

Sioux Falls Fire Rescue

2015

Standards of Response Coverage Manual



Table of Contents

Topic	Page
Introduction	2
Executive Summary	3
Component A-Community Served	5
Component B-Services Provided	27
Component C-Community Expectations	45
Component D-Risk Assessment	53
Component E-System Performance Measurement	148
Component F-Performance Measures Objective Adoption	175
Component G-Compliance Methodology	178
Component H-Overall Evaluation	179
Appendix A-Risk Assessment of Individual Planning Zones	

Introduction

The following report serves as the Sioux Falls Fire Rescue “Integrated Risk Management Plan: Standards of Cover” document. The CFAI defines the process, known as “deployment analysis,” as written procedure which determines the distribution and concentration of fixed and mobile resources of an organization. The purpose for completing such a document is to assist Sioux Falls Fire Rescue in ensuring a safe and effective response for fire suppression, emergency medical services, and specialty response situations in addition to homeland security issues.

Creating the Integrated Response Management Plan Standards of Cover requires that a number of areas be researched, studied, and evaluated. The following report will begin with an overview of both the City of Sioux Falls and Sioux Falls Fire Rescue. Following this overview, Sioux Falls Fire Rescue will discuss areas such as risk assessment, critical task analysis, agency service level objectives, and distribution and concentration measures. Sioux Falls Fire Rescue will provide documentation of reliability studies and historical performance through charts and graphs. The report will conclude with policy recommendations.

Executive Summary

This document identifies Sioux Falls Fire Rescue's standards of response coverage for the City of Sioux Falls. Risk assessment, probability, and consequences are defined. SFFR utilizes GIS and historical data in identifying hazard statistics. In December 2007, Sioux Falls Fire Rescue and the City of Sioux Falls began working with ICMA and the Center for Performance Measurement (CPM) to compile data on core measurements. This will allow for a systematic approach to assessing effectiveness of programs and planning for the future.

Statistics considered in evaluation of the community included the top ten major nongovernmental employers of the city and the number of community facilities. Our Records Management System is constantly being enhanced to expand its filtering capability to allow for expanded analysis. We are currently able to automatically filter 9-1-1 emergent calls. As Sioux Falls continues to grow in population, we look forward to the acquisition of a new RMS solution that will respond to our needs more efficiently.

Planning zones (quadrants) were developed to analyze fire company first-due areas and were further subdivided by property use. Mapping overlays that use National Fire Incident Reporting System (NFIRS) data have been developed using GIS software. Incident type response data has been established for the current SOC. Property use was analyzed for fire loss, civilian injuries, and deaths for the current SOC. A majority of all losses and injuries occurred in one, two, and multifamily dwellings for this manual. Responses were broken down into number of calls by the day of week and by time of day.

A distribution and concentration policy has been published in this document. The distribution policy identifies reflex time for the first-due units, while the concentration policy provides a definition of the total reflex time for an effective response force to respond to an emergency incident.

The emergency event cycle in this report illustrates the sequence of events that occurs during emergency events.

Risks have been defined as special, high, moderate, and low hazards. These risks have been examined in the context of required fire flow and travel time.

The CAD and Records Management System will provide response time analysis for all responses to increase the efficiency of our response. SFFR will continue to work with software developers to enhance analysis capabilities.

The effect of fire growth has been included. Common tasks, broken down by task and number of firefighters, have been developed for residential structure fires. This was selected because fire loss, injuries, and deaths occur most often in this type of property.

Operational assignments for residential fires have been developed for first arriving units, second arriving units, third arriving units, and the Battalion Chief's arrival on the scene. Goals, measures, and objectives for high, moderate, and low risks have been developed for (1) fires, (2) emergency medical service, (3) USAR, and (4) hazardous materials. Current and future station allocation planning has been examined to ensure that response time standards have been met. An allocation map has been included to provide an overview of planning results.

History

Sioux Falls, South Dakota began as a city in the mid-1850s. In 1885 the first Hook and Ladder Company was created. As with every frontier town, the hotel was the center of activity and Sioux Falls followed suit. The Cataract Hotel, located at Ninth Street and Phillips Avenue was considered the center of town. This concept still exists, as all current street addresses originate from that intersection.

The intersection of Ninth Street and Phillips Avenue has played a large part in the history of the Sioux Falls Fire Department. After the Cataract Hotel burned to the ground on June 30, 1900, a movement was organized to create a full-time paid fire department. Mayor Burnside drafted Ordinance No. 261 which provided for a paid fire service with additional minutemen available for large fires. These men could be called upon at any time and were paid by the hour. The ordinance was passed by the City Council on August 6, 1900.

As the city of Sioux Falls continued to grow and prosper, so did its fire department. During the early days, horse-drawn fire suppression apparatus were employed. The horses and equipment had many homes. One of these homes was in the basement of the City Auditorium, located on the present City Hall site at Ninth Street and Dakota Avenue. The department finally built their own building not far from there. The beautiful granite structure that housed the men and their equipment, Central Fire Station, at Ninth Street and Minnesota Avenue still stands and is in operation. As it did in the past, this impressive building captures the spirit of firefighting with its ornate brick work along the roof line and the tall hose tower that keeps a watchful eye over the city. Sioux Falls Construction was responsible for taking architect Joseph Swartz's vision and turning it into a landmark that still inspires young children to be firefighters today.

Motorized fire trucks came to Sioux Falls in 1915 with the purchase of a 1915 Seagrave pumper. This truck served the city well for many years. A loving restoration was completed in the early 2000s on the Seagrave and it is now used for public relations events.

Even though horses were removed from service because of the motorized vehicles, members of the department had the foresight to keep the horse-drawn 1880 Silsby Steamer and hand pumper. These wonderful glimpses of our past are still on display at the Central Fire Station.

The Sioux Falls Fire Department has always been a progressive department. As with all city entities, difficult times ensued. In the late 1950s, things were extremely exasperating for Fire Chief Crusinberry. He took matters into his own hands. Chief Crusinberry retired from the department and ran for mayor. He won the election and things began to improve for the fire department as well as the other city departments. One of the first changes was the construction of a new fire station - the first built in 30 years - at 26th Street and Cliff Avenue. This greatly improved the service to the

expanding southern part of the city. Unfortunately in 1962, halfway through his term as mayor, Crusinberry died of a heart attack.

During the 1960s and 1970s, things were not only turbulent in the country but were also in the fire department. There were wage disputes and “sick out” campaigns where department staffing was at bare minimum. Eventually the wage issues were settled and progress began again. Two new fire stations were opened. One station at 41st Street and Marion Road and the other at Tenth Street and Chicago Avenue. A large young group of firefighters was hired to help with the demands of staffing the new stations.

The VL Crusinberry Regional Training Center was built in the late 1970s. Through the years this facility has grown and expanded to include confined space training, natural gas, trees, an actual house constructed by prison inmates, and many other necessary training tools. Today, this center not only trains firefighters for Sioux Falls but also for the Air National Guard. Training classes are held often for other agencies such as police and volunteer fire departments from the area.

During the mid-1980s, the South Dakota Air National Guard assumed fire protection responsibilities for the airport. The firefighters who had worked at the airport fire station were relocated to the Central Fire Station, and another truck company was added to respond to calls south of Ninth Street. This realignment relieved the other engine company of some of their calls in the busy downtown area. Other station realignments followed included closing the stations located at Oak Street and West Avenue, (Station 3) and the station at 26th Street and Cliff Avenue (Station 4) and combined into one building at 37th Street and Minnesota Avenue, forming the new Station 3. Fire Prevention, as well as the Fire Chief’s office was moved to this location in 1989. In 2010, Fire Prevention was relocated to City Hall.

In the 1980s, several new stations were constructed. Station 8 at Madison Street and Kiwanis Avenue, Station 7 at 1100 East Benson Road, Station 2 at Tenth Street and Sycamore Avenue, and Station 9 at 49th Street and Southeastern Avenue. The Tenth Street and Chicago Avenue station was closed with the opening of the station at Tenth Street and Sycamore Avenue. Included with the fire station on Benson Road was a maintenance shop for the department’s mechanics. There were two mechanics employed with the department by the early 1990s. Fire Station 4 at 3100 East 69th Street opened in 2003 and Station 10 at 320 South Whitewood Circle opened in 2006. In 2009, Station 5 was built at the site of old Station 2 at Tenth Street and Chicago Avenue. Station 5 was built to improve response times in that area of the city. Station 11, located at 2333 N Valley View Road, opened in April of 2015.

Milestones

The changing role of the fire department within the city prompted a considerable change in 1995 as the Sioux Falls Fire Department was renamed Sioux Falls Fire Rescue. This name change was made to reflect the ever-expanding role of the department in the city of responding to more medical and rescue calls each year. By 2000 all apparatus in Sioux Falls once again reverted to the traditional color of red.

In 2004, three heavy rescue/engines were purchased. An additional heavy rescue/engine was purchased in 2006. These vehicles carry all the same equipment as the other engines with additional stores including extrication, stabilization, shoring, and high angle rescue equipment. Three are staffed full time and one is a reserve apparatus. In 2007, two seventy-five foot ladder trucks were purchased along with an additional seventy-five foot ladder in 2009. Two tender/engines were purchased, one in 2010 and one in 2011. These tenders carry two thousand gallons of water. A new engine was purchased in 2012. This engine replaced Engine 1. A new engine was purchased in 2013 to replace Engine 9.

In 2013, three hazardous materials units were purchased as replacements for hazmat units purchased in 2003 and 2004. These units are cross staffed and contain all the supplies and equipment needed by our hazardous materials technicians to mitigate this type of incident.

With the opening of Station 5 in 2009, Sioux Falls Fire Rescue has three technical rescue stations. Station 8's primary mission is water/ice rescue, high angle rescue, and confined space rescue. Station 5's primary mission is trench and structural collapse rescue. Station 4's primary responsibilities are to provide technical search operations. Back up equipment for each type of rescue is kept at all three stations and rescue technicians are certified to perform water/ice, high angle, confined space, trench, and structural collapse rescues. Sioux Falls Fire Rescue has two structural engineers who are trained in dealing with collapsed buildings. Two EUVs were put into service; one of which was donated by Big Sioux Power Sports. The other was purchased through homeland security grant funding. In 2014, the department purchased its first 125' ladder truck.

Sioux Falls Fire Rescue is a member of the State of South Dakota's All Hazard teams. These teams can be deployed anywhere in the State of South Dakota to assist smaller departments with hazardous materials or technical rescue incidents. The team deployed in 2011 to Dakota Dunes to provide swift water rescue for 84 continuous days during the historic Missouri River flooding. The All Hazard teams are often dispatched to assist with water rescues/recoveries in the numerous low-head dams along the Big Sioux River.

On December 23, 2013, the Commission on Fire Accreditation International (CFAI) voted to approve re-accreditation for Sioux Falls Fire Rescue. Only 200 agencies in the world are accredited. Of 32,000 fire departments in the United States, only 72 are accredited (including Sioux Falls). Accreditation is a major commitment by the City and the department to ensure that Sioux Falls Fire Rescue pursues excellence in emergency response and fire prevention through adherence to standards, strategic planning, and continuous self-assessment and improvement.

According to the CFAI, "Accreditation is a comprehensive self-assessment and evaluation model that enables organizations to examine past, current, and future service levels and internal performance and compare them to industry best practices. This process leads to improved service delivery.

CPSE's Accreditation Program, administered by the CFAI allows fire and emergency service agencies to compare their performance to industry best practices in order to

- Determine community risk and safety needs and develop community-specific Standards of Cover
- Evaluate the performance of the department
- Establish a method for achieving continuous organizational improvement

Local government executives face increasing pressure to 'do more with less' and justify their expenditures by demonstrating a direct link to improved or expanded services. Particularly for emergency services, local officials need criteria to assess professional performance and efficiency. The CFAI accreditation process provides a well-defined, internationally-recognized benchmark system to measure the quality of fire and emergency services."

The City of Sioux Falls was evaluated by the Insurance Services Office (ISO) for a fire protection rating in 2015 with the opening of Station 11. A re-evaluation granted Sioux Falls Fire Rescue an ISO rating of 1. Improving this rating has the potential to save residents and businesses millions of dollars in insurance premiums. Only 35 fire departments in the United States are accredited and have an ISO rating of 1.

Station 12 is in the planning process and scheduled to open in 2019. The station will be located at the intersection of 41st Street and Faith Ave

Funding Sources

The mayor is charged with presenting the city council with a balanced budget on or before the first day of July each year. The budget establishes the fiscal policy for the City of Sioux Falls. The budget is affected by many factors including community needs, funding mechanisms, and political considerations. The mayor and council strive to achieve Sioux Falls Fire Rescue's mission at a time when the community's growth is 3,500 to 4,000 people each year. The department's budget policy is shaped around the following influences:

- Providing quality fire apparatus
- Having well-maintained facilities
- Maintain staffing to meet department guidelines
- Maintain minimum staffing levels by filling vacancies with extra duty
- Emergency services provided seven days a week, 24 hours a day
- Having well-trained firefighters
- A commitment to implement technology to aid in meeting our mission
- A Fire Marshal's office that provides comprehensive fire prevention services, including fire investigations, business inspections, plans review, and public education
- The VL Crusinberry Regional Fire Training Center to provide ongoing training for all Sioux Falls Fire Rescue firefighters and other area fire organizations
- Provide facilities for a backup 911 center

The world of firefighting is constantly changing and Sioux Falls Fire Rescue continues to adapt. Without the entire staff of the department this would not be possible. It is because of their dedication that Sioux Falls Fire Rescue has a strong future.

The City of Sioux Falls

Topography

The City of Sioux Falls covers approximately 75 square miles. The terrain is mostly flat to rolling hills with larger hills along the Sioux River and in the eastern part of the city. The area's vegetation is grass with trees planted throughout the city and wild vegetation along the river, creeks, diversion channels, and railroad tracks. The Sioux River, Skunk Creek, diversion channels, three interstates, and railroad tracks dissect the city. Sioux Falls Fire Rescue also contracts with Wayne Township to provide fire and EMS services. This area is made up of slightly over 22 square miles of rolling hills with larger hills along Skunk Creek. The area's vegetation consists of cropland, pastures, and wild vegetation. Most of the roads in Wayne Township are built on section lines, meaning they are one mile apart.

Climate

Sioux Falls is located in southeastern South Dakota and experiences a wide array of weather. South Dakota is known for wind conditions almost every day. South Dakota's temperatures range from -20 degrees Fahrenheit in the winter to above 100 degrees Fahrenheit in the summer. Sioux Falls experiences ice storms and blizzards during the winter, flooding in the spring and thunderstorms with the chance of tornadoes in the spring and the summer. Droughts are often a concern in the late summer.

Sioux Falls

The tables below display average monthly climate and weather indicators in Sioux Falls South Dakota.
Temperature by: Fahrenheit / Centigrade

Sioux Falls Temperature	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Avg. Temperature	13.8	19.7	32.5	46.9	58.4	68.3	74.3	71.4	60.9	48.6	33.0	18.3	45.5
Avg. Max Temperature	24.3	29.6	42.3	59.0	70.7	80.5	86.3	83.3	73.1	61.2	43.4	28.0	56.8
Avg. Min Temperature	3.3	9.7	22.6	34.8	45.9	56.1	62.3	59.4	48.7	36.0	22.6	8.6	34.2
Days with Max Temp of 90 F or Higher	0.0	0.0	0.0	< 0.5	1.0	4.0	10.0	7.0	2.0	0.0	0.0	0.0	23.0
Days with Min Temp Below Freezing	31.0	28.0	25.0	13.0	2.0	0.0	0.0	0.0	1.0	11.0	26.0	31.0	168

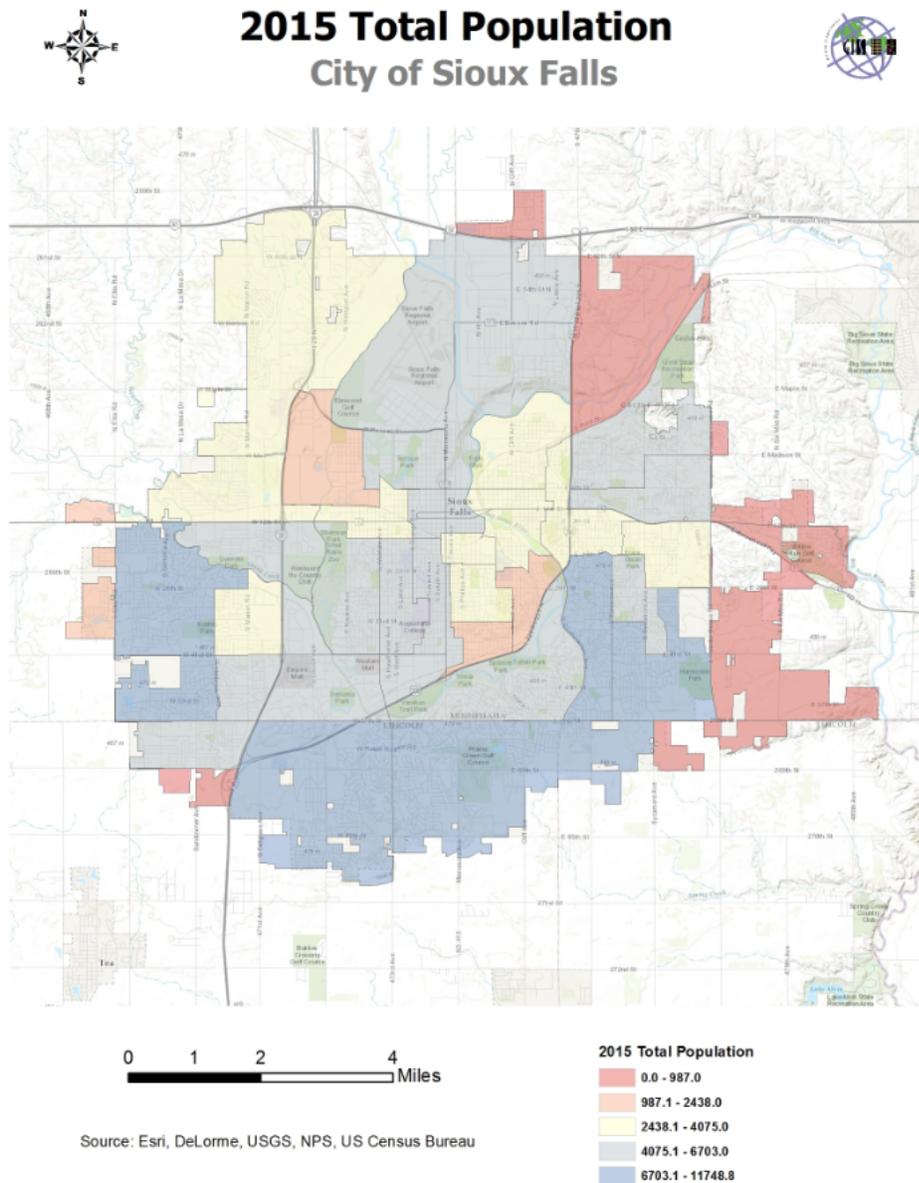
Sioux Falls Heating and Cooling	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Heating Degree Days	1587	1268	1008	543	240	50.0	10.0	22.0	165	508	960	1448	7809
Cooling Degree Days	0.0	0.0	0.0	0.0	35.0	149	298	220	42.0	0.0	0.0	0.0	744

Sioux Falls Precipitation	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Precipitation (inches)	0.5	0.6	1.6	2.5	3.0	3.4	2.7	2.9	3.0	1.8	1.1	0.7	23.9
Days with Precipitation 0.01 inch or More	6.0	7.0	9.0	9.0	11.0	11.0	10.0	9.0	8.0	6.0	6.0	6.0	99.0
Monthly Snowfall (inches)	6.8	8.2	9.4	2.8	< 0.05	< 0.05	< 0.05	0.0	0.0	0.8	5.8	7.2	41.0

Other Sioux Falls Weather Indicators	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Wind Speed	10.9	11.1	12.4	12.9	11.8	10.7	9.8	9.8	10.3	10.7	11.5	10.7	11.1
Clear Days	8.0	7.0	6.0	7.0	7.0	9.0	12.0	12.0	12.0	11.0	7.0	8.0	105
Partly Cloudy Days	8.0	7.0	8.0	8.0	10.0	11.0	12.0	11.0	8.0	8.0	7.0	7.0	103
Cloudy Days	15.0	15.0	17.0	15.0	14.0	11.0	8.0	9.0	10.0	12.0	16.0	16.0	157
Avg. Relative Humidity	56.5	75.0	75.5	73.0	68.5	68.5	70.5	71.0	72.0	70.0	70.0	74.0	77.0

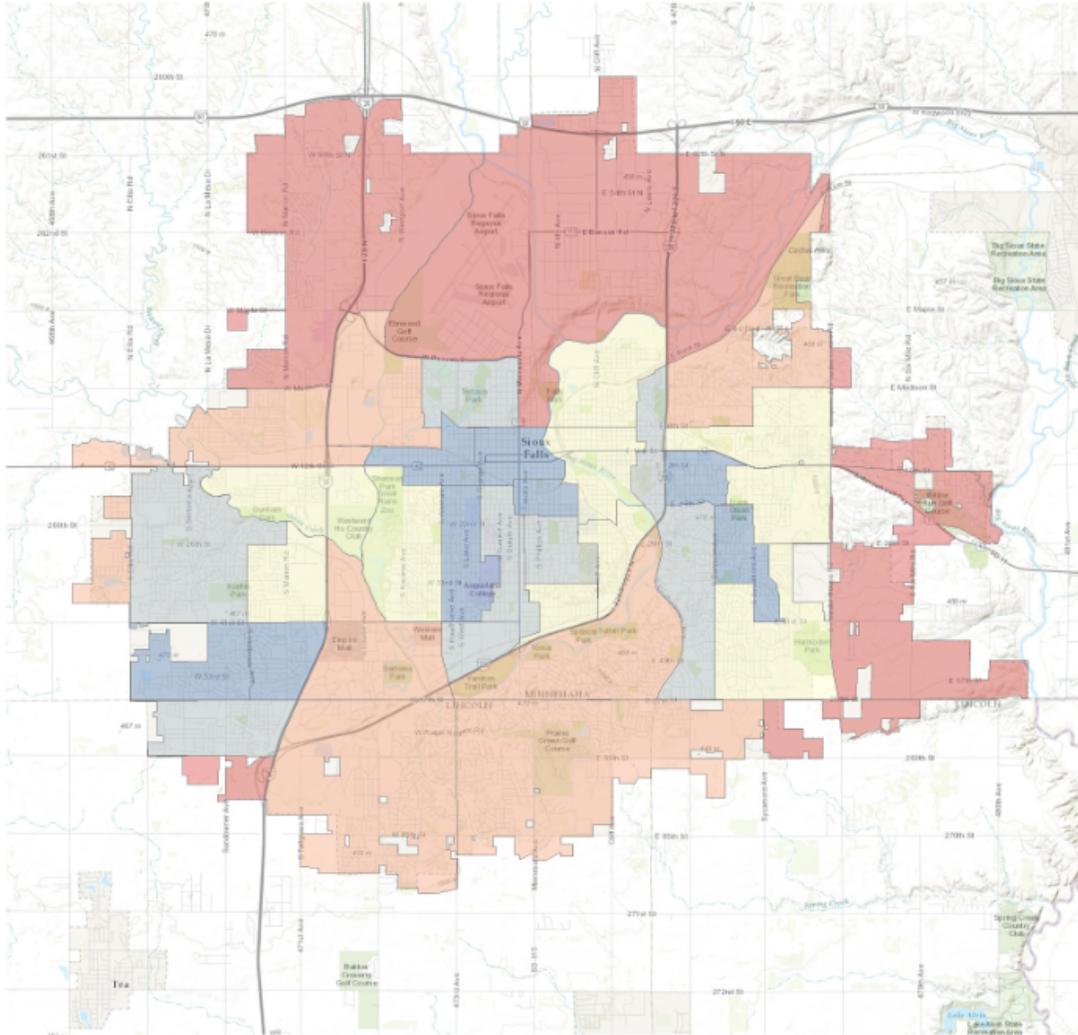
Population

The City of Sioux Falls has a population of approximately 173,300 citizens. The daytime population of Sioux Falls grows by approximately 25 percent. Regional residents travel to Sioux Falls to work, shop, and receive medical services. Sioux Falls Fire Rescue provides fire and rescue services for rural Wayne Township. Wayne Township has a population of approximately 1,196 people. Sioux Falls Fire Rescue's coverage verage area is mostly urban.





2015 Population Density City of Sioux Falls



2015 Population Density (person per sq. mile)

- 0.0 - 1157.0
- 1157.1 - 2411.0
- 2411.1 - 3782.0
- 3782.1 - 5025.0
- 5025.1 - 6700.0

Source: Esri, DeLorme, USGS, NPS, US Census Bureau

Major Non-Government Employers in Sioux Falls in 2015

Business	Industry	Number of Employees
Sanford Health	Health Care	8617
Avera Health	Health Care	6734
John Morrell & Co	Meat Processing	3350
Hy-Vee Food Stores	Retail Grocery	2964
Wells Fargo	Banking	2786
Citibank	Banking	2200
Evang. Luth. Good Sam. Society	Health Care	1440
Wal-Mart/Sam's Club	Retail	1215
Life Scape SD	Health Care	1061
First Premier	Banking	1150
Midcontinent Communications	Telecommunications/Cable	1052
Esurance	Insurance Service Center	900
Capital One	Banking	850
Raven Industries	Manufacturing	786
Cigna	Mail Order Pharmacy	750
Sammons Financial/Midland	Insurance	670
Starmark Cabinetry	Manufacturing	635
Lewis Drug	Retail Pharmacy	610
Billion Automotive	Auto Dealership	602



Demographic and Income Profile

Prepared By Austin Brynjulson

Summary	Census 2010	2015	2020
Population	154,065	168,389	184,918
Households	61,772	67,969	74,906
Families	37,588	41,004	44,906
Average Household Size	2.40	2.39	2.39
Owner Occupied Housing Units	38,635	41,205	45,555
Renter Occupied Housing Units	23,137	26,764	29,352
Median Age	33.8	34.7	35.7
Trends: 2015 - 2020 Annual Rate	Area	State	National
Population	1.89%	1.16%	0.75%
Households	1.96%	1.26%	0.77%
Families	1.83%	1.14%	0.69%
Owner HHS	2.03%	1.29%	0.70%
Median Household Income	3.43%	2.97%	2.66%

Households by Income	2015		2020	
	Number	Percent	Number	Percent
<\$15,000	6,081	8.9%	6,296	8.4%
\$15,000 - \$24,999	6,777	10.0%	5,518	7.4%
\$25,000 - \$34,999	7,935	11.7%	6,910	9.2%
\$35,000 - \$49,999	11,485	16.9%	10,469	14.0%
\$50,000 - \$74,999	13,474	19.8%	14,567	19.4%
\$75,000 - \$99,999	10,759	15.8%	13,206	17.6%
\$100,000 - \$149,999	5,955	8.8%	10,566	14.1%
\$150,000 - \$199,999	2,891	4.3%	4,029	5.4%
\$200,000+	2,612	3.8%	3,345	4.5%
Median Household Income	\$52,140		\$61,721	
Average Household Income	\$69,781		\$81,032	
Per Capita Income	\$28,581		\$33,204	

Population by Age	Census 2010		2015		2020	
	Number	Percent	Number	Percent	Number	Percent
0 - 4	12,212	7.9%	12,493	7.4%	13,657	7.4%
5 - 9	10,517	6.8%	12,279	7.3%	12,852	7.0%
10 - 14	9,489	6.2%	10,638	6.3%	12,719	6.9%
15 - 19	9,791	6.4%	10,224	6.1%	11,284	6.1%
20 - 24	12,210	7.9%	11,926	7.1%	12,088	6.5%
25 - 34	25,586	16.6%	27,512	16.3%	27,885	15.1%
35 - 44	19,832	12.9%	22,203	13.2%	27,150	14.7%
45 - 54	21,207	13.8%	20,857	12.4%	20,203	10.9%
55 - 64	16,316	10.6%	19,368	11.5%	21,087	11.4%
65 - 74	8,449	5.5%	11,544	6.9%	14,899	8.1%
75 - 84	5,714	3.7%	6,114	3.6%	7,448	4.0%
85+	2,739	1.8%	3,230	1.9%	3,647	2.0%

Race and Ethnicity	Census 2010		2015		2020	
	Number	Percent	Number	Percent	Number	Percent
White Alone	133,826	86.9%	140,221	83.3%	150,279	81.3%
Black Alone	6,461	4.2%	10,538	6.3%	13,825	7.5%
American Indian Alone	4,091	2.7%	4,638	2.8%	5,181	2.8%
Asian Alone	2,729	1.8%	3,722	2.2%	4,499	2.4%
Pacific Islander Alone	132	0.1%	138	0.1%	157	0.1%
Some Other Race Alone	3,017	2.0%	4,216	2.5%	5,170	2.8%
Two or More Races	3,809	2.5%	4,917	2.9%	5,807	3.1%
Hispanic Origin (Any Race)	6,802	4.4%	9,858	5.9%	12,277	6.6%

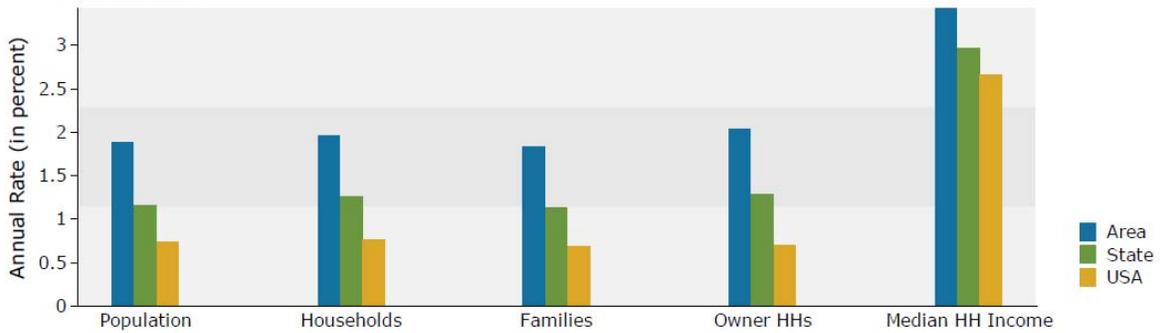
Data Note: Income is expressed in current dollars.

Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri forecasts for 2015 and 2020.

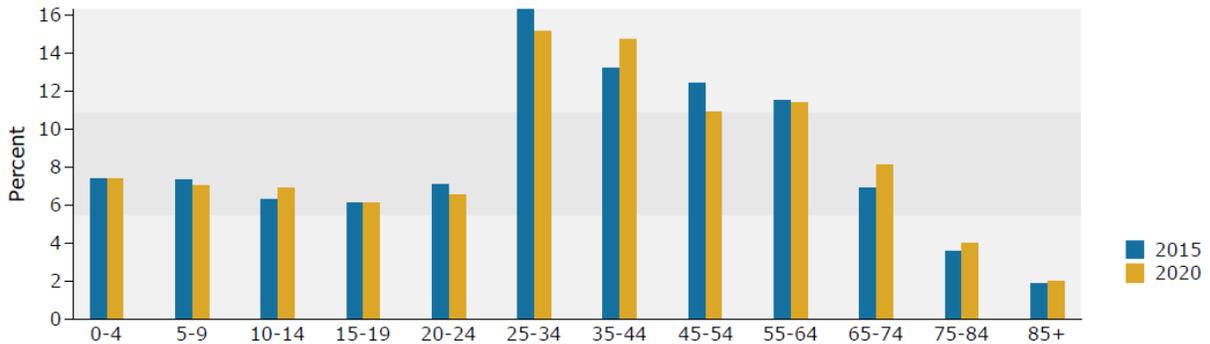
February 09, 2016



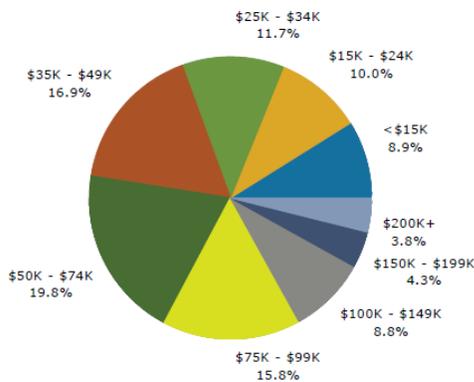
Trends 2015-2020



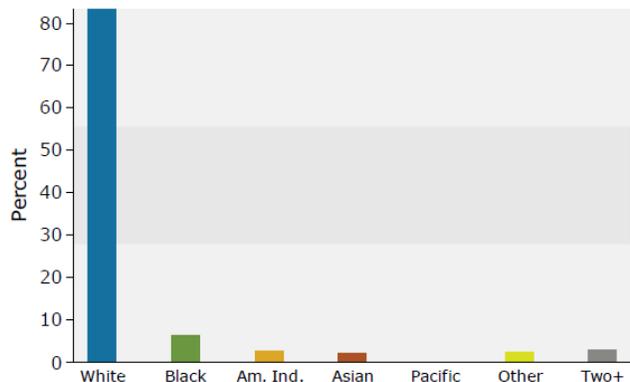
Population by Age



2015 Household Income



2015 Population by Race



2015 Percent Hispanic Origin: 5.9%

Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri forecasts for 2015 and 2020.



