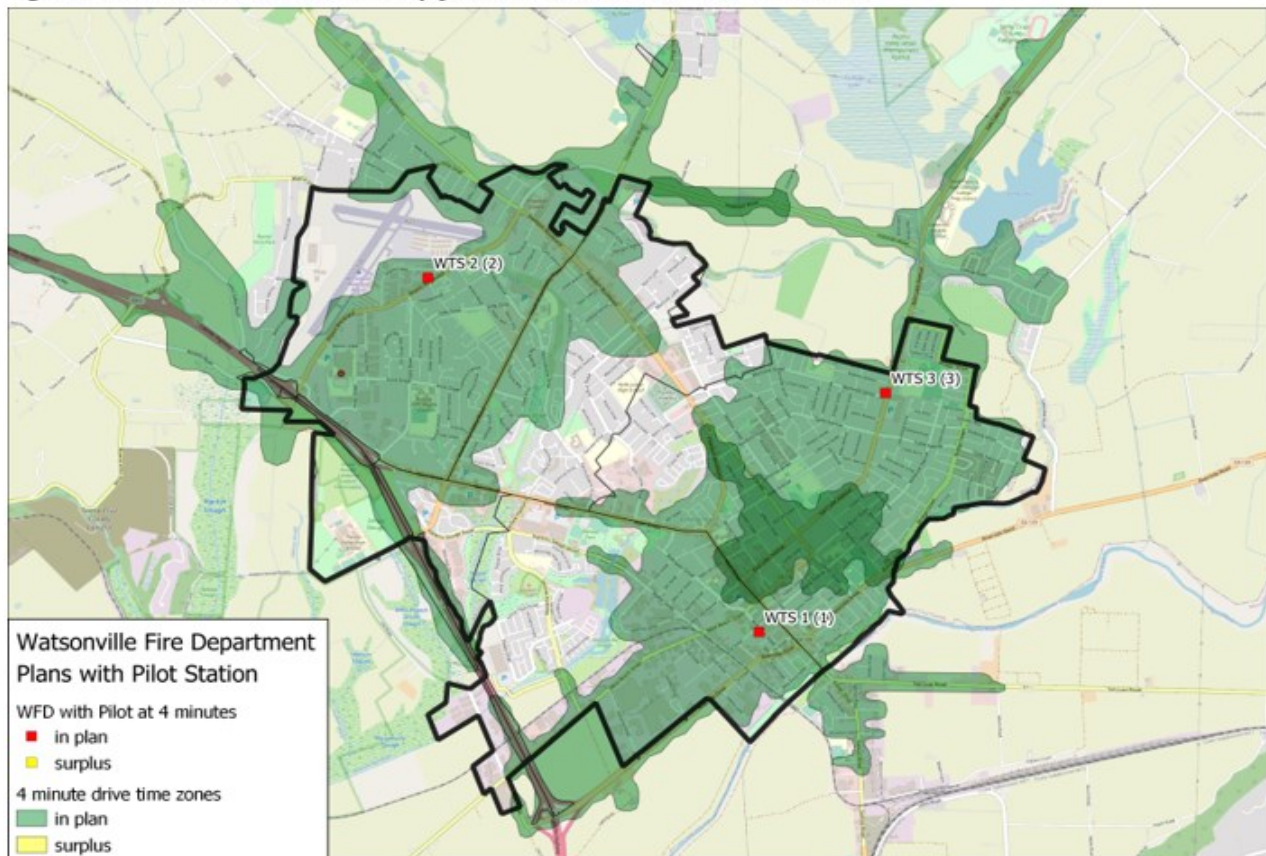
### 4-Minute Travel Time – All Calls

Results suggest that with a three-station configuration, 77.36% of all calls could be responded to within 4-minutes or less travel time.

**Table 17: Marginal Station Contribution for 4-Minute Travel Time – All Calls**

Rank	Station	Station Capture	Total Capture	Percent Capture
1	WTS 1	6,718	6,718	34.68%
2	WTS 2	5,888	12,606	65.07%
3	WTS 3	2,382	14,988	77.36%

