

*Spokane*  
**FIRE DEPARTMENT**  
2013 Annual Report



IN LOVING MEMORY

**JOHN F. KNIGHTEN**

FEBRUARY 19, 1968 - JUNE 30, 2013

*Lost But Never Forgotten*

FEO JOHN KNIGHTEN

LODD 6/30/2013



FOREVER OUR FAMILY - SHAWNA, KILEY, KASEY & ASHLEY

On June 30, 2013, the Spokane Fire Department lost one of our own – John Knighten.

John became the seventeenth Spokane Fire Department member who made the ultimate sacrifice and died in the line of duty.

This report is dedicated to John's memory.

John F. KNIGHTEN, (Age 45) A Spokane City [Firefighter](#) bravely lost his three-year battle with Multiple Myeloma cancer on June 30, 2013. He was preceded in death by his father Jess and brother Jess Jr. He is survived by his loving wife Shawna; three daughters Ashley, Kasey and Kiley; his mother Sarah; siblings Judy, Robert, Chuck, Paul, Mark, Scott, Doug, Kim, Lisa, Eric, Phil; and many nieces and nephews. Also instrumental in John's life were the McLeod family, Gary, Norma Jean, Mike, Andy and Erin. His laughter and gregarious smile will truly be missed by all. John served with distinction in the [US Marine Corps](#). Life was always an adventure to John. He loved riding his motorcycle, boating, camping, road trips and anything he could make memories with his family. After 19 years of dedicated service, John was awarded the Spokane Fire Department's [Purple Heart](#) medal on June 6 at the annual awards ceremony. He was specifically recognized for his courage and inspiration to all who ever had the privilege to work with him.

**Line of Duty Deaths  
Spokane Fire Department  
1884 - 2013**

**"IN THE LINE OF DUTY"**

"Our hearts are saddened by the tragic death of a veteran firefighter. Such an incident serves to remind us of the fact that there are citizens who will face the unexpected in the line of duty, whether it be the taming of a fire or the protection of the citizens of the community."

"These men are dedicated to our welfare, beyond the ordinary call of duty. Let us in turn make known to them our deep appreciation for their dedication to the loving service of their fellow citizens."

Father Barry  
Fire Department Chaplin  
1980

**Last Alarm Memorial**

1. Captain George T. Chaplain	Station 2	May 25, 1894
2. Firefighter John F. Lynch	Station 3	October 8, 1902
3. Firefighter Herman A. Mero	Station 2	March 6, 1905
4. Firefighter Henry J. Maynard	Station 5	July 25, 1909
5. Firefighter E. G. Deardorf	Station 9	September 21, 1914
6. Lieutenant Warren S. Willis	Station 5	January 11, 1920
7. Firefighter William A. Hutchinson	Station 4	May 3, 1924
8. Alarm Operator Charles Bunnell	Alarm Board	October 6, 1930
9. Firefighter Thomas E. Sparrow	Station 16	July 15, 1939
10. Alarm Operator Jesse L. Booher	Alarm Board	February 25, 1942
11. Captain Walter F. Gustafson	Station 7	December 26, 1944
12. Superintendent of Alarms George H. Stewart		February 2, 1947
13. Captain Leonard W. Doyle	Station 4	June 2, 1956
14. Firefighter Leroy A. Mackey	Station 4	January 19, 1966
15. Captain Robert G. Hanna	Station 4	March 2, 1980
16. Firefighter Paul J. Heidenreich	Station 1	September 12, 1982
17. Fire Equipment Operator John Knighten	Station 4	June 30, 2013

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## **Preface**

The City of Spokane Fire Department is required by RCW Chapter 35.103 to adopt and maintain a written statement or policy that establishes the following:

- The existence of a fire department
- Services that the fire department is required to provide
- The basic organizational structure of the fire department
- The expected number of fire department employees
- Functions that fire department employees are expected to perform

It is further required to establish response performance objectives for the various emergency services it provides. The city must report its performance against these established objectives annually and describe consequences that are predictable for those objectives it is not currently meeting. This document constitutes the required annual report as defined by statute.

## **Agency Overview**

The Spokane Fire Department (SFD) has existed as a fire protection agency within the State of Washington since 1884. The fire department is a unit of the City of Spokane general government as required of first class cities under Chapter 35.22 RCW. The City of Spokane is the second largest city in the State of Washington, located adjacent to the Idaho border, and has a Washington Survey and Rating Bureau (equivalent to the Insurance Services Office) rating of three.

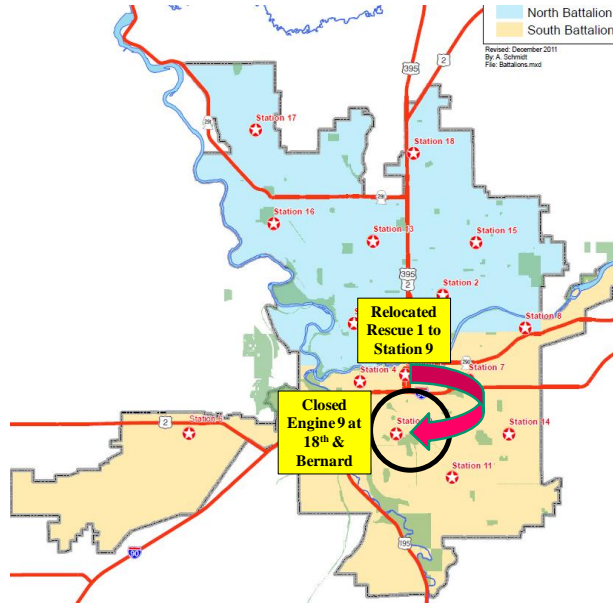
The Spokane Fire Department's service area is approximately 69.5 square miles and consists of a mix of urban, suburban, industrial, and wildland areas.

The primary services provided by the Spokane Fire Department include:

- Fire Suppression
- First Response Basic Life Support (BLS) Emergency Medical Services
- First Response Advanced Life Support (ALS) Emergency Medical Services
- Public Education
- Fire Prevention (Inspection, Fire Protection Engineering Services, Investigations)
- Hazardous Materials "Specialist Level" Response
- Special Rescue (Marine, Technical, and USAR)

## Significant Influences During 2013

- In January of 2013, Engine 9 was removed from service at Station 9 (18<sup>th</sup> & Bernard) due to budget reductions. Rescue 1 was relocated from Station 1 to Station 9 in order to maintain EMS first-response capabilities in Station 9's first due response area.



- In January of 2013, SFD implemented small vehicle responses to EMS incidents in three areas of the city that allowed for greater vehicle maneuverability, access and flexibility while saving wear and tear on large apparatus.



### FD Initiated Redeployment Changes 1-2-13

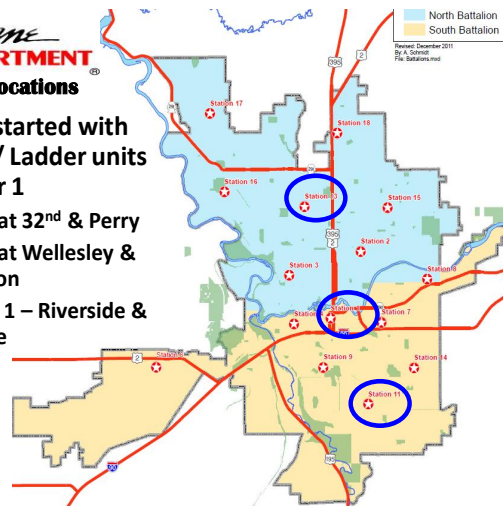


- Began transitioned to smaller vehicle responses for certain stations/ apparatus medical responses



### Spokane FIRE DEPARTMENT Fire Station Locations

- Initially started with Pumper/ Ladder units & Ladder 1
  - P/L 11 at 32<sup>nd</sup> & Perry
  - P/L 13 at Wellesley & Jefferson
  - Ladder 1 – Riverside & Browne

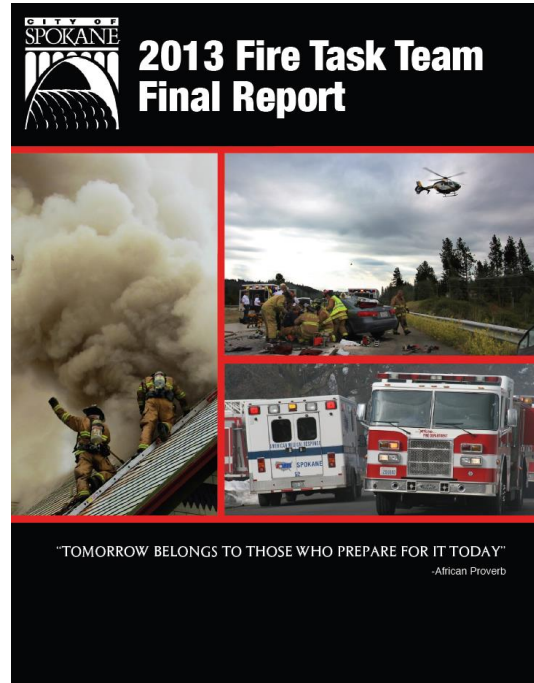




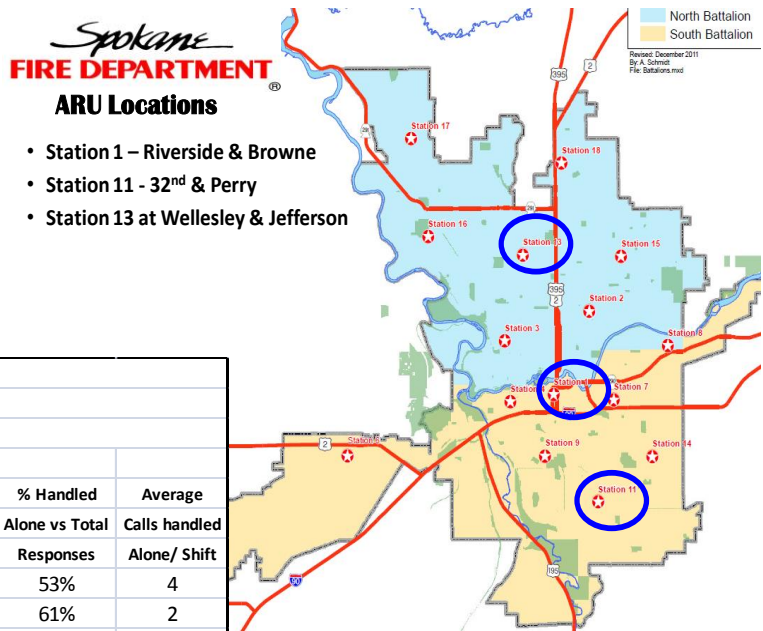
- In June of 2013, the SFD successfully implemented the upgrade to the new SQL CAD (computer aided dispatch) system providing for AVL (automatic vehicle location) dispatch of apparatus to incidents.
- SFD trained field personnel on and implemented a firefighter self-rescue “bail out system” that provides emergency escape capabilities for firefighters who become trapped during emergency operations.
- A Fire Service Task Team was formed to take a long-term, strategic view of how the City could optimize fire and EMS to citizens.

The Fire Service Task Team report was presented to the Mayor in August 2013, identifying 31 recommendations including:

- In conjunction with the SFD Combined Communications Center (CCC), consider implementation of a Nurse line that could handle certain types of calls placed to 9-1-1 and eliminate a response by field personnel.
- Utilize a different level of response to Alpha and Bravo calls, which by their nature are lower-priority, where a field response is needed through the use of one person Alternative Response Units (ARU).
- Evaluate opportunities to expand the use of "Telemedicine Connections" that might reduce the necessity to transport individuals who do not need immediate care.
- Consider alternative transportation to alternative locations other than ER for evaluation.
- Work with local Hospitals to expand and further integrate the SFD's CARES program to address patients' needs and minimize repetitive calls/care.
- Consider expanding the Hot Spotters program to become more inclusive of provider agencies.
- Expand Community Partnerships with the Hospitals and other entities impacted by EMS to improve outcomes for all and to reduce overall system costs.
- Work with private ambulance company towards utilization of the same Computer-Aided Dispatch system to improve call transfer times and consider adding requirement to future ambulance bid specification.
- Work with private ambulance company to place one of their dispatchers within the CCC for coordination and the improvement of call transfer times and consider adding requirement to future ambulance bid specifications.
- Immediately address the SFD's aging fleet of fire apparatus, equipment, and other capital needs.