Housing Profile

Prepared By Austin Brynjulson

Population		Households	
2010 Total Population	154,065	2015 Median Household Income	\$52,140
2015 Total Population	168,389	2020 Median Household Income	\$61,721
2020 Total Population	184,918	2015-2020 Annual Rate	3.43%
2015-2020 Annual Rate	1.89%		

Housing Units by Occupancy Status and Tenure	Census 2010		2015		2020	
	Number	Percent	Number	Percent	Number	Percent
Total Housing Units	66,351	100.0%	72,527	100.0%	79,520	100.0%
Occupied	61,772	93.1%	67,969	93.7%	74,907	94.2%
Owner	38,635	58.2%	41,205	56.8%	45,555	57.3%
Renter	23,137	34.9%	26,764	36.9%	29,352	36.9%
Vacant	4,579	6.9%	4,558	6.3%	4,614	5.8%

Owner Occupied Housing Units by Value	2015		2020	
	Number	Percent	Number	Percent
Total	41,179	100.0%	45,527	100.0%
<\$50,000	2,123	5.2%	1,557	3.4%
\$50,000-\$99,999	5,788	14.1%	4,106	9.0%
\$100,000-\$149,999	8,406	20.4%	5,697	12.5%
\$150,000-\$199,999	8,021	19.5%	9,093	20.0%
\$200,000-\$249,999	6,027	14.6%	8,342	18.3%
\$250,000-\$299,999	3,795	9.2%	5,592	12.3%
\$300,000-\$399,999	3,537	8.6%	5,363	11.8%
\$400,000-\$499,999	1,585	3.8%	2,542	5.6%
\$500,000-\$749,999	1,280	3.1%	2,063	4.5%
\$750,000-\$999,999	280	0.7%	689	1.5%
\$1,000,000+	337	0.8%	483	1.1%
Median Value		\$176,633		\$213,849
Average Value		\$212,699		\$254,398

Data Note: Persons of Hispanic Origin may be of any race.
Source: U.S. Census Bureau, Census 2010 Summary File 1.

February 09, 2016



Census 2010 Owner Occupied Housing Units by Mortgage Status			Number	Percent
Total			38,635	100.0%
Owned with a Mortgage/Loan			29,343	75.9%
Owned Free and Clear			9,292	24.1%

Census 2010 Vacant Housing Units by Status			Number	Percent
Total			4,579	100.0%
For Rent			2,837	62.0%
Rented- Not Occupied			76	1.7%
For Sale Only			662	14.5%
Sold - Not Occupied			126	2.8%
Seasonal/Recreational/Occasional Use			197	4.3%
For Migrant Workers			0	0.0%
Other Vacant			644	14.1%

Census 2010 Occupied Housing Units by Age of Householder and Home Ownership				
	Occupied Units	Owner Occupied Units		
		Number	% of Occupied	
Total	61,772	38,636	62.5%	
15-24	4,400	752	17.1%	
25-34	13,053	6,743	51.7%	
35-44	10,943	7,296	66.7%	
45-54	12,348	8,854	71.7%	
55-64	9,930	7,515	75.7%	
65-74	5,360	4,098	76.5%	
75-84	3,886	2,594	66.8%	
85+	1,852	784	42.3%	

Census 2010 Occupied Housing Units by Race/Ethnicity of Householder and Home Ownership				
	Occupied Units	Owner Occupied Units		
		Number	% of Occupied	
Total	61,773	38,636	62.5%	
White Alone	56,583	37,089	65.5%	
Black/African American	1,866	397	21.3%	
American Indian/Alaska	1,054	178	16.9%	
Asian Alone	796	410	51.5%	
Pacific Islander Alone	38	18	47.4%	
Other Race Alone	776	324	41.8%	
Two or More Races	660	220	33.3%	
Hispanic Origin	1,698	729	42.9%	

Census 2010 Occupied Housing Units by Size and Home Ownership				
	Occupied Units	Owner Occupied Units		
		Number	% of Occupied	
Total	61,770	38,635	62.5%	
1-Person	18,844	8,224	43.6%	
2-Person	20,809	14,526	69.8%	
3-Person	9,246	6,289	68.0%	
4-Person	7,649	5,896	77.1%	
5-Person	3,361	2,491	74.1%	
6-Person	1,203	815	67.7%	
7+ Person	658	394	59.9%	

Data Note: Persons of Hispanic Origin may be of any race.

Source: U.S. Census Bureau, Census 2010 Summary File 1.



Population Summary	
2000 Total Population	126,086
2010 Total Population	154,065
2015 Total Population	168,389
2015 Group Quarters	6,072
2020 Total Population	184,918
2015-2020 Annual Rate	1.89%
Household Summary	
2000 Households	50,499
2000 Average Household Size	2.40
2010 Households	61,772
2010 Average Household Size	2.40
2015 Households	67,969
2015 Average Household Size	2.39
2020 Households	74,906
2020 Average Household Size	2.39
2015-2020 Annual Rate	1.96%
2010 Families	37,588
2010 Average Family Size	3.01
2015 Families	41,004
2015 Average Family Size	3.02
2020 Families	44,906
2020 Average Family Size	3.03
2015-2020 Annual Rate	1.83%
Housing Unit Summary	
2000 Housing Units	52,486
Owner Occupied Housing Units	59.2%
Renter Occupied Housing Units	37.0%
Vacant Housing Units	3.8%
2010 Housing Units	66,351
Owner Occupied Housing Units	58.2%
Renter Occupied Housing Units	34.9%
Vacant Housing Units	6.9%
2015 Housing Units	72,527
Owner Occupied Housing Units	56.8%
Renter Occupied Housing Units	36.9%
Vacant Housing Units	6.3%
2020 Housing Units	79,520
Owner Occupied Housing Units	57.3%
Renter Occupied Housing Units	36.9%
Vacant Housing Units	5.8%
Median Household Income	
2015	\$52,140
2020	\$61,721
Median Home Value	
2015	\$176,633
2020	\$213,849
Per Capita Income	
2015	\$28,581
2020	\$33,204
Median Age	
2010	33.8
2015	34.7
2020	35.7

Data Note: Household population includes persons not residing in group quarters. Average Household Size is the household population divided by total households. Persons in families include the householder and persons related to the householder by birth, marriage, or adoption. Per Capita Income represents the income received by all persons aged 15 years and over divided by the total population.

Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri forecasts for 2015 and 2020. Esri converted Census 2000 data into 2010 geography.



2015 Households by Income	
Household Income Base	67,969
<\$15,000	8.9%
\$15,000 - \$24,999	10.0%
\$25,000 - \$34,999	11.7%
\$35,000 - \$49,999	16.9%
\$50,000 - \$74,999	19.8%
\$75,000 - \$99,999	15.8%
\$100,000 - \$149,999	8.8%
\$150,000 - \$199,999	4.3%
\$200,000+	3.8%
Average Household Income	\$69,781
2020 Households by Income	
Household Income Base	74,906
<\$15,000	8.4%
\$15,000 - \$24,999	7.4%
\$25,000 - \$34,999	9.2%
\$35,000 - \$49,999	14.0%
\$50,000 - \$74,999	19.4%
\$75,000 - \$99,999	17.6%
\$100,000 - \$149,999	14.1%
\$150,000 - \$199,999	5.4%
\$200,000+	4.5%
Average Household Income	\$81,032
2015 Owner Occupied Housing Units by Value	
Total	41,179
<\$50,000	5.2%
\$50,000 - \$99,999	14.1%
\$100,000 - \$149,999	20.4%
\$150,000 - \$199,999	19.5%
\$200,000 - \$249,999	14.6%
\$250,000 - \$299,999	9.2%
\$300,000 - \$399,999	8.6%
\$400,000 - \$499,999	3.8%
\$500,000 - \$749,999	3.1%
\$750,000 - \$999,999	0.7%
\$1,000,000 +	0.8%
Average Home Value	\$212,699
2020 Owner Occupied Housing Units by Value	
Total	45,526
<\$50,000	3.4%
\$50,000 - \$99,999	9.0%
\$100,000 - \$149,999	12.5%
\$150,000 - \$199,999	20.0%
\$200,000 - \$249,999	18.3%
\$250,000 - \$299,999	12.3%
\$300,000 - \$399,999	11.8%
\$400,000 - \$499,999	5.6%
\$500,000 - \$749,999	4.5%
\$750,000 - \$999,999	1.5%
\$1,000,000 +	1.1%
Average Home Value	\$254,398

Data Note: Income represents the preceding year, expressed in current dollars. Household income includes wage and salary earnings, interest dividends, net rents, pensions, SSI and welfare payments, child support, and alimony.

Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri forecasts for 2015 and 2020. Esri converted Census 2000 data into 2010 geography.



2010 Population by Age	
Total	154,063
0 - 4	7.9%
5 - 9	6.8%
10 - 14	6.2%
15 - 24	14.3%
25 - 34	16.6%
35 - 44	12.9%
45 - 54	13.8%
55 - 64	10.6%
65 - 74	5.5%
75 - 84	3.7%
85 +	1.8%
18 +	75.4%
2015 Population by Age	
Total	168,388
0 - 4	7.4%
5 - 9	7.3%
10 - 14	6.3%
15 - 24	13.2%
25 - 34	16.3%
35 - 44	13.2%
45 - 54	12.4%
55 - 64	11.5%
65 - 74	6.9%
75 - 84	3.6%
85 +	1.9%
18 +	75.6%
2020 Population by Age	
Total	184,919
0 - 4	7.4%
5 - 9	7.0%
10 - 14	6.9%
15 - 24	12.6%
25 - 34	15.1%
35 - 44	14.7%
45 - 54	10.9%
55 - 64	11.4%
65 - 74	8.1%
75 - 84	4.0%
85 +	2.0%
18 +	75.3%
2010 Population by Sex	
Males	76,392
Females	77,673
2015 Population by Sex	
Males	83,452
Females	84,936
2020 Population by Sex	
Males	91,395
Females	93,522

Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri forecasts for 2015 and 2020. Esri converted Census 2000 data into 2010 geography.



2010 Population by Race/Ethnicity	
Total	154,065
White Alone	86.9%
Black Alone	4.2%
American Indian Alone	2.7%
Asian Alone	1.8%
Pacific Islander Alone	0.1%
Some Other Race Alone	2.0%
Two or More Races	2.5%
Hispanic Origin	4.4%
Diversity Index	30.7
2015 Population by Race/Ethnicity	
Total	168,390
White Alone	83.3%
Black Alone	6.3%
American Indian Alone	2.8%
Asian Alone	2.2%
Pacific Islander Alone	0.1%
Some Other Race Alone	2.5%
Two or More Races	2.9%
Hispanic Origin	5.9%
Diversity Index	37.8
2020 Population by Race/Ethnicity	
Total	184,918
White Alone	81.3%
Black Alone	7.5%
American Indian Alone	2.8%
Asian Alone	2.4%
Pacific Islander Alone	0.1%
Some Other Race Alone	2.8%
Two or More Races	3.1%
Hispanic Origin	6.6%
Diversity Index	41.5
2010 Population by Relationship and Household Type	
Total	154,065
In Households	96.1%
In Family Households	75.9%
Householder	24.4%
Spouse	18.3%
Child	28.5%
Other relative	2.3%
Nonrelative	2.3%
In Nonfamily Households	20.2%
In Group Quarters	3.9%
Institutionalized Population	2.2%
Noninstitutionalized Population	1.8%

Data Note: Persons of Hispanic Origin may be of any race. The Diversity Index measures the probability that two people from the same area will be from different race/ethnic groups.

Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri forecasts for 2015 and 2020. Esri converted Census 2000 data into 2010 geography.



2015 Population 25+ by Educational Attainment	
Total	110,829
Less than 9th Grade	3.0%
9th - 12th Grade, No Diploma	4.7%
High School Graduate	22.1%
GED/Alternative Credential	4.1%
Some College, No Degree	21.0%
Associate Degree	12.3%
Bachelor's Degree	22.9%
Graduate/Professional Degree	9.9%
2015 Population 15+ by Marital Status	
Total	132,978
Never Married	32.8%
Married	51.3%
Widowed	4.3%
Divorced	11.5%
2015 Civilian Population 16+ in Labor Force	
Civilian Employed	97.0%
Civilian Unemployed	3.0%
2015 Employed Population 16+ by Industry	
Total	92,159
Agriculture/Mining	0.8%
Construction	6.1%
Manufacturing	9.6%
Wholesale Trade	3.1%
Retail Trade	13.3%
Transportation/Utilities	3.1%
Information	2.3%
Finance/Insurance/Real Estate	13.0%
Services	45.3%
Public Administration	3.4%
2015 Employed Population 16+ by Occupation	
Total	92,159
White Collar	63.6%
Management/Business/Financial	13.1%
Professional	22.4%
Sales	11.0%
Administrative Support	17.2%
Services	17.3%
Blue Collar	19.1%
Farming/Forestry/Fishing	0.5%
Construction/Extraction	4.1%
Installation/Maintenance/Repair	2.9%
Production	6.3%
Transportation/Material Moving	5.3%

Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri forecasts for 2015 and 2020. Esri converted Census 2000 data into 2010 geography.



2010 Households by Type	
Total	61,771
Households with 1 Person	30.5%
Households with 2+ People	69.5%
Family Households	60.9%
Husband-wife Families	45.7%
With Related Children	20.9%
Other Family (No Spouse Present)	15.2%
Other Family with Male Householder	4.4%
With Related Children	2.8%
Other Family with Female Householder	10.8%
With Related Children	7.6%
Nonfamily Households	8.6%
All Households with Children	31.8%
Multigenerational Households	1.9%
Unmarried Partner Households	7.6%
Male-female	7.0%
Same-sex	0.5%
2010 Households by Size	
Total	61,771
1 Person Household	30.5%
2 Person Household	33.7%
3 Person Household	15.0%
4 Person Household	12.4%
5 Person Household	5.4%
6 Person Household	1.9%
7 + Person Household	1.1%
2010 Households by Tenure and Mortgage Status	
Total	61,772
Owner Occupied	62.5%
Owned with a Mortgage/Loan	47.5%
Owned Free and Clear	15.0%
Renter Occupied	37.5%

Data Note: Households with children include any households with people under age 18, related or not. Multigenerational households are families with 3 or more parent-child relationships. Unmarried partner households are usually classified as nonfamily households unless there is another member of the household related to the householder. Multigenerational and unmarried partner households are reported only to the tract level. Esri estimated block group data, which is used to estimate polygons or non-standard geography.

Source: U.S. Census Bureau, Census 2010 Summary File 1. Esri forecasts for 2015 and 2020. Esri converted Census 2000 data into 2010 geography.

Development within the service area

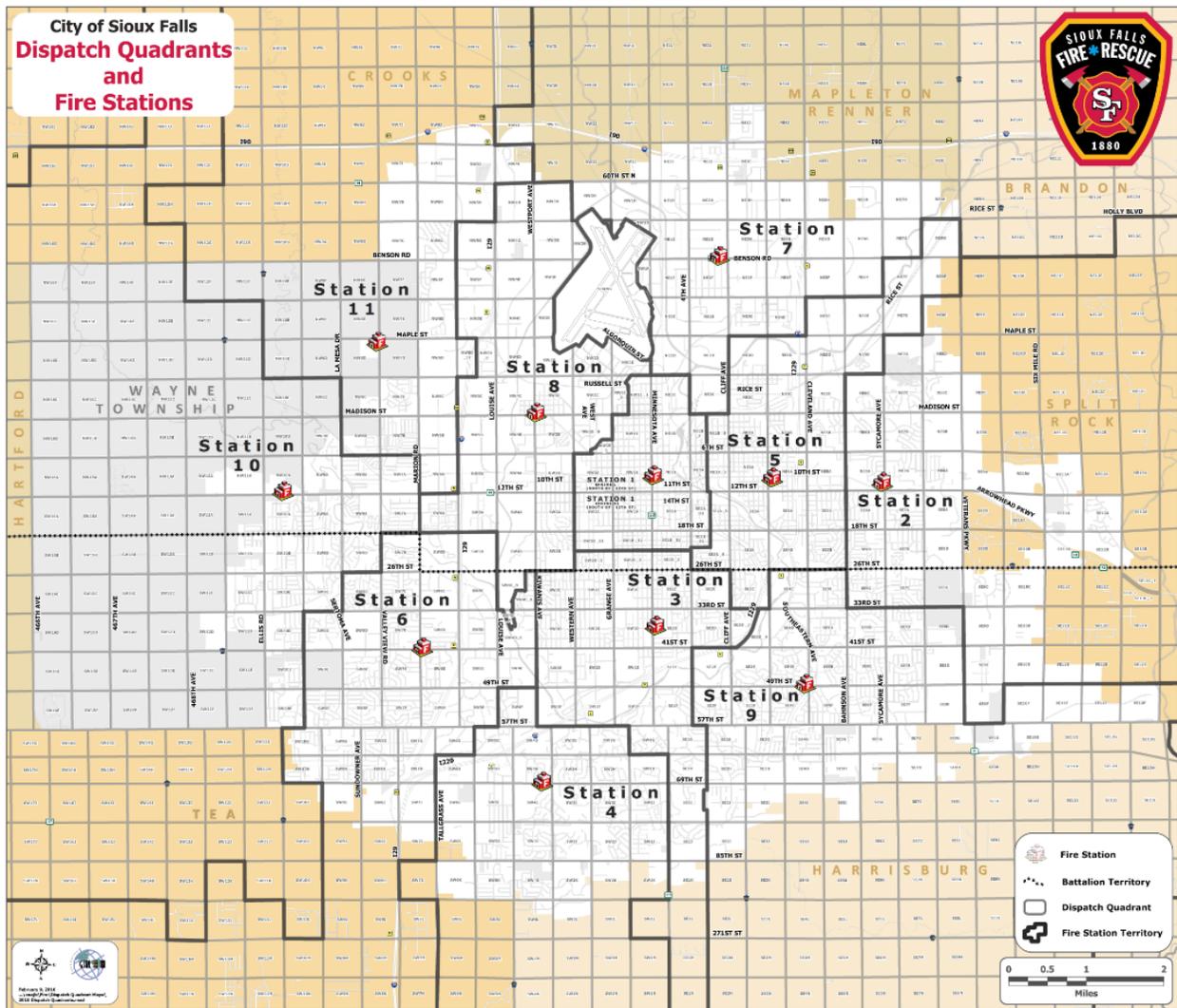
The City of Sioux Falls has a wide range of building construction types. The residential buildings in the downtown area and McKennan Park area are typically balloon frame construction. The houses built in the 1940s to the 1970s are mostly platform construction. The homes built in the 1980s to present are platform construction using engineered trusses and engineered floors.

The commercial buildings in the city are varied. The downtown area has many ordinary and heavy timber buildings. The rest of the city has a mix of noncombustible, fire resistive, and newer ordinary construction buildings. The city has many high rise buildings. The definition of a high rise building in Sioux Falls is any building three stories or larger.

Sioux Falls Fire Rescue takes into account the building construction and occupancy when responding to an incident. Specifically recognized target hazard occupancies receive different responses due to construction type or use.

Sioux Falls Fire Rescue works with the city's engineers and GIS to create maps to determine station locations, station territories, water mains, hydrants, and zoning. These maps help the department plan future station locations and emergency response.

SFFR Dispatch Quadrants and Fire Stations Map



Fire Services Provided

The operations division is tasked with emergency response, and is responsible for the management of day-to-day activities of the 210 personnel assigned. This division is divided into two battalions, complemented by a Training Battalion as follows.

- **Battalion One**
 - Fire Station 1 (100 South Minnesota Avenue)
 - Battalion 1, one battalion chief
 - Engine 1, one captain, one fire apparatus operator, two firefighters
 - Engine 51, one captain, one fire apparatus operator, two firefighters
 - Foam trailer, cross staffed
 - Utility 1, cross staffed
 - EUV 1, cross staffed
 - Wildland 1, cross staffed
 - Fire Station 5 (2010 East Nye Street)
 - Rescue 5, one captain, one fire apparatus operator, two firefighters
 - USAR 5, cross staffed
 - Rescue Boat, cross staffed
 - Fire Station 7 (1100 East Benson Road)
 - Truck 7, one captain, one fire apparatus operator, two firefighters
 - Hazmat 7, cross staffed
 - Rescue 40, reserve apparatus
 - Truck 30, reserve apparatus
 - Fire Station 8 (1000 North Kiwanis Avenue)
 - Rescue 8, one captain, one fire apparatus operator, two firefighters
 - USAR 8, cross staffed
 - Rescue Boat, cross staffed
 - Fire Station 11 (2333 N Valley View Road)
 - Truck 11, one captain, one fire apparatus operator, two firefighters
 - Wildland 11, cross staffed
 - Engine 22, reserve apparatus

- **Battalion Three**
 - Fire Station 2 (301 South Sycamore Avenue)
 - Truck 2, one captain, one fire apparatus operator, two firefighters
 - Hazmat 2, cross staffed
 - Tender 2, cross staffed
 - Fire Station 3 (2820 South Minnesota Avenue)
 - Battalion 3, one battalion chief
 - Truck 3, one captain, one fire apparatus operator, two firefighters
 - Squad 3, cross staffed
 - Fire Station 4 (3100 West 69th Street)
 - Rescue 4 one captain, one fire apparatus operator, two firefighters
 - Wildland 4, cross staffed
 - EUV 4, cross staffed
 - Fire Station 6 (5200 West 41st Street)
 - Truck 6, one captain, one fire apparatus operator, two firefighters
 - Squad 6, cross staffed
 - Engine 23, reserve apparatus
 - Fire Station 9 (2700 East 49th Street)
 - Engine 9, one captain, one fire apparatus operator, two firefighters
 - Squad 9, cross staffed
 - ALV 9 Air Light Ventilation Unit
 - Fire Station 10 (320 South Whitewood Circle)
 - Tender 10, one captain, one fire apparatus operator, two firefighters
 - Engine 10, cross staffed
 - Wildland 10, cross staffed
 - Minnehaha County Command Vehicle, cross staffed

- **Training Battalion**
 - VL Crusinberry Regional Training Center (3400 North Western Avenue)
 - Engine 20, reserve apparatus
 - Engine 21, reserve apparatus

Fire response is dispatched in the following manner:

Special Duty: The special duty call will be utilized for certain requests for services. The requests may come from various sources, including assignment by Battalion One and Battalion Three, police requests, and normal telephone alert. These calls may include multiple companies or stations. Special duty calls are normally for a short duration or temporary assignment. Units on special duty could be available for more serious levels of dispatch if the need arises. Response is normally with the flow of traffic without red lights or siren.

- Special duty assignments will include:
 - Fuel spills (non-emergency 'minor' problems, fuel spills for small quantities (less than one gallon) in open ventilated areas.
 - Fire drills when a SFFR presence is required or special public education assignments
 - Disaster drills
 - Animal rescue after request of Animal Control
 - Special inspections as requested by Fire Prevention. Special duty assignments will generally include non-emergent situations.
 - Water problems (broken sprinkler lines)
 - Assist police or ambulance units at scene
 - Assist Fire Prevention with a fire investigation
 - Carbon monoxide alarm with no illness
 - Natural gas odor with an unknown source from a single report accompanied by no other problems (explosion)

Dispatch procedures will follow guidelines set forth in still alarms except that special duty announcement will be utilized.

Still Alarm: The still alarm dispatch will be used on all dispatches for normal situations that require the response of one Engine, Rescue, or Truck.

- General calls covering the following incidents would be classified and dispatched under this level.
 - Grass fires
 - Car or pickup truck fires
 - Dumpster fires (away from buildings)
 - Investigation of unusual odors
 - Standby service for protection (vehicle accidents)

- Local resident smoke alarm activation without smell of smoke or sight of flames
- Fuel spills (hazardous situations) less than twenty-five gallons of fuel in a ventilated area or smaller quantities in a confined space
- Monitored automatic fire alarms or business alarms monitored by security or an answering service with the exception of hospitals, schools, nursing homes, day cares, or high life hazard locations
- Privately monitored residential alarm systems monitored by security or answering service

The Metro Communications operator procedures for still alarm dispatching is:

- Dispatch the appropriate units suggested by CAD, the station alerting will automatically be activated
- Announce “STILL ALARM _____”; “ENGINE _____”; “TYPE OF CALL _____”; “ADDRESS _____.”
- Give information slowly two (2) times
- The responding unit will acknowledge with an en route message repeating the address
- Provide a short report, supply supplemental information, and provide support as required
- The incident commander (usually an engine company captain) may order a ‘fire alarm’ assignment

Fire Alarm: The fire alarm level of dispatching is the most conventional level of assignment covering the response to a call that requests the use of pre-assigned equipment. Once a working fire is confirmed, the on call inspector is dispatched and Fire Car 2 and Fire Car 5 are notified.

Fire Alarms include, but are not limited to, the following incidents:

- Request for a ‘fire alarm’ by incident commander (three additional engines, rescue, or truck companies and Battalion One or Battalion Three)
- Automatic fire panel alarms at hospitals, nursing homes, day cares, and other high life hazard locations monitored by approved agencies 24 hours a day (four engine, rescue, or truck companies, and Battalion One or Battalion Three)
- Large truck or semi-trailer fires (four engine, rescue or truck companies and Battalion One or Battalion Three)

- College dorms, apartment houses (four engine, rescue, or truck companies and Battalion One or Battalion Three)
- Structure fires, including any report of smoke in a building (four engine, rescue, or truck companies, and Battalion One or Battalion Three)
- Business or commercial fires (four engines, rescue, or truck companies, and Battalion One or Battalion Three)

Communications operators may dispatch additional equipment to a 'fire alarm' at the onset upon direction of an incident commander without increasing the level of the alarm (Example: Safety Officer)

Dispatch of 'fire alarms' will follow procedures set forth in the section covering 'still alarms', except that the 'fire alarm' announcement will be made (See example, SOP600.6 – Dispatching Examples)

Communications operators will access the computer data file on all dispatches and stand ready to provide supplemental information to responding units.

Communications operators will dedicate their attention to responding units until arrival at the scene and are to cease telephone answering or radio testing until the alarm is stabilized.

Communications operators should be ready to advance the alarm level at the direction of the Incident Commander and to supply service as directed. A police district officer will be dispatched. Back-up police units may also be required for traffic control.

The ambulance service will be notified for standby once incident command has confirmed a working fire or at any time a safety officer is requested or directed by Standard Operating Procedure.

The Red Cross will be notified for all confirmed structure fires.

A SFFR chaplain will be notified for all confirmed structure fires.

Second Alarm: The second alarm will be issued by the battalion chief or incident commander as an indication that the fire alarm dispatch is a working fire or large enough in magnitude to require the dispatch of additional equipment and manpower for control.

- Generally, additional equipment would be the three nearest engine, rescue, or truck companies, ALV 9 (if Engine 9 is out of the station, notify Battalion One or Battalion Three).
- The second alarm will indicate that the situation can be handled by personnel 'on duty', but requires the involvement of more than the first alarm units.
- The Incident Commander may indicate what equipment will be needed- Dispatch accordingly with tones as 'second alarm' ... assist fire unit(s) _____ at _____, authority of Battalion One or Battalion Three. (See examples, SOP600.6.II.A.4.b.)
- Communication operators should be alert to the movement of equipment during 'second alarms'. Should another fire or emergency develop, the nearest available fire unit should be dispatched.
Communication operators will dispatch the utility companies when a working fire is in progress (Electric Company, Gas Company, etc.)
- Water Department should be notified that a working fire is in progress and large amounts of water may be used.
- Notify Fire Car 2 of the status of the second alarm (AP400.1) - Fire Car 2 will report en route and on arrival - Notify Fire Car 1 if Fire Car 2 is not available - Notify any other off duty Fire Car if Fire Car 1 is not available.
- The Director or Assistant Director of Metro Communications will be notified.
- The County Emergency Management Director will be notified.
- Mutual aid brought into the city will be generally be assigned to an incident and not directed to stage at a fire station.
- Notify the Training Center Battalion Chief. If available, Training Center Battalion Chief will respond to the scene.
- Notify fire mechanics. If available, one fire mechanic will respond to the scene.
- Notify Fire Inspection Battalion Chief. If available, The Fire Inspection Chief will assist the on-call inspector.

Third Alarm: The Incident Commander will issue the third alarm, which will commit one SFFR crew and two mutual aid crews from the next nearest mutual aid departments.

Fourth Alarm: The Incident Commander will issue a request for the fourth alarm, which will commit one SFFR crew and two mutual aid crews from the next nearest mutual aid departments.

Fifth Alarm: The Incident Commander will issue a request for the fifth alarm requiring most SFFR equipment and manpower for a total commitment.

- Dispatch an additional SFFR company and two additional mutual aid companies from the next nearest mutual aid departments
- Implementation of the Minnehaha County Disaster Plan
- Start preparations to request assistance from state agencies as determined by governing bodies

Rescue/USAR Services Provided

All operation members of Sioux Falls Fire Rescue are trained to meet current NFPA standards regarding general requirements and vehicle and machinery rescue. All personnel assigned to Station 5 and Station 8 must meet level 2 requirements for rope rescue, confined space rescue, trench rescue, structural collapse, water and ice rescue. The personnel assigned to Station 4 are responsible to provide technical search capabilities and are trained to FEMA technical search specialist standards.

Sioux Falls Fire Rescue has three rescue stations located at

- Fire Station 4 (3100 West 69th Street)
 - Rescue 4 one captain, one fire apparatus operator, two firefighters
 - UTV, cross staffed
- Fire Station 5 (2010 East Nye Street)
 - Rescue 5, one captain, one fire apparatus operator, two firefighters
 - USAR 5, cross staffed
 - Rescue Boat, cross staffed
- Fire Station 8 (1000 North Kiwanis Avenue)
 - Rescue 8, one captain, one fire apparatus operator, two firefighters
 - USAR 8, cross staffed
 - Rescue Boat, cross staffed

Station 4, Station 5, and Station 8 each has a rescue/engine which has extrication, lifting, shoring, and high angle capability. These rescues also carry forcible entry and breaching tools.

Station 4 personnel are responsible for providing technical search specialist capabilities for man-made and natural disasters. SFFR is currently expanding our capabilities in this area. Several of the Station 4 personnel have received training that mirrors the FEMA 40 hour Technical Search Specialist training. This is the same training that is taught to members of the national FEMA US&R teams. This training provides our members with the knowledge, skills, and abilities to perform technical searches of structural collapse or CBRNE incidents. Several personnel at this station are also trained in wide-area search strategies and tactics.

Station 5 and Station 8 are technical rescue stations. Station 8 is the primary rope, water, ice, and confined space rescue station. This station has USAR 8 which carries the rope, water, ice, and confined space rescue equipment. This unit also pulls a rescue boat. Station 8 also has a USAR trailer that carries back up equipment for trench and structural collapse rescues.

Station 5 is our primary trench and structural collapse rescue station. This station has USAR 5 which carries the trench and structural collapse rescue equipment. The trailer and Rescue 5 also carry back equipment for rope, water, ice, and confined space rescues. The USAR 5 tow vehicle is also utilized to pull a rescue boat.

Sioux Falls Fire Rescue is a member of the State of South Dakota's All Hazards Teams. Agencies on these teams must provide technical rescue and hazardous materials teams.

Rescue Calls:

Rescue calls include persons trapped as a result of aircraft emergency, entrapment, water rescue, rescues from above and below grade elevations, trench excavation, structural collapse and other similar-type situations.

When calls are received from any source requiring the response of a fire apparatus from Sioux Falls Fire Rescue, the call will be dispatched as follows by the communication operators:

- Dispatch the coverage area Engine, Rescue or Truck Company, appropriate USAR units, and additional Rescue Engines - Select and transmit appropriate paging or encode tone to activate station receiver and lights
- Voice transmits the type of call, such as: aircraft emergency or water rescue
- Example: Announce “RESCUE CALL - EXTRICATION”; “PROVIDE SHORT REPORT”; GIVE ADDRESS”
- The short report includes age, sex, nature of injury, if patients is in cardiac arrest, and any other pertinent information
- Examples of pertinent information includes victim of assault, perpetrator on scene, hazards, etc.
- Give information slowly two (2) times with numerical in different format.
- The responding units will acknowledge with an en route message repeating the address
- Provide a short report, supply supplemental information, and provide support as required
- Information will generally be transmitted simultaneously to the ambulance

Types of Rescue Calls:

- **Aircraft Emergency Calls:** These calls are normally initiated by the FAA tower and require the dispatch of SDANG Fire Rescue personnel and equipment. Assistance may be requested by SDANG Fire Rescue for Sioux Falls Fire Rescue units to respond. The units normally are an Engine, Rescue or Truck company. The incident commander may change the dispatch, subject to the nature of the emergency and availability of Sioux Falls Fire Rescue and South Dakota Air National Guard personnel. Additional dispatch instructions can be found in SOP 802.1 Airport Mutual Aid.
- **Elevation / Confined Space Rescues:** These include rescue from above and below grade elevations, confined space
- **Structural Collapse / Trench Excavation Rescues:** These rescues involve entrapment emergencies, which include engulfment and cave-ins
- **Water / Ice Rescues:** These are rescue incidents where victim(s) are in/on or near water or ice or where response personnel involvement may put them in close proximity

- **Extrications:** These rescues include vehicle injury accidents requiring extrication of a trapped victim - other accidents that may have trapped victims include a rollover accident, vehicle into a body of water (river, lake, pond, or pool), vehicle over an embankment, any head-on accident or machinery entrapment - Dispatch procedures will be a Fire Alarm assignment to include a Rescue Engine
- **Other type calls**, which may fall under this level at the communication operator's discretion:
 - Assist police or ambulance
 - The communication operators may dispatch response to outside the city calls, if assistance is requested by a responsible agency with a mutual aid agreement with Sioux Falls Fire Rescue.

Medical Services Provided

Sioux Falls Fire Rescue is the largest emergency medical basic service in the State of South Dakota. All operations level personnel must be emergency medical technicians. Sioux Falls Fire Rescue engines, rescues, and truck companies carry all of the basic EMS equipment and defibrillators. Our personnel can also use our defibrillators to monitor heart rhythms in the field. Our personnel also includes paramedics. Sioux Falls Fire Rescue paramedics can use their ALS skills on USAR and hazardous materials incidents outside the City of Sioux Falls to provide care for SFFR responders. Rural Metro provides ALS and transport services for the City of Sioux Falls. All Sioux Falls Fire Rescue units carry EMS equipment and the following resources are typically used for EMS incidents.