**Figure 4: Current Station Bleed Map for 4-Minute Travel Time – All Calls**





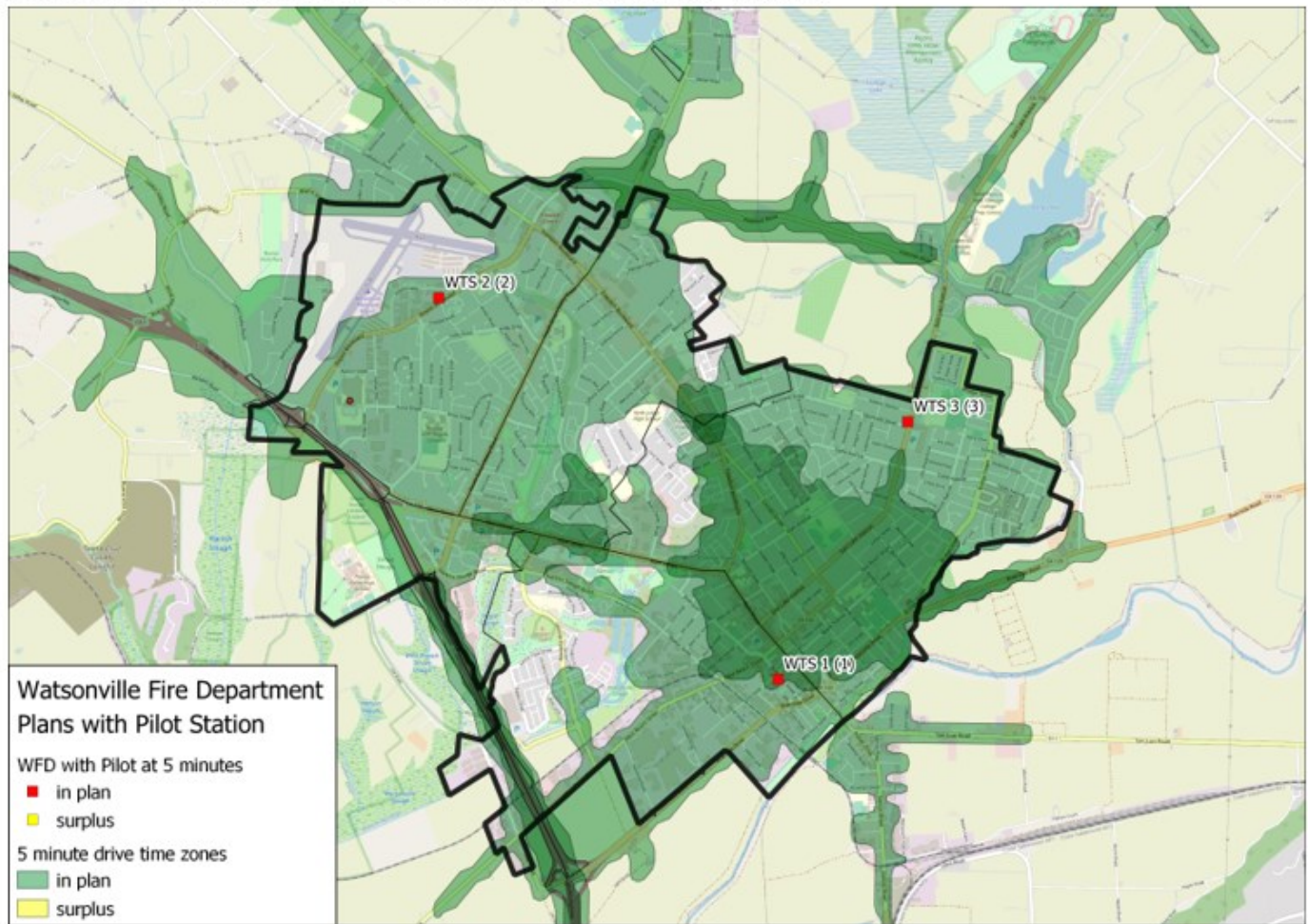
### 5-Minute Travel Time – All Calls

Results suggest that with a three-station configuration, 92.75% of incidents could be responded to within 5-minutes or less travel time.

**Table 18: Marginal Station Contribution for 5-Minute Travel Time – All Calls**

Rank	Station	Station Capture	Total Capture	Percent Capture
1	WTS 1	8,836	8,836	45.61%
2	WTS 2	7,159	15,995	82.56%
3	WTS 3	1,974	17,969	92.75%