- Add four additional firefighters (one per shift) to Fire Station 9 so the station regains its day-today ability to respond to and engage fire incidents in their first due response area.
  - Immediately pursue a Supplemental Response agreement with Fire District 3 to include response by Fire Station 35 in the Eagle Ridge or any other area of the SW portion of the city who lives in an area outside of 5 road miles from a fire station.
  - Work towards implementation of Automatic Aid agreements with Fire Districts immediately adjacent to the City limits who have career staffed companies, to implement the “closest unit dispatch” concept.
  - Immediately seek funding approval for the purchase of Traffic Pre-emption Devices that will allow emergency vehicles to switch traffic lights to green along response routes to help improve "code" responses.
  - Aggressively work with City, State and Federal representatives to improve the capacity/ capability for fire apparatus to utilize bridges that currently have restricted use.
  - Aggressively work toward the completion of the road connection between the Indian Trail and Five Mile areas of the city so that overall emergency response times can be improved.
- Based on the recommendation of the Fire Service Task Team, a trial of a different level of response to non-life threatening EMS calls through the use of one person Alternative Response Units (ARU) was implemented in September. Through a cooperative agreement with IAFF Local 29, three, 1-person ARU's were placed in service on four 10-hour shifts (Tuesday – Friday) at Stations 1 (Riverside & Browne), Station 11 (32<sup>nd</sup> & Perry) and Station 13 (Wellesley & Jefferson). The ARU trial ran for approximately six months.



ARU Trial						
2013 Statistics						
For Trial Period Sept 17th - Dec 20th						
Unit	Number of 10 Hr Shifts In Service	Total Responses 9-17 to 12-20	Average Responses Per Shift	Responses Handled Alone	% Handled Alone vs Total Responses	Average Calls handled Alone/ Shift
ARU 1	57	386	7	206	53%	4
ARU 11	53	200	4	121	61%	2
ARU 13	55	312	6	155	50%	3
		898	16	482	55%	9
<b>Note:</b>	<b>During this period, the 3 ARU's responded to an average of 16 calls per day. Of these calls, ARU's were able to handle approximately 55% or 9 calls per shift, alone thus keeping larger units available for more critical calls for service.</b>					



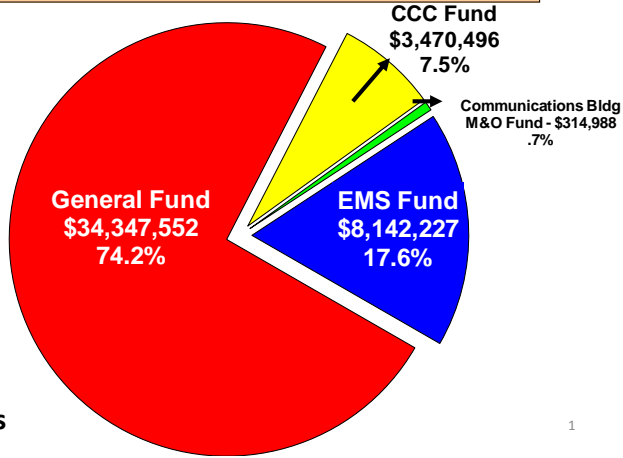
**2013 Budget Information**



**2013 Funds Managed by FD**

**Total All Funds: \$ 46,275,263**

**2013**  
**Total Positions**  
**318.75**  
 GF – 249 positions  
 EMS – 50 positions  
 CCC – 19.75 positions



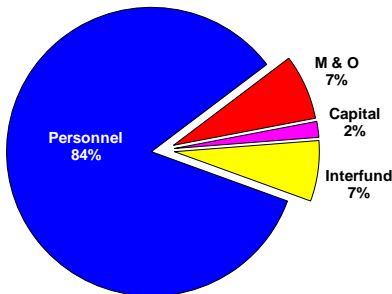
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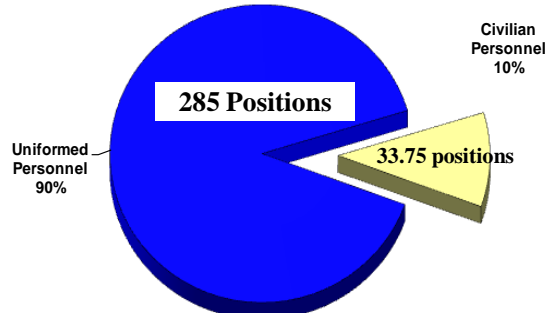
**Spokane FIRE DEPARTMENT**  
**2013 FD Budget**



**How Funds are Allocated:**



**Breakdown of Budgeted Positions**  
**Uniformed vs Civilian**  
**318.75 Positions**



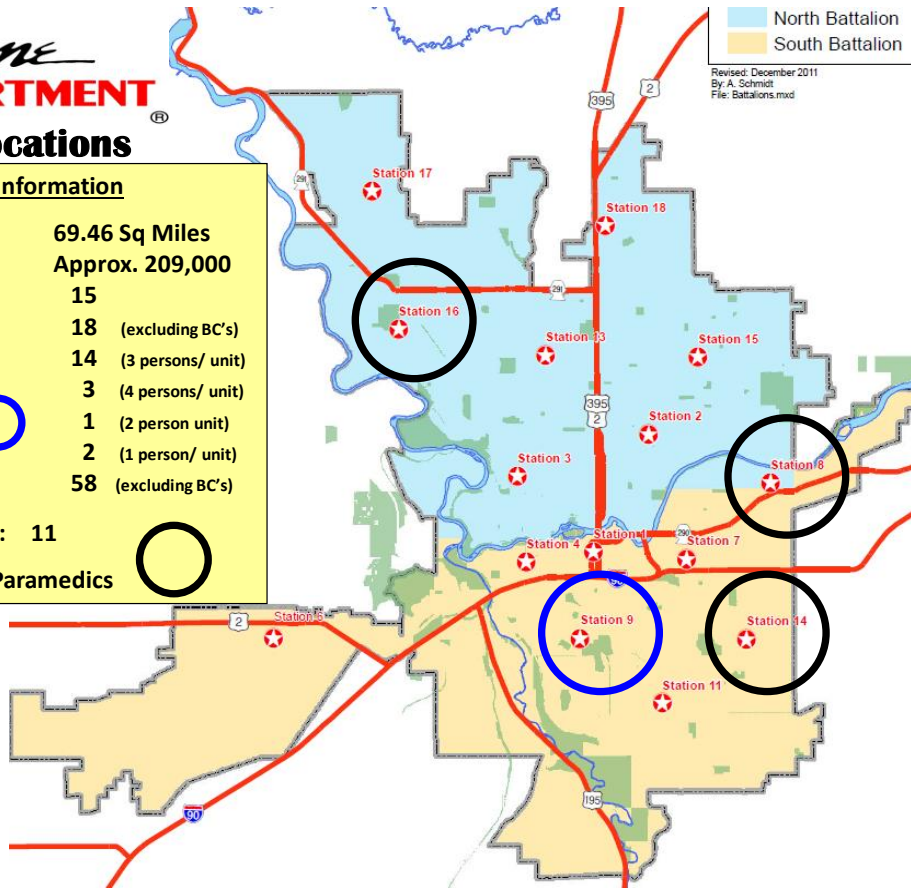
**Note: Total positions reducing to 306.75 by end of 2013**

**2013 Deployment Overview**

**Spokane FIRE DEPARTMENT**  
**Fire Station Locations**

**2013 SFD Information**

Service Area:	69.46 Sq Miles
Population Served:	Approx. 209,000
Stations:	15
Staffed Units/ shift:	18 (excluding BC's)
Engine Companies:	14 (3 persons/ unit)
Ladder Companies:	3 (4 persons/ unit)
Rescue Company →	1 (2 person unit)
Battalion Chief	2 (1 person/ unit)
Daily Staffing:	58 (excluding BC's)
Units with Paramedics:	11
Fire Stations without Paramedics	



## 2013 Annual Performance

### Response Performance Objectives

The following describes the adopted response time performance objectives established by the Spokane Fire Department and its performance during the evaluation period. The evaluation period is from January 1, 2013, through December 31, 2013, and includes evaluation of only potentially life-threatening emergency responses.

- \* Since the intent of this document is to report on normalized performance, beginning with this report (2013), data outliers have been excluded in calculations. The category of incident call type included within the performance calculation is identified within each measurement section. Additionally, historical performance measurement data for 2011 and 2012 has been adjusted for each measure based on the specific call types included and the exclusion of data outliers.

### Incident Call Types

#### Fire and Misc Types

00	Investigation
11C	Structure Fire Commercial
11F	Structure Fire Full
11S	Structure Fire Single
11W	Structure Fire Working
13S	Vehicle Fire
14E	Brush Fire Extreme
14H	Brush Fire High
14L	Brush Fire Low
14M	Brush Fire Moderate
14S	Brush Fire Single
18F	Alarm System Full
18S	Alarm System Single
35F	Extrication
36F	Water Rescue
37F	Tech Rescue
40F	Hazmat Full
40I	Hazmat Investigation
40T	Hazmat Team

#### Medical Types

31A	EMS Alpha Response
31B	EMS Bravo Response
31C	EMS Charlie Response
31D	EMS Delta Response
31E	EMS Echo Response
46A	MVA Alpha
46B	MVA Bravo
46D	MVA Delta

- **Dispatch time**

The Spokane Fire Department has adopted a dispatch time standard of sixty (60) seconds, 90% of the time.

Actual department performance for the review period:

The Spokane Fire Department met the Dispatch time objective **94.6%** of the time. The Fire Department Dispatch time was 55 seconds, 90% of the time.

Performance based on approximately 57,998 priority incidents with all call types.

2008	2009	2010	2011*	2012*	2013
59.9%	58.9%	59.7%	72.8%	96.5%	94.6%

Note: Implemented Automated Voice and Quick Dispatch System – August 29, 2011.

- **Turnout time**

The Spokane Fire Department has adopted a turnout time standard of ninety (90) seconds, 90% of the time.

Actual department performance for the review period:

The Spokane Fire Department met the turnout time objective **66.3%** of the time. The Fire Department turnout time was two minutes seven seconds, or 128 seconds, 90% of the time.

Performance based on approximately 11,380 priority incidents with call type 11C, 11F, 11W, 13S, 31C, 31D, & 31E.

2008	2009	2010	2011*	2012*	2013
61%	61%	63.5%	71.8%	72.4%	66.3%

- **Response time for arrival of the first arriving engine company at a priority fire suppression incident**

The Spokane Fire Department has adopted a response time objective of eight minutes and thirty seconds (8:30) for the first arriving fire engine, 90% of the time.

Actual department performance for the review period:

The Spokane Fire Department met the response time objective **95.4%** of the time. The Fire Department's response time for the first arriving fire engine to priority fire suppression incidents was 7 minutes 29 seconds, 90% of the time.

Performance based on approximately 503 Incidents with call types: 11C, 11F, 11W & 13S.

2008	2009	2010	2011*	2012*	2013
90.6%	87.1%	88.0%	96.6%	97.2%	95.4%

- **Response time for arrival of the full first alarm assignment at a structure fire incident**

The Spokane Fire Department has adopted a response time objective of eleven (11:00) minutes for the arrival of the full first alarm assignment at structure fire incidents, 90% of the time.