- **Battalion One**
 - Fire Station 1 (100 South Minnesota Avenue)
 - Engine 1, one captain, one fire apparatus operator, two firefighters
 - Engine 51, one captain, one fire apparatus operator, two firefighters
 - EUV1, cross staffed
 - Fire Station 5 (2010 East Nye Street)
 - Rescue 5, one captain, one fire apparatus operator, two firefighters
 - USAR 5, cross staffed
 - Fire Station 7 (1100 East Benson Road)
 - Truck 7, one captain, one fire apparatus operator, two firefighters
 - Hazmat 7, cross staffed

- Rescue 40, reserve apparatus
 - Truck 30, reserve apparatus
 - Fire Station 8 (1000 North Kiwanis Avenue)
 - Rescue 8, one captain, one fire apparatus operator, two firefighters
 - USAR 8, cross staffed
 - Fire Station 11 (2333 N Valley View Road)
 - Truck 11, one captain, one fire apparatus operator, two firefighters
 - Wildland 11, cross staffed
 - Engine 22, reserve apparatus
- **Battalion Three**
- Fire Station 2 (301 South Sycamore Avenue)
 - Truck 2, one captain, one fire apparatus operator, two firefighters
 - Hazmat 2, cross staffed
 - Fire Station 3 (2820 South Minnesota Avenue)
 - Truck 3, one captain, one fire apparatus operator, two firefighters
 - Squad 3, cross-staffed
 - Fire Station 4 (3100 West 69th Street)
 - Rescue 4, one captain, one fire apparatus operator, two firefighters
 - Wildland 4, cross staffed
 - EUV4, cross staffed
 - Fire Station 6 (5200 West 41st Street)
 - Truck 6, one captain, one fire apparatus operator, two firefighters
 - Squad 6, cross staffed
 - Engine 23, reserve apparatus
 - Fire Station 9 (2700 East 49th Street)
 - Engine 9, one captain, one fire apparatus operator, two firefighters
 - Squad 9, cross-staffed
 - Fire Station 10 (320 South Whitewood Circle)
 - Tender 10, one captain, one fire apparatus operator, two firefighters
 - Engine 10, cross staffed
- **Training Battalion**
- VL Crusinberry Regional Training Center (3400 North Western Avenue)
 - Engine 20, reserve apparatus
 - Engine 21, reserve apparatus

EMS response is dispatched in the following manner:

Medical Emergencies: Medical emergencies are defined as all Code 3/Priority 2 or Code 4/Priority 1 responses as determined by current emergency medical dispatch (EMD) protocols. Code 3/Priority 2 calls include, but are not limited to, cardiac emergencies, respiratory difficulty, seizures, trauma, and any medical situation that is classified as life-threatening by EMD protocols, and when our EMS services are requested by other agencies. Code 4/Priority 1 calls are cardiac arrest or patients not breathing, childbirth, or any condition which a life is in immediate danger of death. Additionally, Priority 3 calls are responses where a “standby” situation exists, or when ambulances are “Code 0” due to unavailable resources.

When calls are received from any source requiring emergency medical response from Sioux Falls Fire Rescue, the call will be dispatched as follows;

- Dispatch the appropriate units suggested by CAD, the station alerting will automatically be activated. The ‘alert’ tone will also be used.
- Announce the unit(s) responding, location of emergency, and medical emergency.
- Example: Announce “Engine 10 at 1234 S Main Avenue, medical emergency.”
- Give this information slowly a second time with numerical in different format.
- The responding unit will acknowledge the information with an en route message repeating address and nature of call.
- Provide a short report, supply supplemental information, and provide support as required.
- Information will be transmitted simultaneously to the ambulance provider.
- The battalion chief or the dispatcher may redirect apparatus as the unit returns to an in service status if a unit is in position to better cover the call.

Injury Accidents: Injury accidents are vehicle accidents involving pedestrians or bicycles, or motor vehicle collisions with injuries.

- Dispatch procedures will follow guidelines set forth in Rescue Calls, except that the term “Injury Accident” will be used.
- Dispatch the coverage area Engine, Rescue or Truck, if available. If unavailable, dispatch the next closest company available
- Notify responding crew of situation and if any hazards are present.
- On injury accidents on high-speed roads (with limits of 45 MPH or greater) dispatch normal fire alarm assignment to include a Rescue Company which carries extrication equipment.
- For single apparatus responses on the Interstate system surrounding the city, dispatch an additional Engine, Rescue, or Truck company to assist in blocking traffic 1/8 mile back from the incident increases the safety level to responders as well as bringing specialized equipment to the scene.
- Engine company officers may upgrade to a fire alarm dispatch based on information received during dispatch or knowledge of the increased speed limit of the roadway on which the incident occurs.

Hazardous Materials Services Provided

All operations personnel on Sioux Falls Fire Rescue are trained to the operations level of NFPA 472. Sioux Falls Fire Rescue has three specialized hazardous materials stations. The personnel at these stations are all trained to the technician and specialist level of NFPA 472. The three hazardous materials teams are located at the following stations:

- Fire Station 2 (301 South Sycamore Avenue)
 - Truck 2, one captain, one fire apparatus operator, two firefighters
 - Hazmat 2, cross staffed
- Fire Station 6 (5200 West 41st Street)
 - Truck 6, one captain, one fire apparatus operator, two firefighters
 - Squad 6, cross staffed

- Fire Station 7 (1100 East Benson Road)
 - Truck 7, one captain, one fire apparatus operator, two firefighters
 - Hazmat 7, cross staffed

These three stations can independently identify, mitigate, and perform decontamination at a hazardous materials incident. Station 2's hazardous materials team carries all of the boom equipment that helps them mitigate a hazardous materials incident that involves waterways. Hazardous materials response is dispatched in the following manner:

The following are the response levels for hazardous material incident responses. These materials include, but are not limited to petroleum products, such as gasoline, diesel fuel, fuel oil, oil, aviation fuel, and antifreeze.

- **Special Duty** – Incidents with less than one gallon of petroleum product or antifreeze released, dispatch coverage area Engine, Rescue, or Truck.
- **Still Alarm** – Incidents with one to 25 gallons of petroleum product or antifreeze released, dispatch coverage area Engine, Rescue, or Truck.
- **HAZMAT Emergency** – Those incidents that have over 25 gallons of petroleum product or antifreeze released, require the evacuation of persons, have injuries or personnel contamination resulting from the release of hazardous materials, fires involving hazardous materials, and/or have multiple injuries and/or death resulting from the release of hazardous materials. Dispatch a Code 3 response of the nearest area Engine, Rescue, or Truck, HazMat 2 or 7, Squad 6 and Battalion One or Three. If the call is in a HazMat unit's territory, also dispatch the next nearest Engine, Rescue, or Truck and notify Fire Car 2, Fire Car 5 and the Minnehaha or Lincoln County Emergency Management Representative

Below are examples of hazardous material incidents, and their required dispatch levels.

- **Vapor Cloud or Odor Identified:** Any report of an identified vapor cloud or odor - Examples of such reports may be the major release and may include the smell of natural gas, propane, chlorine, or ammonia - Dispatch HAZMAT Emergency

- **Vapor Cloud or Odor-Unidentified:** Any report of an unidentified vapor cloud or odor - Examples of such reports may be the presence of a sweet, pungent, unknown or otherwise offensive odor - Includes sewer gas from plugged vent stacks - Dispatch a Still Alarm

- **Spill and/or Release Identified:** Any report of an identified product, liquid or solid, that may be considered hazardous to life and/or to the environment - examples may involve a known substance, such as an agricultural chemical product, (herbicide, pesticide, or a fertilizer) or an industrial chemical (naphthalene or ammonium nitrate), including oxidizers, toxic materials, infectious substances, radioactive materials, and corrosive materials - Dispatch HAZMAT Emergency

- **Spill and/or Release Unidentified:** Any report of an unidentified product, liquid or solid that may be considered hazardous to life and/or environment - Examples of such reports may involve the presence of liquid or solid (including powder or dust) of unknown origin or identity, such as a yellow powder or liquid with no container labels available - Dispatch HAZMAT Emergency

- **Spill and/or Release of a Known Substance:** Contained by the Responsible Party: Any report of an identified product, liquid, gas, or solid that may be considered hazardous to life and/or to the environment and is reportable under local, state, and federal law. The owner/operator has safely contained and controlled the release, but must report the occurrence. Examples of such reports may involve the controlled release of anhydrous ammonia by the operator, or a small quantity petroleum product spill that has been contained for disposal by the service station owner/operator.
 - Notify the appropriate battalion chief and assign an incident number. The battalion chief will acknowledge the information and forward the information to the station officer of the territory involved. The station officer shall complete the NFIRS report. The battalion chief or station officer can upgrade the incident.
 - Notify the Minnehaha or Lincoln County Emergency Management Representative

General hazardous materials dispatcher guidelines:

- Direct the reporting party not to operate any electrical appliances, switches, or telephones and to evacuate the affected area.
- Collect any product information that can safely be identified by the reporting party (i.e., hazard/warning labels, product name, and type of container, size of container)
- Direct the reporting party to evacuate upwind and uphill from the release to a distance of 200' (feet) and wait for SFFR personnel to arrive.
- Dispatch law enforcement (traffic and crowd control) and ambulance services (standby and medical transport) to the scene and advise to approach from an upwind and uphill direction (Information may be requested from the Incident Commander for the safest direction of approach with other responding units)
- Provide a short report to include general information about the nature of the incident to all responding units upon dispatch.
- Notify the incident to Minnehaha or Lincoln County Emergency Management.
 - Be prepared to relay any technical information obtained from the reporting party to the appropriate Hazardous Material Response Team. Upon arrival at the scene, the HAZMAT unit may contact Metro Communications for any additional information and to relay any scene information and/or support needs.

The following additional notifications may be requested of dispatch by the Incident Commander:

- Sioux Falls Fire Rescue Fire Prevention Bureau or On Call Inspector
- City of Sioux Falls Health Department Environmental Specialist
- South Dakota Department of Environment and Natural Resources
- South Dakota Department of Game Fish and Parks Representative
- South Dakota Highway Patrol Representative
- City of Sioux Falls Water Reclamation Representative
- Other agencies as determined by the Incident Commander
- Mutual Aid Requests Outside of the City Limits of Sioux Falls; SFFR units may be requested to assist First Responders

The Incident Commander requests technical assistance

- Notify the SFFR shift commander immediately
- Report to the Minnehaha or Lincoln County Emergency Management Representative
- Notify Fire Car 2 or the on call chief officer and advise of the situation

The Incident Commander requests technical and tactical on-scene assistance of equipment and personnel

- Notify the SFFR shift commander immediately. The shift commander will determine what SFFR resources will be dispatched
- Notify the Minnehaha or Lincoln County Emergency Management Representative
- Refer to SFFR SOP400.1 for operational and training guidelines at hazardous materials incidents
- Contact the SFFR shift commander if there are any questions concerning the nature of a hazardous material product release or spill or for determining what units should be dispatched
- South Dakota First Responder Hazardous Material Incident Information Requests

SFFR will provide emergency responders technical and operational support at the scene of hazardous materials incidents - Incident Commanders will complete proper documentation for recording the incident. Response guidance given to assist in the selection of an appropriate action plan, and any assistance in identifying and locating resources need to be documented.

When calls are received from first response agencies requesting technical assistance for hazardous material incidents, the call will be transferred to a SFFR shift commander. A minimum of the following information will be obtained:

- Name of the requesting agency/organization
- Name of the Incident Commander
- Return telephone number
- Nature of the incident
- General questions regarding hazardous materials would not generate an incident cc number. Requests for assistance of an incident would generate an incident cc number.

Wildland Firefighting Services Provided

Sioux Falls Fire Rescue has expanded our response capabilities in 2013 to respond to wildland/urban interface emergencies. All personnel assigned to the operations division are certified as wildland firefighters to the National Wildfire Coordinating Group standards S130 & S190 (South Dakota SDFFT2). Attaining this certification gives them urban interface training. Sioux Falls Fire Rescue also has multiple firefighters that have engine boss certification. Sioux Falls Fire Rescue has signed a contract with the State of South Dakota to assist with wildland firefighting upon request. In 2013, areas throughout the City of Sioux Falls were identified as having wildland/urban interface characteristics and placed on all maps used by the operations division. This will assist members to identify when they are responding to these areas and prompt them to request appropriate resources. Sioux Falls Fire Rescue has three type six engines and two water tenders. The wildland firefighting equipment and apparatus are located at:

- Fire Station 1 (100 South Minnesota Ave)
 - Wildland 1, cross staffed
 - EUV 1, cross staffed
- Fire Station 2 (301 South Sycamore Avenue)
 - Tender 2, cross staffed
- Fire Station 4 (3100 West 69th Street)
 - Wildland 4, cross staffed
 - EUV 4, cross staffed
- Fire Station 10 (320 South Whitewood Circle)
 - Tender 10, staffed
 - Wildland 10, cross staffed
- Fire Station 11 (2333 N Valley View Road)
 - Wildland 11, cross staffed

Wildland fires are usually dispatched in the following manner:

- Still Alarm: The still alarm dispatch will be used on all dispatches for normal situations that require the response of one Engine, Rescue, or Truck
- General calls covering the following incidents would be classified and dispatched under this level: Grass fires

Community Expectations

The City of Sioux Falls service areas are urban in designation. This means that the population density is over 30,000 people in an incorporated or unincorporated area or a population density of over 2,000 people per square mile.

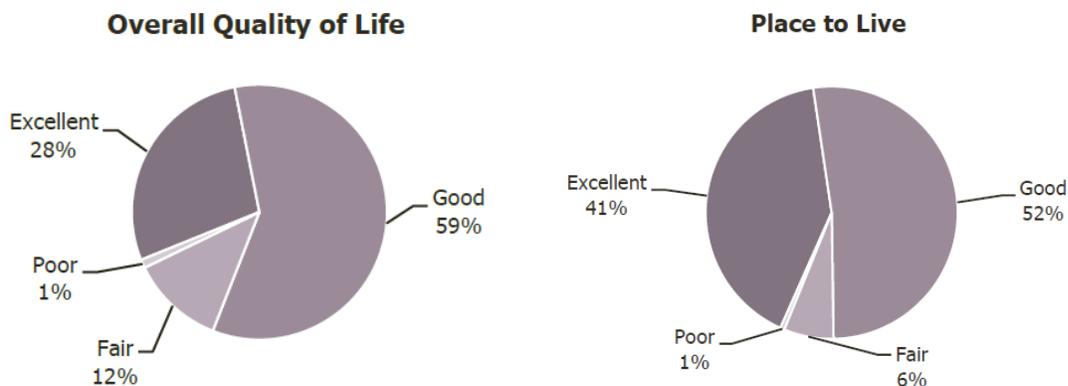
Wayne Township service areas are rural in designation. This means that the population density is less than 10,000 people, or with a population density of less than 1,000 people per square mile.

The City of Sioux Falls takes citizen suggestions and complaints about departments on the city's website. Citizens can go to www.siouxfalls.org to email their suggestions or complaints.

The City Of Sioux Falls reaches out to the citizens via a television show called City Scene. This program is aired monthly on channel 16, City Link. The presentation is used for public education. This allows SFFR to present the citizens with their fire department's capability and services.

Public Safety

The National Citizen Survey <http://www.siouxfalls.org/en/council/2015-citizen-survey>, is a project compiled by by the National Research Center, Inc (NRC) and the International City/County Management Association (ICMA). The report was completed, compiled and written in 2015. 3000 surveys were distributed to a random group of Sioux Falls residents. 847 surveys were completed. 93% of the completed survey results ranked that quality of life in Sioux Falls is excellent or good. The main negative responses were related to improvement of roads, transportation and traffic flow. Most survey respondents agree that economic growth should remain the focus for the community.

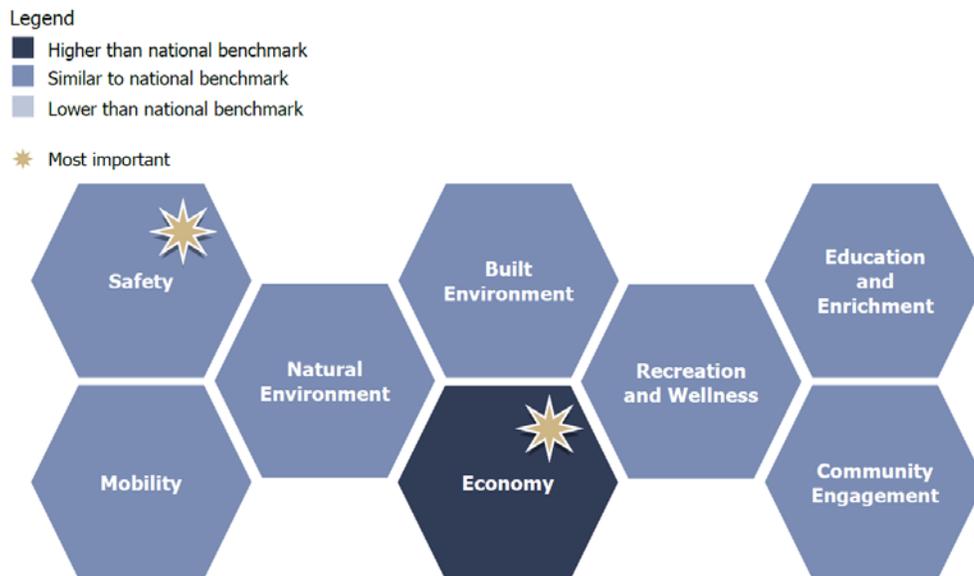


Questions in the survey are related to eight facets of community including Safety, Mobility, Natural Environment, Built Environment, Economy, Recreation & Wellness, Education & Enrichment and Community Engagement. The chart below depicts how the residents of the city of Sioux Falls rated these eight facets.

	Community Characteristics			Governance			Participation		
	Higher	Similar	Lower	Higher	Similar	Lower	Higher	Similar	Lower
Overall	10	42	0	3	43	0	4	28	4
General	0	7	0	0	3	0	0	2	1
Safety	0	3	0	0	7	0	0	3	0
Mobility	0	8	0	0	8	0	0	1	2
Natural Environment	1	2	0	0	6	0	0	3	0
Built Environment	1	4	0	0	7	0	0	2	0
Economy	5	3	0	1	0	0	2	1	0
Recreation and Wellness	3	4	0	1	3	0	0	4	1
Education and Enrichment	0	6	0	0	2	0	1	2	0
Community Engagement	0	5	0	1	7	0	1	10	0

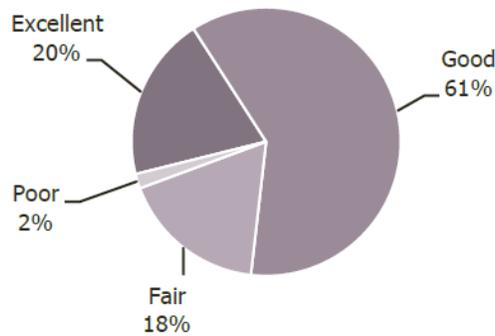
Legend	
	Higher
	Similar
	Lower

The graphic below indicates rankings of the most important focus areas for Sioux Falls citizens.



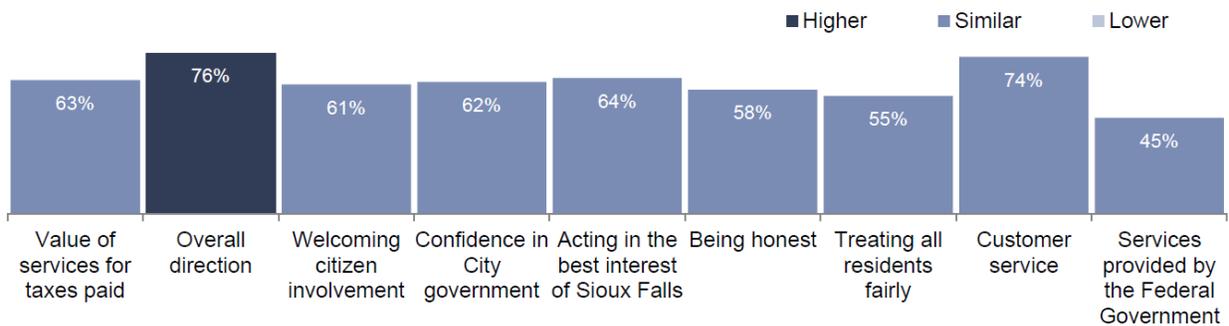
Government services are key components of how a quality of life can be rated by the citizens of any community. The overall quality of city services is shown in the graphic below.

Overall Quality of City Services



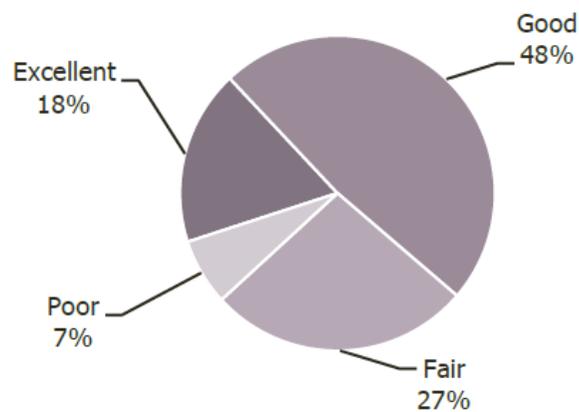
Percent rating positively (e.g., excellent/good)

Comparison to national benchmark



A sense of community is another aspect that contributes to quality of life. The survey results in regards to sense of community are indicated below.

Sense of Community



Comparisons by Demographic Subgroups

Comparisons by demographic subgroups for community characteristics in general are indicated below.

Percent rating positively (e.g., excellent/good)	Number of years in Sioux Falls			Housing unit type		Annual household income				Age			Overall
	Less than 5 years	6 to 20 years	More than 20 years	Detached	Attached	Less than \$24,999	\$25,000 to \$49,999	\$50,000 to \$99,999	\$100,000 or more	18-34	35-54	55+	
The overall quality of life in Sioux Falls	85%	85%	90%	89%	85%	73%	82%	92%	96%	88%	85%	90%	87%
Overall image or reputation of Sioux Falls	85%	80%	86%	86%	79%	80%	78%	87%	89%	82%	83%	87%	84%
Sioux Falls as a place to live	93%	91%	95%	93%	93%	90%	91%	95%	97%	94%	92%	94%	93%
Your neighborhood as a place to live	80%	83%	85%	86%	78%	75%	76%	86%	94%	85%	80%	85%	83%
Sioux Falls as a place to raise children	81%	79%	91%	88%	79%	73%	80%	88%	93%	83%	86%	87%	85%
Sioux Falls as a place to retire	62%	63%	67%	64%	67%	66%	63%	66%	63%	59%	62%	73%	65%
Overall appearance of Sioux Falls	79%	84%	85%	84%	82%	76%	84%	82%	86%	81%	81%	88%	83%

Community overall safety characteristic comparisons by demographic subgroups are indicated in the following chart.

Percent rating positively (e.g., excellent/good, very/somewhat safe)	Number of years in Sioux Falls			Housing unit type		Annual household income				Age			Overall
	Less than 5 years	6 to 20 years	More than 20 years	Detached	Attached	Less than \$24,999	\$25,000 to \$49,999	\$50,000 to \$99,999	\$100,000 or more	18-34	35-54	55+	
Overall feeling of safety in Sioux Falls	78%	75%	82%	78%	79%	65%	76%	80%	86%	75%	80%	80%	79%
In your neighborhood during the day	97%	91%	94%	93%	94%	92%	90%	95%	97%	93%	93%	94%	93%
In Sioux Falls' downtown/commercial area during the day	85%	82%	87%	84%	86%	85%	83%	82%	92%	83%	83%	89%	85%

The following chart indicates comparisons by demographic subgroups for governance and public safety.

Percent rating positively (e.g., excellent/good)	Number of years in Sioux Falls			Housing unit type		Annual household income				Age			Overall
	Less than 5 years	6 to 20 years	More than 20 years	Detached	Attached	Less than \$24,999	\$25,000 to \$49,999	\$50,000 to \$99,999	\$100,000 or more	18-34	35-54	55+	
Police services	80%	81%	86%	85%	80%	74%	81%	86%	86%	78%	80%	93%	83%
Fire services	94%	96%	98%	97%	96%	92%	97%	97%	98%	96%	95%	98%	96%
Ambulance or emergency medical services	91%	92%	92%	92%	91%	91%	91%	91%	93%	94%	90%	91%	92%
Crime prevention	68%	68%	74%	69%	75%	63%	70%	70%	76%	70%	66%	78%	71%
Fire prevention and education	75%	88%	85%	87%	77%	76%	77%	90%	86%	81%	81%	88%	83%

Comparison by Geographical Subgroups

Comparison by geographical subgroups for community characteristics in general are indicated below.

Percent rating positively (e.g., excellent/good)	City Council District					Overall
	Central	Northeast	Northwest	Southeast	Southwest	
The overall quality of life in Sioux Falls	86%	76%	86%	92%	90%	87%
Overall image or reputation of Sioux Falls	82%	76%	81%	84%	92%	84%
Sioux Falls as a place to live	93%	86%	92%	96%	96%	93%
Your neighborhood as a place to live	73%	68%	80%	96%	91%	83%
Sioux Falls as a place to raise children	87%	78%	79%	89%	90%	85%
Sioux Falls as a place to retire	64%	55%	68%	63%	71%	65%
Overall appearance of Sioux Falls	85%	80%	82%	81%	88%	83%

Community overall safety characteristic comparisons by geographic subgroups are indicated in the following chart.

Table 2: Community Characteristics - Safety

Percent rating positively (e.g., excellent/good, very/somewhat safe)	City Council District					Overall
	Central	Northeast	Northwest	Southeast	Southwest	
Overall feeling of safety in Sioux Falls	74%	74%	75%	83%	84%	79%
In your neighborhood during the day	90%	89%	89%	98%	99%	93%
In Sioux Falls' downtown/commercial area during the day	86%	78%	82%	90%	86%	85%

The following chart indicates comparisons by geographic subgroups for governance and public safety.

Percent rating positively (e.g., excellent/good)	City Council District					Overall
	Central	Northeast	Northwest	Southeast	Southwest	
Police services	85%	75%	79%	91%	83%	83%
Fire services	99%	96%	95%	99%	94%	96%
Ambulance or emergency medical services	93%	90%	91%	92%	92%	92%
Crime prevention	67%	67%	71%	73%	73%	71%
Fire prevention and education	83%	86%	82%	80%	87%	83%

Trending Across Time

Analyzing trends across time allows for improvements and declines in attitudes about citizens regarding their city. It also is an important indicator to show the effectiveness of policies, programs or public information and how these things affect public opinion.

General Characteristics from 2008 to present

	Percent rating positively (e.g., excellent/good)				2015 rating compared to 2013	Comparison to benchmark			
	2008	2009	2013	2015		2008	2009	2013	2015
Overall quality of life	83%	88%	90%	87%	Similar	Much higher	Much higher	Much higher	Similar
Overall image	83%	85%	85%	84%	Similar	Much higher	Much higher	Much higher	Similar
Place to live	89%	92%	93%	93%	Similar	Much higher	Much higher	Much higher	Similar
Neighborhood	81%	82%	80%	83%	Similar	Higher	Higher	Similar	Similar
Place to raise children	84%	87%	91%	85%	Lower	Much higher	Much higher	Much higher	Similar
Place to retire	59%	64%	61%	65%	Similar	Similar	Higher	Similar	Similar
Overall appearance	79%	81%	81%	83%	Similar	Much higher	Much higher	Much higher	Similar

Governance by Facet

	Percent rating positively (e.g., excellent/good)				2015 rating compared to 2013	Comparison to benchmark			
	2008	2009	2013	2015		2008	2009	2013	2015
Police	78%	83%	83%	83%	Similar	Higher	Much higher	Higher	Similar
Fire	93%	95%	96%	96%	Similar	Much higher	Much higher	Much higher	Similar
Ambulance/EMS	87%	91%	91%	92%	Similar	Similar	Similar	Similar	Similar

Public Safety Rankings

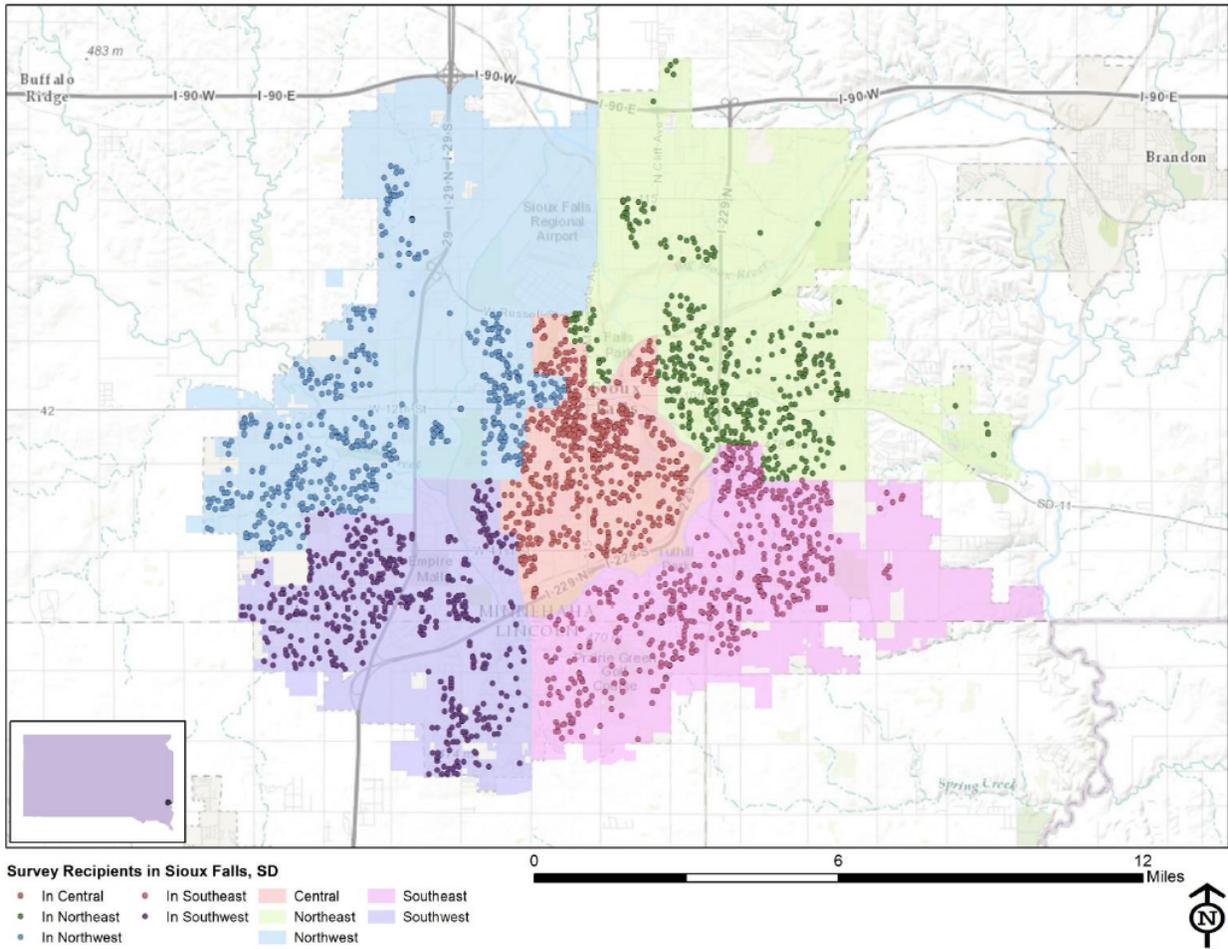
Several questions on the survey directly relate to Public Safety services. The specific questions asked are at the top of each of the graphics below.

Please rate the quality of each of the following services in Sioux Falls:	Excellent		Good		Fair		Poor		Total	
Police services	33%	N=258	50%	N=392	14%	N=108	3%	N=25	100%	N=783
Fire services	48%	N=354	48%	N=355	3%	N=22	1%	N=5	100%	N=735
Ambulance or emergency medical services	38%	N=274	53%	N=382	8%	N=55	1%	N=6	100%	N=717
Crime prevention	19%	N=139	52%	N=375	22%	N=163	7%	N=49	100%	N=726
Fire prevention and education	27%	N=186	56%	N=385	15%	N=102	2%	N=12	100%	N=685
Traffic enforcement	16%	N=124	48%	N=375	27%	N=211	9%	N=69	100%	N=779

Please rate the importance of the City of Sioux Falls investing existing tax dollars over the next two years in the following:	Very important		Somewhat important		Not very important		Not at all important		Total	
Public safety (Police and Fire)	73%	N=603	21%	N=176	4%	N=37	1%	N=9	100%	N=825

Please rate the importance of the City of Sioux Falls investing existing tax dollars over the next two years in the following:	Very important		Somewhat important		Not very important		Not at all important		Total	
Job growth	58%	N=475	35%	N=291	6%	N=51	1%	N=7	100%	N=825
Streets	65%	N=540	33%	N=272	2%	N=13	0%	N=0	100%	N=826
Traffic flow	55%	N=454	39%	N=319	6%	N=52	0%	N=2	100%	N=827
Bike trail system	22%	N=180	45%	N=375	28%	N=233	5%	N=39	100%	N=827
Public transportation/busing	26%	N=218	47%	N=388	21%	N=177	5%	N=44	100%	N=826
Passenger air services	30%	N=247	45%	N=366	20%	N=166	5%	N=38	100%	N=817
Parks	33%	N=270	56%	N=459	11%	N=87	1%	N=10	100%	N=827
Recreation programs	23%	N=190	54%	N=440	21%	N=168	2%	N=19	100%	N=819
Downtown river greenway	25%	N=209	44%	N=367	23%	N=190	7%	N=59	100%	N=825
Library services	27%	N=222	45%	N=374	24%	N=197	4%	N=33	100%	N=825
Public health services	43%	N=351	43%	N=352	13%	N=105	2%	N=17	100%	N=825
Community gardens	19%	N=152	37%	N=303	37%	N=302	8%	N=62	100%	N=819
Additional fire stations	31%	N=253	47%	N=382	20%	N=164	3%	N=21	100%	N=820
Code enforcement	28%	N=230	48%	N=391	20%	N=165	4%	N=32	100%	N=818
Recycling	42%	N=344	41%	N=338	15%	N=124	2%	N=16	100%	N=822
Affordable housing	52%	N=430	35%	N=291	11%	N=89	2%	N=13	100%	N=822
Downtown development	30%	N=250	44%	N=361	22%	N=179	4%	N=34	100%	N=824
Downtown parking	34%	N=280	45%	N=366	19%	N=156	2%	N=19	100%	N=820
Entertainment venues	26%	N=214	42%	N=340	27%	N=224	5%	N=42	100%	N=820
City of Sioux Falls website	14%	N=114	38%	N=309	38%	N=309	10%	N=84	100%	N=816
Programming on Citylink cable channel	11%	N=89	26%	N=213	39%	N=319	23%	N=190	100%	N=811
Public safety (Police and Fire)	73%	N=603	21%	N=176	4%	N=37	1%	N=9	100%	N=825

Location of Survey Recipients



Risk Assessment

Risk assessment consists of seven key elements.