**Figure 5: Current Station Bleed Map for 5-Minute Travel Time – All Calls**



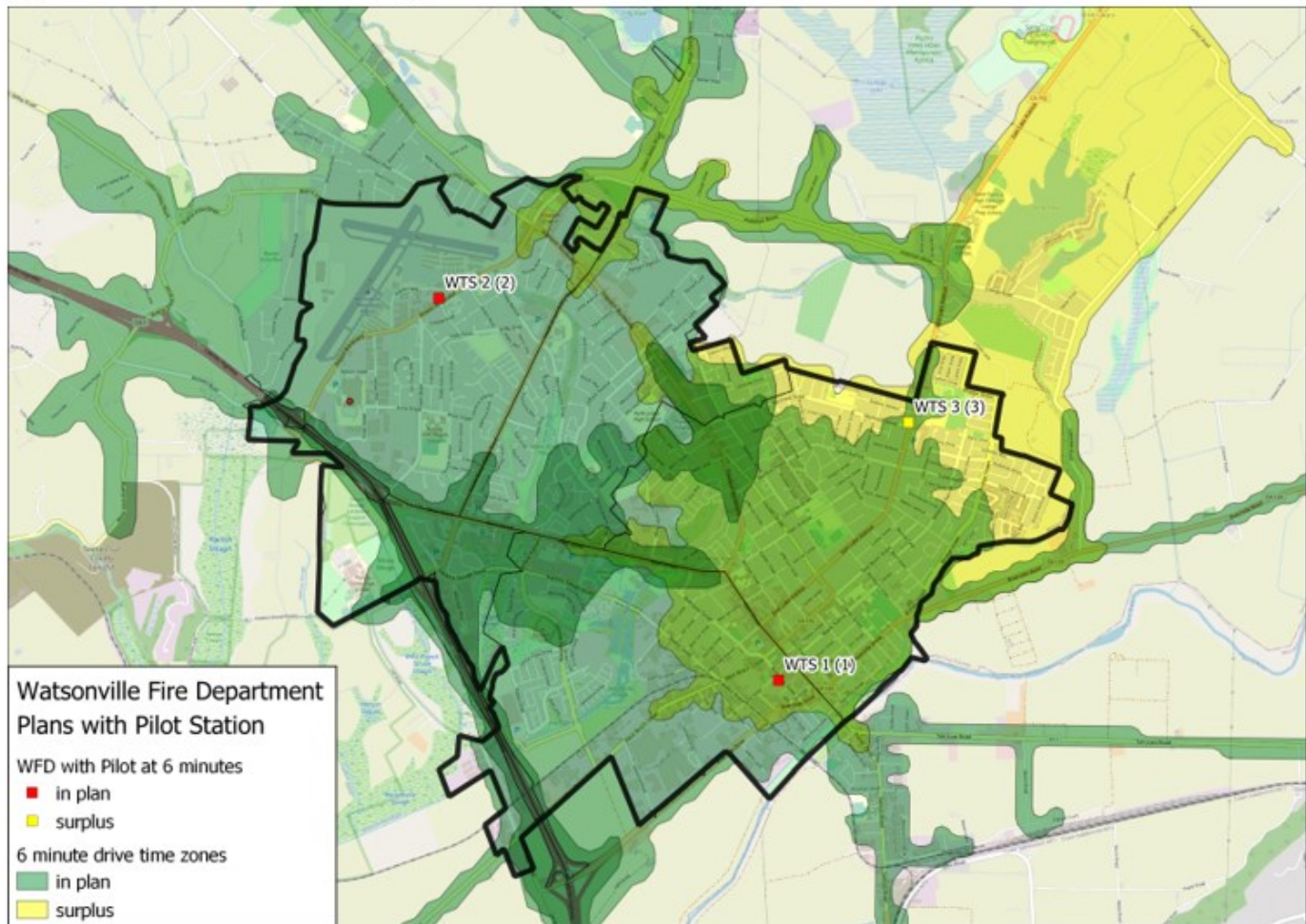
### 6-Minute Travel Time – All Calls

Results suggest that with five stations, 92.53% of calls could be responded to within 6-minutes or less travel time.

**Table 19: Marginal Station Contribution for 6-Minute Travel Time – All Calls**

Rank	Station	Station Capture	Total Capture	Percent Capture
1	WTS 1	11,687	11,687	60.32%
2	WTS 2	6,610	18,297	94.44%
3	WTS 3	988	19,285	99.54%