Actual department performance for the review period:

The Spokane Fire Department met the response time objective **85.2%** of the time. The Fire Department's response time for the first full alarm assignment to a structure fire was 12 minutes 6 seconds, 90% of the time.

Performance based on approximately 189 structure fire incidents with call type 11C, 11F & 11W.

2008	2009	2010	2011*	2012*	2013
83%	78%	87.6%	85.3%	92.4%	85.2%

- **Response time for the first fire department medical unit at a life threatening emergency medical (EMS) incident**

The Spokane Fire Department has adopted a response time objective of eight minutes and thirty seconds (8:30) for the arrival of the first fire department unit at life-threatening emergency medical incidents, 90% of the time.

Actual department performance for the review period:

The Spokane Fire Department met the response time objective **95.3%** of the time. The Fire Department's response time for the first arriving fire department unit responding to a life-threatening emergency medical incident was 7 minutes 26 seconds, 90% of the time.

Performance based on approximately 10,396 EMS incidents with call type 31C, 31D & 31E.

2008	2009	2010	2011*	2012*	2013
94.8%	94.7%	96.1%	94.7%	96.1%	95.3%

- **Response time for the first fire department advanced life support medical unit at a life threatening emergency medical (EMS) incident**

The Spokane Fire Department has adopted a response time objective of eight minutes and thirty seconds (8:30) for the arrival of the first fire department advanced life support unit at life-threatening emergency medical incidents, 90% of the time.

Actual department performance for the review period:

The Spokane Fire Department met the response time objective **93.1%** of the time. The Fire Department's response time for the first arriving fire department advanced life support unit responding to a life-threatening emergency medical incident was 7 minutes 55 seconds, 90% of the time.

Performance based on approximately 8,536 EMS incidents with call type 31C, 31D, & 31E.

2008	2009	2010	2011*	2012*	2013
94.4%	91.5%	92.1%	91.1%	94.0%	93.1%

- **Response time for arrival of the first fire department unit at a technical rescue incident**

The Spokane Fire Department has adopted a response time objective of eight minutes and thirty seconds (8:30) for the arrival of the first fire department unit at a technical rescue incident, 90% of the time.

Actual department performance for the review period:

The Spokane Fire Department met the response time objective 91.1% of the time. The Fire Department's response time for the first unit to arrive at a technical rescue incident was 7 minutes 53 seconds, 90% of the time.

Performance based on approximately 45 technical rescue incidents with call type 35F & 37F.

2008	2009	2010	2011*	2012*	2013
100%	95.6%	96.5%	100%	94.9%	91.1%

- **Response time for arrival of the first fire department unit at a marine technical rescue incident**

The Spokane Fire Department has adopted a response time objective of eight minutes and thirty seconds (8:30) for the arrival of the first fire department unit at a marine technical rescue incident, 90% of the time.

Actual department performance for the review period:

The Spokane Fire Department met the response time objective **70.0%** of the time. The Fire Department's response time for the first arriving unit at a marine rescue incident was 10 minutes 15 seconds, 90% of the time.

Performance based on approximately 10 marine rescue incidents with a call type of 36F.

2008	2009	2010	2011*	2012*	2013
41%	73%	96.5%	77.3%	90.5%	70.0%

- **Response time for arrival of the first fire department unit at a hazardous materials incident**

The Spokane Fire Department has adopted a response time objective of nine (9:00) minutes for the arrival of the first fire department unit at a hazardous materials incident, 90% of the time.

Actual department performance for the review period:

The Spokane Fire Department met the response time objective **90.4%** of the time. The Fire Department's response time for the first arriving unit at a hazardous materials incident was 8 minutes 26 seconds, 90% of the time.

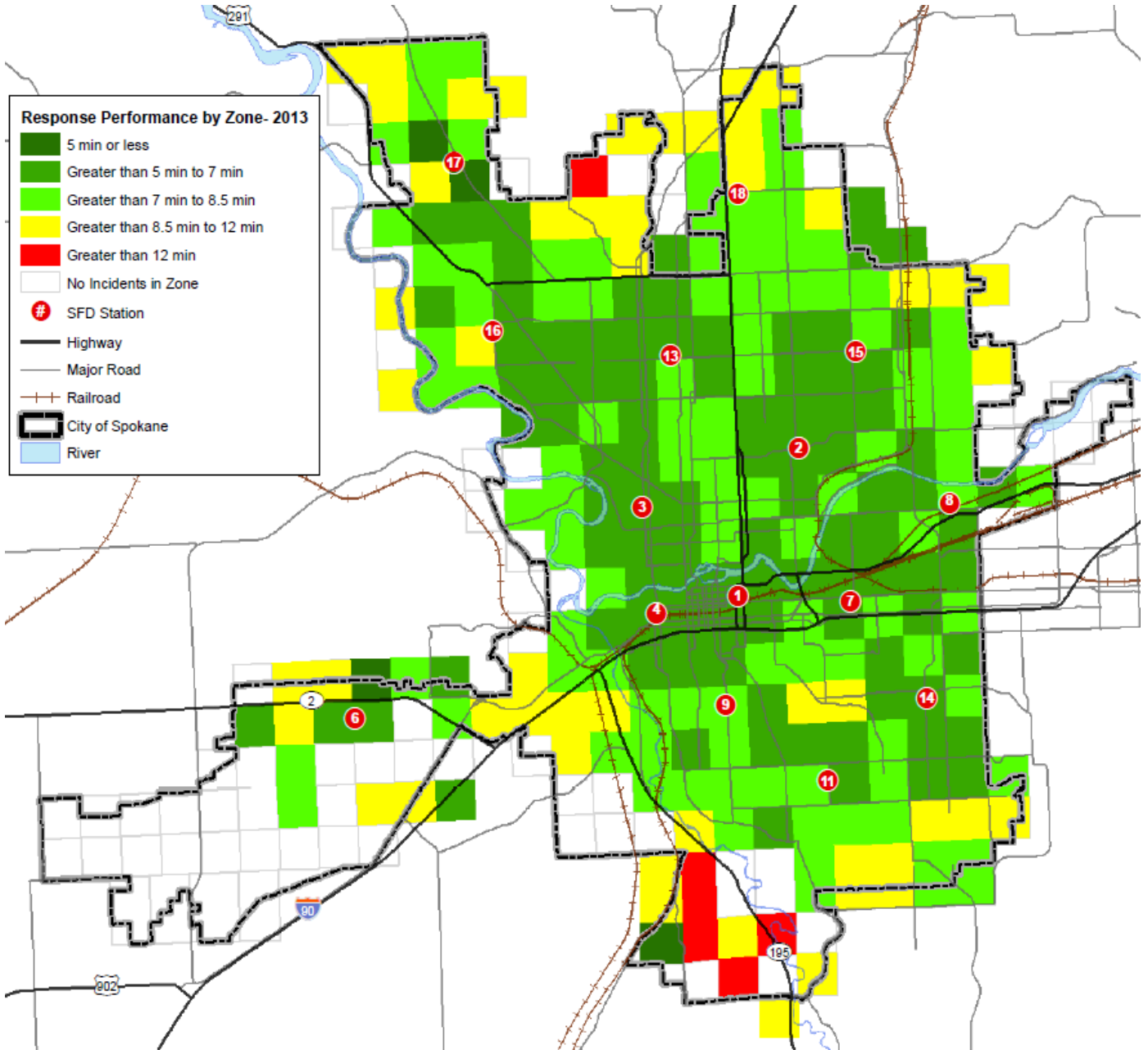
Performance based on approximately 52 hazardous materials incidents with call type 40F & 40T.

2008	2009	2010	2011*	2012*	2013
92%	96%	98.3%	94.4%	91.7%	90.4%



**Geographic Analysis**

The following map shows the city and response time performance at the 90<sup>th</sup> percentile for priority incidents within specific geographic regions. Response service is uniformly provided throughout the majority of the service area with the significant exception of the south-southwest portion of the city west of the river and on Five Mile Prairie.



## Incident Activity

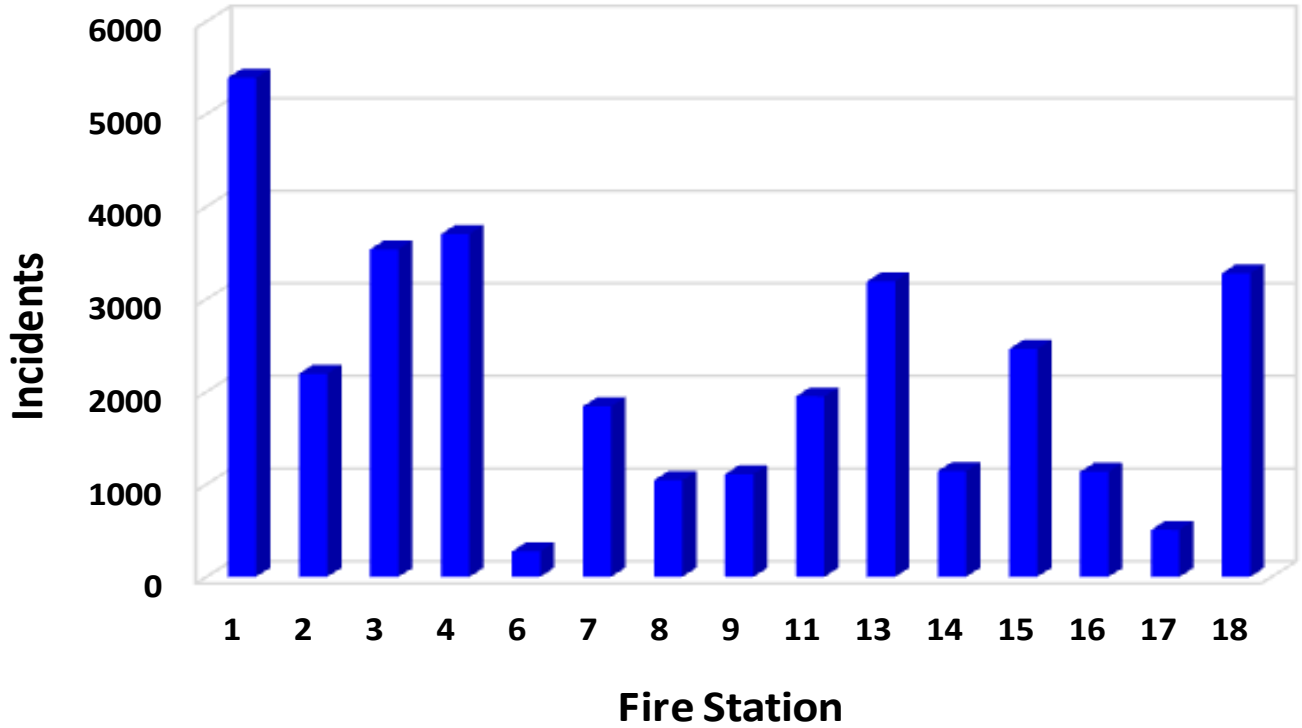
2013 Calls for Service Dispatched for the Spokane Fire Department