- **Fire Flow**—The amount of water required to control the emergency, which is based on contents and combustible materials.
- **Probability**—The likelihood that a particular event will occur within a given period of time. An event that occurs daily is highly probable. An event that occurs only once in a century is very unlikely. Probability then is an estimate of how often an event will occur.
- **Consequence**—There are two components: (1) life-safety (the amount of personnel and equipment required to rescue or protect the lives of occupants from life-threatening situations, including both fire and EMS) and (2) economic impact (the losses of property, income, or irreplaceable assets).
- **Occupancy Risk**—An assessment of the relative risk to life and property resulting from a fire inherent in a specific occupancy or in a generic occupancy class.
- **Planning Zones**—An area used to define or limit the management of a risk situation. Planning zones (quadrants) in Sioux Falls are divided into station territories and subdivided by property use.
- **Community Profile**—The overall profile of the community based on the unique mixture of demographics, socioeconomic factors, occupancy risk, planning zones, and the level of services currently provided.
- **Risk Assessment**—An analysis of our community and its problems using real factors. This results in community risk determinations based on probability and consequence.

Physical Risk Factors

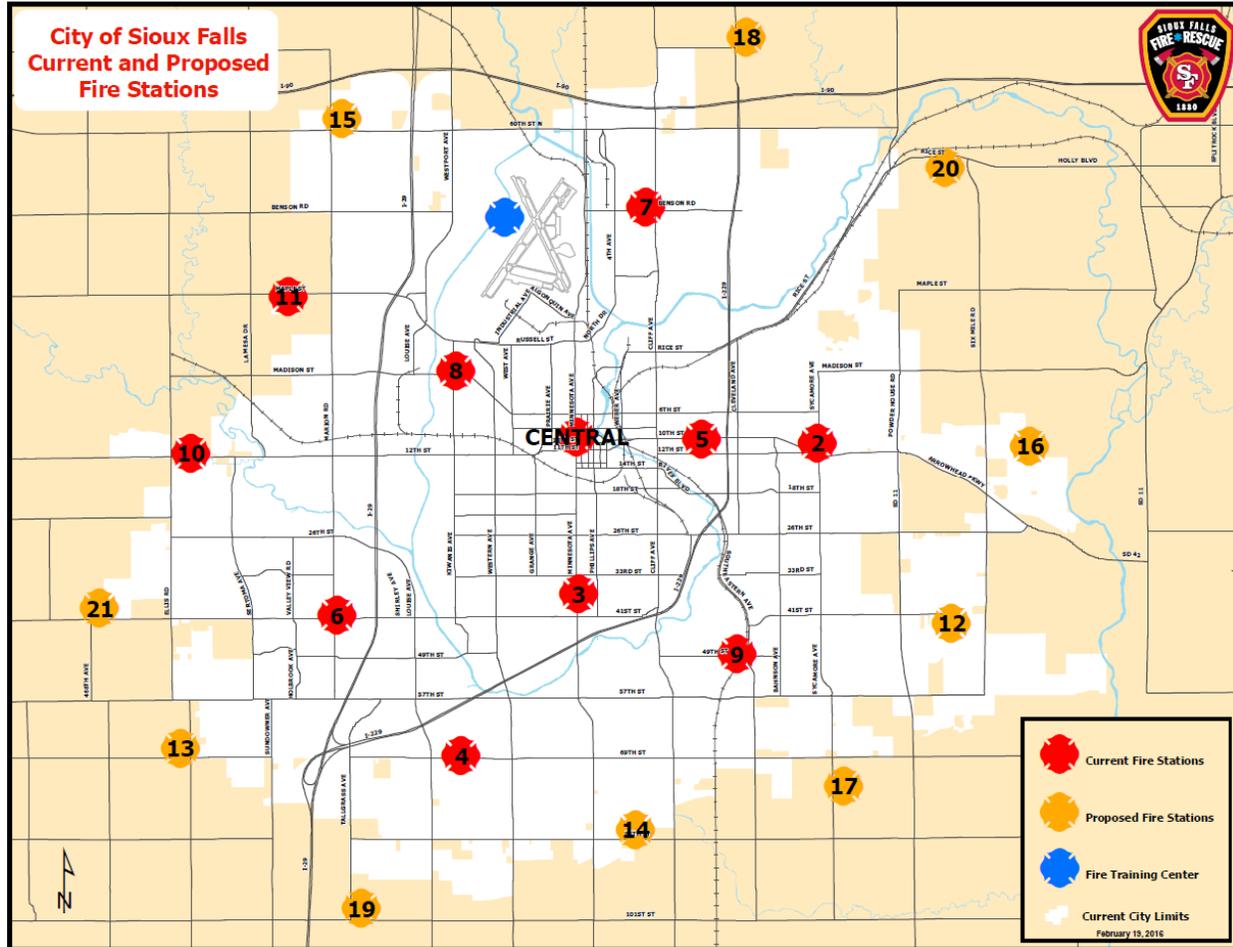
Political Boundaries

Sioux Falls Fire Rescue services two distinct political boundaries which are the City of Sioux Falls and Wayne Township. Sioux Falls Fire Rescue operates under the city's ordinances while within the city limits and Minnehaha County's ordinances while within Wayne Township. Services are different in Wayne Township. Emergency services are the same for both jurisdictions but Sioux Falls Fire Rescue does not inspect businesses in Wayne Township. Sioux Falls Fire Rescue does not investigate for fire cause in Wayne Township unless asked to by Minnehaha County Sheriff's Department.

Growth Boundaries

The City of Sioux Falls has experienced positive growth. Sioux Falls Fire Rescue plans for this growth by adding new fire stations. Stations are requested through the city's capital improvement program's (CIP) budget. The CIP is a five year plan. Statistical data is analyzed to see if fire companies are meeting their travel times to calls 90% of the time within 5 minutes and 12 seconds. When outlying areas do not meet these criteria, a new station's planning process begins. Sioux Falls Fire Rescue attempts to space stations one and half miles apart per ISO recommendations. Following is a map showing future stations.

Current and Proposed Fire Stations



Construction Limitations

The City of Sioux Falls has adopted the 2015 edition of the International Fire Code. This helps Sioux Falls Fire Rescue insure that buildings have the proper fire alarm systems and auxiliary fire systems in buildings that need them.

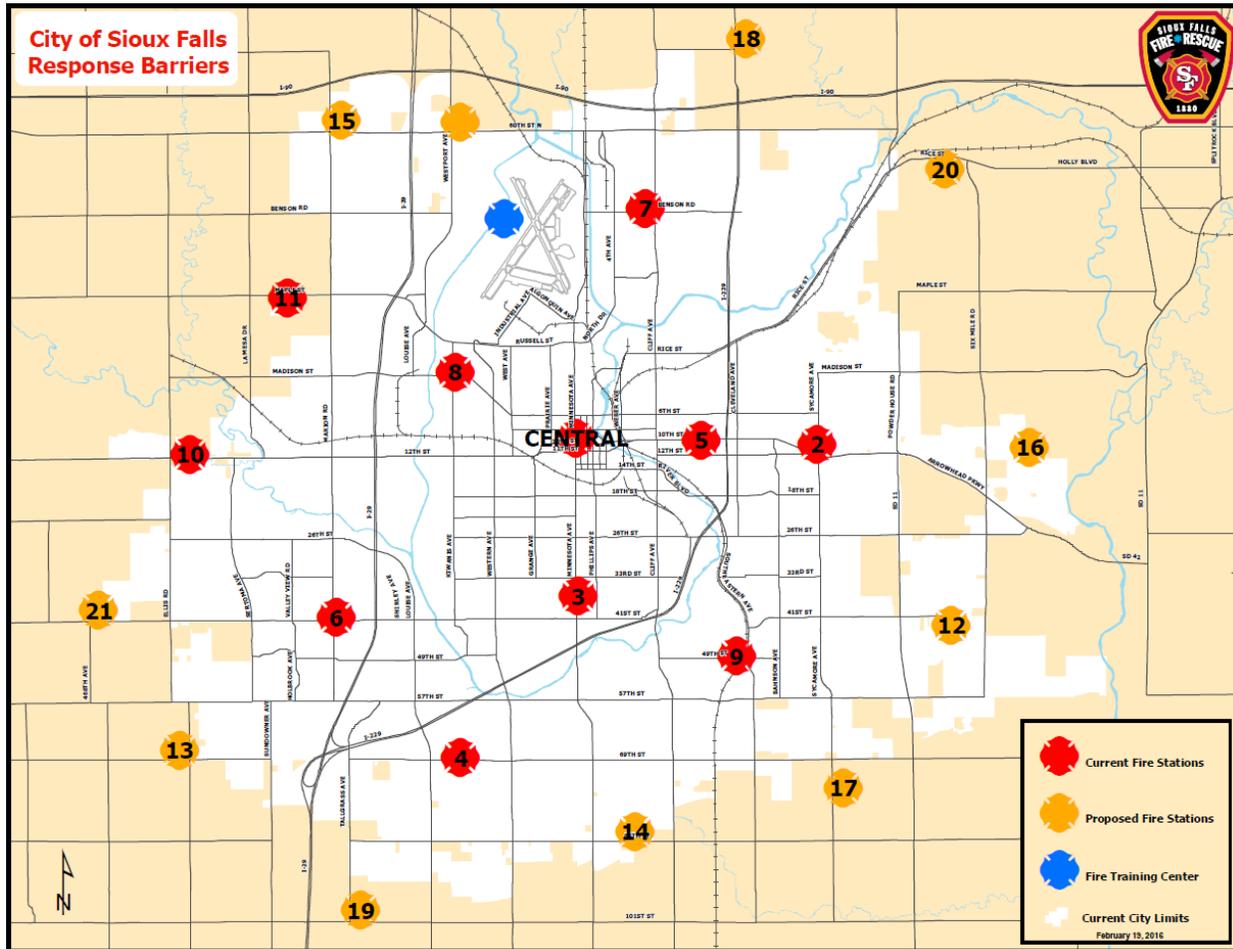
Infrastructure Limitations

The City of Sioux Falls requires in new areas under development to provide adequate access to these areas. The access must have a suitable driving service in accordance to the International Fire Code. Working fire hydrants are also required before construction can begin in areas of new development. Sewer lines must be in place before construction begins.

Topography

Response Barriers

The City of Sioux Falls does have response barriers. These barriers are the Sioux River, Skunk Creek, railroads, and two interstates. The following map shows the roads, rail lines and water ways that affect response.



Elevation Changes

The City of Sioux Falls is mainly flat to rolling hills. There are no issues caused by elevation changes.

Open Space Interface

Wayne Township has limited road access in some areas because most roads are on section lines, meaning they are one mile apart. Sioux Falls Fire Rescue also responds to agricultural incidents in this area where there are no roads. Smaller four wheel drive units are used to gain access to these incidents if conditions do not allow access with a larger apparatus.

Transportation Network

See Risk Assessment Appendix A

Climatic Impact

Minnehaha & Lincoln County Hazard Assessment

Minnehaha and Lincoln Counties and the City of Sioux Falls updated the Multi-Hazard Pre-Disaster Mitigation Plan in 2009. Sioux Falls is susceptible to all forms of natural and technological hazards ranked as follows.

- Winter Storm
 - Blizzards
 - Ice Storms
- Summer Storm
 - Straight Line Winds
 - Thunderstorms
 - Hail
 - Lightening
 - Tornadoes
 - Flash Flooding
 - Drought
 - Floods
- Fires
 - Structural
 - Prairie/Grassland
- Hazardous Materials Incident
- Ground Transportation Incident
- Civil Disturbance / Terrorism
- Aviation Incident
- Nuclear Incident

Emergencies and disasters resulting from hazards may cause disruptions in the following areas but are not limited to these areas only.

- Utilities
- Transportation Systems
- Communications
- Food Delivery
- Damage and / or destruction of necessities needed to maintain daily life

The majority of the population in Minnehaha and Lincoln County that are at risk to any of the above mentioned hazards are located in the urban area of Sioux Falls. Due to the small geographical size of the counties, the entire population would be at risk in terms of a nuclear or terrorist type hazard or a winter weather situation.

Minnehaha and Lincoln County

Hazard Information

Type of Hazard

Winter Weather

Definition: Minnehaha and Lincoln Counties are located within a region that experiences some of nature's most extreme winter weather. Residents of this area must be aware of the characteristics and effects of various elements of winter weather in order to enhance their survivability in all weather conditions. Winter weather can include the following.

- Periods of extreme cold where exposure is the primary concern
- Winter storms producing heavy snow and winds up to 35 mph
- Blizzards with considerable falling or blowing snow, winds in excess of 35 mph expected to continue for several hours and steadily falling temperatures making any travel not only difficult but dangerous as well
- Ice storms occur when the temperature warms allowing precipitation to freeze when it hits an exposed surface (freezing rain and drizzle). Ice storms down trees, power lines, communication towers and make driving impossible at times.

Vulnerability

Capable of impacting the entire county or an isolated area of the county.

Populations at risk include the elderly, the impoverished, the homeless, commuters, and rural and urban homeowners.

Properties likely to sustain the most damage include utilities, transportation routes, livestock populations, and the roofs of both urban and rural structures.

Environmental exposure depends on the direct area of impact, but should include exposure risks for wildlife.

History

The winter season in the counties can begin as early as September and last into May, however the typical storm period is from late November until early April. The counties generally experience at least one blizzard per year as well as several less severe winter storms, which hinder cities, businesses, and daily life in general. Ice storms are not as frequent, but when they do occur, they place a drastic impact upon area transportation systems, trees and power lines.

Historical records indicate numerous winter weather occurrences throughout the past century. In the past three decades, Minnehaha and Lincoln Counties and the City of Sioux Falls have experienced several winter storms that not only caused property damages but injury and death as well.

Risk

Probability is high during the months of November through April. A winter storm's average duration lasts between 48 and 72 hours.

Specific Risks

- Blocked roads due to heavy snow, ground drifting, or stalled vehicles
- Building collapses due to excessive snow buildup on roofs
- Business interruptions ranging from a loss of power to blocked roads
- Delayed emergency response when roads become blocked or there is a loss of communications
- Downed power lines and trees from ice build-up and high winds
- Loss of power from weather related conditions such as ice buildup and high winds

- Damage to property in the form of ice and snow buildup on roofs to building freeze-up from loss of power
- Damage to property in the form of livestock casualties from exposure
- Possible school closures generally because of their effects on students by adverse weather conditions or because of power outages
- Wind chill exposure risks for people, pets, livestock, and wildlife

Minnehaha and Lincoln County

Hazard Information

Type of Hazard

Drought

Definition: Drought is a condition of climatic dryness severe enough to reduce soil moisture and water below the minimum necessary for sustaining plant, animal, and human life systems.

Drought characteristics usually include precipitation levels well below normal and temperatures higher than normal. Severe damage occurs to vegetation and soil which becomes dry and crumbles. Streams, ponds, and wells often dry up during a drought causing wildlife and livestock to suffer and sometimes perish.

Though agriculture is the most obvious recipient of drought losses, it also impacts urban areas, leaving its mark on domestic and industrial water supplies.

Vulnerability

Capable of affecting the entire county but most likely the rural areas of the counties, specifically agricultural and grassland areas.

Populations at risk include the elderly, the impoverished, the homeless, and those employed primarily outdoors.

Property at risk includes all non-irrigated cropland and livestock.

Environmental exposure includes the increased possibility of disease, fire and infestation. The severity of environmental exposure relates directly to the time period of the drought conditions.

History

Weather forecasters are unable to predict with certainty when a drought will occur or when it will end. Because the effects of drought tend to persist over long periods of time, it is difficult to predict what effects it will make upon the land. Historical analysis clearly indicates that severe drought conditions can be caused by as little as a four to six inch precipitation deficit. When mixed with numerous other factors, the situation can worsen in a short period of time. While drought conditions are most likely to affect agriculture, predicting the exact effects is difficult due to the wide variety of variables that can hinder or help the situation. These variables include the time of year, the timing of precipitation, the amount of water stored in the soil, the type of crop, the stage of growth, and meteorological variables including temperature, humidity, and wind.

Various secondary hazards are generally associated with drought, including rural grassland fires, soil erosion, dust storms, deterioration of water quality, as well as disease and infestation. Rural grassland fires increase because of dry vegetation. Reduction in vegetation cover then exposes soil to wind, thus producing dust storms and soil erosion. Reduction in the flow of rivers and lake water results in not only the changing of the chemical quality of the water but also in the sediment transport that occurs. Deterioration in water quality, in turn, results in disease and possible death to plants and animals. Stagnant pools along river courses provide favorable habitats for insects, particularly mosquitoes and grasshoppers that can lead to crop infestation as well as disease among humans, animals, and plants. And with the return of rain, dry and unstable topsoil is likely to cause flooding.

Risk

Probability of drought is dependent upon numerous underlying factors. The probability of disasters occurring resulting from drought conditions is high, due to abundance of grassland, crops, and livestock in the county.

Specific Risks

- Increased fire potential
- Increased public safety incidents
- Loss of potable water
- Human casualties or injuries due to exposure
- Wildlife and vegetation losses due to exposure
- Property damage due to livestock casualties and crop damage
- Business interruptions
- Loss of economic revenue due to crop and livestock losses and the loss of income for displaced farmers and ranchers due to drought conditions

Minnehaha and Lincoln County Hazard Information Type of Hazard

Summer Storms

Definition: Severe summer storms are generated by temperature imbalances in the atmosphere, and as warm, moist air rises the thunderstorm develops. These conditions will produce updrafts and downdrafts. Both the updrafts and downdrafts can reach velocities of 170 MPH. Updrafts and downdrafts are the reason for gust fronts, heavy rain (flash flooding), lightning, hail, and high winds. Downburst or straight-line winds can be as deadly as tornadoes. If the thunderstorm continues to intensify, a tornado may develop. Listed below is an explanation of summer storm conditions.

- *Downbursts/ Straight Line Winds* form along the leading edge of a thunderstorm. They are intense concentrations of sinking air which can fan out upon striking the earth's surface producing damaging 'straight' winds. Frequently, damage attributed to tornadoes is caused by straight line winds from a downburst. Downbursts can produce a 'roaring' sound and damage similar to a tornado but are not tornadoes because the winds do not rotate. They don't tend to last long but can approach 100 mph.
- *Hail* is precipitation in the form of a lump of ice that forms during some thunderstorms. The hailstone's size can range from pea to grapefruit size. They are usually round but can be conical or irregular in shape. The major hazard is to crops, aircraft, automobiles, roofs and windows. Hail tends to fall in swaths ranging from 20 to 150 miles in length and 5 to 30 miles wide. The destructiveness of hailstorms is not just from the hail alone but it's accompaniment of wind and rain. This makes it difficult to exact the damage caused by hail.
- *Lightening* is produced by the interaction of charged particles producing an intense electrical field within a thunderstorm's cloud. Lightening occurs in attempt to balance the positive and negative electrical charges between the storm and the earth's surface. Electrical potential in lightening storms can equal 100 million volts.
- *Tornadoes* are the most violent weather phenomenon known to man. Tornadoes are generally defined as violently rotating columns of air that are in contact with the ground. A tornado may last from a few seconds to more than an hour. A tornado can remain nearly stationary or move through the countryside at speeds up to 70 mph with wind forces ranging from 100 to 250 mph.
- *Flash Floods* are capable of developing from severe summer storms due to heavy rains. Flash floods are discussed in the section detailing *Floods*.

Vulnerability

Historical analysis indicates that summer storms can affect isolated areas within each county as well as the entire county itself.

Populations at risk include the elderly, the impoverished, the homeless, as well as those living in mobile homes or on flood plains.

Property at risk includes homes, businesses, crops, livestock, rural buildings, automobiles, aircraft, trees, electrical power systems.

The environmental exposure to such storms depends upon the location and length of the storm. Wildlife, vegetation, forests and grasslands are specifically vulnerable.

Although severe summer storms can and do occur in Minnehaha and Lincoln Counties the frequency of the storms is limited. Occurrence usually takes place between the months of April and August.

History

The counties have experienced numerous severe summer storm events over the years.

Risk

Severe summer storm occurrence is moderately high in Minnehaha County. Twenty-five percent of the county can be affected from a single severe summer storm event. The normal seasonal pattern of occurrence for these types of storms is from April until August. The average severe summer storm lasts for fifteen minutes. The probability of simultaneous disasters occurring during a severe summer storm event is very likely. A combination of heavy rains, high winds or tornadoes, hail, and lightning are possible during any individual storm event.

Specific Risks

- Blocked roads
- Downed trees and power lines
- Localized evacuation
- Release of hazardous materials
- Increased fire potential
- Increased number of emergency services trips
- Possible loss of drinking water
- Possible loss of medical facilities
- Possible loss of power
- Possibility of mass casualties

- Property damage due to structures, automobiles, aircraft, crops, and livestock
- Possibility of school and business interruptions
- Economic loss due to crop, livestock, and various other property losses.

Minnehaha and Lincoln County

Hazard Information

Type of Hazard

Flooding

Definition: Floods are defined as overflows of water on land not normally covered by water. While floods are a natural phenomenon, the hazards they cause are often intensified by man-made alterations to the natural landscape along waterways.

Flood hazards arise from the complex effects of water on land surfaces by water pressure. Flooding and its impact occur from the overflow of rivers, creeks, drainage channels, streams, lakes and other bodies of standing water.

Flooding can occur when already frozen or saturated ground is expected to absorb further precipitation. There are several different sources of moisture that can result in flooding circumstances. One source is heavy snow pack when affected by a rapid warming trend coupled with a spring rainfall. Another flooding source occurs when already saturated soil experiences heavy rainfall and cannot absorb the extra moisture. Heavy rains can also cause flooding when occurring for a prolonged period of time. Flooding can result from ice jamming or blockage along streams. This type of flooding does not often occur in the county.

Gradual and flash flooding are more common and typical predictable. Snowmelt, slow rain or controlled dam releases are the most likely cause. Forecasting of gradual flooding is due to the amount of moisture or water that already exists. The time of occurrence can be predicted to a certain degree so enabling protective measures can be implemented in a timely manner to mitigate potential loss of life and property.

Flash flooding events can occur in any jurisdiction in the county and are typically caused by severe thunderstorms or heavy rains on snow pack. This type of flooding occurs with little warning, giving response organizations minimal time for reaction.

High runoff produced by excessive rainfall or sudden spring thaws after periods of heavy snowfall will cause rivers or other body of water to overflow, inundating areas and threatening or causing heavy damage. The risk of damage or life loss may result when floodwaters strike cities, industries and farms located on or near river valleys. Usually the damaged area is in a floodplain, which is a strip of relatively level land bordering a stream.

Vulnerability

Floodplain locations that exist near the Big Sioux River, its tributaries and Nine Mile Creek are especially vulnerable to flooding. Urban areas are specifically susceptible because of the attractiveness of the floodplain for land development.

Populations at risk include those living or working in floodplains as well as the elderly, the homeless and non-English speaking persons.

Property at risk includes any structures residing in the floodplain as well as crops, livestock, homes, businesses, and automobiles.

The environmental exposure that is likely to occur affects vegetation, wildlife, the quality of water in surrounding water bodies.

History

In 1961, the Army Corp of Engineers completed a flood control project for the City of Sioux Falls. The project consisted of a diversion headworks, entirely automatic in operation located on the Big Sioux River flood plain just north of the Airport; a diversion channel and a concrete diversion chute and stilling basin which would carry the diverted flood waters in a generally southeasterly direction to the Big Sioux River below the falls; channel improvement and levees along the Big Sioux River; channel improvement and levees along the lower one-half mile of Skunk Creek; and the necessary railroad and highway alterations.

In October 1996, the most recent Big Sioux River levy system project started. The project was intended to protect the city of Sioux Falls against a 100 year flood event. Three phases were planned for this project.

Phase 1 commenced in Spring of 2001 and was completed in Fall of 2003. Phase 1 constructed three draining structures and a retaining wall at Sertoma Park.

Phase 2 began in July, 2006 and ended in July, 2012. Phase 2 included the construction of a new flood control dam north of where Skunk Creek and the Big Sioux River meet. Ten automatic gates were constructed on the dam as well as a flood wall near the Minnehaha Country Club. A replacement of several drainage structures was also included in this Phase.

Phase 3 was launched in July, 2011 and concluded in July, 2013. This phase rehabilitated the existing dam, located north of the Sioux Falls Regional Airport, and replaced fifteen drainage structures along with six flood closures. Phase 3 also replaced gates and their automatic controls.

The official Physical Map Revision packet was signed and sent to FEMA in September of 2014. All levee improvements managed by the Corps was completed prior to this date. The City had the maps officially revised and accepted by FEMA. The final cost of the project was estimated at \$62.5 million. The City of Sioux Falls has complete responsibility and maintenance of the operation.

Specific Risks

- Blocked roads from rising water
- Street and / or structural flooding
- Sewer backup
- Power loss
- Delayed emergency response
- Business interruption
- Property damage
- Evacuation (localized)

Minnehaha and Lincoln County

Hazard Information

Type of Hazard

Urban Fire

Definition: Fire hazards exist in every size of community on every day of the year. The magnitude of a fire varies, ranging from small vehicle fires to large residential, business, or institutional fires. There are numerous ways in which a fire starts, but the most common cause results from human carelessness.

Vulnerability

The entire geographical area of both Minnehaha and Lincoln County is at risk from urban fire, specifically Sioux Falls, which contains a majority of the counties' population. Sioux Falls Fire Rescue is part of an automatic aid response plan with the South Dakota Air National Guard, all of the volunteer fire departments in Minnehaha County and the Tea, Canton and Harrisburg Volunteer Fire Departments in Lincoln County.

Populations at risk include the elderly, the mentally handicapped, the impoverished and any other inhabitant of the area. Structural populations under specific risk include medical facilities, nursing homes, shelters, emergency response centers, trailer parks, heavily populated public areas.

Property at risk includes homes, businesses, automobiles.

The amount of environmental exposure that will occur depends solely upon the place of occurrence. If the fire affects hazardous materials, the environmental exposure that may take place could be extreme. Vegetation, wildlife, pets, and humans could suffer from any hazardous material situation.

History

The possibility of catastrophic loss due to fire is always possible but the potential for this great of loss is highest in those areas built before the adoption of modern building and fire codes. Properties at close proximity to one another and those with inadequate fire separations of common basements are the most at risk areas in Sioux Falls.

Fires have occurred involving dumpsters, automobiles, mobile homes, houses, and commercial properties. The city's strict enforcement of fire, life safety, and building codes is attributed to the relatively small number of major fire events that have occurred within the city. Without the city's modern fire department, which includes well-trained firefighters, up to date fire apparatus, and active inspection programs, the city's record of major fire events could have been higher.

Fire mitigation is a concern to everyone but especially emergency management officials, because fire affects the lives of those persons in which it comes into contact. Fire also destroys property and critical resources needed for the survival of all area residents.

Sioux Falls Fire Rescue (SFFR) provides fire and rescue services for the City of Sioux Falls. They are also a part of an automatic/mutual aid response plan with the South Dakota Air National Guard, all of the volunteer fire departments in Minnehaha County and the Tea, Canton and Harrisburg Volunteer Fire Departments in Lincoln County. SFFR also has an agreement with the South Dakota Department of Agriculture Wildland

Suppression Division for wildland fire response within and outside the state. SFFR employs approximately 210 employees. All firefighters are, at minimum, certified as emergency medical technicians. SFFR provides emergency response that includes responding to and mitigating medical calls and injury accidents, fire notifications and related incidents, and hazardous materials incidents. Other special response may include consequence management of terrorist acts; rescue and recovery calls including vehicle extrications, water and ice, elevation and confined space, structural collapse, trench/excavation, and mass casualty incidents. SFFR currently has 11 operating fire stations located throughout the city.

Risk

Unfortunately, the probability of a fire occurring is unpredictable. Because Sioux Falls is one of the 200 largest cities in the United States, the responsibility of Sioux Falls Fire Rescue has increased greatly and will continue to do so as the city and county continue to grow in population.

Identified Risks

- Personal injury and / or death
- Business interruption due to fire / smoke / water/ structural damages
- Loss of income for displaced workers
- As many as 60% of businesses fail to reopen, or close within one year after a fire
- Explosion due to flame impingement on closed containers
- Release of hazardous materials
- Loss of medical facilities to a major fire event
- Loss of power
- Property damage, including loss of personal property and / or living space

**Minnehaha and Lincoln County
Hazard Information
Type of Hazard**

Rural Fire

Definition: Rural fires are experienced on a yearly basis. Basic factors that allow for or influence the potential for rural fires include: the type and amount of fuel supply (vegetation), temperatures, wind conditions, precipitation patterns, humidity levels, topography, and the levels of human activity on the land. Fires that occur in heavy vegetated areas are likely to cause major damage to surrounding habitats, crops, livestock, wildlife, people, and structural property if they are not quickly detected and suppressed.

Because of limited resources within rural areas it is necessary for several agencies representing local, state and federal governments to share responsibility for both fire mitigation measures and fire response operations. Sioux Falls Fire Rescue is part of an automatic/mutual aid response plan with the South Dakota Air National Guard, all of the volunteer fire departments in Minnehaha County and the Tea, Canton and Harrisburg Volunteer Fire Departments in Lincoln County

Vulnerability

Although rural fires can occur at any time throughout the year, it is seldom that they occur during winter months, as the cold and snow are excellent mitigating factors.

Populations that are at risk include all rural residents, but specifically, the elderly.

Property at risk includes residential structures, farm / ranch buildings, automobiles, farming equipment, crops, and livestock.

The environmental exposure that occurs from rural fires depends upon the site of the fire. Rural fires can destroy wildlife habitats, forage, valuable shelterbelts, agricultural crops, and scenic and recreational areas. Extensive rural fires are usually followed by soil erosion, the silting of streams and reservoirs, the contamination of wells, flooding and damage to utilities.

History

Two basic fire seasons exist for rural fires. From April 1 to June 15, conditions are monitored very closely. The potential for fire to occur within this spring period is directly related to unseasonably hot, dry, and windy conditions. From July 15 - October 30 (or the first significant snow cover), conditions are monitored even more closely because of the increase in temperature and the chance of limited precipitation.

Most rural fires result from human carelessness during activities such as controlled burns of sloughs, ditches, and fields by landowners; recreational activity such as camping, hunting, and other off road vehicle travel, and the use of fireworks preceding and immediately following the 4th of July holiday.

Risk

The probability of occurrence depends, for the most part, on numerous factors aiding in the creation or expansion of rural fires, such as the type and amount of fuel supply (vegetation), temperatures, wind conditions, precipitation patterns, humidity levels, topography, and the levels of human activity on the land.

Unfortunately, like urban fire incidents, rural fire incidents are not altogether predictable. Experts can predict times of favorable fire conditions and thus limitations or bans of burning in specific areas can be enforced until the eminent danger has passed.

Identified Risks

- Possibility of blocked roads
- Possibility of building collapse and extensive property damage
- Delayed emergency response because of rural location
- Localized evacuation can be necessary
- Explosion
- Hazmat release
- Localized loss of power
- Personal injury and / or death

**Minnehaha and Lincoln County
Hazard Information
Type of Hazard**

Hazardous Materials Incident

Definition: Hazardous materials are any substance in any quantity or form which may pose an unreasonable risk to the safety, health, environment and property of citizens. The term “hazardous materials” covers a wide array of products from relatively harmless substances like hair spray in aerosol dispensers and wash preservatives like creosote to highly toxic or poisonous materials like polychlorinated biphenyl (PCBs) and phosgene gas. The potential severity of hazardous materials varies but the primary reason they are designated as hazardous is for their risk to public safety.

Hazardous materials incidents involve hazardous materials (HAZMAT) which can be classified into two separate groups. HAZMAT incidents can be of a transportation nature or of a stationary nature, occurring at a fixed site or facility. A list of all fixed facility sites within Minnehaha County is available at the Minnehaha Emergency Management Office. This list is updated annually and dispersed to all local first responders for use in emergency situations. Lincoln County also has also developed a list.