**Figure 6: Current Station Bleed Map for 6-Minute Travel Time – All Calls**





### Optimized 3-Station Configuration

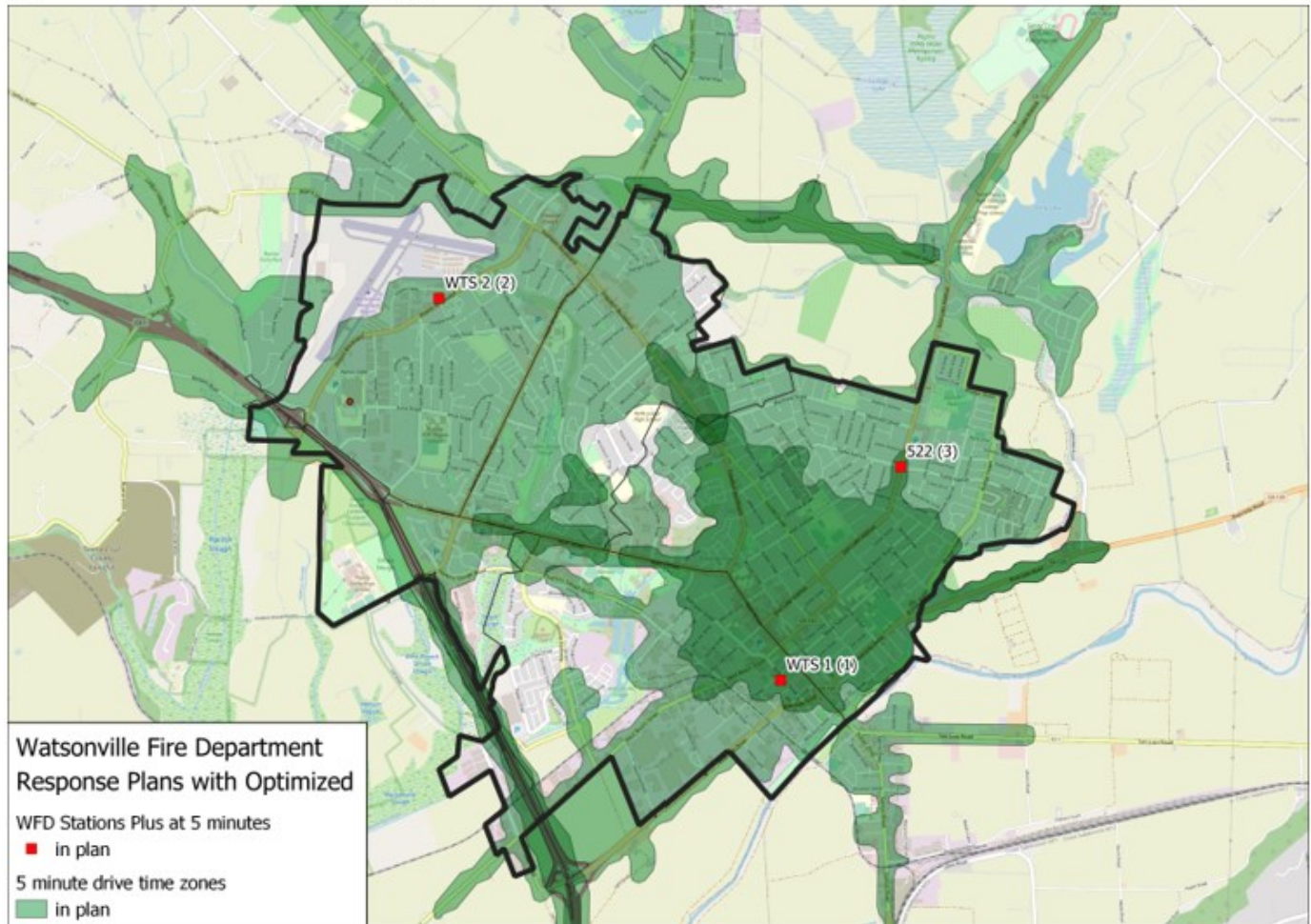
#### 5-Minute Travel Time – All Calls

Results suggest that with a three-station configuration, 95.04% of incidents could be responded to within 5-minutes or less travel time. The optimized location provides approximately a 3% improvement over the pilot location.

**Table 18: Marginal Station Contribution for 5-Minute Travel Time – All Calls**

Rank	Station	Station Capture	Total Capture	Percent Capture
1	WTS 1	8,836	8,836	45.61%
2	WTS 2	7,159	15,995	82.56%
3	522	2,418	18,413	95.04%