Medical		# of Calls	% of EMS	% of Total
Code	Description	Incidents	Incidents	Incidents
31A	EMS Alpha Response	4,489	15.63%	13.54%
31B	EMS Bravo Response	10,816	37.65%	32.63%
31C	EMS Charlie Response	4,805	16.73%	14.50%
31D	EMS Delta Response	5,791	20.16%	17.47%
31E	EMS Echo Response	425	1.48%	1.28%
31F	EMS Second Alarm Response	0	0.00%	0.00%
46A	MVA Alpha	1,563	5.44%	4.72%
46B	MVA Bravo	623	2.17%	1.88%
46D	MVA Delta	212	0.74%	0.64%
<b>Total EMS Incidents</b>		<b>28,724</b>	<b>100.00%</b>	<b>86.65%</b>
Fire and Misc.		# of Calls	% of Fire	% of Total
Code	Description	Incidents	& Misc.	Incidents
00	Investigation	53	1.20%	0.16%
01	CISD	0	0.00%	0.00%
11C	Structure Fire Commercial	32	0.72%	0.10%
11F	Structure Fire Full	250	5.65%	0.75%
11S	Structure Fire Single	1,110	25.08%	3.35%
11W	Structure Fire Working	126	2.85%	0.38%
13S	Vehicle Fire	158	3.57%	0.48%
14E	Brush Fire Extreme	2	0.05%	0.01%
14H	Brush Fire High	16	0.36%	0.05%
14L	Brush Fire Low	43	0.97%	0.13%
14M	Brush Fire Moderate	24	0.54%	0.07%
14S	Brush Fire Single	36	0.81%	0.11%
18F	Alarm System Full	1,266	28.61%	3.82%
18S	Alarm System Single	436	9.85%	1.32%
35F	Extrication	48	1.08%	0.14%
36F	Water Rescue	16	0.36%	0.05%
37F	Tech Rescue	12	0.27%	0.04%
40F	Hazmat Full	52	1.18%	0.16%
40I	Hazmat Investigation	276	6.24%	0.83%
40T	Hazmat Team	3	0.07%	0.01%
50S	Service Call	466	10.53%	1.41%
<b>Total Fire and Misc. Incidents</b>		<b>4,425</b>		<b>13.35%</b>
<b>Total EMS Incidents</b>		<b>28,724</b>		<b>86.65%</b>
			Change over last yr	
<b>2013 Total Incidents Dispatched by the CCC</b>		<b>33,149</b>	3.1%	<b>100.00%</b>

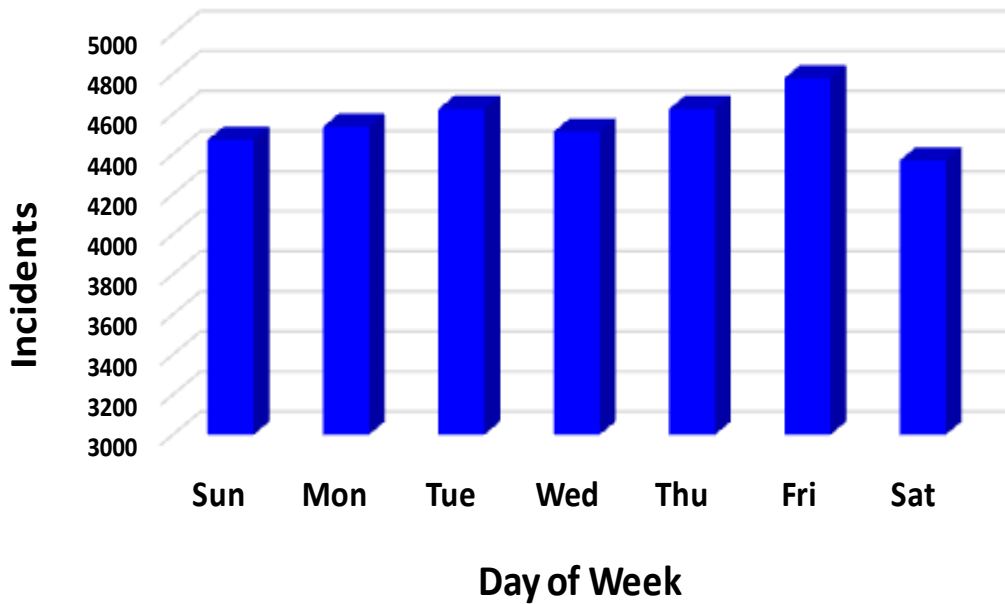
Note: Call totals include all incidents to which SFD resources were dispatched regardless of whether they were within the City of Spokane city limits or the unit went enroute.

2013 Incidents broken down by fire station service area, day of week and hour of the day are shown in the following charts.

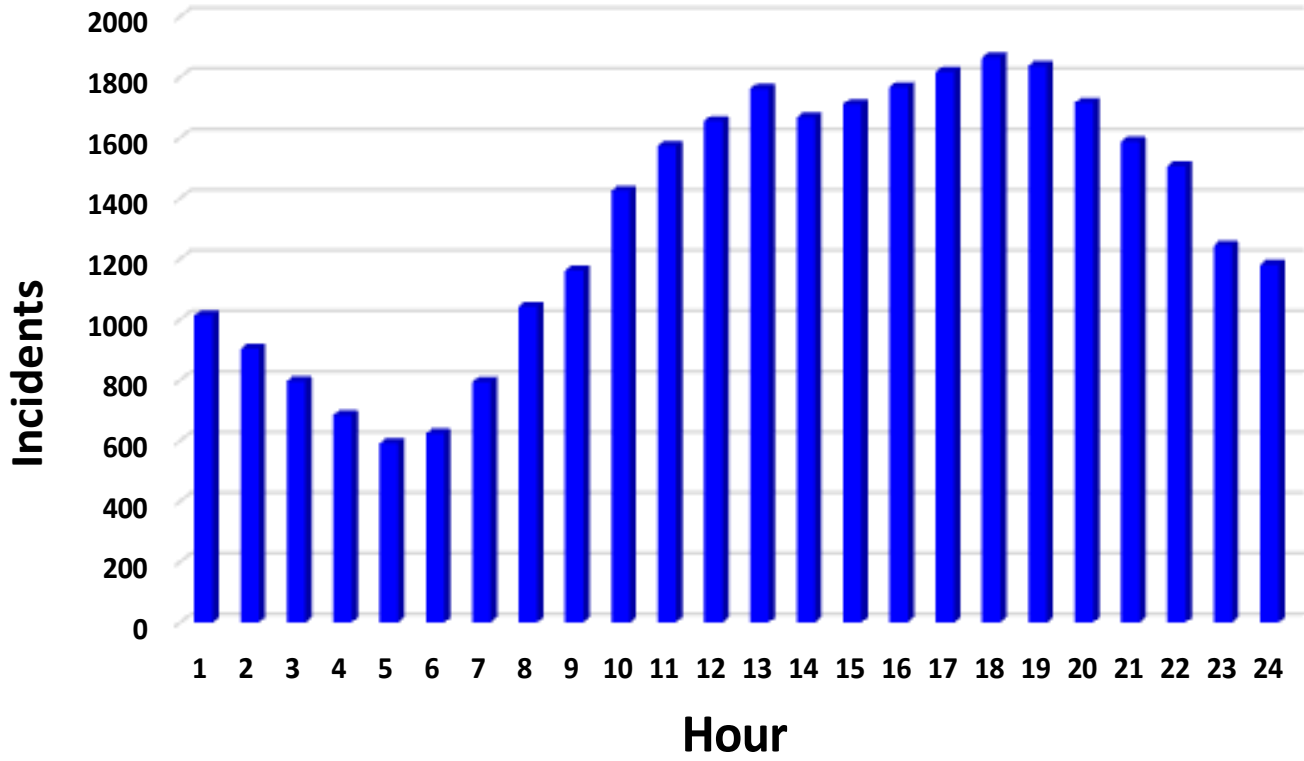
**2013 Incidents by Fire Station Service Area**