Vulnerability

All geographic areas of the two counties are susceptible to hazardous materials incidents, however areas prone to higher human use are the most likely to be affected. In particular, those areas in the county within a 5-mile radius around a transportation site such as Interstate 29, Interstate 90, Interstate 229, major highways, rail lines or pipelines are in the greatest danger. Areas at risk from fixed site releases include the locations of hazardous materials manufacturing, processing, or storage facilities, as well as all hazardous waste treatment, storage, and disposal sites. Rural areas have potential for affectation due to chemical transport and use by farmers and because of railways, local highways, and pipelines.

Specific populations at risk include those persons living or working next to a fixed site facility or heavily used transportation location. Depending upon the type of hazardous material, large portions of the county could be affected by a release of hazardous materials due to transportation routes running directly through the city of Sioux Falls.

The property that would be at risk from a hazardous materials spill depends solely upon the type of hazardous materials release and where it occurs.

The potential environmental exposure from such an incident cannot be predicted without identifying the type of hazardous material released and the exact place of

occurrence. However, water supplies, sewer lagoons, fish and wildlife habitats, vegetation, and human life are all at risk from a HAZMAT situation of any kind.

History

Both Minnehaha and Lincoln County are at risk from accidents and/or incidents involving hazardous materials. Agriculture, industry, and manufacturing rely upon the production, use, storage, and transportation of hazardous materials. Explosives, flammable liquids, flammable solids, gases, poisons, pesticides, oxidizing substances, miscellaneous dangerous substances, and radioactive materials are either used in or transported through the county.

Risk

The probability of a HAZMAT occurrence in the two counties is constantly present. The seriousness of one particular event depends upon several factors, the properties and quantity of the chemical involved as well as wind direction and current weather pattern. There is not a seasonal pattern in which HAZMAT incidents occur; however, the potential impact of the event can vary by season. HAZMAT events tend to have a greater community impact in the summer due to higher temperatures which enable higher rates of material expansion, more people outdoors with an increased risk of exposure. The duration of a HAZMAT incident averages between 2 and 24 hours, however due to cleanup and recovery, the duration could be extended to multiple days.

Identified Risks

- Roads may be closed
- Businesses may be interrupted
- Evacuation may be necessary
- Potential of explosion is increased
- Potential of fire is increased
- Potential of public safety runs are increased
- Loss of drinking water
- Loss of medical facilities
- Property damage
- School closures
- Injury and / or death to humans and animals

Minnehaha and Lincoln County Hazard Information Type of Hazard

Ground Transportation Incident

Definition: Ground transportation incidents can involve trucks, cars and railcars. These events have potential to be very serious, sometimes relating in numerous casualties and involving numerous methods of transportation.

Vulnerability

A ground transportation accident could occur anywhere throughout Minnehaha or Lincoln County. Because there are three interstates within the county and numerous highways and railways, the potential for occurrence is always present. Because both counties are experiencing a steady growth in population the chances of an incident occurring are increasing rapidly.

Populations at risk include a majority of the county areas because of the high number of daily interactions between automobiles, large trucks, and buses, and rail traffic occurring throughout the area, creating the potential for ground transportation accidents.

Property at risk includes the method of transportation involved in the incident as well as any structures and utilities coming into contact with the situation.

The environmental exposure that could occur from such an event depends solely upon what type of incident were to occur, if it were an incident involving hazardous materials the likeliness of environmental contamination would increase considerably.

History

Ground transportation incidents occur every year and in every season in both Minnehaha and Lincoln County. The most serious incidents result in the loss of life, while others result in merely the temporary closure of a transportation route. The majority of ground vehicle accidents that have occurred in the county have been contained and isolated with relative ease.

Accidents involving trains and automobiles, although minimal, do occur as did on March 28, 2003. According to officials, a Sioux Falls woman died after crashing into a railroad car that stopped in a crossing on Rice Street. The crash ruptured a fuel tank that was attached to the railroad car, spilling 50 gallons of diesel along the tracks. A fuel truck was utilized to drain another 400 gallons from the tank to prevent an even larger spill.

Another incident occurred on August 25, 2006, where a tanker trailer came unhooked from a semi and overturned. The trailer ruptured and caught fire. The tanker had approximately 9,000 gallons of gasoline in it.

Risk

The probability of a ground transportation accident is always present no matter the time of year. However, incidents tend to rise during the winter months when road conditions are unusually poor.

Identified Risks

- Roads may be closed
- Businesses may be interrupted
- Increased number of fire, police, and ambulance runs due to various reasons regarding the incident
- Property damage
- Mass casualties
- Congestion of medical facilities
- If hazardous materials are involved in the incident, the event takes on all of the characteristics described in the "Hazardous Materials Incident" description

Minnehaha and Lincoln County

Hazard Information

Type of Hazard

Aircraft Incident

Definition: An aircraft incident can be serious and involve casualties or can be simply a matter of property damage. This risk is present in Sioux Falls because of the commercial airport, Joe Foss Field, with commercial jet service as well as an Air National Guard unit. In addition, the proximity to Minneapolis/St Paul, Grand Forks and Omaha makes Joe Foss Field an ideal place to practice landings and takeoffs for both military and commercial aircraft. Joe Foss Field is also used by small private aircraft and by package delivery services. Most aircraft accidents occur during the takeoff or landing of the aircraft. Although the risk of an air crash is minimal, it is still a possibility for which emergency management officials should be prepared. There are also smaller airfields located in the towns of Tea and Canton. While they serve a smaller service area, the danger of an accident is always present.

Vulnerability

The most likely location for an aircraft incident is in or near Sioux Falls. However, because of passing overhead aircraft the entire county could be affected from one incident to another.

Populations at risk include passengers of the aircraft involved in the incident, any bystanders, motorists, workers at nearby job sites, emergency crews.

Property at risk includes the aircraft, structures, other aircraft, automobiles.

The environmental exposure that may occur is solely dependent upon the site of the occurrence and whether or not any hazardous material is involved.

History

On December 9, 2011 at 14:24 hours a twin-engine Cessna 421C impacted and was inflamed in a field west of Joe Foss Field while attempting to return to the airport shortly after takeoff. Units from SFFR and Joe Foss Field Fire Rescue responded to the incident and quickly extinguished the fire. A search of the wreckage determined that four lives were lost in the crash.

Although no commercial airline crashes resulting in casualties have occurred in Sioux Falls, the possibility of such an occurrence is always present. A United Airlines DC-10 was en route from Denver to Chicago on July 19, 1989, when it experienced mechanical failure and attempted an emergency landing at Sioux City, Iowa.

Just before the wheels touched down, the right wing of the aircraft hit the ground causing the plane to skid and cartwheel. Of the 296 people on board, 111 died in the crash and resulting fire. This incident alone serves to demonstrate how a community the size of Sioux Falls can experience a major aircraft disaster, even though it does not have a high number of takeoffs and landings.

Identified Risks

- Roads may be closed
- Airport services may be interrupted
- Increased fire potential
- Increased explosion potential
- Increased public safety runs
- Congestion of medical facilities
- Property damage
- Mass casualties
- Hazardous materials release

Minnehaha and Lincoln County Hazard Information Type of Hazard

Civil Disorder / Terrorism

Definition: Civil Disorder can be defined as ‘any conduct of more than one person who destroys or menaces the public order and tranquility’. Mobs rioting and looting or groups of people blocking sidewalks, roadways can cause civil disorder. Civil disorder is not always pre-meditated. It can occur spontaneously. For example, a rioting mob erupts into violence. A pre-meditated event could occur when a demonstration or protest intentionally interferes with another individual or group’s lawful business. Many targets are subject to civil disorder. For example, schools, universities, industry, government officials and buildings, medical facilities, financial institutions, power grids, telecommunication systems, dams, water supplies and pipelines are all potential targets.

Terrorism is the calculated use of violence, often directed toward civilians in order to obtain political goals through the instillation of fear, intimidation or coercion. Acts of terrorism are intended to influence an audience besides that of the immediate victim(s). A terrorist attack is defined easiest by its secretive nature.

Since 1990 domestic terrorism has been characterized by an increasing degree of sophistication. Terrorist organizations have drastically increased the level of technology, the choice of targets and the use of the media to further their goal of directing violence against government entities and society in general.

On the other end of the spectrum, international terrorist groups use ideological, religious and political reasons to justify the violence they aim at people. International terrorist groups are almost always sponsored by authoritarian and totalitarian dictatorships.

Vulnerability

The City of Sioux Falls is the most likely target in the county to the threat of civil disorder and terrorism. The potential of an event occurring in the city is increased by the size and importance of the city. Because the population of the county and city is growing rapidly a future crisis is likely to affect an enormous number of citizens, therefore placing a larger strain on public resources and emergency response teams.

Potential Targets of Terrorism & Civil Disorder

Government Office Buildings

- Public Safety Building
- Administration Building
- Courthouse
- Jail
- Law Enforcement Center
- Juvenile Detention Center
- Highway Department
- Emergency Management Building
- Sioux Falls City Hall
- Federal Court House
- United States Post Office
- FBI and Secret Service Office
- South Dakota Air and Army National Guard
- EROS Data Center
- South Dakota Penitentiary

Electrical Power Production

- Xcel Energy

Electrical Power Distribution

- Xcel Energy
- Sioux Falls Municipal Power
- Rural Electric Companies

Gas Storage and Shipment

- Amoco
- Magellan Pipeline
- Midwest

Telecommunications

- Northwestern
- Cellular Companies
- Qwest

Information and Communications

- Argus Leader
- Radio Stations
- Television Stations
- Cable Television Companies
- National Weather Service Building

Emergency Services

- Law Enforcement Center
- Game Fish and Parks Department
- South Dakota Highway Patrol
- FBI
- Secret Service
- Sioux Falls Fire Rescue
- Rural Fire Departments
- Rural Ambulance Services
- Paramedics Plus Ambulance
- State of South Dakota EOC
- City / County EOC

Institutions

- EROS Data Center
- Colleges
- K-12 Schools (Public & Private)
- Technical Institute
- Museums

Commercial / Industrial Facilities

- Industrial Plants
- John Morrell & Company
- Raven Industries
- Citibank
- Insurance Companies
- Malls – Shopping Centers
- Hotels & Convention Centers
- Movie Theaters
- Grain Elevators

Transportation – Air, Rail, Land

- Railroad and Rail yards
- Interstates 29, 90 & 229
- Joe Foss Field (Airport)
- Pipelines
- Bus Terminals
- Truck Terminals

Water Supply

- Sioux Falls Water Plant
- Sioux Falls Water Purification Plant
- Rural Water Systems
- Sioux Falls Waste Water Treatment Plant

Banking & Finance

- Banks
- Credit Unions
- Finance Facilities / Brokers

Public Health

- Sanford Hospital
- Avera McKennan Hospital
- Veterans Hospital
- Heart Hospital of South Dakota
- Children's Care Hospital
- Dell Rapids Community Hospital
- City Health Department
- Medical Clinics

Recreational Facilities

- Sioux Falls Arena/Denny Sanford Events Center
- Falls Park
- Washington Pavilion
- Restaurants
- Sanford Pentagon
- Denny Sanford Premier Center

Miscellaneous

- Community Celebrations
- Festivals
- Abortion Clinics
- Sioux Empire Fair
- Religious Gatherings
- Sioux Falls Humane Society

History

Civil disorder and terrorism incidents do not have a significant record of occurrence within the counties. However, because an event has never taken place does not indicate that it cannot take place. It merely indicates that the need to be prepared for such an event is that much more important. Civil disorder and terrorism events are likely to cause casualties, injuries, and significant property damage; therefore it is imperative that emergency response teams are highly trained and capable of surviving and performing in the most difficult conditions.

Identified Risks

- Delayed emergency response
- Explosions
- HAZMAT release
- Increased fire potential
- Loss of power
- Personal injury or death
- Property damage
- Business interruptions
- Blocked roads

Minnehaha County Potential Terrorism Targets & Critical Infrastructure List GPS Points in Sioux Falls

Banking & Finance	Citibank	43.60113313	-96.71809715
	CNA Surety	43.54750328	-96.72363839
	CorTrust Bank	43.55001036	-96.72373051
	Home Federal Bank	43.54783895	-96.68805928
	Wells Fargo	43.59987793	-96.72677328
Commercial/Industrial Facilities	Century Theaters	43.53726782	-96.65547572
	Century Theaters	43.52586512	-96.77765476
	Dean Foods	43.56427421	-96.74275273
	Empire Mall	43.51125769	-96.77576054
	John Morrell & Company	43.5600458	-96.72034974
	Orion Foods	43.57453944	-96.76481101
	Raven Industries	43.55089533	-96.72480181
	Sioux Falls Orpheum	43.55054305	-96.72728656
	State Theater	43.54411925	-96.726358
	West Mall 7	43.51362461	-96.75562014
	Western Mall	43.51258385	-96.75473375
Communications	Argus Leader	43.5456494	-96.73081731
	AT&T	43.54660947	-96.76537229
	Communications Service for the Deaf	43.54760622	-96.70309285
	KDLT	43.51254703	-96.76724904
	KELO Radio	43.54227919	-96.72632985
	KELO TV	43.54224434	-96.72719024
	Midcontinent	43.58613507	-96.77713005
	SDN Communications	43.54642529	-96.76427214
Educational Facilities	Anne Sullivan Elementary	43.554253	-96.68066445
	Augustana College	43.52662141	-96.7370252
	Axtell Park Middle School	43.54851339	-96.74738504
	Baan Dek Montessori	43.47567958	-96.74651337
	Bellevue	43.56948051	-96.78032535
	Career and Technical Academy	43.56147916	-96.78270935
	Christ the King Elementary	43.52877921	-96.74535968
	Cleveland Center	43.53016209	-96.73817259
	Cleveland Elementary	43.53789638	-96.68331716
	Colorado Tech	43.49671653	-96.77389855
	Cornerstone School	43.51538584	-96.71533531
	Discovery Elementary	43.53215838	-96.82191879
	Edison Middle School	43.52683468	-96.74709285
	Eugene Field Elementary	43.54363951	-96.7044699

	Excel Achievement Center	43.49904933	-96.76339028
	Fred Assam Elementary	43.54741822	-96.62865735
	Garfield Elementary	43.53983561	-96.75737318
	Globe University	43.49918475	-96.78638841
	Good Shepherd Elementary	43.50075926	-96.68735694
	Grand Island Hall	43.53261507	-96.73966087
	Harrisburg Explorer Elem	43.47942258	-96.77564334
	Harvey Dunn Elementary	43.52382771	-96.68072717
	Hawthorne Elementary	43.55419493	-96.73352199
	Hayward Elementary	43.55048083	-96.79865811
	Holy Spirit Elementary	43.50570575	-96.68268941
	Independent Living Choices	43.50854551	-96.76540112
	Jefferson Elementary	43.53075951	-96.7445282
	JFK Elementary	43.50360716	-96.80097517
	Joe Foss	43.55530721	-96.71078659
	John Harris Elementary	43.50687342	-96.68388202
	Harrisburg Journey Elementary	43.48317184	-96.73818542
	Harrisburg Middle School North	43.4666544	-96.74969266
	Harrisburg Endeavor Elementary	43.46647589	-96.75324996
	Kilian Community College	43.55172534	-96.72279699
	Laura B Anderson Elementary	43.56442666	-96.706991
	Laura Wilder Elementary	43.52436723	-96.75307565
	Lincoln High School	43.51847322	-96.71011531
	Longfellow Elementary	43.53511031	-96.72013089
	Lowell Elementary	43.53698817	-96.73611189
	Lutheran High School of SF	43.49760432	-96.74589083
	Mark Twain Elementary	43.52802614	-96.72939445
	Memorial Middle School	43.53201194	-96.81819708
	Mount Marty College	43.50706474	-96.74991187
	National American University	43.51979354	-96.76322785
	New Horizons	43.50232194	-96.77440141
	Norman Mears Library	43.53271679	-96.73796134
	Oscar Howe Elementary	43.51980484	-96.80186973
	Patrick Henry Middle School	43.52501641	-96.71798716
	RF Pettigrew Elementary	43.50589118	-96.82491015
	Robert Frost Elementary	43.51691685	-96.72180763
	Roosevelt High School	43.51648015	-96.80777694
	Rosa Parks Elementary	43.53068851	-96.65995191
	SD Achieve	43.50545815	-96.74883574
	SD Behavioral Health Center	43.52771017	-96.73587006
	SD Rehab for the Blind	43.55645935	-96.74623892

	SD School for Deaf	43.54753713	-96.70137343
	Seventh Day Adventist	43.53074823	-96.63476763
	Sioux Falls Lutheran	43.51900689	-96.7295896
	Sioux Falls Seminary	43.52545498	-96.73564637
	Southeast Technical Institute	43.57048798	-96.77956557
	St Katharine Cathedral Elementary	43.52773677	-96.83690852
	St Lambert Elementary	43.53766352	-96.68026119
	Stewarts Hairstyling School	43.54439701	-96.7247986
	Stewarts Hairstyling School	43.55506077	-96.74630812
	Sylvan Learning Center	43.50112227	-96.77382097
	Technology HS	43.56866976	-96.78196548
	Terry Redlin Elementary	43.54889419	-96.70458019
	University Center North	43.60040334	-96.78183689
	University Center South	43.56800411	-96.78202249
	USD School of Medicine	43.53357151	-96.74264423
	USF	43.53166065	-96.7371192
	Volunteers of America	43.50788508	-96.7430385
	St Joseph's Cathedral Elementary	43.55349567	-96.73472475
	St Marys Elem School	43.52715297	-96.72041237
	Whittier Middle School	43.55187444	-96.71476453
	Glidden Martin Memorial Hall	43.5315505	-96.7386893
	Horace Mann Elementary School	43.52900274	-96.70803304
	Granskou Hall Augustana	43.52763931	-96.73746659
	Stavig Hall Augustana	43.52741297	-96.73890971
	Tuve Hall Augustana	43.52657884	-96.73874486
	Bergsaker Hall Augustana	43.52281533	-96.73919312
	O'Gorman Middle School	43.51756783	-96.76504459
	All City Jane Adams	43.55991091	-96.76027261
	O'Gorman HS	43.51699167	-96.76315844
	Sioux Falls Christian Middle School/High School	43.48825717	-96.69926629
	St Michael Elementary	43.53097794	-96.78945982
	Washington High School	43.55408599	-96.67371454
	Maintenance Service Center	43.52629868	-96.7402428
Electrical Power, Oil & Gas Storage	Mid American Energy	43.50837973	-96.74640537
	Sioux Falls Municipal Power	43.55209901	-96.72943897
	US Oil	43.5466542	-96.78373422
	Xcel Energy Substation	43.58736655	-96.660689
Emergency Services	Airport Fire Station	43.57242617	-96.74002812
	Fire Station 1	43.54706413	-96.73088861
	Fire Station 10	43.54450074	-96.82590811

	Fire Station 11	43.57225698	-96.80149434
	Fire Station 2	43.54554117	-96.67209729
	Fire Station 3	43.51887979	-96.7305752
	Fire Station 4	43.49009937	-96.759996
	Fire Station 5	43.54628721	-96.70053105
	Fire Station 6	43.51525719	-96.79038109
	Fire Station 7	43.58752656	-96.71242354
	Fire Station 8	43.55898023	-96.76084688
	Fire Station 9	43.507974	-96.69221592
	Rural Metro Ambulance	43.5461861	-96.75982621
	Rural Metro Ambulance	43.54527258	-93.69108696
	Rural Metro Ambulance	43.50549055	-96.76926374
	SD Highway Patrol/DOT Complex	43.60300584	-96.79427571
	VL Crusinberry Fire Dept Training Center	43.34505	-96.43524
Government	Army National Guard	43.59524616	-96.73788587
	Carnegie Town Hall	43.54570936	-96.72936219
	Emergency Management Civil Defense	43.55541305	-96.75169057
	Federal Building	43.54321556	-96.72622388
	Juvenile Detention Center	43.5061129	-96.7437636
	Law Enforcement Center	43.55396061	-96.73014963
	Metro Communications	43.55188407	-96.73030705
	Minnehaha Co Administration Building	43.55188407	-96.73030705
	Minnehaha Co Hwy Dept	43.60198807	-96.70007837
	Minnehaha Co Public Safety Building	43.55188407	-96.73030705
	SD National Air Guard	43.57147225	-96.73923948
	SD State Penitentiary	43.56752784	-96.72505114
	Sioux Falls City Hall	43.5476489	-96.7293831
	US Post Office	43.54440348	-96.72364086
	US Post Office	43.59668957	-96.72630384
	Courthouse Square	43.5437711	-96.72585335
	Minnehaha Co Courthouse	43.55265904	-96.72974511
	Sioux Falls St Dept	43.57157343	-96.71527441
	Minnehaha Co Courthouse Annex	43.55180615	-96.72872774
Miscellaneous	Humane Society	43.5882522	-96.67992401
	Multi Cultural Center	43.55304796	-96.72877595
	National Weather Service	43.58744852	-96.7298176
Public Health	Avera Cancer Institute	43.53280788	-96.71306746
	Avera Doctors Plaza 1	43.53324976	-96.71556146
	Avera Doctors Plaza 2	43.53339823	-96.71441568
	Avera Heart Hospital SD	43.49097336	-96.78067758
	Avera McKennan Behavior Health Hospital	43.49117193	-96.77854725

	Avera McKennan Hospital	43.53425866	-96.71509911
	Avera Prince of Peace Retirement	43.50443123	-96.68350522
	Berakhah House	43.5513595	-96.75053234
	Bethany Lutheran Home	43.52808368	-96.75474525
	Center for Children & Youth	43.57763324	-96.71940252
	Childrens Care Hospital & School	43.52864285	-96.75539795
	Childrens Home Society	43.55721966	-96.67370548
	Childrens Inn	43.55207847	-96.75199227
	Covington Heights Health Care Center	43.51028102	-96.78847016
	Dakota Abilities	43.53880403	-96.67612805
	Dakota Abilities	43.51732592	-96.67176011
	Dakota Abilities (Phillips Res Home)	43.51330797	-96.7267812
	Dow Rummell Village	43.55992368	-96.74451353
	Edgewood Vista	43.49246104	-96.76323173
	Glory House	43.50745011	-96.74555232
	Good Sam Luther Manor	43.51799996	-96.74426819
	Good Samaritan Center	43.55572752	-96.73183799
	Good Samaritan Creekside Apartments	43.50151199	-96.77784553
	Good Samaritan Nursing Home	43.55488529	-96.73185342
	Good Samaritan Village	43.50975671	-96.79171732
	Greenleaf Senior Housing	43.55174134	-96.6851458
	K-nopf Assisted Living Center	43.54845126	-96.67025887
	Medical BLDG 2	43.53460851	-96.74357934
	Medical BLDG 3	43.53460851	-96.74357934
	My Home	43.58532727	-96.77913639
	North Central Heart Ins	43.49098373	-96.78178626
	Planned Parenthood	43.51451588	-96.80780824
	Prairie Crossing Assisted Living	43.52893749	-96.81933571
	Prairie Village Senior Apartments	43.51394396	-96.66662352
	Primrose Assisted Living Center	43.47928236	-96.76595125
	Quinn House	43.53566181	-96.6874229
	Riverview Residential Living	43.53600524	-96.72917242
	Sanford Corporate Offices	43.59902033	-96.69394951
	Sanford Hospital	43.5354736	-96.74284882
	Schager Residential Living Center	43.53774487	-96.67184217
	Sioux Falls Dept of Health	43.55311759	-96.72877423
	Sioux Valley Hospice Cottages	43.51322793	-96.80490046
	Sioux Vocational (Hilltop Hall)	43.53982361	-96.69227082
	Sioux Vocational Beadle	43.54176989	-96.71264839
	Sioux Vocational Churchill (Horizon Hall)	43.54368412	-96.67918437
	Sioux Vocational Harvest (Cathy Hall)	43.51375023	-96.7886187

	Sioux Vocational Harvest (Hawthorne Hall)	43.5095077	-96.74898696
	Sioux Vocational Harvest (Mariona Hall)	43.52792488	-96.68532652
	Sioux Vocational Heritage (Hall #1)	43.5061615	-96.74732865
	Sioux Vocational Heritage (Hall #2)	43.50580166	-96.74824552
	Sioux Vocational Stephen (Horizon Hall)	43.52881629	-96.68201366
	Sioux Vocational Tennis Lane (Horizon Hall)	43.50313137	-96.76930168
	Sioux Vocational Terry (Hospitality Hall)	43.51251112	-96.78532152
	Southeastern Behavioral Healthcare	43.5265901	-96.73533403
	Southeastern Behavioral Healthcare	43.59512723	-96.72232979
	Southeastern Behavioral Healthcare	43.55285696	-96.72722295
	Southridge Health Care Center	43.51169293	-96.73495128
	Summit Oaks Center	43.54374401	-96.73594371
	The Arch	43.54369926	-96.73305921
	Trail Ridge Retirement Community	43.49417399	-96.76537012
	Transitional Living Center	43.53289701	-96.72905963
	Transitional Living Center	43.52963825	-96.73289081
	Turning Point	43.53744342	-96.72628242
	United Cerebral Palsy of SD	43.507023	-96.74274049
	USD School of Medicine	43.53366843	-96.74286006
	Volunteers of America	43.52552918	-96.74653614
	Waterford at All Saints	43.53691883	-96.72918882
	VA Hospital/Camp-Bldg 1	43.53062423	-96.75596035
	VA Hospital/Camp-bldg 5	43.53186044	-96.75764496
	VA Hospital/Camp-Bldg 15	43.53057712	-96.7576525
	VA Hospital/Camp-Bldg T15	43.53177637	-96.75588155
	Good Sam Vila Crescent	43.51001764	-96.79466988
	Dakota Abilities (Blaine Res Home)	43.53630319	-96.69227572
	Pams Pl	43.50894288	-96.70082366
	Dakota Abilities (S Sycamore Estates)	43.52706806	-96.67100022
	Dakota Abilities (Pheasant View Apts)	43.51386646	-96.81030412
	DakotAbilities	43.53810182	-96.77448176
	DakotAbilities	43.53878595	-96.77189889
Recreational Facilities	Denny Sanford Premier Center	43.55883059	-96.74715724
	Great Plains Zoo	43.53923201	-96.76272654
	Howard Wood Field	43.56382344	-96.70136333
	Pettigrew Museum	43.54838939	-96.73463282
	Sanford Pentagon	43.59151361	-96.75512114
	Sioux Falls Arena	43.56207916	-96.74937479
	Sioux Falls Baseball Stadium	43.55959196	-96.74896959
	Washington Pavilion	43.5439873	-96.72903665
	WH Lyons Fairgrounds	43.54637782	-96.77328002

	Old Courthouse Museum	43.55146517	-96.72865211
Religious Centers	Faith Baptist Fellowship	43.50004328	-96.73327929
	First Assembly of God	43.51603751	-96.80373538
	Islamic Center of Sioux Falls	43.55101685	-96.70220947
	Mount Zion Temple	43.5412639	-96.73391864
	St Josephs Cathedral	43.55256306	-96.73440102
Transportation-Air, Rail, Land	Burlington Northern Santa Fe	43.5478735	-96.71997662
	FedEx	43.58997019	-96.73107966
	Jefferson Bus Lines	43.57339715	-96.78003219
	Landmark Aviation	43.58535345	-96.7320204
	Magellan	43.54487491	-96.79196196
	SF Regional Airport	43.58024301	-96.7313817
	Sioux Falls Transit	43.55218154	-96.72047277
	UPS Air Service	43.58682244	-96.73281733

Minnehaha and Lincoln County

Hazard Information

Type of Hazard

Nuclear Incident

Definition: A nuclear incident occurring within the United States has the potential to cause the most catastrophic National Security disaster imaginable. Although each generation has attempted to eliminate the possibility of war, none has succeeded. The chance of war is high thus the chance that a nuclear incident will occur somewhere in the world increases greatly. Nuclear, biological, chemical and conventional weapons have become easily accessible in third world countries, especially in the Middle East, Eastern Europe and the former Soviet Union.

The threat of nuclear war has slowly increased in recent years despite attempts from numerous countries to reduce their nuclear arsenals. Although these attempts have been somewhat productive, numerous smaller and less stable countries and terrorist groups have gained the capability to produce and deliver nuclear weapons.

Vulnerability

If an enemy of the United States were to attack a large number of targets within the country and adjacent areas with nuclear weapons, large areas or all of the United States could be contaminated with nuclear fallout. Radiation from fallout could be fatal to many of the population exposed. Minnehaha County could be subjected to nuclear

fallout without sufficient warning time to implement the relocation of its residents. The following counties in South Dakota have been designated high-risk areas in the event of a nuclear attack: Butte, Haakon, Hughes, Jackson, Lawrence, Lincoln, Meade, Minnehaha, Pennington, Perkins, Stanley and Union.

The environmental exposure that would occur due to a nuclear event would cause an extremely dangerous situation. The affects of radiation on wildlife, livestock, crops, other vegetation, and people are deadly. If not decontaminated, any living being or plant would experience serious side effects as well as death.

History

There is no history of nuclear attack in either Lincoln or Minnehaha County or the United States as a whole. However, because of increasing instability within many countries and terrorist groups the chance of an occurrence is not unrealistic. While the counties may seem an unlikely target for a nuclear attack, the fallout from an attack is still very likely, especially with the existence of Ellsworth Air force Base, located in western South Dakota.

Identified Risks

- Mass casualties
- Radioactive contamination
- Lack of critical materials due to contamination
- Panic that could lead to civil unrest, loitering and riots
- Business and school closures
- Loss of medical facilities and / or healthcare professionals
- Loss of emergency responders

City of Sioux Falls

Hazard Information

Flooding

Sioux Falls experienced major flooding in the early summer of 2004. On May 29th, the City of Sioux Falls received very heavy rainfall over an 8 hour period. Rainfall amounts of 3-5 inches were reported at various locations throughout the City. Up to 1.5 inches of rain fell in one hour during the height of the thunderstorm. Rapid runoff and urban flooding resulted across Sioux Falls. Approximately 2 dozen homes reported sewer back-ups as a result of this storm event.

On June 16th, the storms hit again. Strong thunderstorms developed around 4 AM on the west side of Sioux Falls and moved northeast. As the storms moved to the east, a new storm development was again observed just west of Sioux Falls which resulted in repeated episodes of very heavy rainfall. While overall rainfall amounts were only slightly higher than the May 29th event (3 to 7.67 inches); multiple locations around the city received in excess of 3 inches of rain in 2 hours. This large amount of rainfall in such a short period of time produced excessive runoff across the city. Over 170 homes reported flooded basements and there were 142 claims of sewer back-up.

The flooding from the summer of 2004 was declared a major disaster by FEMA for the State of South Dakota on July 20, 2004. Minnehaha County received public assistance for the repair and replacement of disaster-damaged public facilities.

The estimated damage from flooding in the summer of 2004 totaled over \$11.7 Million.

Numerous other flooding instances have also occurred and can be found in the *Past Hazard Events* section of Unit 3. Specific problem flooding areas are listed below:

- West of Sioux Falls – The Floodplain of Skunk Creek has the potential to affect rural homes, county and state highways, and portions of the unincorporated Village of Ellis, specifically four businesses including that of a feed supplier, a seed supplier, a propane distributor, and a contractors shop.
- North of Sioux Falls – The Floodplain of the Big Sioux River has the potential to affect a limited number of rural homes and some east-west transportation corridors as well as Sioux Falls and Minnehaha Rural Water wells that are located in the area. The greatest potential for damage lies in the unincorporated Village of Renner, where approximately five businesses could suffer flooding damage. Those businesses include a Legion Hall, a steakhouse, grain elevator, an auto repair shop, and a concrete contractor's shop. The most important site of potential impact is the Renner Fire Hall which if damaged could impact emergency response from the facility. In the case of this type of flooding, potential damage could also occur to the Towns of Baltic and Dell Rapids and the City of Sioux Falls.

Winter Storms

Blizzards, ice storms, and extreme cold occur throughout the county on an annual basis, these storms can impact the entire county at during any one event. Damages that can occur from winter storms are difficult to predict and can be extremely damaging in terms of economic loss, property damages, livestock loss, and transportation accidents. Snowstorms can collapse buildings, ice storms can disrupt power and communication services, and the extreme cold effects the human and livestock population throughout

the county. Also affected by winter storms are transportation routes, countless traffic accidents can be attributed to winter weather, from zero visibility to icy roads, this can be the most dangerous part of a winter storm. It is difficult to determine repair and replacement costs to damages resulting from a winter storm because of the numerous variables that occur within each type of storm.

Past events have occurred numerous times throughout the county, for more detail regarding winter storm events; please reference the *Past Hazard Events* section of the plan, located in Unit 3. The blizzard of January 10-11, 1975 is widely considered to be the worst blizzard of the century in this particular area. While there was only seven inches of snow measured in Sioux Falls, wind gusts were measured at 70 mph, wind chills dropped to 70 degrees below zero, and visibilities were below a quarter mile at the airport for a period of 24 hours straight. Damages from the storm ranged from the death of two college students from Sioux Falls who died from exposure when their car stalled 3 miles east of Sioux Falls to the collapse of a 2000-foot high broadcast tower east of Sioux Falls and livestock losses that were estimated at 10 to 15 thousand head. Several potential issues are listed below and should be addressed or considered later while determining potential projects. It should be noted that this is not the only winter storm that has produced such drastic damages.

- Livestock shelters (Assisting farmers / ranchers secure shelters during winter weather for their livestock)
- Preparing the elderly for winter weather by gathering their necessary supplies and medications, keeping them safe in their house instead of driving and walking on icy roads, sidewalks, and steps
- Educate homeowners and businesses of the potential roof damages that can occur from heavy snow

On April 9, 2013 a severe ice storm crippled the city of Sioux Falls and severely stressed response capabilities. SFFR responded to a record setting 284 incidents within the first 24 hour time period of the 3 day event. Safety officers were provided by SFFR for the debris cleanup effort for the next several weeks which resulted in no serious injuries.