**Figure 8: Current Station Bleed Map for 5-Minute Travel Time – All Calls**

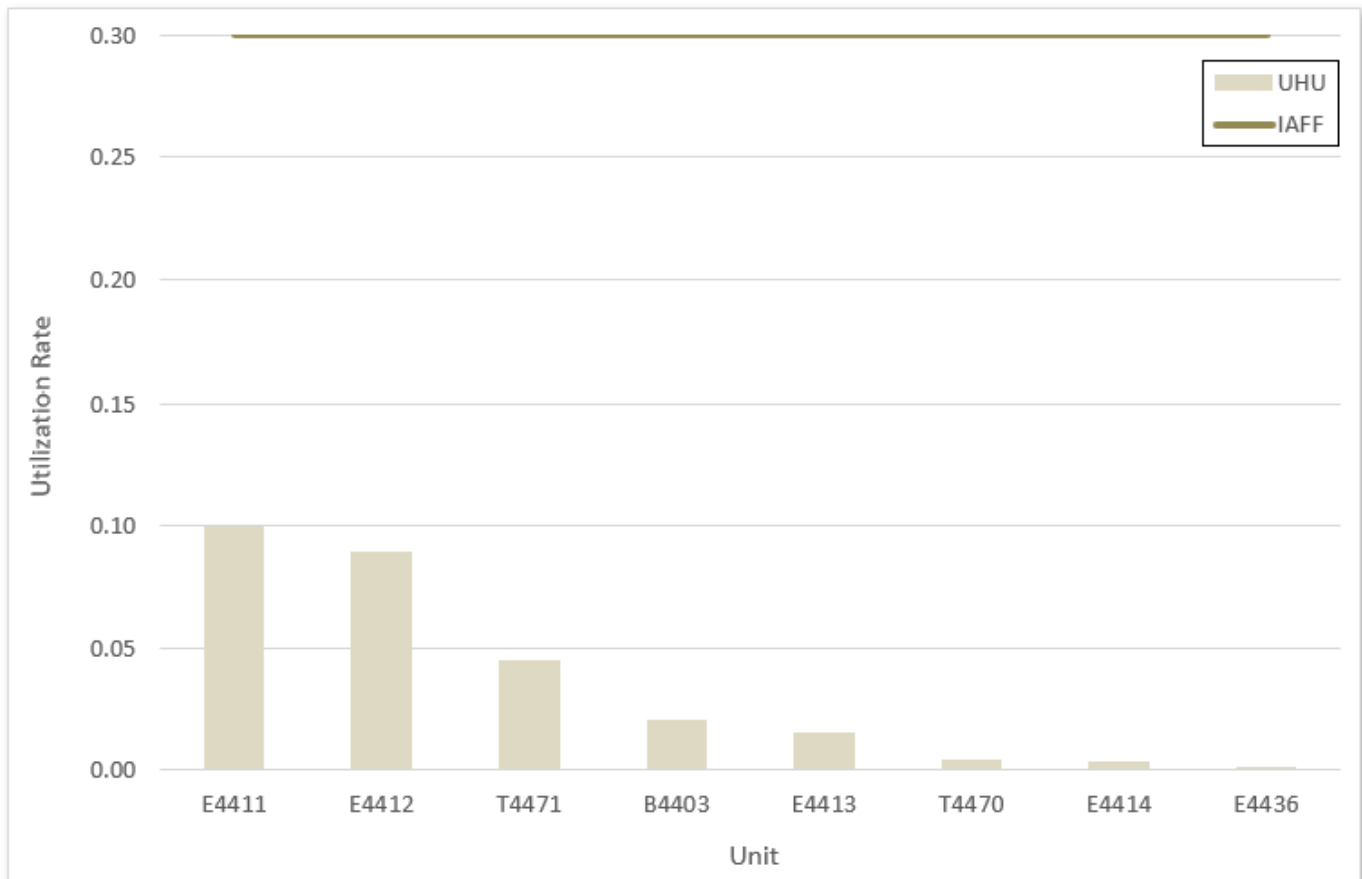




## Workload Capacity – Reinvesting or Reallocating Resources

The department is currently operating within the boundaries of nationally recommended best practices with respect to workload. Overall, the department is performing at less than or equal to 10% (0.10). The most utilized unit is the Engine 4411, at 0.10. Engine 4412 is the second most utilized unit at 9% (0.09). All other resources are less than 5% (0.05). At the current workload utilization rates, the department should have a limited impact on their level of readiness or system performance. *FITCH*'s recommendation is that workloads greater than 0.25 are not optimal on a 24-hour shift and should not exceed 0.30.

Figure 14: Unit Hour Utilization



## Utilization of the Tiller versus a Quick Response Vehicle (QRV)

It is common for communities to question the efficacy of utilizing large fire apparatus such as ladder trucks to respond to emergency medical incidents. On the surface, utilizing a \$1 million dollar apparatus or more to respond to incidents that only need a transportation vehicle such as an sport utility vehicle doesn't pass the common sense test. However, each community is unique and the condition that support the policy choice of which type of vehicle and personnel configuration will work best should be evaluated independently.