**2013 Incidents By Day of Week**



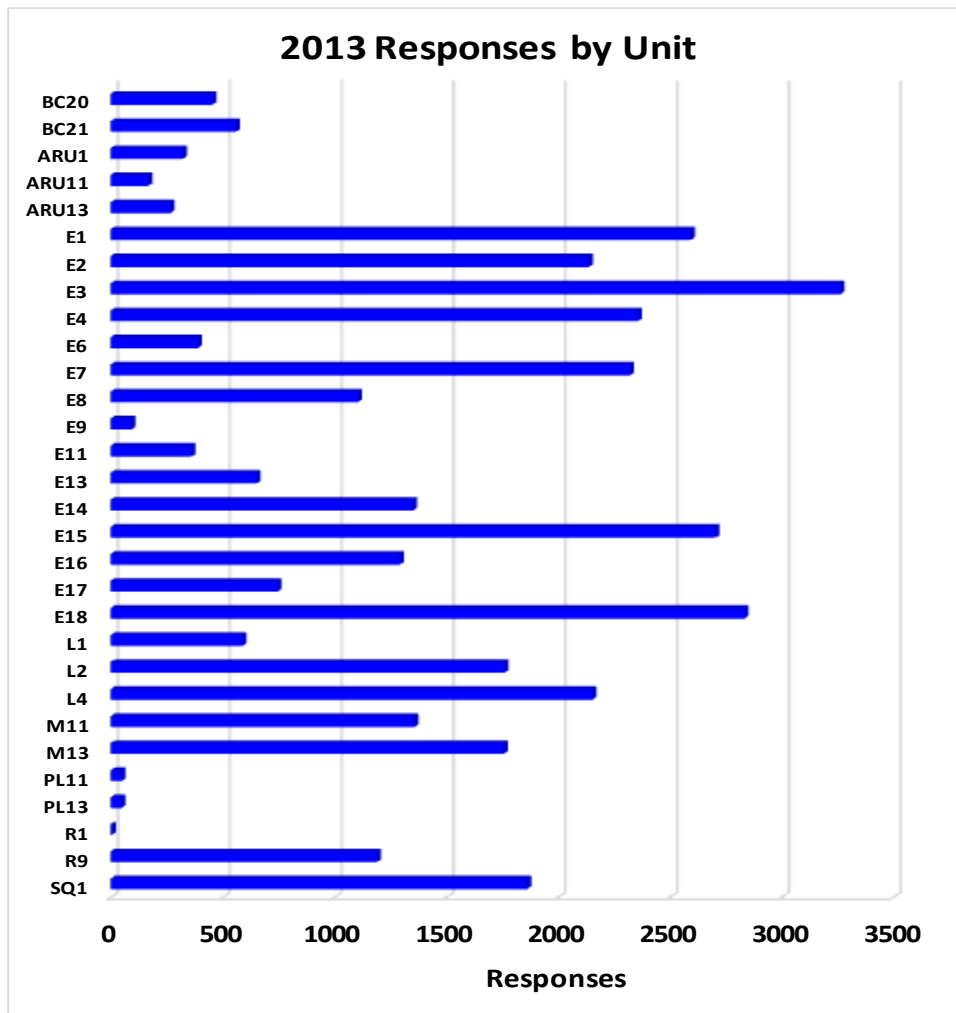
### 2013 Incidents By Hour of Day



2013 Responses by Unit are shown in the following chart  
 Workload varied considerably between units.

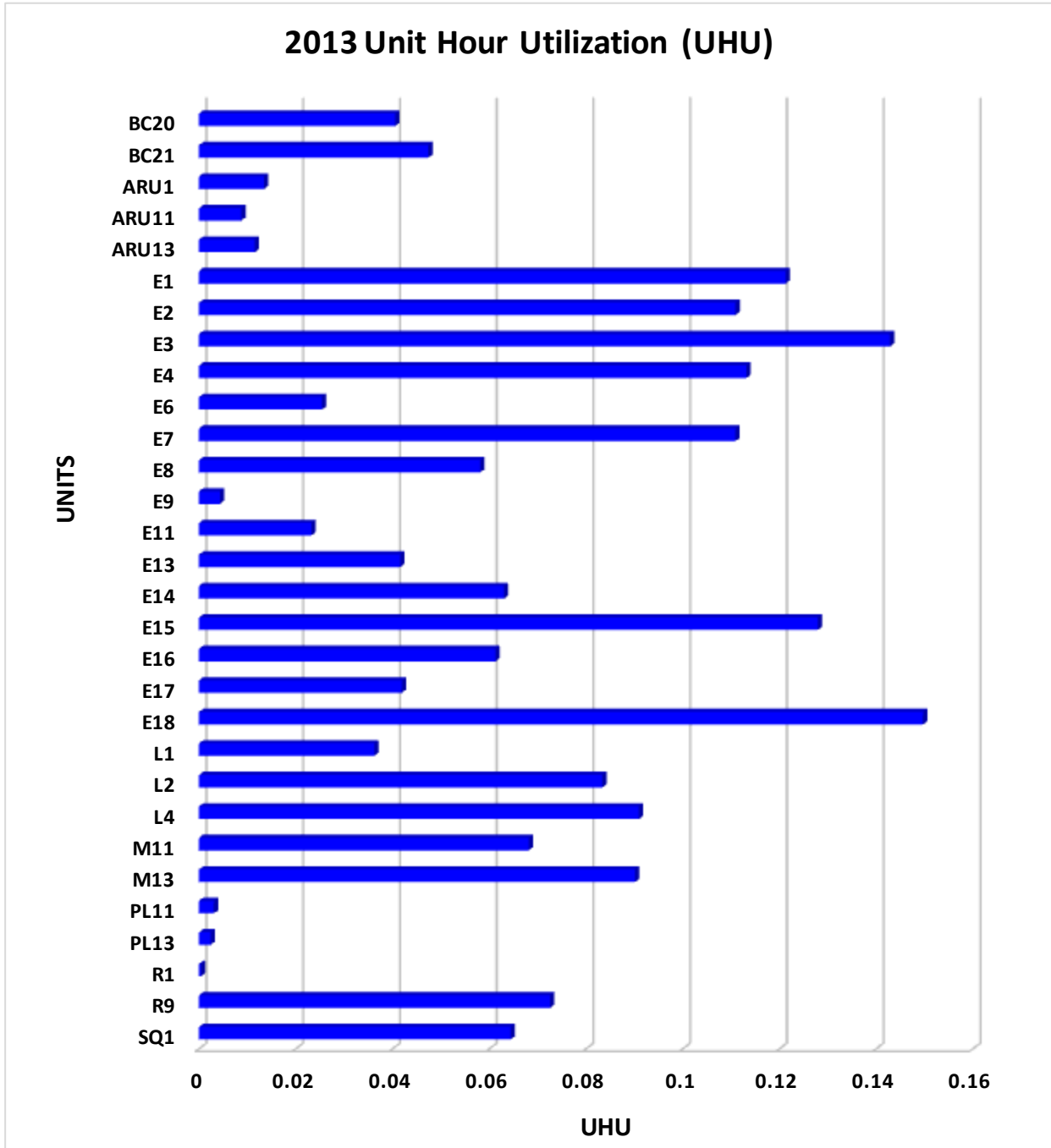
Notes:

- At the beginning of 2012, personnel normally assigned to Station 11, Station 13 and Ladder 1, were primarily assigned to a smaller medical response unit at their respective stations. SQ1 (Squad 1), M11 (Medic 11) and M13 (Medic 13) became the primary response unit to those station’s first due response area for all incidents that did not require firefighting Personal Protective Equipment (PPE), to be worn. For calls that required PPE, the larger apparatus (L1 – Ladder 1; E11/PL11 – Engine 11 or Pumper/Ladder 11; or E13/PL13 – Engine 13 or Pumper/Ladder 13) responded. (see graphics on Page 2)
- E9 (Engine 9) was removed from service at the beginning of 2013 due to budget reductions. SFD’s Rescue unit was relocated from Station 1 to Station 9 so there was a response unit in service in this response area for medical and other non fire related incidents.
- On a limited number of days in which fire station staffing was at a “plus” status for the day (i.e. staffing was above a routine minimum), E9 (Engine 9) was placed back in service for the shift at Station 9 and the Rescue unit was placed back in service at Station 1 as R1 (Rescue 1).
- Three (3) Alternative Response Units (ARU’s) were placed in service during September for a trial period therefore, ARU responses occurred from September through the end of 2013.



Unit Hour Utilization (UHU)

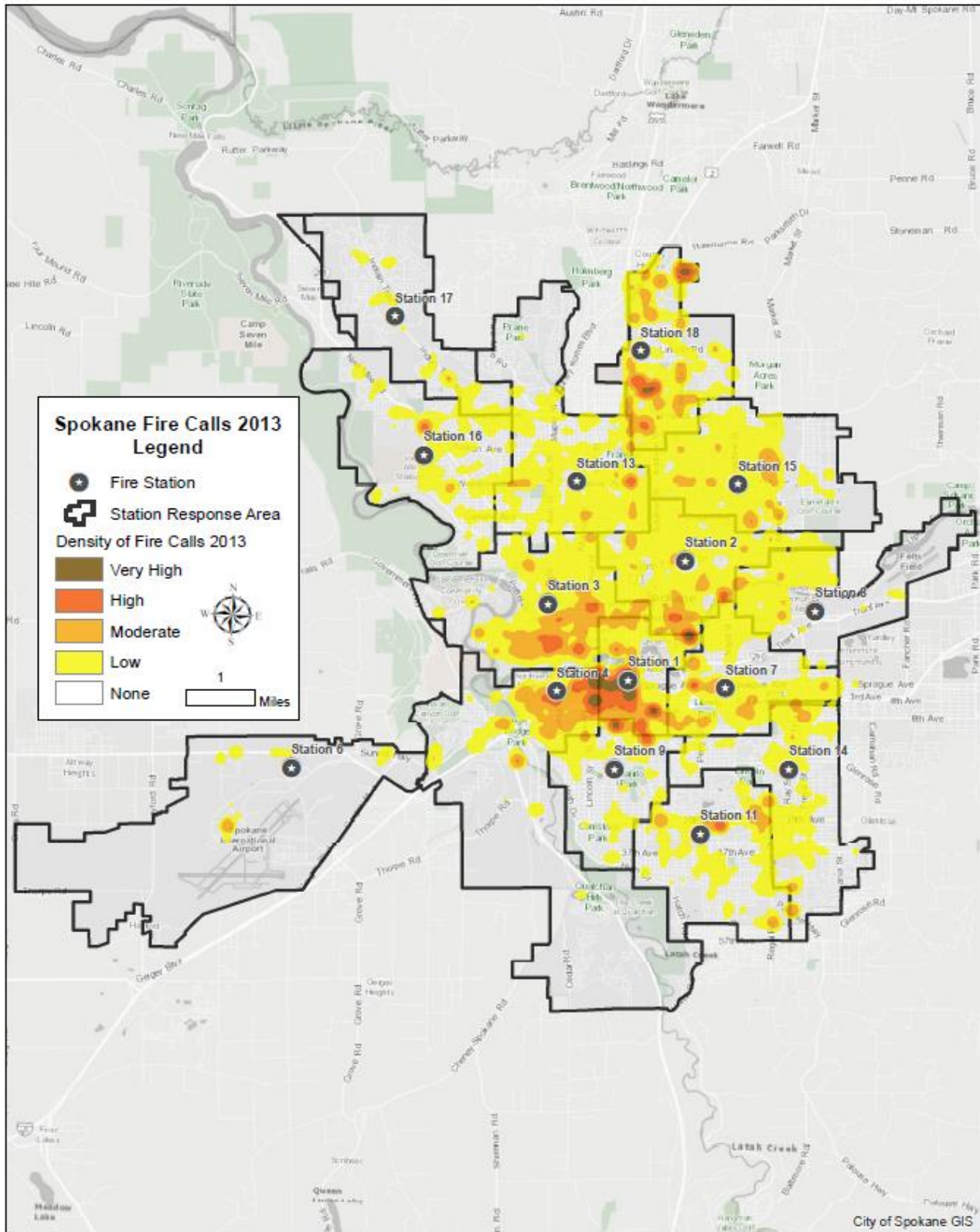
The time committed to responses by each unit is illustrated below. Unit hour utilization represents the amount of a unit's available time committed on responses. It does not include time committed to other non-response activities.





## Incident Concentration

Response activity tends to be greatest in areas of higher population density. The City of Spokane incident concentration for 2013 follows this trend, as shown in the following map.



## Conclusion

### **Status Towards Achieving Department’s Performance Objectives**

The Spokane Fire Department’s adopted performance objectives are being met with three exceptions.

- Turnout time (Actual - 128 seconds, 90% of the time. Target - 90 seconds, 90% of the time).
- Arrival of the full first alarm assignment on a structure fire. (Actual – 12:06, 90% of the time. Target - 11:00, 90% of the time).
- Arrival of the first fire department unit at a marine rescue incident. (Actual – 10:15, 90% of the time. Target – 8:30, 90% of the time).

### **Status of Department’s Performance Versus National Standards**

The National Fire Protection Association (NFPA) is a non-profit organization that, as a part of its mission, develops standards that are utilized by the fire service. Unless adopted by federal, state, or local law, NFPA standards are voluntary and therefore are not mandated on individual agencies. They act as a guide or best practice.

The NFPA Standard that is utilized by career fire departments for evaluation of response capabilities is NFPA 1710, “*Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations and Special Operations to the Public by Career Fire Departments.*” This standard contains numerous performance objectives for staffing and service delivery times.

The Department’s turnout time, fire, and emergency medical service response time performance objectives are not the same as those outlined in NFPA 1710. The Department’s performance objectives, in most cases, include longer times than those in 1710. A comparison is shown in the following table. All times are measured at the 90<sup>th</sup> percentile.

Performance Element	Spokane Objective	2013 Spokane Actual	NFPA 1710 Objective
Dispatch Time	60 seconds	55 seconds	60 seconds
Turnout Time on priority incidents	90 seconds	128 seconds	Fire - 80 seconds EMS - 60 seconds
First unit arrival on a priority fire incident	8 min 30 sec	7 min 29 sec	5 minutes
Full first alarm assignment at a structure fire	11 minutes	12 min 5 sec	9 minutes
First unit at a priority emergency medical incident	8 min 30 sec	7 min 26 sec	5 minutes
First ALS unit at an emergency medical incident	8 min 30 sec	7 min 55 sec	9 minutes

Given the current resources and funding levels, the Department would not be able to achieve NFPA 1710 standard compliance for staffing or services delivery performance objectives except for the first advanced life support unit arrival at an emergency medical incident.

### **Monitoring Performance**

The Department routinely monitors its performance in relation to performance objectives. Utilizing computer modeling and analysis, the Department regularly evaluates modifications to apparatus and personnel deployment to assess possible service delivery improvements. The Department is committed to providing the best service possible to the community, with the resources provided.

## **Predictable Consequences**

The following describes the sequence of events involved with a fire in a structure and with cardiac arrest, a significant medical emergency. These explain the importance of response time in creating an effective outcome to an emergency and the results if response is delayed.

### **Response Performance and Outcomes**

The ultimate goal of any emergency service delivery system is to provide sufficient resources (personnel, apparatus, and equipment) to the scene of an emergency in time to take effective action to minimize the impacts of the emergency. This need applies to fires, medical emergencies, and any other emergency situation to which the fire department responds.

### **Dynamics of Fire in Buildings**

Most fires within buildings develop in a predictable fashion, unless influenced by highly flammable material. Ignition, or the beginning of a fire, starts the sequence of events. It may take several minutes or even hours from the time of ignition until a flame is visible. This smoldering stage is very dangerous, especially during times when people are sleeping, since large amounts of highly toxic smoke may be generated during this phase.

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

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

Flashover usually occurs about five to eight minutes from the appearance of flame in typically furnished and ventilated buildings. Since flashover has such a dramatic influence on the outcome of a fire event, the goal of any fire agency is to apply water to a fire before flashover occurs.

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

In the 1970s, scientists at the National Institute of Standards and Technology found that after a fire broke out, building occupants had about 17 minutes to escape before being overcome by heat and smoke. Today, that estimate is as short as three minutes.<sup>1</sup> The necessity of effective early warning (smoke alarms), early suppression (fire sprinklers), and firefighters arriving on the scene of a fire in the shortest span of time is more critical now than ever.