Thunderstorms / Lightning / Hail

These storms frequent the spring and summer months and occur throughout the area on an annual basis. Damages can be mild and or severe, depending on the time of year. Damages resulting from these storms come from flash flooding, lightning strikes, and hail damage that can ultimately destroy an entire year's cash crop. Damages

resulting from these types of events are extremely hard to predict as the severity of the storm cannot be predicted, however certain precautions can be taken by officials to ensure that the residents of their county are safe in such instances. It is possible to mitigate against flash flooding, one such measure is by not allowing development in the floodplain. It is difficult, however to implement mitigation measures against hail damages without being able to shelter crops. While crop insurance does provide some relief it cannot replace a farmer's time and dedication to his livelihood. Thunderstorms, hailstorms, and lightning strikes occur in the county on an annual basis, for a detailed description of past events, please see Section 3 of this document.

High Winds / Tornadoes

High winds occur in the county annually. They have often been the root cause of damage to property, including that of automobiles, businesses, residential structures, and crops. Debris cleanup is a regular after-storm duty for every municipality throughout the county, the related cost to city governments from such an event is staggering. Many cases of high wind and even tornado events have been recorded within the region. More detailed information regarding these storms can be found in the *Past Hazard Events* section of Unit 3.

- Tornado shelter building specifications should be reevaluated and enforced on an annual basis
- Residents should be advised annually to perform a routine tree and debris cleanup

Wildfire

The County is covered with grassland areas and heavily forested areas in the northeast portion of Sioux Falls stretching to the City of Brandon and extending southward. There are other forested areas throughout the county, primarily along the Big Sioux River.

The Northeast section of Sioux Falls from Great Bear Recreation Park to Brandon is a specific area of concern, especially in regards to future development. Future development in the area will most likely consist of upscale residential homes. Fire and emergency response teams may experience difficulty in reaching the residential homes due to a lack of sufficient roadway. Also of concern is the steep slope throughout this area.

The City of Sioux Falls will provide the area with the most appropriate zoning in order to benefit the residential homeowner, the City and any fire or rescue teams. Such zoning requirements may include specific roofing and housing materials, placement of vegetation surrounding the residence, and debris cleanup requirements.

Urban Fire

Fire hazards exist in every size of community on every day of the year. The magnitude of a fire varies, ranging from small vehicle fires to large residential, business, or institutional fires. There are numerous ways in which a fire starts, but the most common cause results from human carelessness. The entire geographical area of both Minnehaha and Lincoln County is at risk from urban fire, specifically Sioux Falls, which contains a majority of the counties' population. Sioux Falls Fire Rescue is part of a mutual aid response plan with the South Dakota Air National Guard, all of the volunteer fire departments in Minnehaha County and the Tea, Canton and Harrisburg Volunteer Fire Departments in Lincoln County.

Elderly, mentally handicapped, impoverished, and all other inhabitants of the area are at risk from urban fire. Medical facilities, nursing homes, shelters, emergency response centers, trailer parks, and heavily public areas are also at serious risk due of their importance to the community and because of the populations within.

There is always the potential for catastrophic loss due to fire but this potential is highest in the areas built before the adoption of modern building and fire codes. Properties at close proximity to one another and those with inadequate fire separations of common basements are the most "at risk" areas in Sioux Falls.

Fires have occurred involving dumpsters, automobiles, mobile homes, houses, and commercial properties. The City's strict enforcement of fire, life safety, and building codes is credited with the relatively small number of major fire events that have occurred within the city. Without the Sioux Falls' modern fire department, which includes well-trained firefighters, up to date fire apparatus, and active inspection programs, the city's record of major fire events may have been higher.

Hazardous Materials Incidents (HAZMAT)

Minnehaha County and the City of Sioux Falls are home to Interstate 90 (east - west) and Interstate 29 (north - south) along with three different railroad companies. Because of the coast-to-coast Interstate traffic and the railroad traffic, the area is becoming increasingly susceptible to HAZMAT events. Below are listed specific areas within the county that pose the greatest HAZMAT potential.

- Magellan Pipeline (specifically where it crosses the Big Sioux Aquifer north of Sioux Falls) – Even though the pipeline has been replaced in this specific area, leaks in several areas could cause potentially impact Sioux Falls wells and the Big Sioux River.
- Municipalities are located along Interstate 90 & Interstate 29, specifically the Cities of Sioux Falls, Hartford, Humboldt, and Brandon. Numerous trucks carrying hazardous materials travel through the area on a daily basis, this poses a threat due to the possibility of a transportation accident within the city limits of any individual municipality.
- Each municipality within the county serves host to a particular railroad line. The HAZMAT threat is relative to the types of products carried on the rail lines, is not typically known and could be of serious danger if spilled in an area of high population or traffic.
- Gas Pipeline Explosions – Buried pipelines of private enterprises could impact the development potential of affected lands and have an impact on the arrangement of land uses within the county. Many main lines exist in northern portion of the county.

Transportation Incidents

This section includes all forms of transportation within the area including air, rail, and automobile. Joe Foss Field, the Sioux Falls Regional Airport serves a relatively large regional area and is host to approximately 100,000 flights in and out annually. While there have not been many air traffic events in the past, the potential for an event to occur is present.

Rail line extends throughout the county and through each municipality within the county. The danger of this extends not only to the possibility of vehicle – train collisions but also to the potential for HAZMAT events. Many of the train cars carry grain, ethanol and chemicals used in developing the octane booster.

Special and Annual Events

Each year, a variety of special and annual events occur within the City of Sioux Falls and in Minnehahaa County. The participation in these events grows each year, along with the chance for a disaster happening. Although there have been no reported incidents to date, being aware of the events can help prevent many disasters that are likely to occur. The list below contains some of the names and the month these events take place. This list is only some of over 200 events that take place annually.

List of Annual Special Events in Sioux Falls

Event Date	Event
March	St Patrick's day Parade
March	St. Patty's Day Mile
May	MS Walk
May	Race For Hope
May	Girls on the Run
May	Cinco de Mayo
May	Race against Breast Cancer
May	NAMI Walk
June	Optimist Fishing Derby
June	Great Balloon race
June	Hy-Vee Iron Kids
June	Festival of Cultures
July	Mayor's Fourth of July Picnic & Parade
July	Family Wellness Achieve 5K
July	Hot Harley Nights
July	Hot Summer Nites
July	Jazz Fest
July	PRIDE Festival
August	MS Walk
August	River Fest
August	President's Bowl 5K
August	Presidents Bowl
September	German Fest
September	Sidewalk Arts Festival
September	SF Marathon & Half Marathon
September	Walk to end Alzheimer's
September	Susan G Komen Race for the Cure
October	Augie Homecoming Parade
October	Zombie Walk
November	Run for Food -Thanksgiving Day Run (Banquet)
November	Jingle Bell Run
November	Parade of Lights

Actions Taken

Previously defined planning zones were recognized as ineffective for planning and data analysis purposes in 2009. At that time, Sioux Falls Fire Rescue redesigned the City's planning zones into grid-based approximate half-mile by half-mile areas.

Target Hazards have been identified throughout the community and pre-plans are completed based on these hazards. Each planning zone sheet identifies the specific Target Hazards within that zone. Sioux Falls has contracted with Verizon Wireless to increase bandwidth for information exchange. Crews are able to access Target Hazard information via mobile computers in each apparatus with wireless connectivity.

Sioux Falls Fire Rescue has compiled totals for specific incident types for each planning zone. Incident types include Residential Fires, Other Structures, Rubbish/Dumpster Fires, Mobile Fires, Grass Fires, Other Fires, Hazardous Material Responses, Other Hazardous Responses, Rescue and EMS calls. The specific volume of each incident type is mapped in each planning zone sheet within this document.

Sioux Falls Fire Rescue uses this information to target specific planning zones in high risk areas as a way to reduce loss of life and property due to fires. One example of this is our free smoke detector program where crews visit citizens door-to-door in residential communities offering free installation of smoke detectors and replacement batteries. Over the course of the program, SFFR has distributed over 19,498 free smoke detectors and batteries. Crews are able identify high risk areas within their territory through this program.

Planning zones NE 2B, 3B, 2A, 3A, SE 2A, and 3A have been identified as an area of concern due to a large non-English speaking (Hispanic) population. Sioux Falls Fire Rescue is working with the Hispanic community (churches, radio stations, and key stakeholders) to increase the awareness of the Hispanic population.

Public Education is provided throughout the community to educate citizens in all planning zones in the reduction of fires in programs.

Planning zones NW1A, NW2A, NE1A, NE2A, SW1A, SW2A, SW1B-51, SW2B-51, SE1A, SE2A-51, SE1B-51, SE2B-51 were targeted in 2007 for increased inspections due to citizen complaints regarding property owners not effectively caring for rental properties and the upswing of crime in the area.

Targeted community resilience efforts are planned through several analysis steps. Community demographics, residential construction components, historical fire behavior, regional fire deaths data and needs analysis are used as means to identify and select geographical neighborhoods for targeted smoke alarm campaigns. Collaborating with

other city departments, media outlets, charitable organizations and public and private donors, neighborhoods are canvassed en masse and provided with an all hazards approach to home safety.

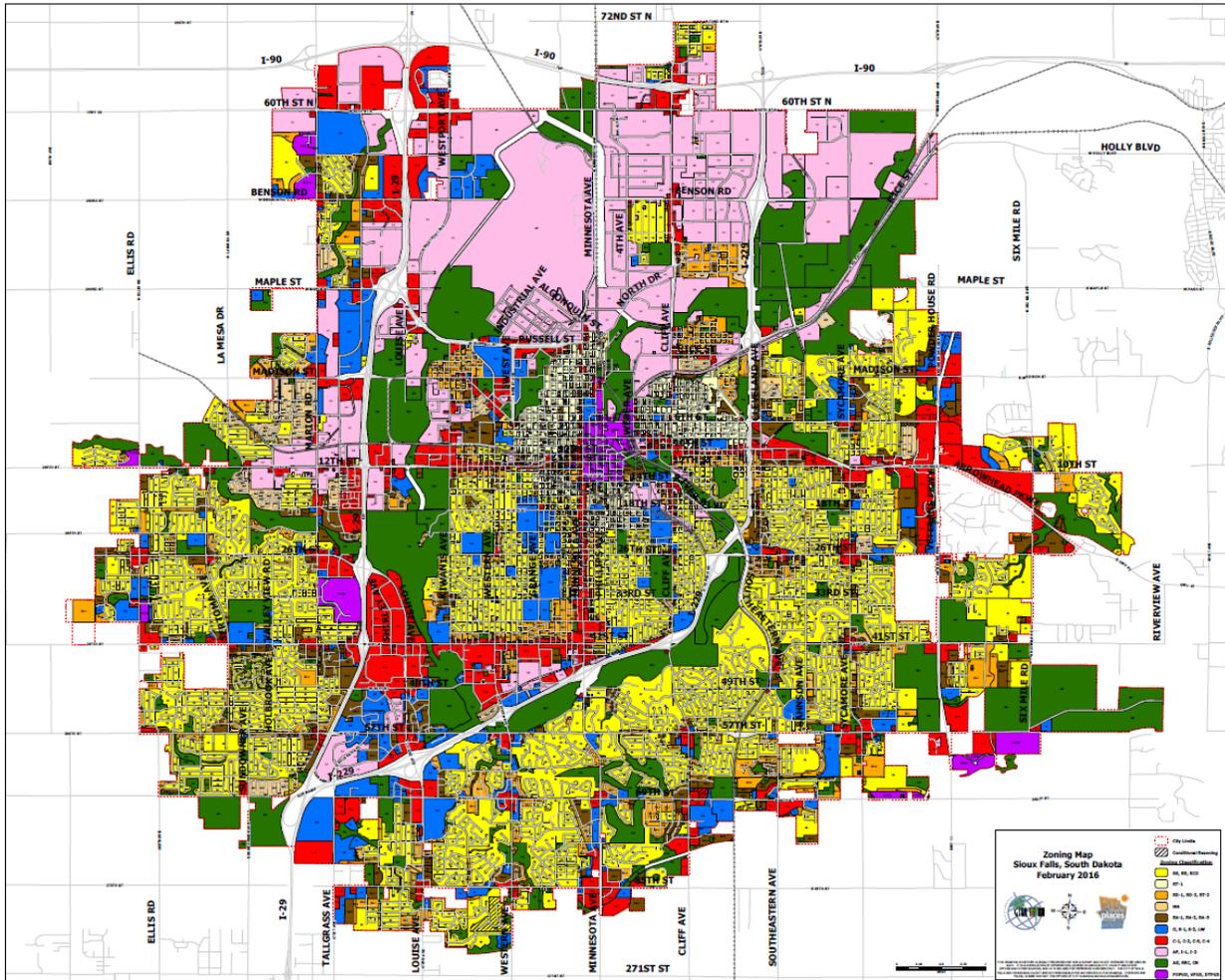
Sioux Falls Fire Rescue has a Public Access Defibrillator program in place and has located nearly 700 of these life saving devices throughout the community. The Sioux Falls Police department has placed AEDs in all of their patrol cars. The Sioux Falls Community is nationally recognized for its AED program. Sioux Falls and the surrounding communities are a PulsePoint protected community with the goal of enhancing survivability in sudden cardiac events by the use of a smartphone technology to bring early intervention at cardiac events.

Additional planning zones have been established due to lack of hydrants within areas of the city. Planning zones NE 4C, 5C, 4D, 5D, 6D, 5E, 6E, 7E, 7F, 8F, 8G, SW 6S and Wayne Township have Tenders automatically responding due to water needs.

Water rescues are a constant concern for SFFR at Falls Park. In response to a double drowning in 2013, SFFR placed pre-determined anchor points to assist in rescue efforts. The primary water rescue stations are located in the middle of the city.

The community can be impacted by flooding and specific planning zones have been identified as at risk. Specific planning zone sheets identify additional risk information. Also identified are community shelters outside of the flood plain area.

Physical Assets Protected Community



Fire Management Zones

See appendix A

Individual Buildings

All commercial occupancies in the City of Sioux Falls are surveyed annually. The information from these surveys is entered into Aegis Fire records.

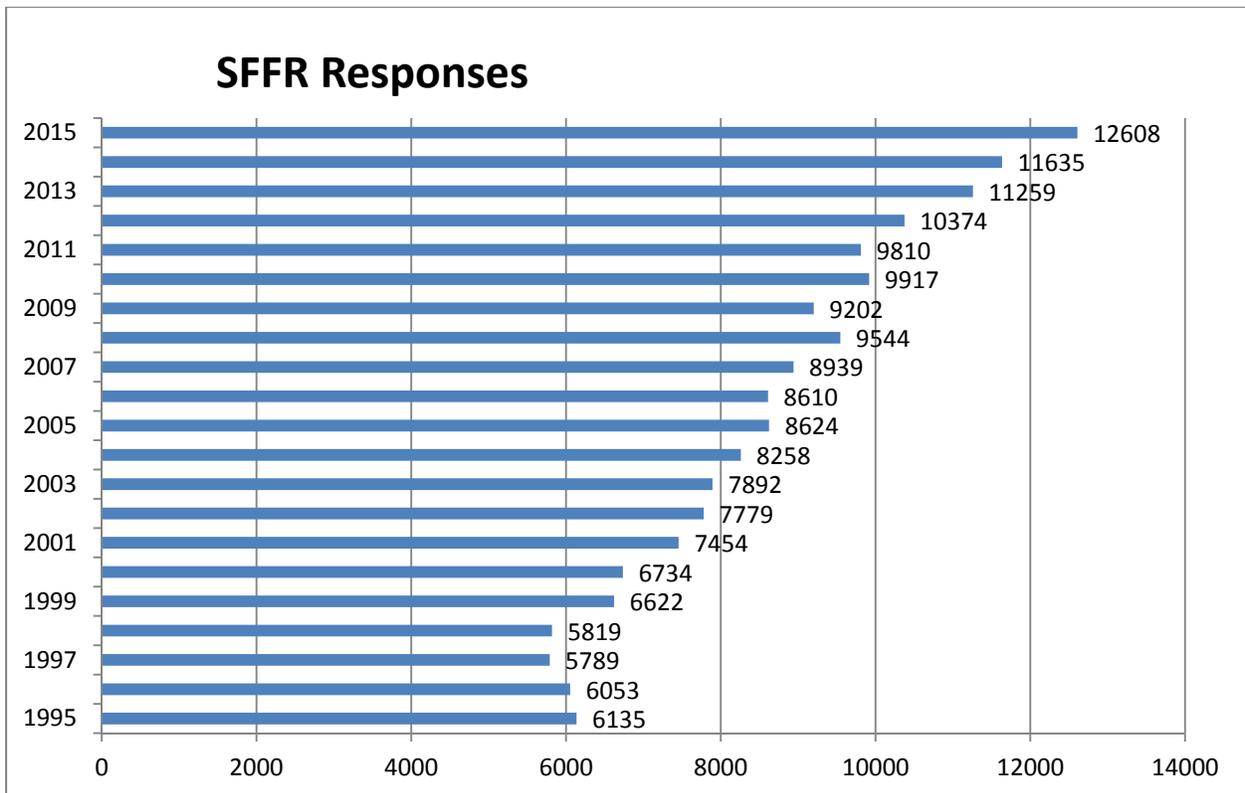
Development and Population Growth

See Component A

Service Demand

Response Data

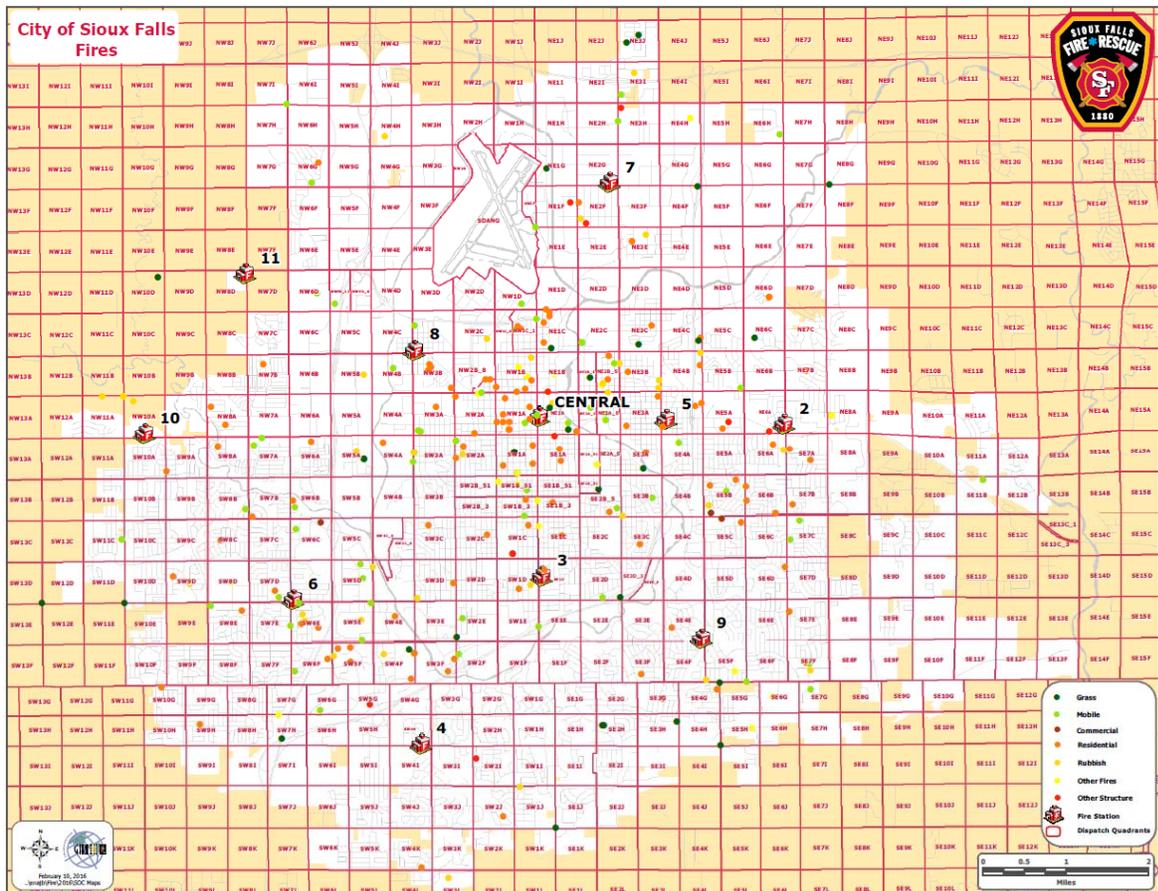
The following chart shows a total of all calls for service since 1994 to the present. On average, SFFR has responded to 30.38 calls per day for the last three years.

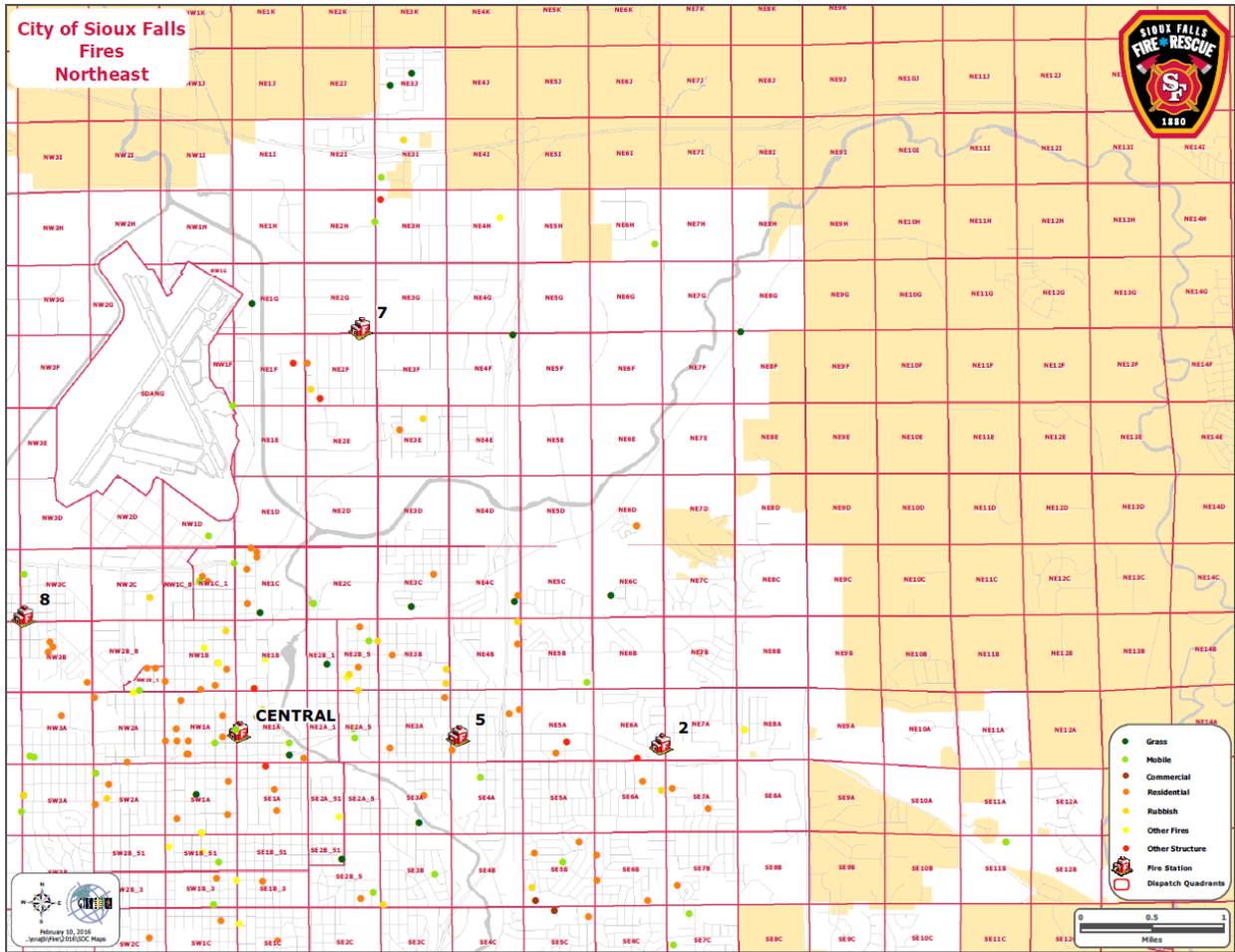


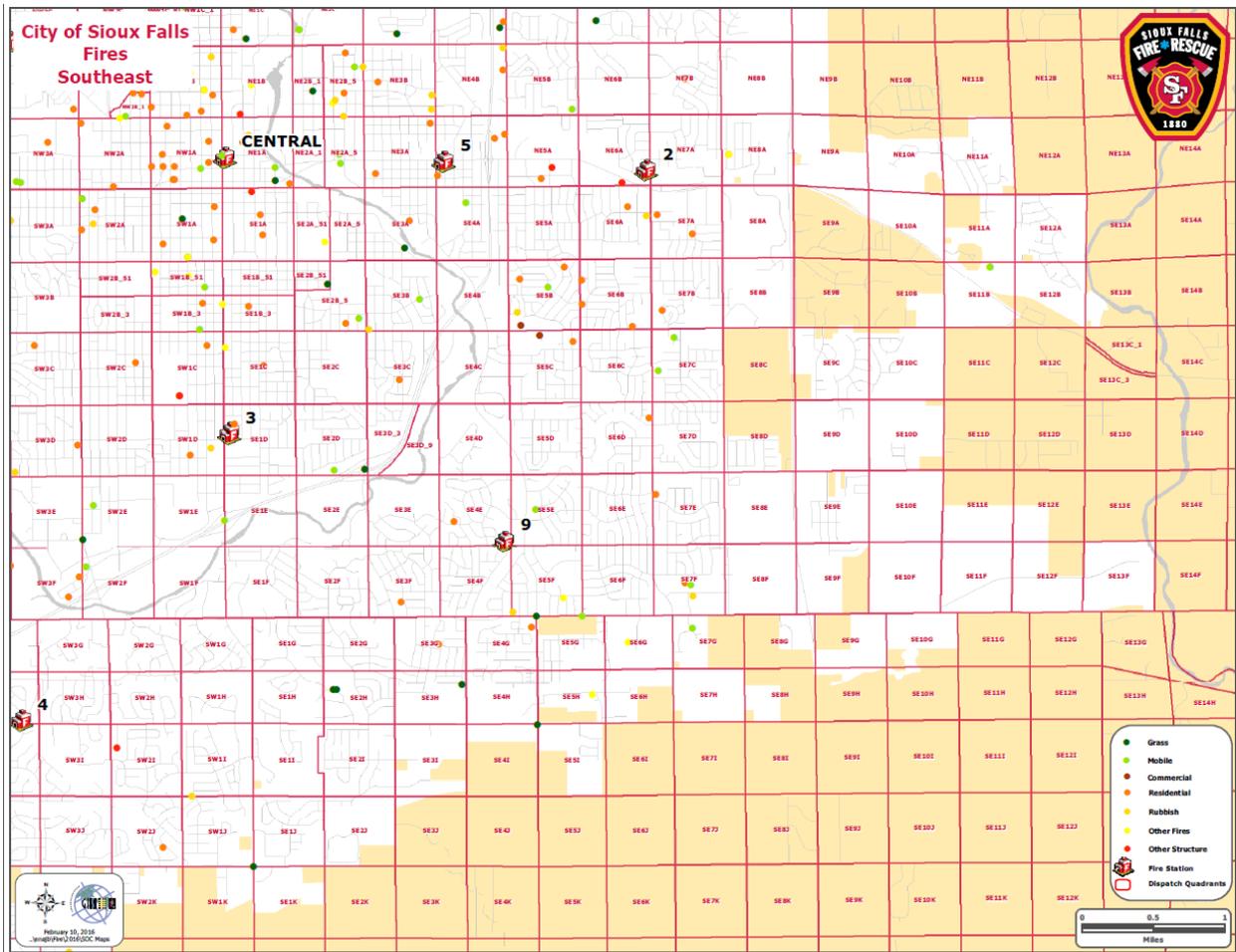
Fires

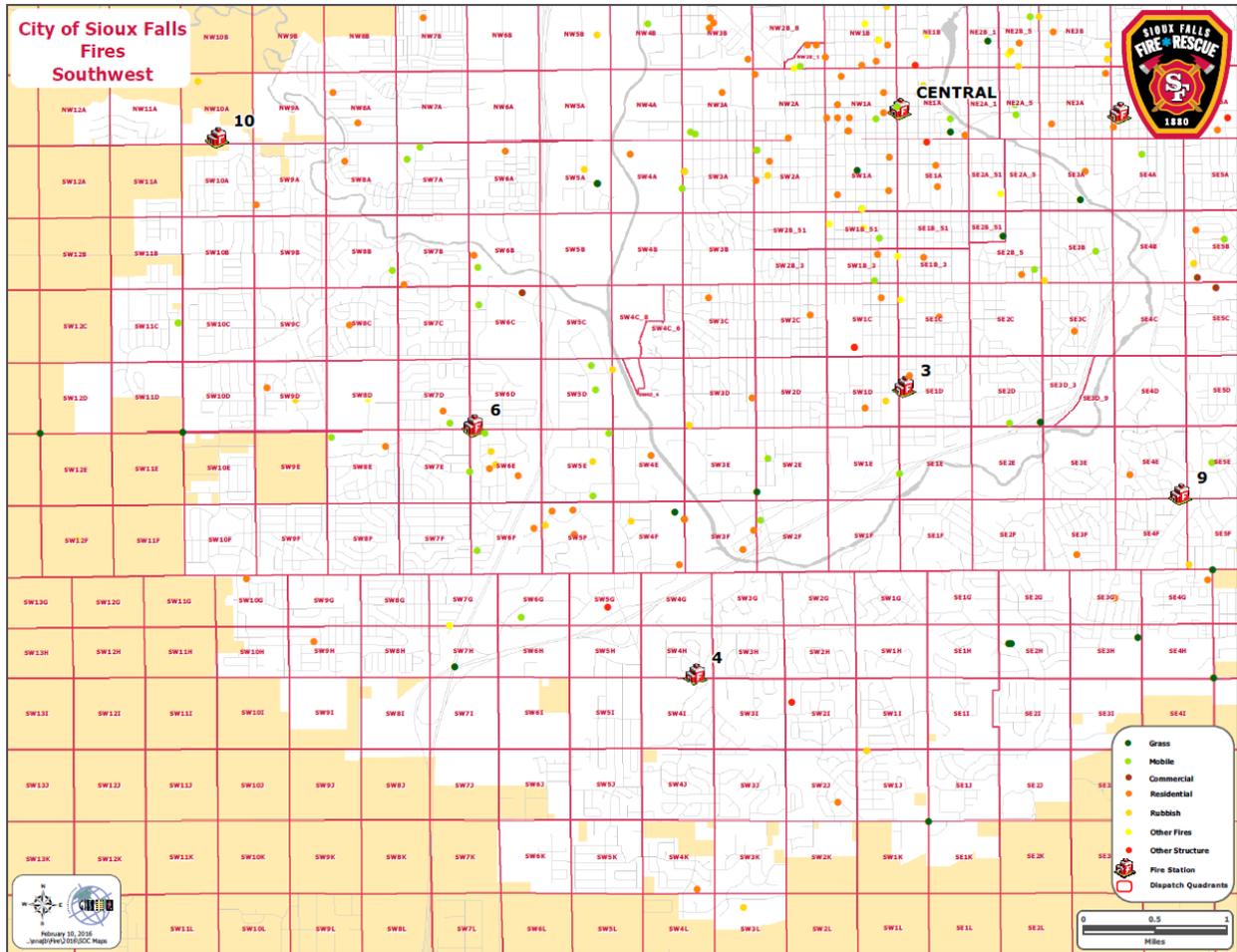
On average, 139 structure fires have occurred for each of the last three years, resulting in less than one structure fire every three days. The number of Fire incidents has decreased by 10% in the last three years.