There are three main thresholds that should be considered prior to entertaining the option of utilizing a QRV instead of a large fire apparatus; in the City's case a tiller truck. These three considerations are as follows:

- Unit hour utilization / workload
- Station reliability
- Probability of simultaneous events

The Truck at Station 1 is on calls approximately 1.2 hours per day out of the 24-hour period with a UHU of less than 5%. In 2020/21, the Truck was first on-scene a total of 534 times. Station 1 is approximately 88% reliable that a unit from Station 1 was available and able to respond to a request for service in Station 1s area. Finally, the rate of simultaneous events occurring was 15% in Station 1. Understanding that Truck 1 is co-located with Engine 1, the reliability and call concurrency is well within acceptable parameters.

The data supports the policy option to cross-staff the Truck company and a QRV for medical incidents. The department would be encouraged to continue to send the Engine first to all calls and the Truck crew only respond to medical emergencies in relief when the Engine isn't available. In this manner, the opportunity to be on a medical call in a QRV and need the Truck apparatus would be minimized. At the current call volume and a call concurrency of less than 15% is well justified to cross staff the units if desired. The benefits are that the choice would serve a common public perception challenge and may decrease (quicker) response time as the smaller vehicle can navigate the road network more nimbly.

However, it is recognized that this is a policy choice and not an operational or fiscal solution. The recurring personnel costs would be identical and the marginal value of reduced wear and tear, maintenance, replacement schedules, and fuel costs to operate would be negligible at the current call volume and utilization. In other words, the Truck is not utilized to such as extent that there would be a true fiscal and operational benefit. This may be a totally different conclusion in a large metropolitan city.

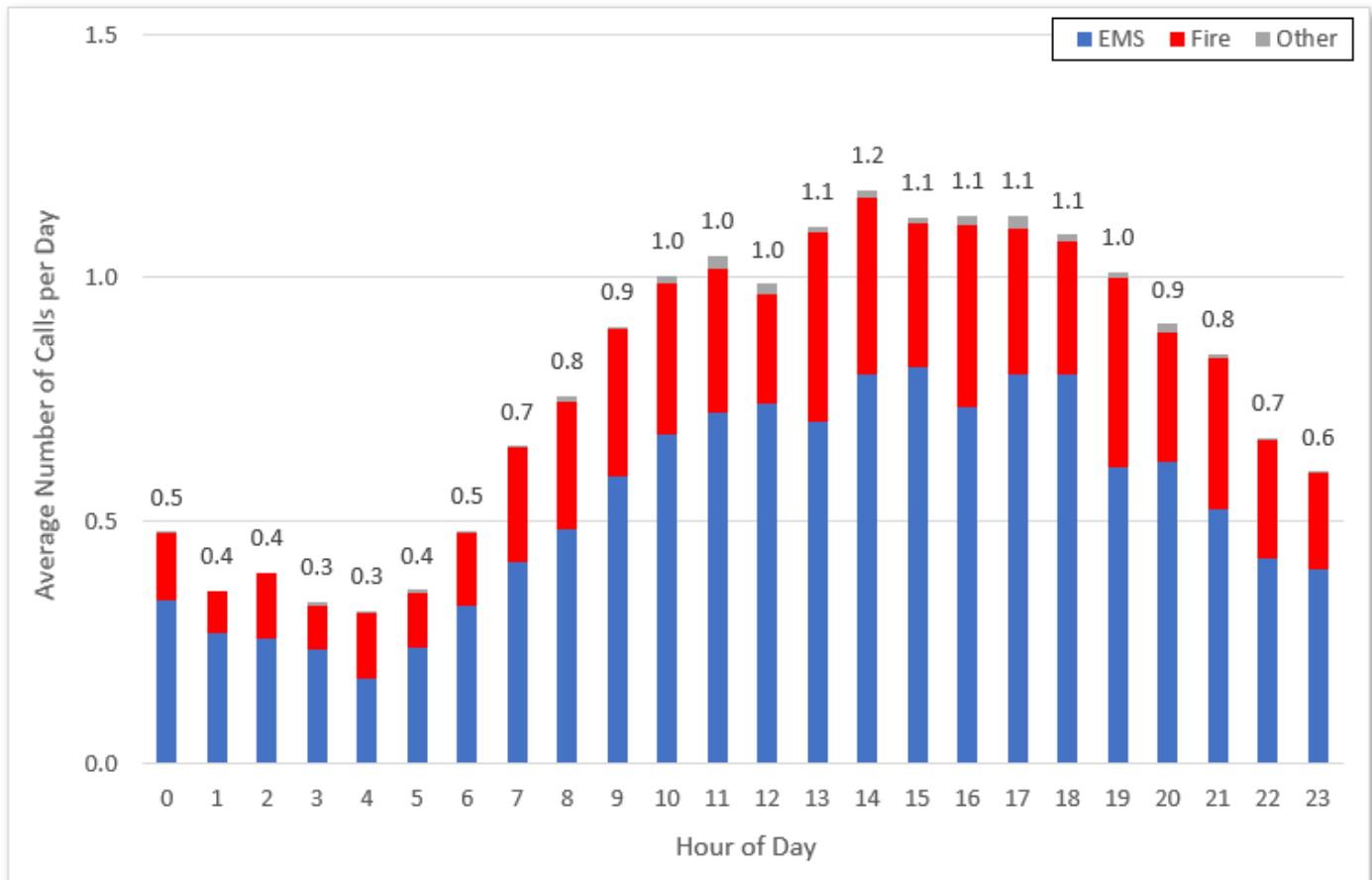
## **Utilization of Peak-Load Units in the Future**