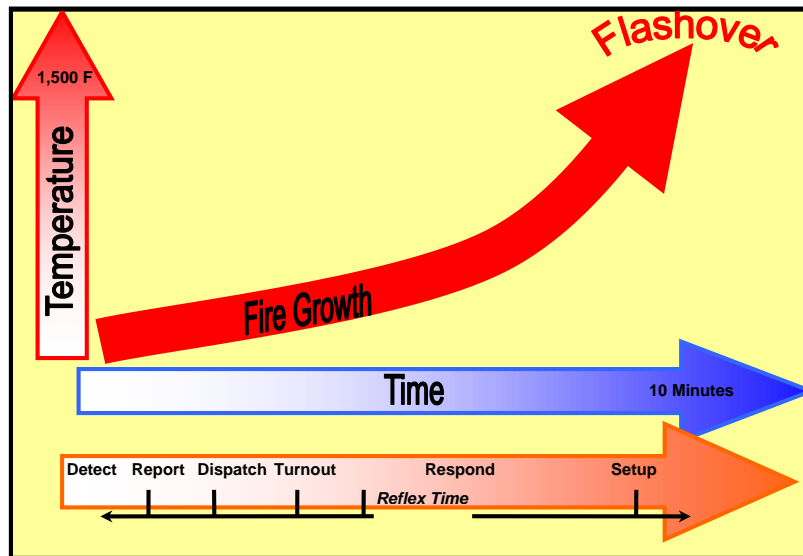
Perhaps as important as preventing flashover is the need to control a fire before it does damage to the structural framing of a building. Materials used to construct buildings today are often less fire resistive than the heavy structural skeletons of older frame buildings. Roof trusses and floor joists are commonly made with lighter materials that are more easily weakened by the effects of

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<sup>1</sup> National Institute of Standards and Technology, *Performance of Home Smoke Alarms, Analysis of the Response of Several Available Technologies in Residential Fire Settings*, Bukowski, Richard, et al.

fire. “Light weight” roof trusses fail after five to seven minutes of direct flame impingement. Plywood I-beam joists can fail after as little as three minutes of flame contact. In addition, the contents of buildings today have a much greater potential for heat production than in the past. The widespread use of plastics in furnishings and other building contents rapidly accelerate fire spread and increase the amount of water needed to effectively control a fire. All of these factors make the need for early application of water essential to a successful fire outcome. A number of events must take place quickly to make it possible to achieve fire suppression prior to flashover. The following figure illustrates the sequence of events.

**Fire Growth vs. Reflex Time**



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

The National Fire Protection Association found that fires contained to the room of origin (typically extinguished prior to or immediately following flashover) had significantly lower rates of death, injury, and property loss when compared to fires that had an opportunity to spread beyond the room of origin (typically extinguished post-flashover). As evidenced in the following table, fire losses, casualties, and deaths rise significantly as the extent of fire damage increases.

**Fire Extension in Residential Structures**

Consequence of Fire Extension In Residential Structures 2003 - 2007			
Extension	Rates per 1,000 Fires		
	Civilian Deaths	Civilian Injuries	Average Dollar Loss Per Fire
Confined to room of origin or smaller	2.44	25.67	\$5,317
Confined to floor of origin	16.18	72.79	\$34,852
Confined to building of origin or larger	27.54	54.26	\$60,064

Source: National Fire Protection Association “Home Structure Fires”, March 2010

The reflex time continuum consists of six steps, beginning with ignition and concluding with the application of (usually) water. The time required for each of the six components varies. The policies and practices of the fire department directly influence four of the steps, but two are only indirectly manageable. The six parts of the continuum are:

1. Detection: The detection of a fire may occur immediately if someone happens to be present or if an automatic fire detection or fire suppression system is functioning. Otherwise, detection may be delayed, sometimes for a considerable period.
2. Report: Today most fires are reported by telephone to the 9-1-1 center. Call takers must quickly elicit accurate information about the nature and location of the fire from persons who are apt to be excited. A citizen well trained in how to report emergencies can reduce the time required for this phase.
3. Dispatch: The dispatcher must identify the correct fire units, subsequently dispatch them to the emergency, and continue to update information about the emergency while the units respond. This step offers a number of technological opportunities to speed the process including computer aided dispatch and global positioning systems.
4. Turnout: Firefighters must don firefighting protective clothing, assemble on the response vehicle, and begin travel to the fire. Good training and proper fire station design can minimize the time required for this step.
5. Travel: This is potentially the longest phase of the continuum. The distance between the fire station and the location of the emergency influences reflex time the most. The quality and connectivity of streets, traffic, driver training, geography, and environmental conditions are also factors.
6. Set up: Once firefighters arrive on the scene of a fire emergency, fire apparatus are positioned, breathing apparatus donned, hose lines stretched out, additional equipment assembled, and certain preliminary tasks are performed (such as ventilation) before entry is made into the structure and water is applied to the fire.

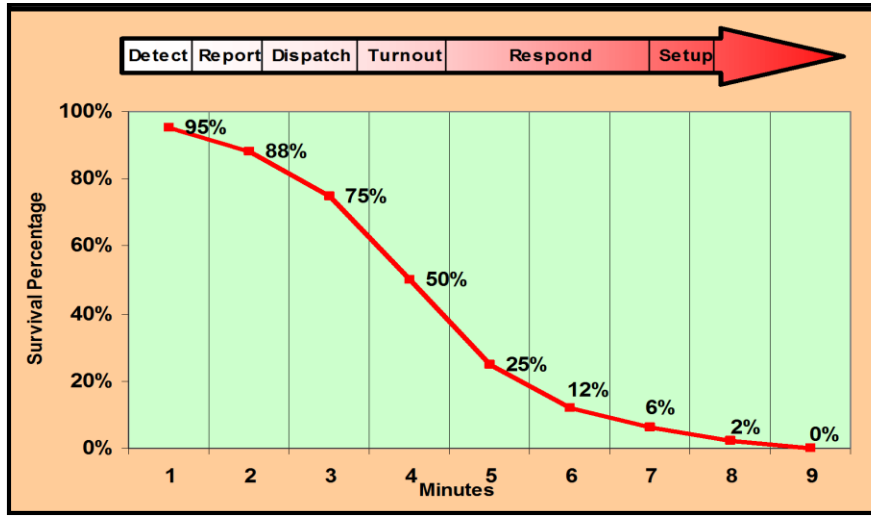
As is apparent by this description of the sequence of events, application of water in time to prevent flashover is a serious challenge for any fire department. It is reasonable though, to use the continuum as a tool in designing the emergency response system.

#### Emergency Medical Event Sequence

Cardiac arrest is generally used as the prototypical life-threatening medical event. A victim of cardiac arrest has mere minutes in which to receive definitive lifesaving care if there is to be any hope for resuscitation.

Heart attack survival chances fall by seven to ten% for every minute between collapse and defibrillation. Consequently, American Heart Association guidelines now recommend the administration of cardiac defibrillation accompanied by effective cardio pulmonary resuscitation (CPR) as quickly as possible following cardiac arrest.

As with fires, the sequence of events that leads to emergency cardiac care can be visually shown, as in the following figure.



Source: American Heart Association

The probability of recovery from cardiac arrest drops quickly as time progresses. The stages of medical response are very similar to the components described for a fire response.

Research stresses the importance of rapid cardiac defibrillation and administration of certain drugs as a means of improving the opportunity for successful resuscitation and survival. An Oregon fire department studied the effect of time on cardiac arrest resuscitation and found that nearly all of their “saves” were within 1.5 miles of a fire station, underscoring the importance of quick response.

#### Factors - People, Tools and Time

Time matters a great deal in the achievement of an effective outcome to an emergency event. Time, however, isn't the only factor. Delivering sufficient numbers of properly trained and appropriately equipped personnel within the critical time period completes the equation.

For medical emergencies, this will vary based on the nature of the emergency. Most medical emergencies are not as time critical as structure fires. However, for serious trauma, cardiac arrest, or conditions that may lead to cardiac arrest, response time can be very critical.

Equally critical is delivering a sufficient complement of personnel to the scene to perform all concurrent tasks required to deliver quality emergency care. For a cardiac arrest, this can be up to six personnel: two to perform CPR, two to set up and operate advanced medical equipment, one to record the actions taken by emergency care workers, and one to direct and provide advanced patient care. Thus, for a medical emergency the real test of performance is the time it takes to provide the personnel and equipment needed to deal effectively with the patient's condition, not necessarily the time it takes for the first person to arrive.

Fire emergencies are even more resource critical. Again, the true test of performance is the time it takes to deliver sufficient personnel to initiate application of water on the fire. This is the only practical method to reverse the continuing internal temperature increases and ultimately prevent flashover. The arrival of one person with a portable radio does not provide fire intervention capability and should not be counted as “arrival” by the fire department.



Industry standards and worker safety regulations require that at least four personnel must be on scene to conduct interior firefighting operations. The initial arrival of effective resources should be marked as the point in time when at least four personnel, properly trained and equipped, have assembled at the fire.

Effective operations at the scene of fire emergencies also depend on the arrival of sufficient trained and equipped personnel to perform all of the duties and tasks required to control a fire event. Tasks that must be performed can be broken down into two key components: life safety and fire flow. Life safety tasks are based on the number of building occupants, their location, status, and ability to take self-preservation action. Life safety tasks involve the search, rescue, and evacuation of victims. The fire flow component involves delivering sufficient quantities of water to extinguish the fire and creating an environment within the building that allows entry by firefighters.

The number and types of tasks needing simultaneous action will dictate the minimum number of firefighters required to combat different types of fires. In the absence of adequate personnel to perform concurrent action, the command officer must prioritize the tasks, completing some in chronological order rather than at the same time, reducing overall fire emergency effectiveness. These tasks include:

Command  
Fire Attack  
Ventilation

Scene Safety  
Water Supply  
Back-up

Search and Rescue  
Pump Operation

The following chart illustrates the fire ground staffing recommendations of the Commission on Fire Accreditation, International.

**Minimum Firefighting Personnel Needed Based Upon Level of Risk**

Task	Maximum Risk	High Risk	Moderate Risk	Low Risk
Attack Line	4	4	2	2
Search and Rescue	4	2	2	
Ventilation	4	2	2	
Back-Up Line/Rapid Intervention	8	6	4	2
Pump Operator	1	1	1	1
Water Supply	1	1	1	
Utilities Support	1	1	1	
Command/Safety	2	2	2	1#
Forcible Entry	*			
Salvage	*			
Overhaul	*			
Communication	1*			
Operations Section Chief	1			
Logistics	1			
Planning	1*			
Staging	1*			
Rehabilitation	1			
Division/Group Supervisors	2*			
High Rise Evacuation	10*			
Stairwell Support	10*			
Totals:	53	19	15	6

# Can often be handled by the first due officer.

\* At maximum and high-risk fires, additional personnel may be needed.  
See the definitions on the previous page

The following definitions apply to the chart:

**Low Risk** – Fires involving small sheds and other outbuildings, larger vehicles and similar. Characterized by sustained attack fire flows typically less than 250 gallons per minute.

**Moderate Risk** – Fires involving single-family dwellings and equivalently sized commercial office properties. Sustained attack fire flows range between 250 gallons per minute to 1,000 gallons per minute.