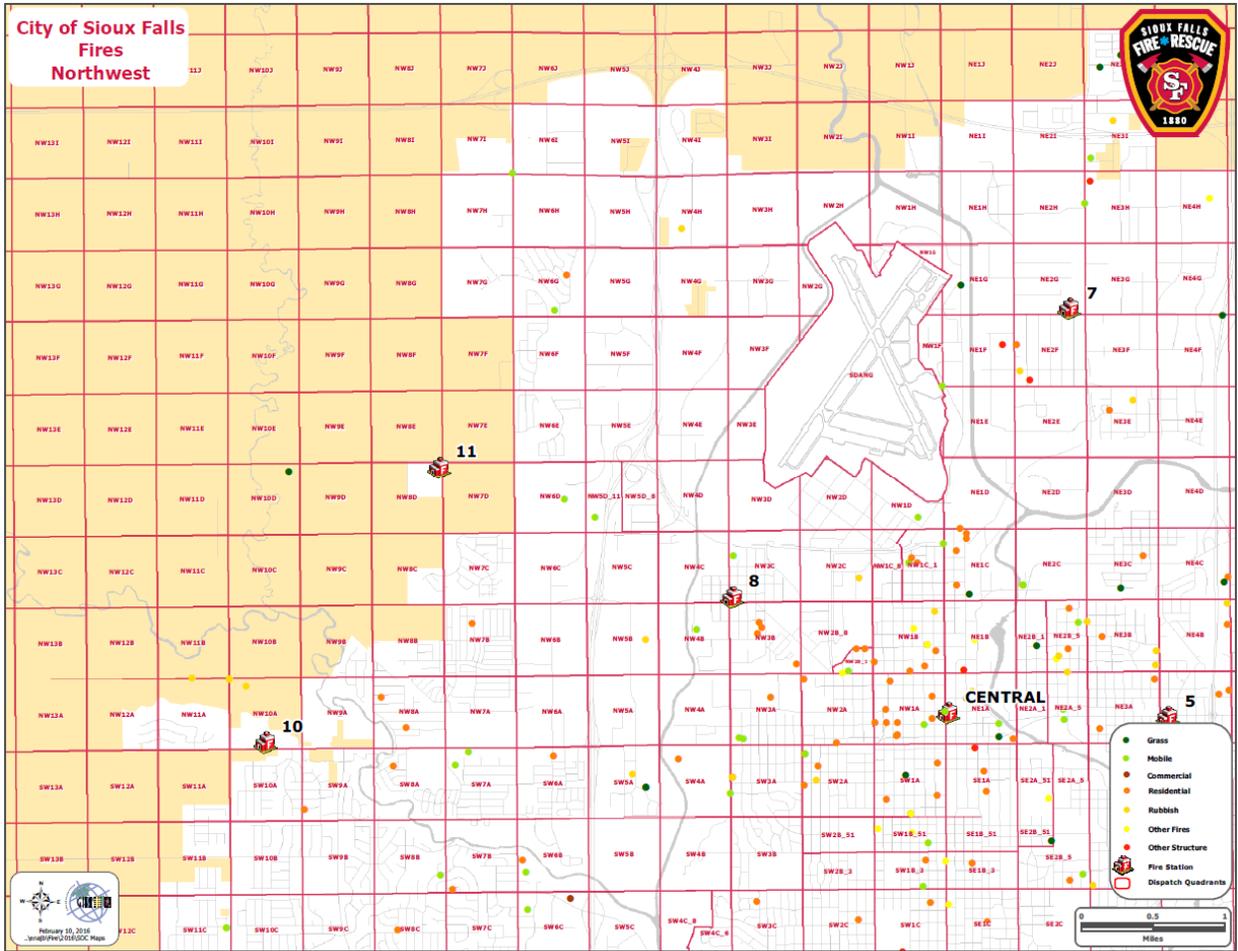
Frequency of Fires										
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Residential Fires	115	120	133	131	124	125	151	116	104	112
Other Structure Fires	45	48	49	39	37	64	46	30	32	22
Automobile	99	87	75	73	66	81	77	91	82	64
Brush	38	27	27	14	16	30	84	20	28	31
Trash	30	39	25	15	25	49	48	32	36	36
Miscellaneous	37	33	44	36	38	33	42	36	34	29
Totals	364	354	353	308	306	382	448	325	316	294







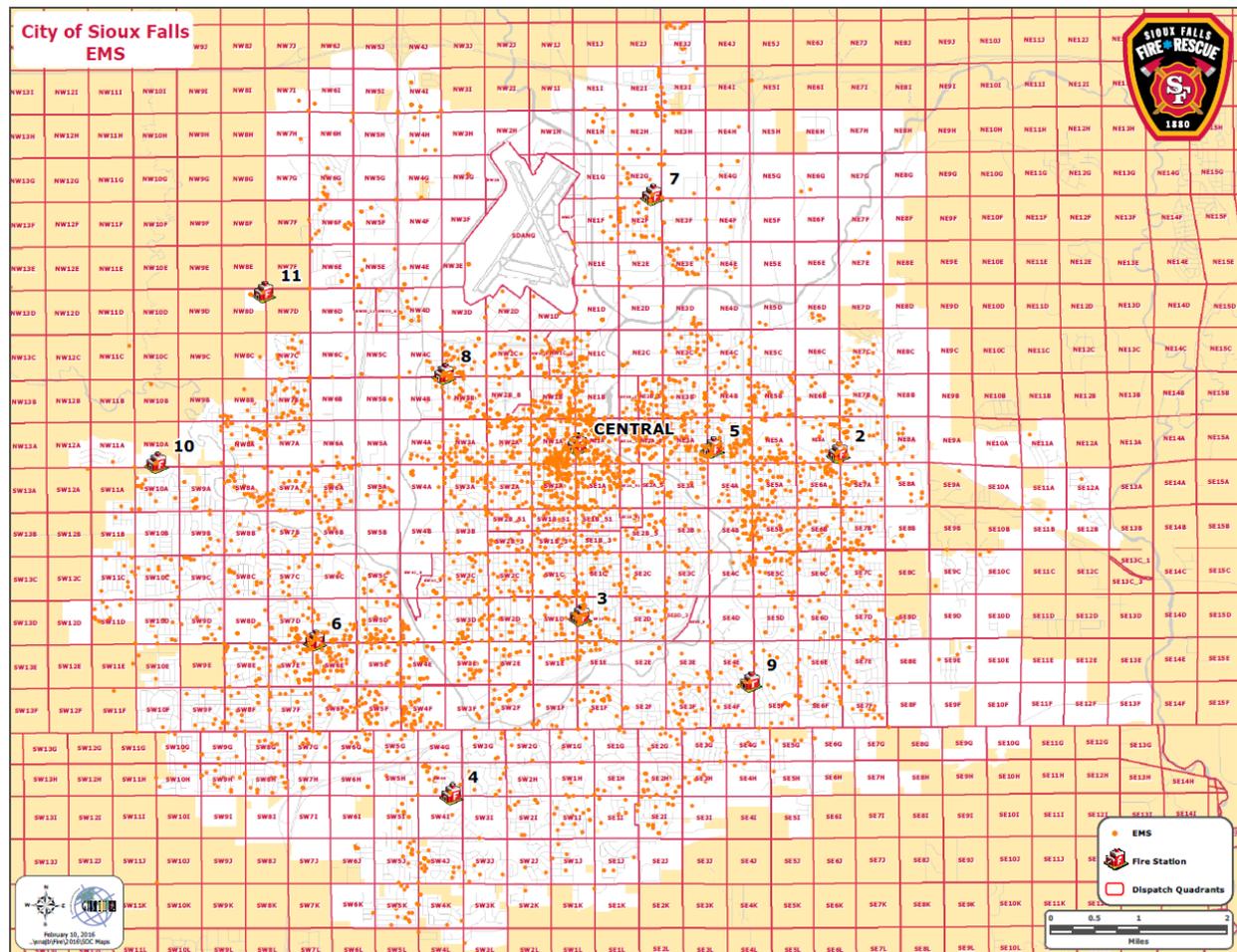


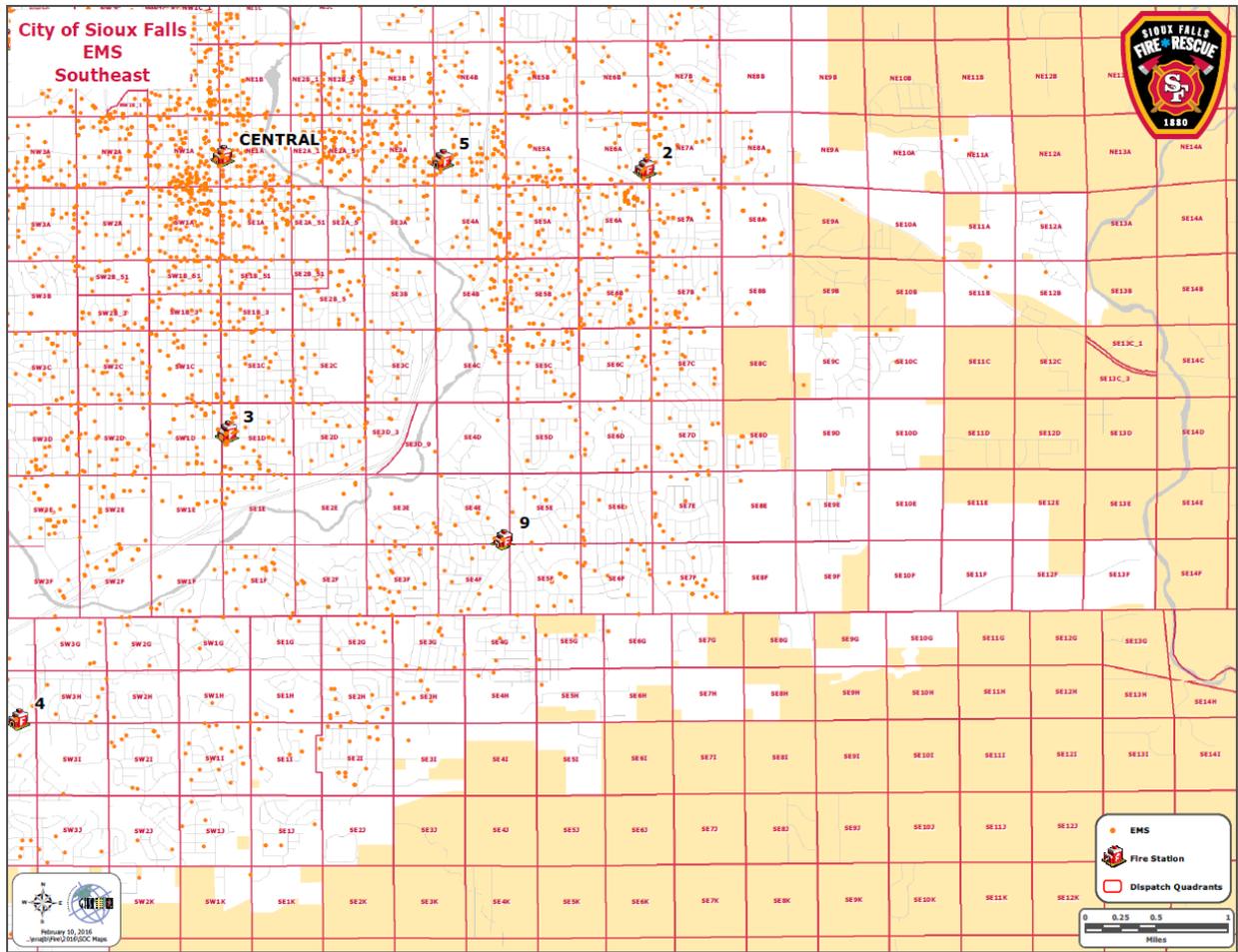


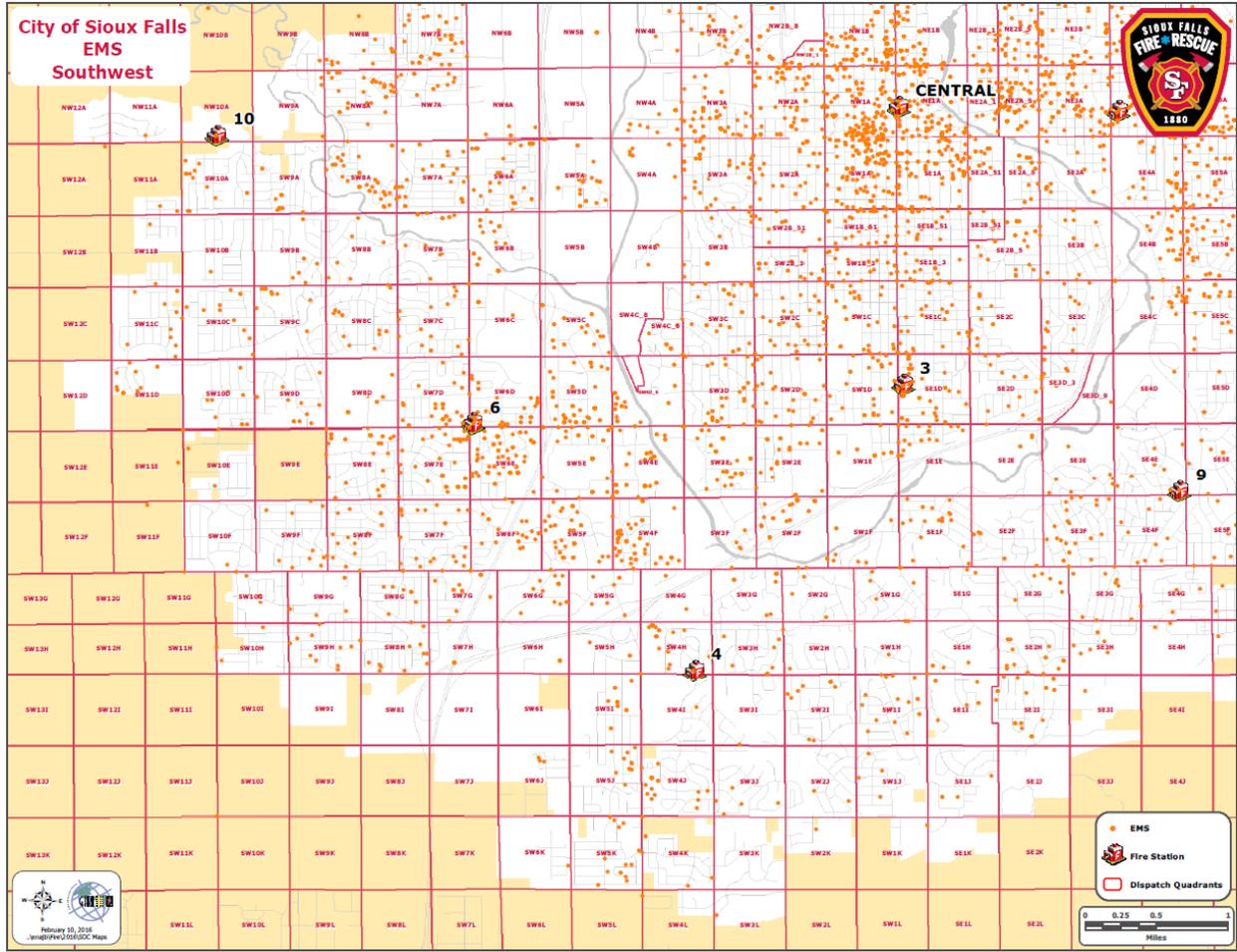
EMS

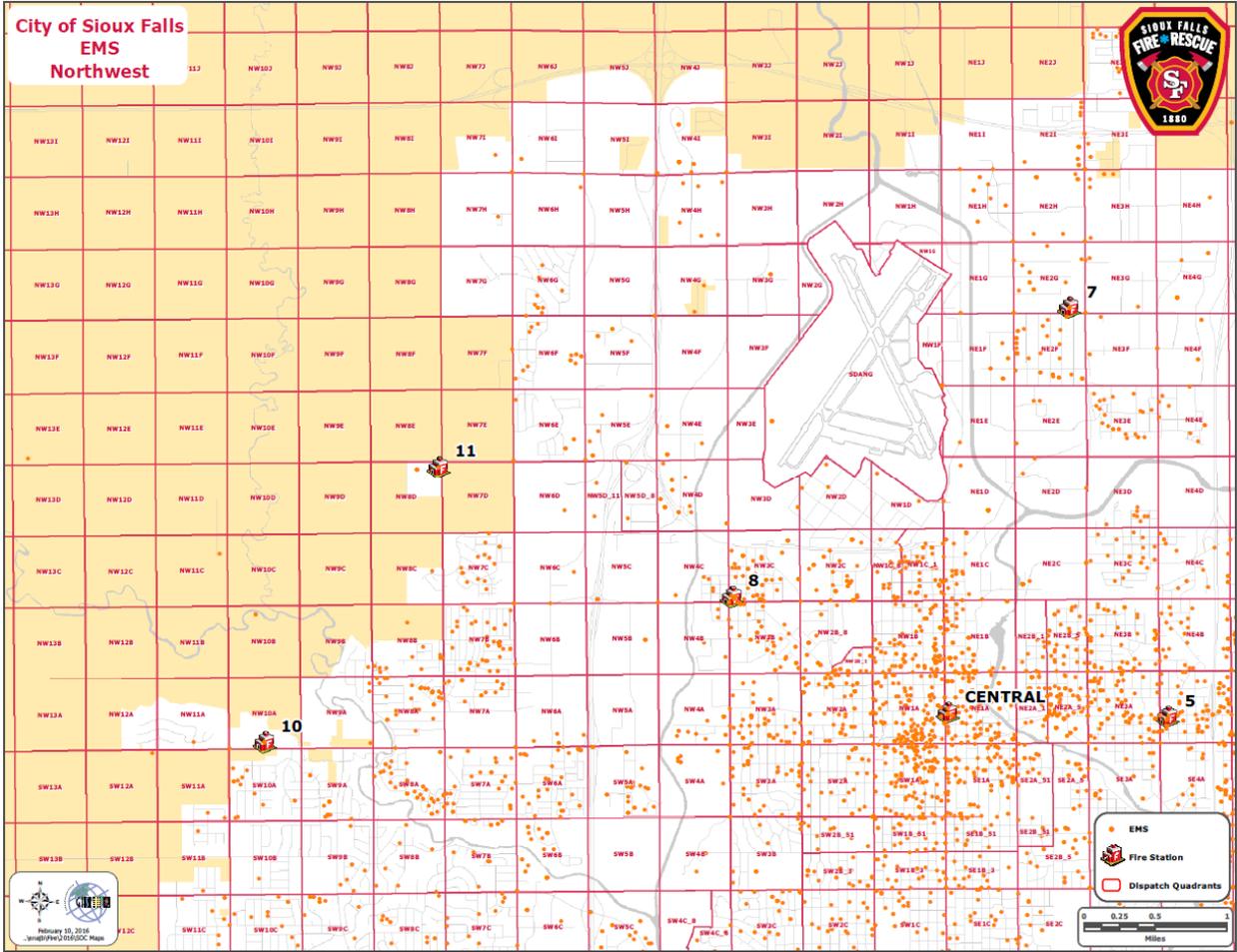
As is the case of other fire departments across the nation, the largest percentage of emergency calls in Sioux Falls is for Emergency Medical Services (EMS). Responses are steadily increasing each year:

Frequency of EMS Calls										
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
EMS Calls	4,834	4,900	5,321	5,225	5,610	5,314	5,732	5,809	6,227	6,793
Daily Average	13.24	13.42	14.58	14.32	15.37	14.56	15.70	15.92	17.06	18.61







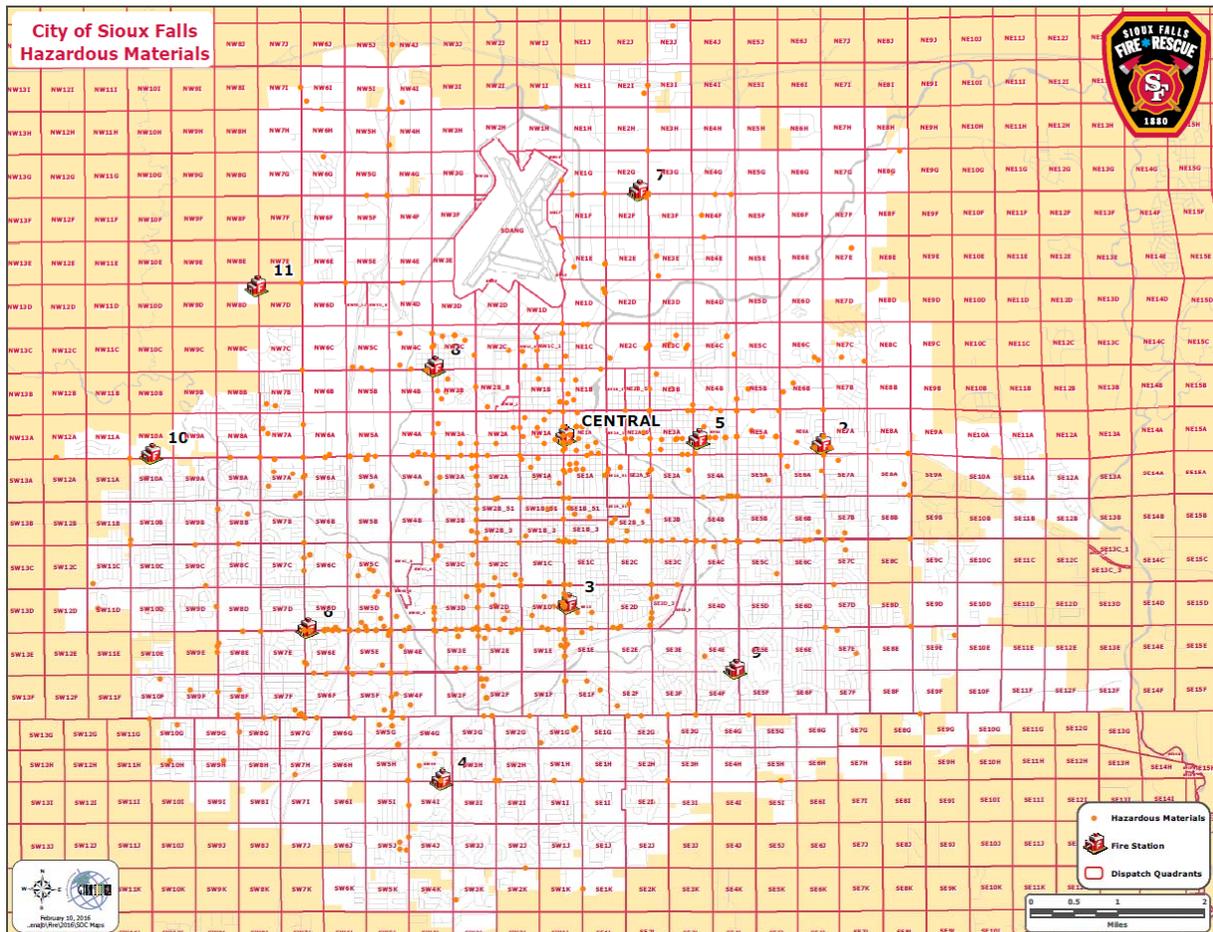


HazMat

On average, 715 hazardous materials incidents have occurred for in the the last ten years, resulting in 1.96 incidents per day.

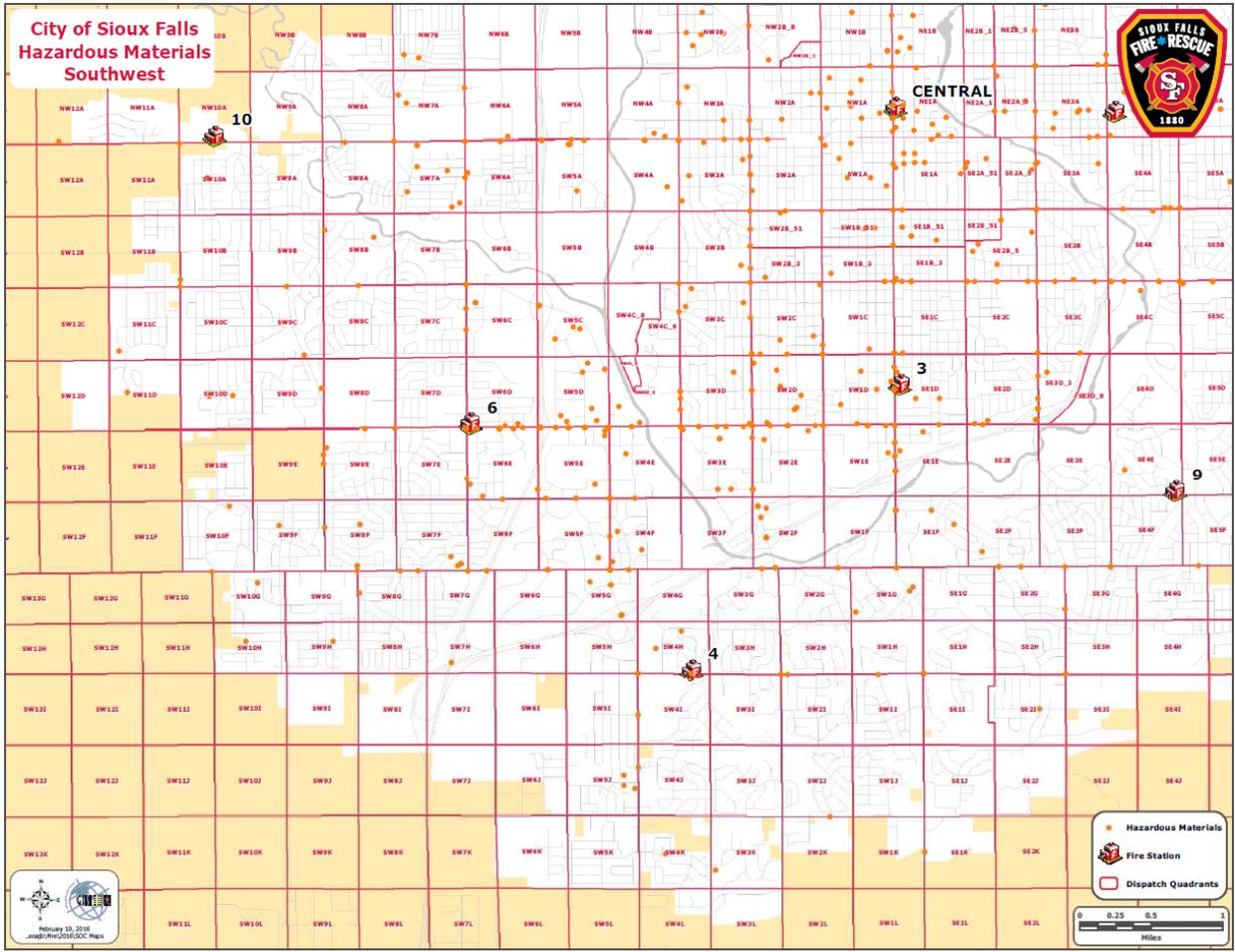
In addition, an average of 222 hazardous condition incidents have occurred for each of the last three years, resulting in .61 incidents per day.

Frequency of Hazardous Materials/Conditions Calls										
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Hazardous Materials(Low) (spills, leaks, etc.)	636	691	686	653	608	737	690	784	710	745
Hazardous Materials (Moderate or Higher)				2	25	55	91		23	15
Hazardous Conditions (arcing/down wires, etc.)	146	163	172	144	216	228	188	502	217	243

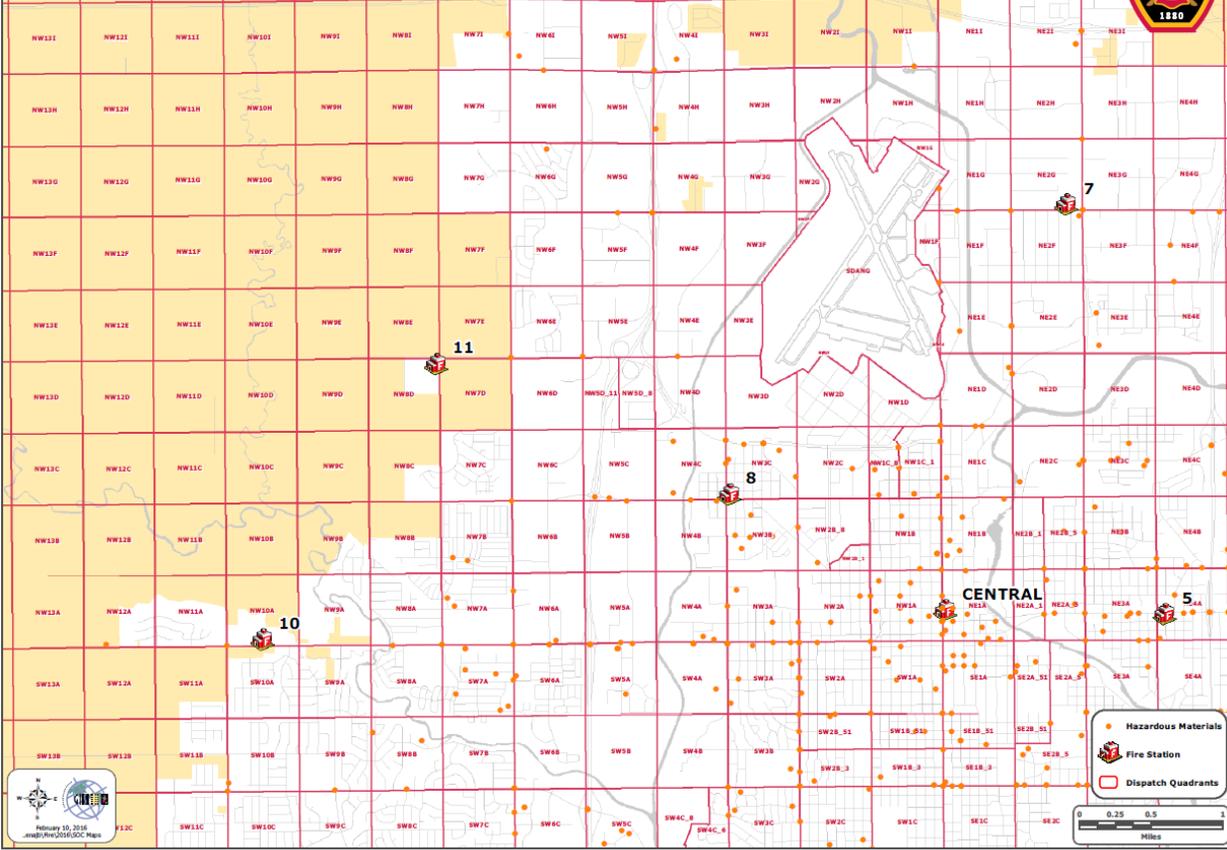








**City of Sioux Falls
Hazardous Materials
Northwest**



- Hazardous Materials
- Fire Station
- Dispatch Quadrants

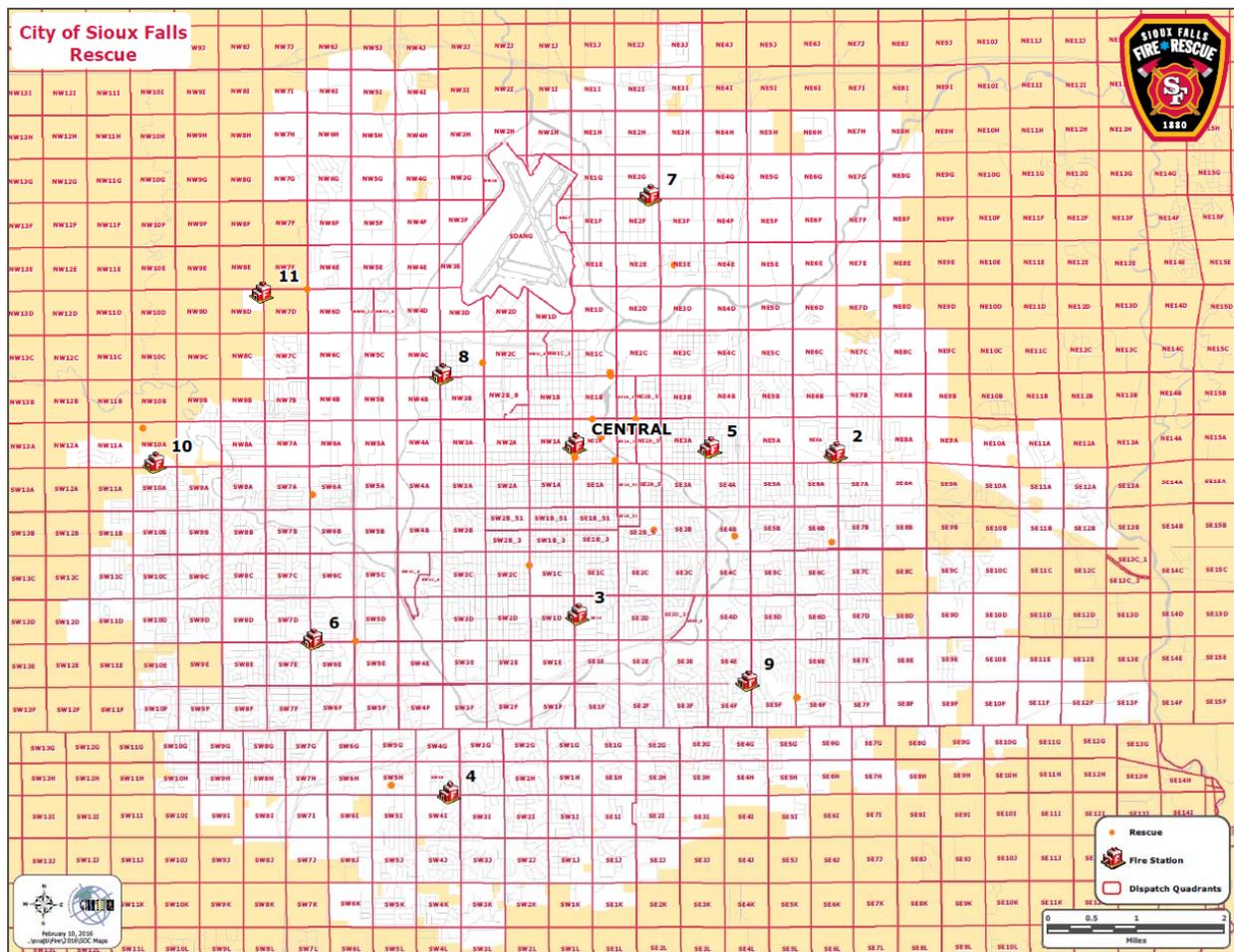
0 0.25 0.5 1
Miles

Technical Rescue

On average, 11.6 technical rescue incidents have occurred for each of the last ten years, resulting in less than one technical rescue incident a month .

On average, 17 technical rescue incidents have occurred for each of the last ten years, resulting in approximately one extrication incident every 3 weeks.