As the City and Department continue to develop and change future investments may be needed. The current configuration suggests that the system is robust and will not need reinvestment soon. However, when reinvestment is needed or desired, it is recommended that the City consider a peak-load unit. A peak-load unit is typically deployed only for the 12-hour period during each day that the call volume is at the highest demand. Understanding that [the majority of](#) requests for service are emergency medical in nature, an EMS specific unit could be utilized as the majority of growth will continue to be in EMS.

Since the 24-hour readiness costs are well-aligned with community risks, the greatest return on investments would be to only purchase additional protective resources during the periods with the highest utilization rather than exacerbate the overnight readiness costs.

The peak periods of the day are approximately between 9 am and 9 pm. The figure below represents the data.

**Figure 4: Overall: Average Calls per Day by Hour of Day**



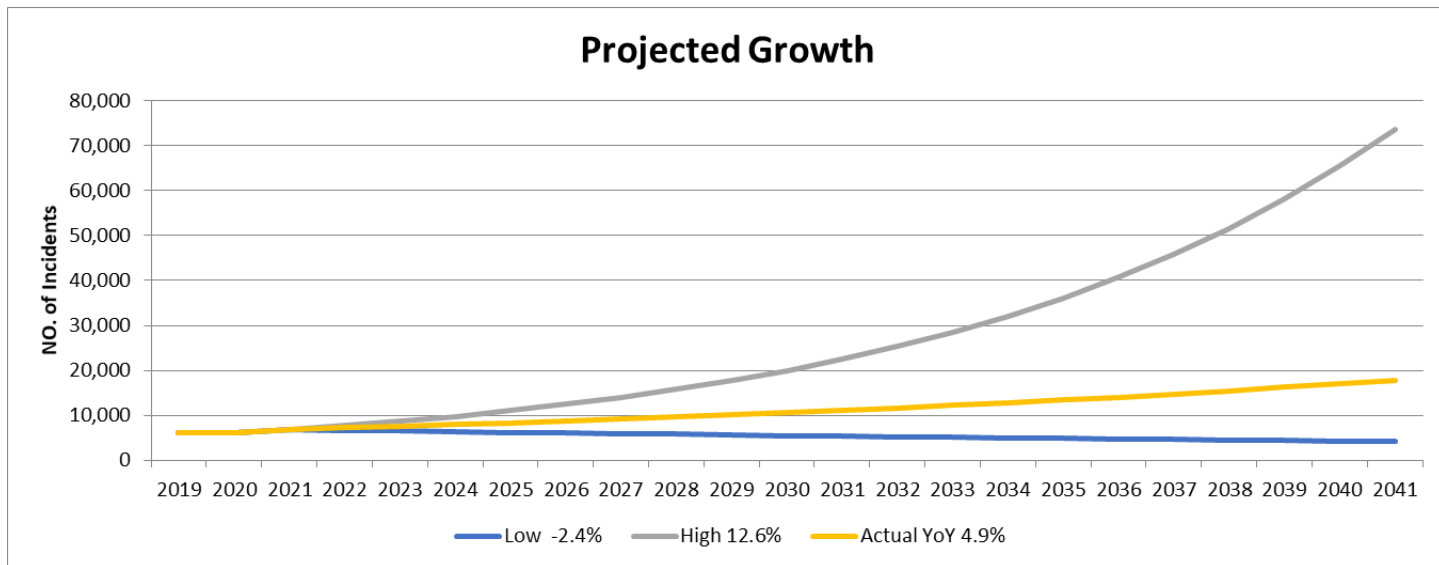
## Long-term Sustainability and the Impact of Growth