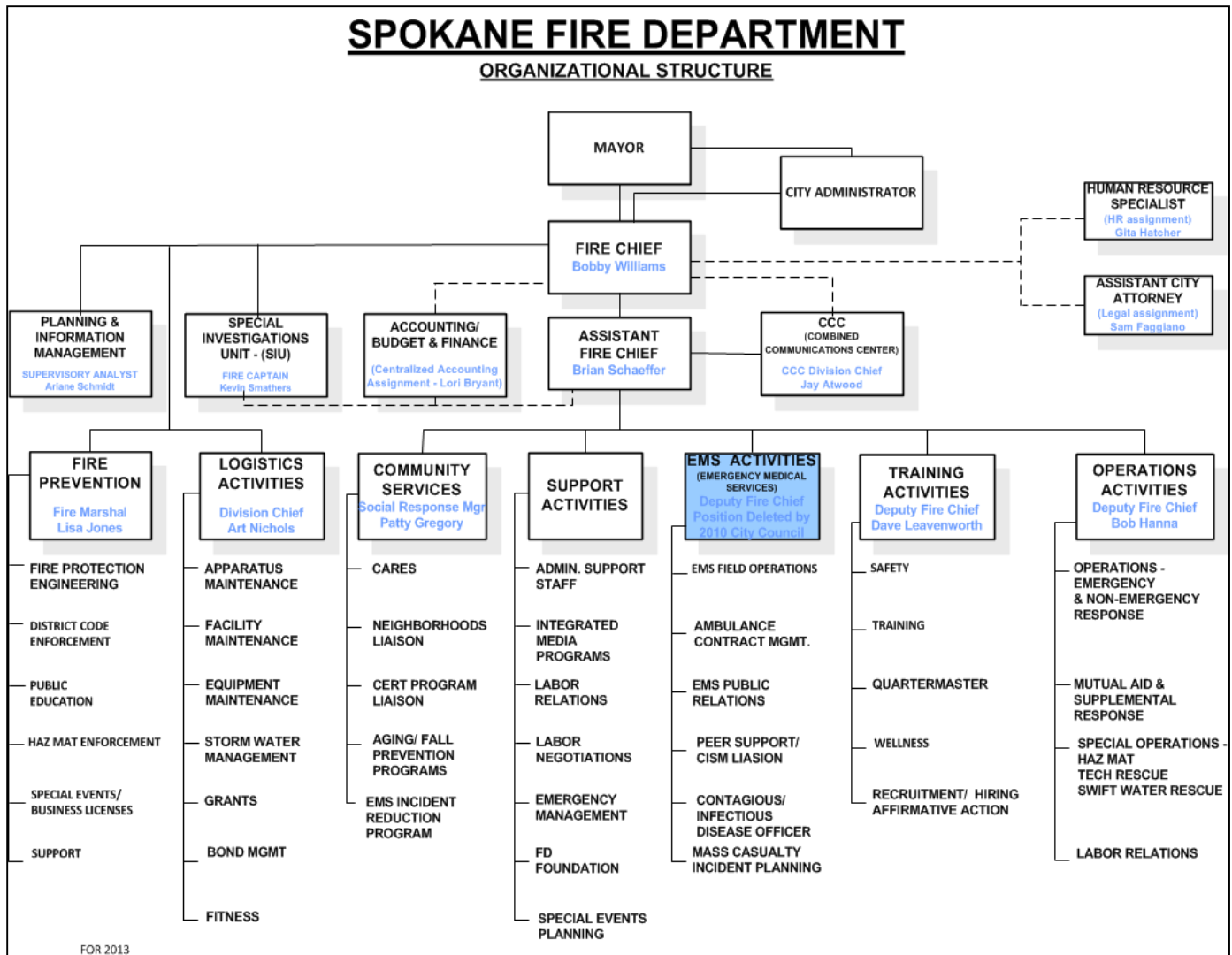
**High Risk** – Fires involving larger commercial properties with sustained attack fire flows between 1,000 gallons per minute and 2,500 gallons per minute

**Maximum Risk** – Fires in buildings with unusual hazards such as high-rise buildings, hazardous materials facilities, very large buildings, and high life risk properties (nursing homes, hospitals, etc.). Though they may not require large sustained attack fire flows, they do require more personnel to perform tasks required for effective control.

# Spokane Fire Department – Resources and Policy Statement

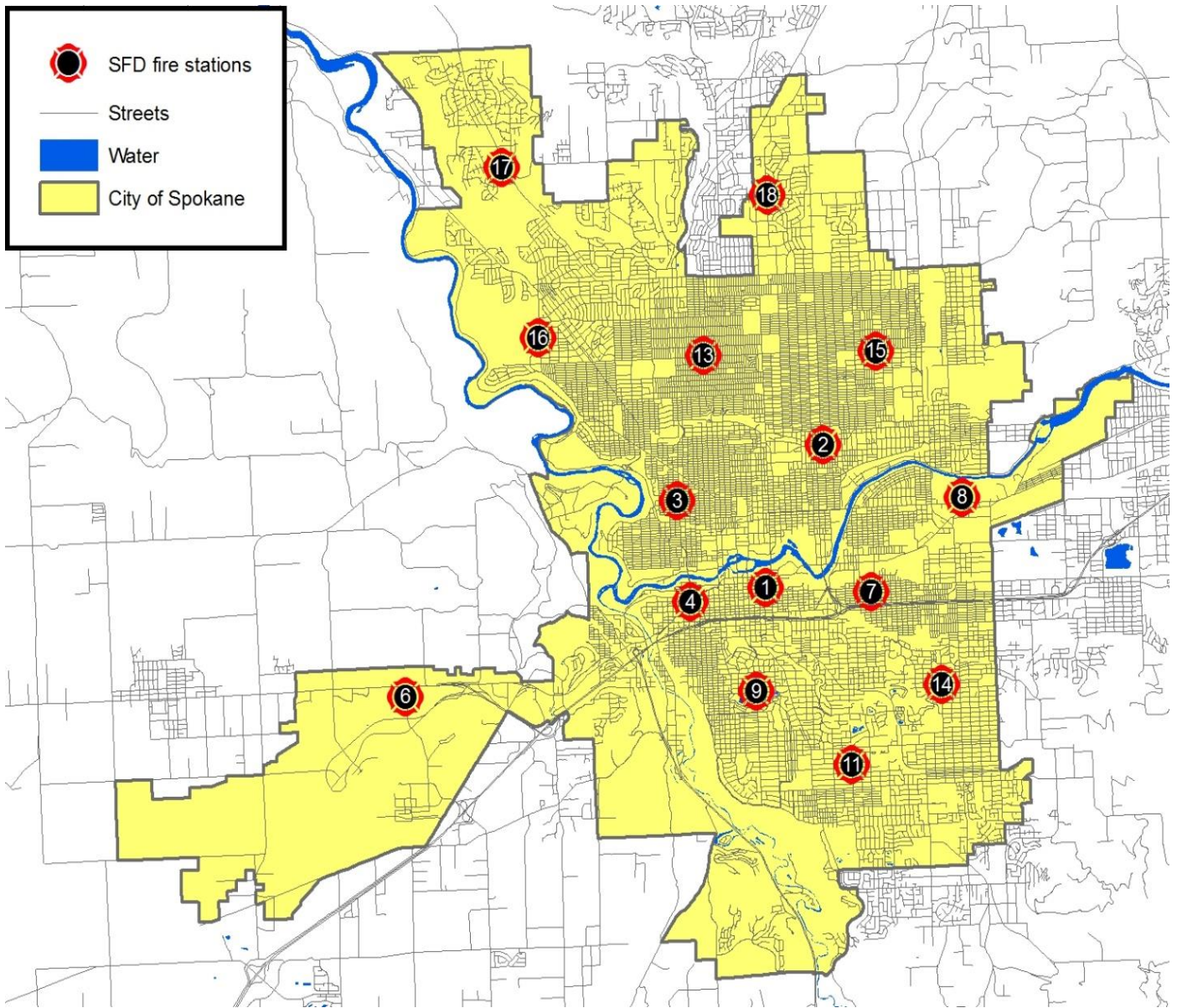
## Organizational Structure

The Spokane Fire Department operates under a hierarchical chain of command. The chain of command, or organizational chart, and authorized staffing are described in the following chart.



**Facilities**

The Spokane Fire Department provides emergency response service from 15 Fire Stations. .  
The following map shows Fire Station locations in relation to the city boundaries.



City of Spokane Fire Department – 2013 Annual Report

**Response Resources**

The table below lists each station along with the apparatus and personnel assigned to them, type of unit, and level of emergency medical service capability. In total, during 2013 the SFD provided no less than 59 on-duty response personnel. "X" indicates the unit is cross-staffed by personnel as needed.

Station	YEAR	Apparatus	Unit #	Class	Staffing	ALS
1	2009	PIERCE PUMPER	E-1	Structual Engine	3	yes
	1994	SIMON DUPLEX AERIAL	L-1	Ladder	4	X
	2001	KENWORTH RESCUE	Haz mat 1	Hazardous Materials Unit	X	X
	2004	FORD F550 4X4	HAZ-1	Decontamination unit	X	X
	2012	FORD F350 4X4	SQ-1	Squad	X	X
	2013	Chevy 2500 4x4 PU	BC-1	Batatalion Chief	1	X
2	1992	PIERCE PUMPER	E-2	Structual Engine	3	yes
	2005	PIERCE PLATFORM	L-2	Ladder	4	X
	2002	FORD F350 4X4	R-2	Rescue	X	X
3	2009	PIERCE PUMPER	E-3	Structual Engine	3	yes
	1991	CENTRAL STATES PUMPER	E-55	Reserve Engine	X	X
4	2009	PIERCE PUMPER	E-4	Structual Engine	3	yes
	2004	PIERCE AERIAL	L-4	Ladder	4	X
	2000	International Tractor/Trailer	SUSAR	USAR	X	X
	1987	KENWORTH RESCUE	R-4	Rescue	X	X
6	1990	PIERCE PUMPER	E-6	Structual Engine	3	yes
	2004	FORD F550 4X4	B-51	Brush Engine	X	X
	2004	FORD F550 4X4	B-6	Brush Engine	X	X
7	2001	PIERCE PUMPER	E-7	Structual Engine	X	yes
	2004	FORD F550 4X4	B-7	Brush Engine	X	X
	1992	CENTRAL STATES PUMPER	E-51	Reserve Engine	X	X
8	2000	PIERCE PUMPER	E-8	Structual Engine	3	X
	1991	CENTRAL STATES PUMPER	E-54	Reserve Engine	X	X
	2009	DODGE 5500 4X4	B-8	Brush Engine	X	X
9	2001	PIERCE RESCUE	R-9	Rescue	X	X
	1992	CENTRAL STATES PUMPER	E-9	Structual Engine	3	X
	1978	AMERICAN LAFRANCE AERIAL	L-52	Reserve Ladder	X	X
11	1993	PIERCE PUMPER LADDER	PI-11	Ladder-Structual Engine Combinatio	3	yes
	2003	FORD F550 4X4	B-11	Brush Engine	X	X
	1999	FORD F350 4X4	M-11	Medic Unit	X	X
	2006	FORD Explorer 4X4	ARU-51	Reserve Alternative Response Unit	X	yes
13	1992	PIERCE PUMPER LADDER	PI-13	Ladder-Structual Engine Combinatio	3	yes
	2002	FORD F350 4X4	M-13	Medic Unit	X	X
	2009	Chev F2500 4x4 PU	BC-2	Batatalion Chief	1	X
14	2000	PIERCE PUMPER	E-14	Structual Engine	3	X
	2004	FORD F550 4X4	B-14	Brush Engine	X	X
15	2009	PIERCE PUMPER	E-15	Structual Engine	3	yes
	2003	FORD F550 4X4	B-15	Brush Engine	X	X
16	2000	PIERCE PUMPER	E-16	Structual Engine	3	X
	1990	CHEVROLET SUBURBAN	R-16	Rescue	X	X
17	2000	PIERCE PUMPER	E-17	Structual Engine	3	X
	1999	FREIGHTLINER PUMPER	E-57	Reserve Engine	X	X
	2004	FORD F550 4X4	B-17	Brush Engine	X	X
18	2000	PIERCE PUMPER	E1-8	Structual Engine	3	yes
	1978	AMERICAN LAFRANCE AERIAL	L-51	Reserve Ladder	X	X
	1992	CENTRAL STATES PUMPER	E-52	Reserve Engine	X	X

## **Policy Statement**

### **Emergency Response Functions**

The primary emergency response functions performed by the Spokane Fire Department include the following:

- 1) Suppression of fires in buildings, vehicles, natural vegetation, and other property
- 2) Emergency medical response at both the basic life support and advanced life support levels
- 3) Technical rescue and extrication (USAR Type III)
- 4) Marine rescue
- 5) Hazardous materials emergency response and control (Type I)

### **Response Standards**

There are several component parts to response standards for which objectives are established. The Spokane Fire Department has established the following response time objectives for its services.