Structured interviews with community development suggested that the majority of future development and growth will be infill. Infill growth is the most stable for the fire and emergency medical services as the growth will influence the number of units required in the future but will have little implication for the need for additional fire station locations. In other words, the current assessment and deployment strategies will be very sustainable unless the road impedance material changes. Community Development suggests that there may be up to 1,000 new occupancies downtown and 2,400 new occupancies in the city overall as the known development migrates to full fruition.



Section I - Conclusion and Recommendations

The available data set included five reporting periods of data, representing FY 2019 - 2021. From FY 2019 to FY 2021, calls for WFD services increased from 6,250 to 6,867, with an average growth rate of 4.9% per year. The figure below depicts observed call volume during the last three-year reporting periods and various hypothetical growth scenarios for the next 20 years. These projections should be used with caution due to the variability in growth observed across prior calendar years. In all cases, data should be reviewed annually to ensure timely updates to projections and utilize a five-year rolling average.



Assuming that future demands may not be reasonably distributed across the various stations in the system, the system may ultimately require a redistribution of workload and ultimately reinvestment in resources to meet the growing demand. While the system should be evaluated continuously for performance and desired outcomes, the department should specifically re-evaluate workload and performance indicators for every 1,000-call increase to ensure system stability.

A system of measures was created and offered for the City and Department’s consideration. The system of measures is intended to provide a framework of what should be measured, in what timelines, and will indicate in a structured format when reinvestment or alternative deployment strategies should be utilized.

Type of Measure	Performance Metric	Recommended Performance Urban	Priority	Review Period
Station/Unit Performance	Turnout Time – EMS	≤1.0 Min at 90%	Emergency	Quarterly
	Turnout Time – All Other	≤1.5 Min at 90%	Emergency	Quarterly
	Travel Time - EMS	≤6 Min at 90%	Emergency	Quarterly
	Travel Time - Fire	≤6 Min at 90%	Emergency	Quarterly
	Travel Time	≤15 Min at 90%	Non-emergency	Quarterly
System Design and Performance	Dispatch	≤2 Min at 90%	Priority	Monthly
	Station Risk Rating	Increases in Risk		Annually
	Reliability	≥70%		Quarterly
	Call Concurrence – Per Unit	≤30%		Quarterly
	Call Volume	3,000 – Initial 1,000 – Ongoing		Annually
	Unit Hour Utilization	≤0.30 on 24-hour units ≤0.50 on 12-hour units		Quarterly
	Cross-Staffing at Unit Level	<1,500 annual calls and <15% Call Concurrence		Annually

## **Commitment to Strategic Planning**

The community risk assessment and standards of cover process is intended to develop a commitment to action through ongoing performance measurement, performance management, and transparent accountability. The development of a community driven strategic plan would assist the Department in refining key strategic initiatives and the associated accountability plan to ensure that goals and objectives were brought to fruition.

Therefore, it is recommended that the Department develop a community-driven strategic plan for the Department that is well-aligned with the City's adopted strategic plan.

## **Recommendations and Observations:**

1. The City could improve the total response time in most instances with an incremental improvement in crew turnout time that is more closely aligned with best practices.
2. The City is encouraged to work with the County 911 provider to explore opportunities to improve call processing time.
3. A three-station solution is not required unless there is a desire to improve response time to 5-minutes or less. Therefore, a 3<sup>rd</sup> station is more of a policy choice rather than an operational need and may not provide the desired return on investment.
4. The fire stations are strategically located and well-aligned with community demands for service.
5. The City could consider a cross-staffed quick response vehicle for Station 1 and EMS calls, although it would provide little fiscal or operational benefit.
6. The current workload provides considerable capacity to absorb more work as the call volume and development increases prior to the need to add resources specifically due to workload.
7. When it is time to reinvest in the department's deployment, the City is encouraged to explore the utilization of peak-load units to garner the greatest return on investment.
8. The Department and City are encouraged to utilize the proposed systems of measures, or triggers, for ongoing performance management.
9. The Department is encouraged to develop a 3-to-5-year strategic plan that is well aligned with the City's goals and objectives and department initiatives.