- **Dispatch time** – the period of time from the receipt of the call into the Combined Communications Center (CCC) until the initial dispatch of the call to responders.
- **Turnout time** – the period of time from initial dispatch to initiation of travel toward the incident.
  - The Spokane Fire Department has adopted a turnout time standard of ninety (90) seconds, 90% of the time.
- **Response time for the first arriving engine company at a fire suppression incident** – the period from notification of fire department response personnel of the incident to the arrival of the first unit at the scene of the incident.
  - The Spokane Fire Department has adopted a response time objective of eight minutes and thirty seconds (8:30) for the first arriving fire engine, 90% of the time.
- **Response time for full first alarm assignment at a structure fire incident** – the period of time from notification of fire department response personnel of the incident to the arrival of all of the first alarm units at the scene of the incident.
  - The Spokane Fire Department has adopted a response time objective of eleven (11) minutes for the arrival of the full first alarm assignment at structure fire incidents, 90% of the time.
- **Response time for the first fire department medical unit at an emergency medical (EMS) incident** – the period from notification of fire department response personnel of the EMS incident to the arrival of the first fire department unit at the scene of the incident.
  - The Spokane Fire Department has adopted a response time objective of eight minutes and thirty seconds (8:30) for the arrival of the first fire department unit at life-threatening emergency medical incidents, 90% of the time.



- **Response time for the first fire department advanced life support medical unit at a priority emergency medical (EMS) incident** – the period from notification of fire department response personnel of the EMS incident to the arrival of the first fire department advanced life support unit at the scene of the incident.
  - The Spokane Fire Department has adopted a response time objective of eight minutes and thirty seconds (8:30) for the arrival of the first fire department advanced life support unit at life-threatening emergency medical incidents, 90% of the time.
  
- **Response time for arrival of the first fire department unit at a technical rescue incident** – the period from notification of fire department response personnel of the technical rescue incident to the arrival of the first fire department unit.
  - The Spokane Fire Department has adopted a response time objective of eight minutes and thirty seconds (8:30) for the arrival of the first fire department unit at a technical rescue incident, 90% of the time.
  
- **Response time for arrival of the first fire department unit at a marine technical rescue incident** – the period from notification of fire department response personnel of the marine rescue incident to the arrival of the first fire department unit.
  - The Spokane Fire Department has adopted a response time objective of eight minutes and thirty seconds (8:30) for the arrival of the first fire department unit, 90% of the time.
  
- **Response time for arrival of first fire department unit at a hazardous materials incident** – the period from notification of fire department response personnel of the hazardous materials incident to the arrival of the first fire department unit.
  - The Spokane Fire Department has adopted a response time objective of nine (9) minutes for the arrival of the first fire department unit, 90% of the time.

Critical Tasking

Critical tasks are those activities that must be conducted in a timely manner by firefighters at emergency incidents in order to control the situation, stop loss, and to perform necessary tasks required for a medical emergency. The Spokane Fire Department is responsible for assuring that responding companies are capable of performing all of the described tasks in a prompt, efficient, and safe manner.

**Fires** – Critical tasking for fire operations is the minimum number of personnel to perform the tasks required to effectively control a fire in the listed risk category. Major fires (beyond first alarm) will require additional personnel and apparatus.

**Emergency Medical** – Critical tasking for emergency medical incidents is the minimum number of personnel to perform the tasks required to support the identified strategy based on the department’s adopted medical protocol.

**Low Rise Residential Structure Fire** (Structure under 55 feet in height)

Task	Number of Personnel
Command/Safety	3
Pump Operations	1
Attack Line	2
Search and Rescue	2
Ventilation	2
RIT	3
Other (hydrant and back up line)	3
<b>Total</b>	<b>16</b>

**High Rise Residential Structure Fire** (Structure over 55 feet in height)

Task	Number of Personnel
Command/Safety	3
Pump Operations	2
Attack Line	4
Search and Rescue	4
Ventilation	4
RIT	4
Other (hydrant and back up line)	4
<b>Total</b>	<b>25</b>

**Moderate Risk Commercial Structure Fire**

Task	Number of Personnel
Command/Safety	3
Pump Operations	2
Attack Line	4
Search and Rescue	4
Ventilation	4
RIT	2
Other (back up line)	4
<b>Total</b>	<b>23</b>

**High Risk Commercial Structure Fire**

<b>Task</b>	<b>Number of Personnel</b>
Command/Safety	3
Pump Operations	2
Attack Line	4
Search and Rescue	4
Ventilation	4
RIT	4
Other (back up line)	4
<b>Total</b>	<b>25</b>

**Grass/Brush Fire (Not threatening structures)**

<b>Task</b>	<b>Number of Personnel</b>
Command/Safety	1
Pump Operations	--
Attack Line	2
Other	--
<b>Total</b>	<b>3</b>

**Vehicle Fire (Not threatening structures)**

<b>Task</b>	<b>Number of Personnel</b>
Command/Safety	1
Pump Operations	1
Attack Line	1
Other	--
<b>Total</b>	<b>3</b>

**Emergency Medical (Non-life threatening)**

<b>Task</b>	<b>Number of Personnel</b>
Patient Management	--
Patient Care	1-3
Documentation	0-1
<b>Total</b>	<b>1-3</b>

**Emergency Medical (Life threatening)**

<b>Task</b>	<b>Number of Personnel</b>
Patient Management	1
Patient Care	2-3
Documentation	0-1
<b>Total</b>	<b>3-4</b>

**Motor Vehicle Accident (With patient extrication)**

<b>Task</b>	<b>Number of Personnel</b>	
	Surface Street	Freeway
Scene Management	1	1
Patient Care	3	3
Extrication	4	4
Fire Protection	3	3
Documentation	1	1
Other (safety)	1	1
<b>Total</b>	<b>13</b>	<b>13</b>

**Motor Vehicle Accident (No patient extrication)**

Task	Number of Personnel	
	Surface Street	Freeway
Scene Management	1	1
Patient Care	2	2
Extrication	--	--
Fire Protection	--	--
Documentation	--	--
Other	--	--
<b>Total</b>	<b>3</b>	<b>3</b>

**Hazardous Materials**

Task	Number of Personnel
Command/Safety	4
Entry Team	2
Backup Team	2
Decontamination	4
Research	1
Support	6
Other (medical)	1
<b>Total</b>	<b>20</b>

**Technical Rescue**

Task	Number of Personnel
Command/Safety	3
Operations	14
Patient Management	3
Documentation	1
<b>Total</b>	<b>21</b>

**Marine Rescue**

Task	Number of Personnel
Command/Safety	3
Operations	10
Patient Management	3
Documentation	1
<b>Total</b>	<b>17</b>

Alarm Assignments

In order to ensure sufficient personnel and apparatus are dispatched to an emergency event, the following first alarm response assignments have been established. “Total Staffing Needed” is the number identified in the Critical Tasking analysis above.

**Low Rise Residential Fire (Structure under 55 feet in height)**

Unit Type	Number of Units	Total Personnel
Engine	3	9-11
Senior Ladder	1	4
Rescue	1	2
Squad		
Battalion Chief	2	2
<b>Total Staffing Provided</b>		<b>17-19</b>
<b>Total Staffing Needed</b>		<b>16</b>

**High Rise Residential Fire (Structure over 55 feet in height)**

Unit Type	Number of Units	Total Personnel
Engine	4	12-14
Senior Ladder	2	8
Rescue	1	2
Squad		
Battalion Chief	2	2
<b>Total Staffing Provided</b>		<b>24-26</b>
<b>Total Staffing Needed</b>		<b>25</b>

**Moderate Risk Commercial Fire**

Unit Type	Number of Units	Total Personnel
Engine	4	12-14
Senior Ladder	2	8
Rescue	1	2
Squad		
Battalion Chief	2	2
<b>Total Staffing Provided</b>		<b>24-26</b>
<b>Total Staffing Needed</b>		<b>23</b>

**High Risk Commercial Fire**

Unit Type	Number of Units	Total Personnel
Engine	4	12-14
Senior Ladder	2	8
Rescue	1	2
Squad		
Battalion Chief	2	2
<b>Total Staffing Provided</b>		<b>24-26</b>
<b>Total Staffing Needed</b>		<b>25</b>

**Grass/Brush Fire (Not threatening structures)**

Unit Type	Number of Units	Total Personnel
Engine	1	3
Senior Ladder		
Rescue		
Squad		
Battalion Chief		
<b>Total Staffing Provided</b>		<b>3</b>
<b>Total Staffing Needed</b>		<b>3</b>

**Vehicle Fire (Not threatening structures)**

Unit Type	Number of Units	Total Personnel
Engine	1	3
Senior Ladder		
Rescue		
Squad		
Battalion Chief		
<b>Total Staffing Provided</b>		<b>3</b>
<b>Total Staffing Needed</b>		<b>3</b>

**Emergency Medical (Non-life threatening)**

Unit Type	Number of Units	Total Personnel
ARU	1	1
Engine	1	3
Senior Ladder		
Rescue		
Squad		
Battalion Chief		
<b>Total Staffing Provided</b>		<b>1-3</b>
<b>Total Staffing Needed</b>		<b>1-3</b>

**Emergency Medical (Life threatening)**

Unit Type	Number of Units	Total Personnel
Engine	2	3
Senior Ladder		
Rescue		
Squad		
Battalion Chief		
<b>Total Staffing Provided</b>		<b>3</b>
<b>Total Staffing Needed</b>		<b>3</b>

**Motor Vehicle Accident (With patient extrication)**

Unit Type	Number of Units		Total Personnel	
	Surface street	Freeway	Surface street	Freeway
Engine	1-2	1-2	6	6
Senior Ladder	1	1	4	4
Rescue	1	1	2	2
Squad				
Battalion Chief	2	2	2	2
<b>Total Staffing Provided</b>			<b>14-16</b>	<b>14-16</b>
<b>Total Staffing Needed</b>			<b>13</b>	<b>13</b>

**Motor Vehicle Accident (No patient extrication)**

Unit Type	Number of Units		Total Personnel	
	Surface street	Freeway	Surface street	Freeway
Engine	1	1	3	3
Senior Ladder				
Rescue				
Squad				
Battalion Chief				
<b>Total Staffing Provided</b>			<b>3</b>	<b>3</b>
<b>Total Staffing Needed</b>			<b>3</b>	<b>3</b>

**Hazardous Materials**

Unit Type	Number of Units	Total Personnel
Engine	3	9
Senior Ladder	1	4
Rescue	1	2
Squad		
Hazardous materials unit	1	4 (Cross Staffed)
Battalion Chief	2	2
<b>Total Staffing Provided</b>		<b>21</b>
<b>Total Staffing Needed</b>		<b>20</b>

**Technical Rescue**

Unit Type	Number of Units	Total Personnel
Engine	3	9
Senior Ladder	2	8
Rescue	1	2
Squad (tech rescue unit)	1	(Cross Staffed)
Battalion Chief	2	2
<b>Total Staffing Provided</b>		<b>21-22</b>
<b>Total Staffing Needed</b>		<b>21</b>

**Marine Rescue**

Unit Type	Number of Units	Total Personnel
Engine	2	3
Senior Ladder	2	8
Squad (marine rescue unit)	1	Cross Staffed
Rescue	1	2
Battalion Chief	1	2
<b>Total Staffing Provided</b>		<b>15</b>
<b>Total Staffing Needed</b>		<b>15</b>