Frequency of Technical Rescue Calls										
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Technical Rescue	16	13	3	1	14	23	7	4	17	18
Extrication	20	15	22	10	26	4	26	25	19	6
Totals	36	28	25	11	40	27	33	29	36	30

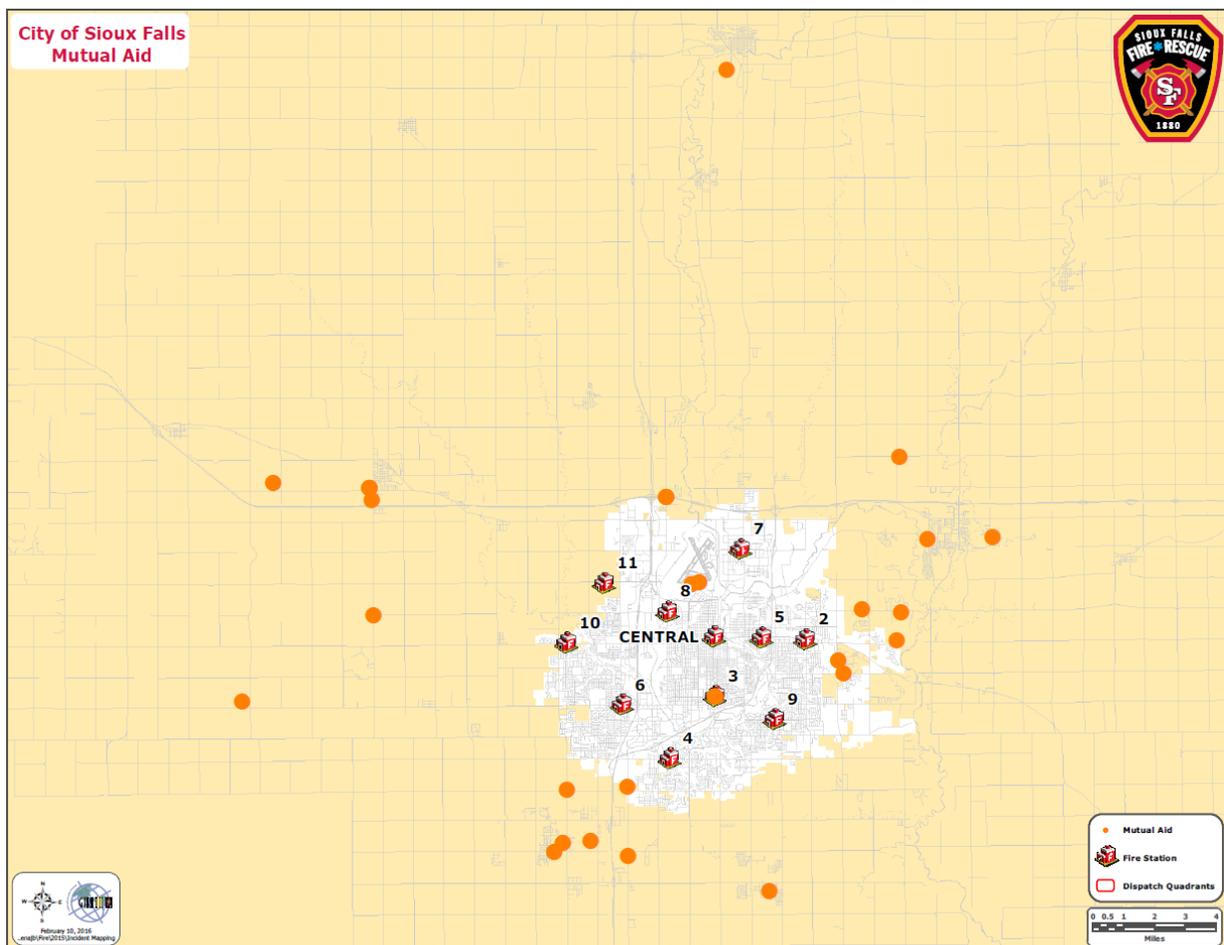


Out-of-City Responses

SFFR has entered into mutual and automatic aid agreements with neighboring communities in two counties. In November 2004, SFFR entered into an agreement as the primary provider of fire and rescue services to the citizens of Wayne Township. We also have regional response agreements for Hazardous Materials/WMD and Technical Rescue. We have entered into a agreement with the State of South Dakota Department of Homeland Security to provide all-hazards response throughout the State if requested by the State Duty Officer. We also signed an agreement with the State of South Dakota to provide wildland firefighters when needed.

On average, 38 mutual aid responses have occurred for each of the last ten years. Automatic aid agreements are for structure fires only and Wayne Township responses are not included since we contract the service.

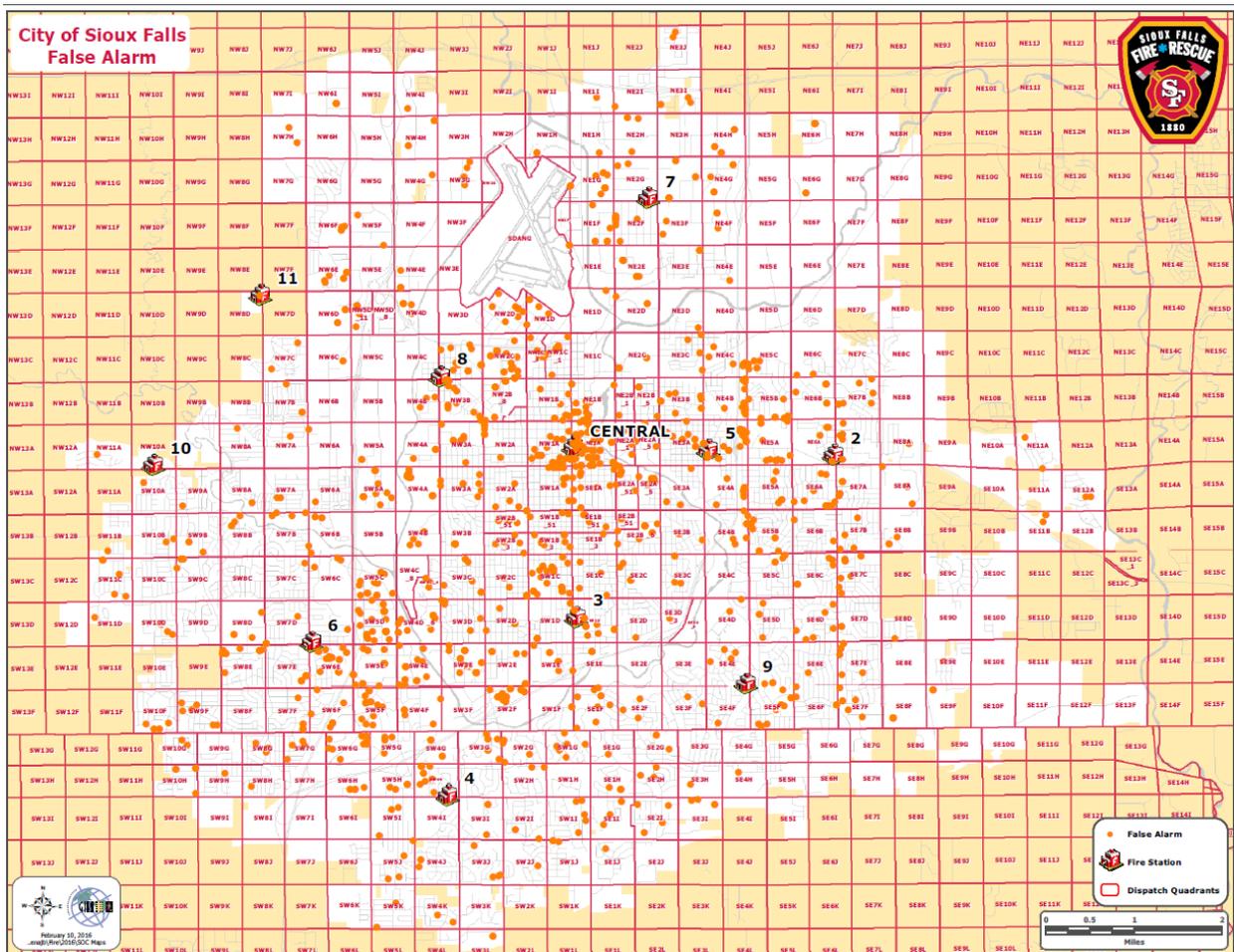
Frequency of Out-of-City Responses										
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Out-of-City	31	42	38	34	34	27	51	39	51	33

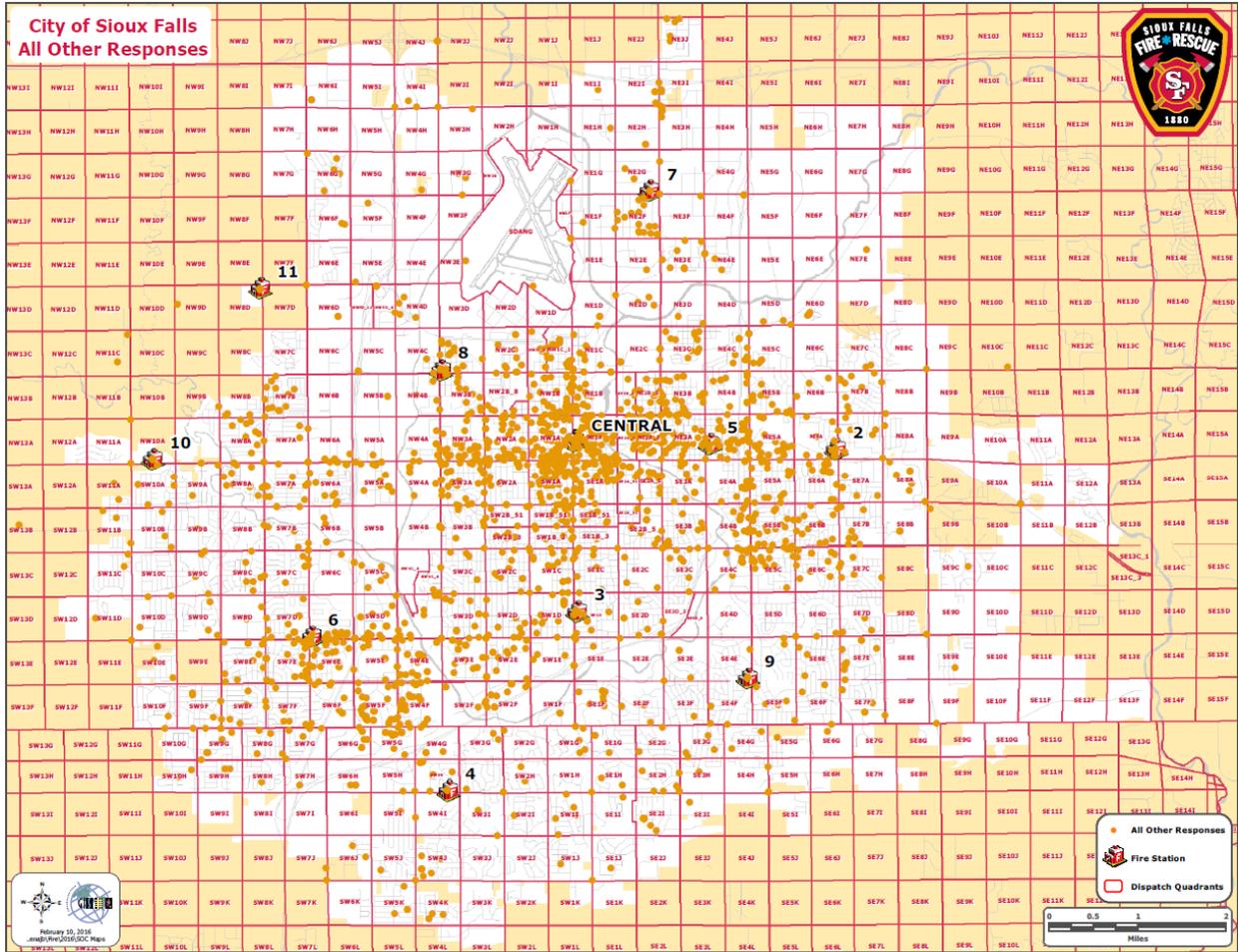


Miscellaneous Calls

A large number of responses occur each year due to unintentional alarm activations and system malfunctions (false alarms). In addition, there are a large number of other responses due to smoke scares, lockouts and other responses. The intent is to show probability of a call—other than a call type previously demonstrated—occurring. On average, SFFR responded to 14.6 calls a day in this category for the last three years.

Frequency of Miscellaneous Calls										
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
False Alarm	1,305	1,539	1,649	1,478	1,621	1,600	1,507	1,599	1,599	1,587
Other Responses	1,294	1,250	1,325	1,347	1,456	1,703	1,921	2,205	2,350	2,900





Five Highest Fire Loss Types by Property Use in 2015		
Property Use	Count of Fires	Estimated Loss
One- or Two-Family Dwellings	64	\$1,749,214
Multifamily Dwellings	44	\$2,516,055
Storage in Structures	7	\$258,400
Hotels & Motels	3	\$36,700
Mercantile/Business	3	\$18,540
Public Assembly	4	\$2,450

2015 Response by Day of Week	
Sunday	1,663
Monday	1,880
Tuesday	1,720
Wednesday	1,634
Thursday	1,873
Friday	1,838
Saturday	1,758
Total Calls	12,366

Responses by Apparatus

Response Numbers by Apparatus									
Unit	2007	2008	2009	2010	2011	2012	2013	2014	2015
ALV 9	15	50	40	48	46	57	53	73	39
Battalion 1	533	606	440	573	639	641	597	605	428
Battalion 3	364	346	339	343	439	409	385	410	304
Chaplain					43	72	41	36	25
Engine 1	1527	1647	1334	1916	1659	2211	2,477	2,375	2,342
(Reserve) Engine 10	13	29	22	0	60	9	80	5	
(Reserve) Engine 20	580	324	495	177	41	13	165	24	10
(Reserve) Engine 21	157	130	139	0	136	193	226	1	14
(Reserve) Engine 22	259	0	32	7			20	410	416
Engine 51			368	779	579	681	572	771	709
Engine 9	428	639	406	642	591	436	712	761	762
EUV 1							2	4	7
EUV4									1
(Reserve) Engine 3	1196	1377	723				0	0	
Hazmat 2	18	26	33	108	331	317	353	441	542
Hazmat 5	17	22	13				0	0	
Hazmat 6	50	51	35	409	628	651	716	746	16
Hazmat 7	17	14	25	158	237	298	303	311	292
MCP 1					12	20	16	10	2
OI							250	232	295
(Reserve) Rescue 10	526	661	349				0	0	
Rescue 4	789	745	747	618	653	709	589	614	480
(Reserve) Rescue 40	0	0	140	204	447	136	414	415	267
Rescue 5	1427	1680	1508	1691	1857	1884	1,827	1,363	1,083
Rescue 8	1047	1166	1073	1217	1480	1539	1,524	1,195	830
Squad 3			201	639	547	551	548	606	624
Squad 6									899
Squad 9					81	127	25	40	3
Tender 10				386	625	674	633	686	641
Tender 2				5	130	316	74	63	38
(Reserve) Tender 8	7	7	0				0	0	
(Reserve) Tender 9	12	9	12				0	0	
Truck 2	1090	1145	937	685	712	860	903	694	571
Truck 3	504	643	827	1438	1486	1306	1,499	1,349	823
(Reserve) Truck 30/34	0	141	204	220	202	481	384	240	363
Truck 6	1342	1457	1609	1478	1568	1559	1,536	1,399	860
Truck 7	650	629	532	599	684	759	720	536	275
Truck 11									221
(Reserve) USAR 10	19	14	6				0	0	
(Reserve) USAR 4							1	0	
USAR 5			0	379	654	770	875	945	1,033
USAR 8	8	5	10	19	14	20	42	559	637
Wildland 1			19	19	31	28	35	21	27
Wildland 4	7	23	0	14	88	237	209	203	314
(Reserve) Wildland 9	9	14	4					0	
Wildland 10						60	50	29	28
Wildland 11									131
Yearly totals	14618	15608	14631	16781	18711	20036	20869	20,186	18,367

Responses listed by number of calls by the time of day 2015

0000 - 0100	364
0100 - 0200	317
0200 - 0300	299
0300 - 0400	262
0400 - 0500	240
0500 - 0600	261
0600 - 0700	279
0700 - 0800	458
0800 - 0900	466
0900 - 1000	544
1000 - 1100	583
1100 - 1200	590
1200 - 1300	661
1300 - 1400	684
1400 - 1500	673
1500 - 1600	701
1600 - 1700	761
1700 - 1800	792
1800 - 1900	732
1900 - 2000	641
2000 - 2100	673
2100 - 2200	661
2200 - 2300	516
2300 - 2400	449
Total Calls	12,607

Civilian injuries and fatalities in 2015 by property use

Property Use	Injuries	Fatalities
One or Two Family Dwellings	9	0
Multifamily Dwellings	3	0
Storage in Structures	0	0
Vehicle Fires	0	0
Other Fires	1	0
Totals	13	0

Peak Load Staffing

Sioux Falls Fire Rescue began peak load staffing in the core area of the City in April of 2010. Our data shows that we have more calls from 08:00 hours to 20:00 hours than 20:00 hours to 08:00 hours. Our minimum staffing from 08:00 hours to 20:00 hours is 46. Our minimum staffing from 20:00 hours to 08:00 hours is 42. This staffing plan has saved the city in excess of \$1.5 million in overtime costs.

Personnel Resources

Please see Component A

Probability/Consequence

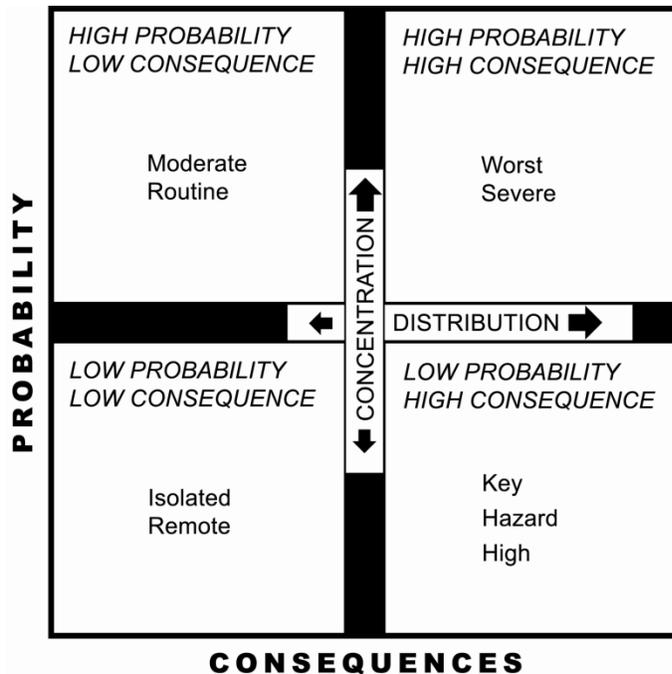


Figure 1: Probability and Consequences Quadrants

Probability and Consequences

As noted above, different quadrants require different resource commitments. The four possible relationships between structures or conditions and the distribution and concentration of resources are:

- Low Probability, Low Consequences
- Low Probability, High Consequences
- High Probability, Low Consequences
- High Probability, High Consequences

The Sioux Falls Fire Rescue risk assessment includes a definition of the differences between a single-family dwelling, a multiple-family dwelling, an industrial building, and a six-story hotel. Fire stations and apparatus are equally distributed in the community to provide an initial attack service to all. Conversely, the fire station locations and staffing patterns are prepared to respond to a worst-case scenario in the high-consequence areas to represent concentration of services.

Community Risk Analysis

The Community Risk Analysis section identifies our community risks in terms of severe, high, moderate, and low. These areas are further defined by probability and consequences.

High Risk

A high-risk area is defined as one that contains properties or hazards presenting a substantial risk of life loss, a severe financial impact on the community, or unusual potential damage to property if there is a fire and has a low probability of events.

- Examples of such areas include the following: Strip shopping centers and business centers not exceeding two stories
- Concentrated areas of revenue generating properties or high job loss to the community if business is lost
- Infrastructure facilities such as schools, city, state, and federal facilities
- Properties deemed to be of historical value to the community
- Any building with life safety and fire load beyond the reach of preconnected hose lines (200 feet)
- Concentrated areas of single- or two-story multifamily dwellings
- Any occupancy over 10,000 square feet with built-in fire protection not classified as a severe risk
- Emergency medical, rescue, special operations incidents requiring a first alarm

Moderate Risk

Moderate risk is defined as high probability and low consequences. Included are places where people live; housing units, mobile home courts, and apartment units. An area is classified as a moderate fire risk when it contains built-up areas of average size and the risk of life loss or damage to property, if there is a fire in a single occupancy, is usually limited to the occupants. In certain areas such as small apartment complexes, the risk of death or injury may be relatively high. Concentrations of property may vary, but generally will be of limited extent. Probabilities of fire events are high along with frequent, routine nonfire risks resulting in a service demand other than fire. Examples of moderate-risk areas include the following.

- Developments of generally detached single-family housing
- Apartments with preconnected hose line access (200 feet)
- Industrial or commercial buildings under 5,000 square feet without built-in fire protection
- Emergency medical, rescue, and special operations incidents requiring three units or less

Low Risk

Low risk is determined by low probability and low risk. Included are grasslands and wild land fire potentials.

Special Risk

Special risk is defined as certain areas, whether comprised of single buildings, complexes, locations, or other risks unique to the planning zone that require a first-due response beyond that which is appropriate to the predominant risk of the surrounding area. These premises or small areas should be treated as special risks and given an appropriate predetermined response.

Examples of such areas include the following:

- Isolated severe or high-risk structures when they are in other risk areas
- Railroad lines and interstate

Risk assessment for non fire responses is an additional requirement. As Sioux Falls Fire Rescue is an “all hazard” response department, non-fire related requests were also evaluated.

The criteria for each hazard are assigned as a rating of high, moderate, or low. All listed situations refer to major disasters causing loss of life, human suffering, and property damage. Day-to-day emergencies or accidents that are routinely responded to by local emergency organizations are not included.

1. The **HISTORY** rating is derived by the number of occurrences of the type of disaster under study over the past 25 years. If it has not occurred and if conditions have not changed to increase the hazard, the rating is "low" - once in 25 years; "moderate" – one occurrence in five years; “high” - two or more times per year.

2. Comparing the area at risk to the population and property density can derive estimates of **VULNERABILITY**. For example, thinly populated rural jurisdictions near nuclear power plants are considered less "vulnerable" than more heavily populated urbanized ones.

3. The **MAXIMUM THREAT** is the greatest destruction that could occur for the disaster under study. For example, with a nuclear attack, jurisdictions within a high-risk or target area receive a "high" rating; those within 30-40 miles - "medium"; and other, more remote jurisdictions - "low."

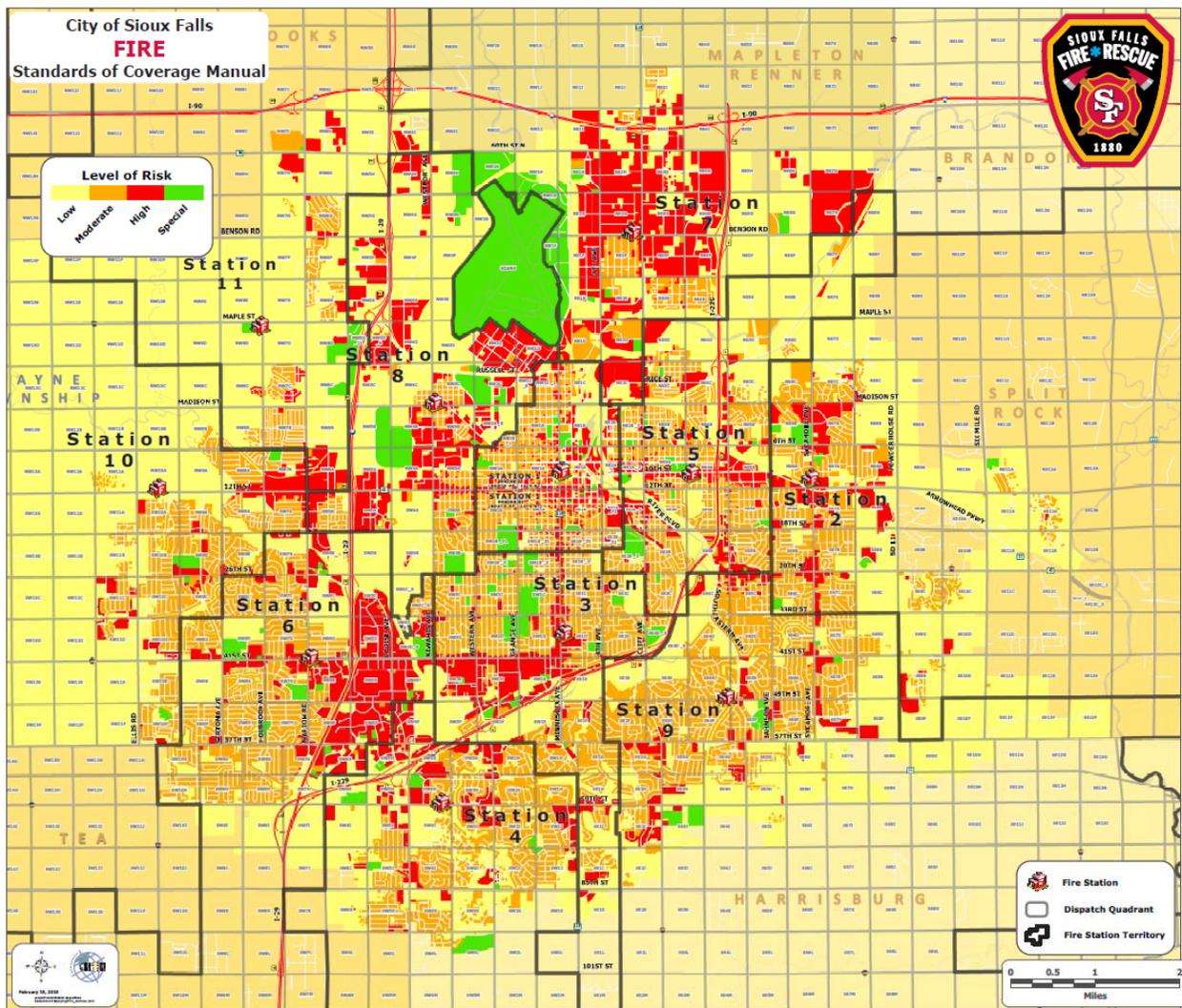
4. The **PROBABILITY** of a disaster is a subjective judgment to be made primarily by local officials. The following guide may be used:

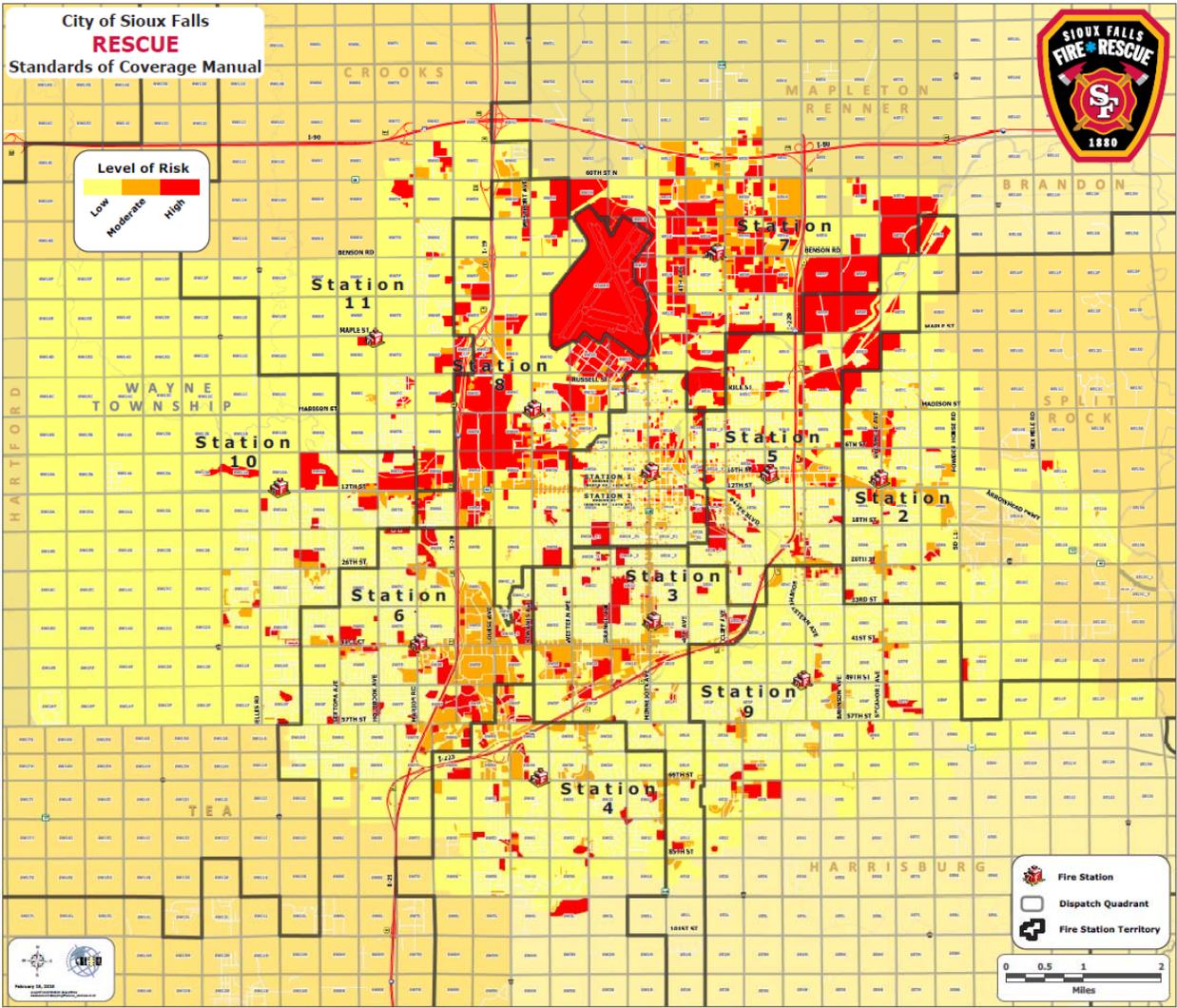
A. Chances per year greater than 1 in 10 - **"high"**

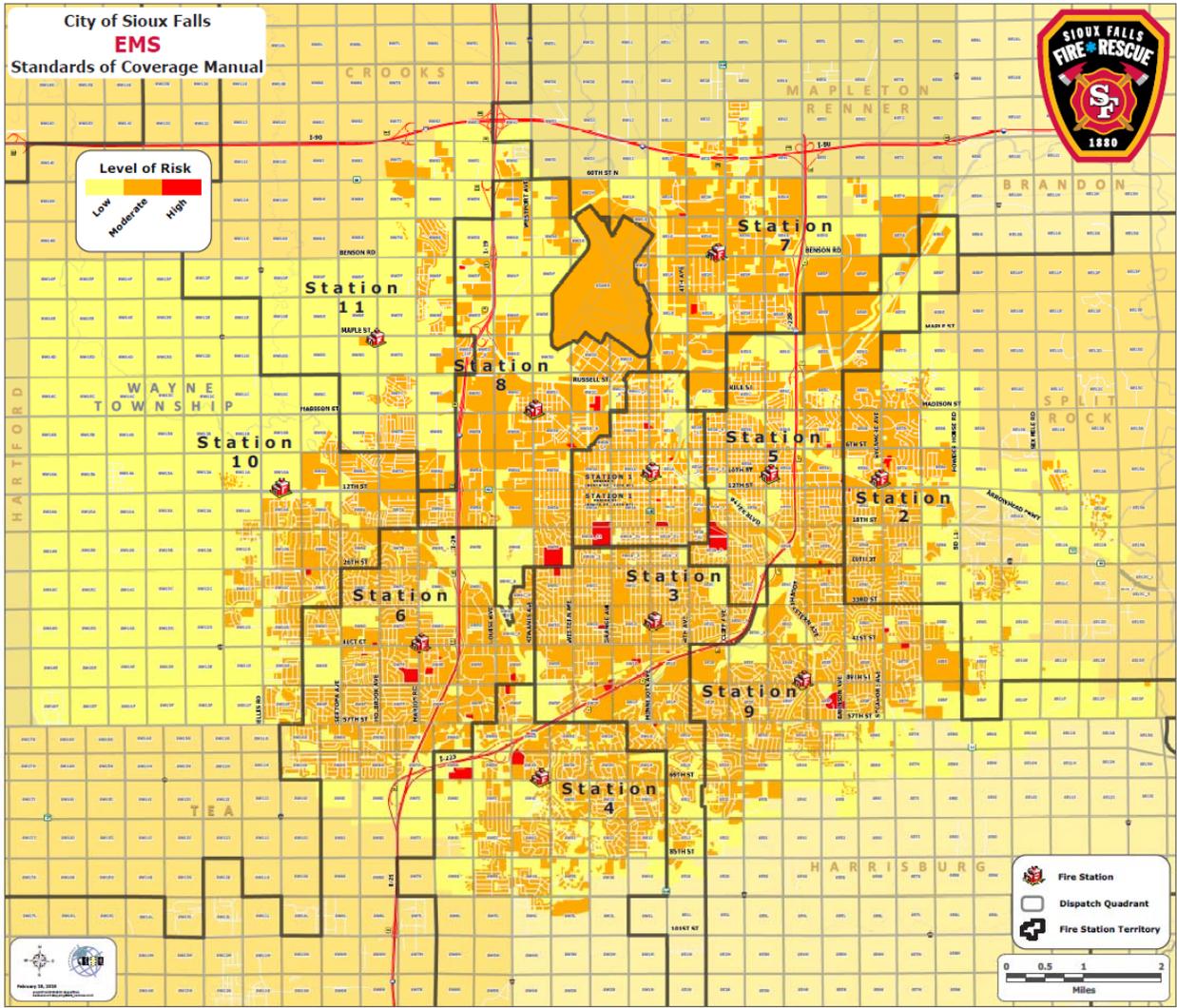
B. Chances per year between 1 in 10 and 1 in 1000 - **"moderate"**

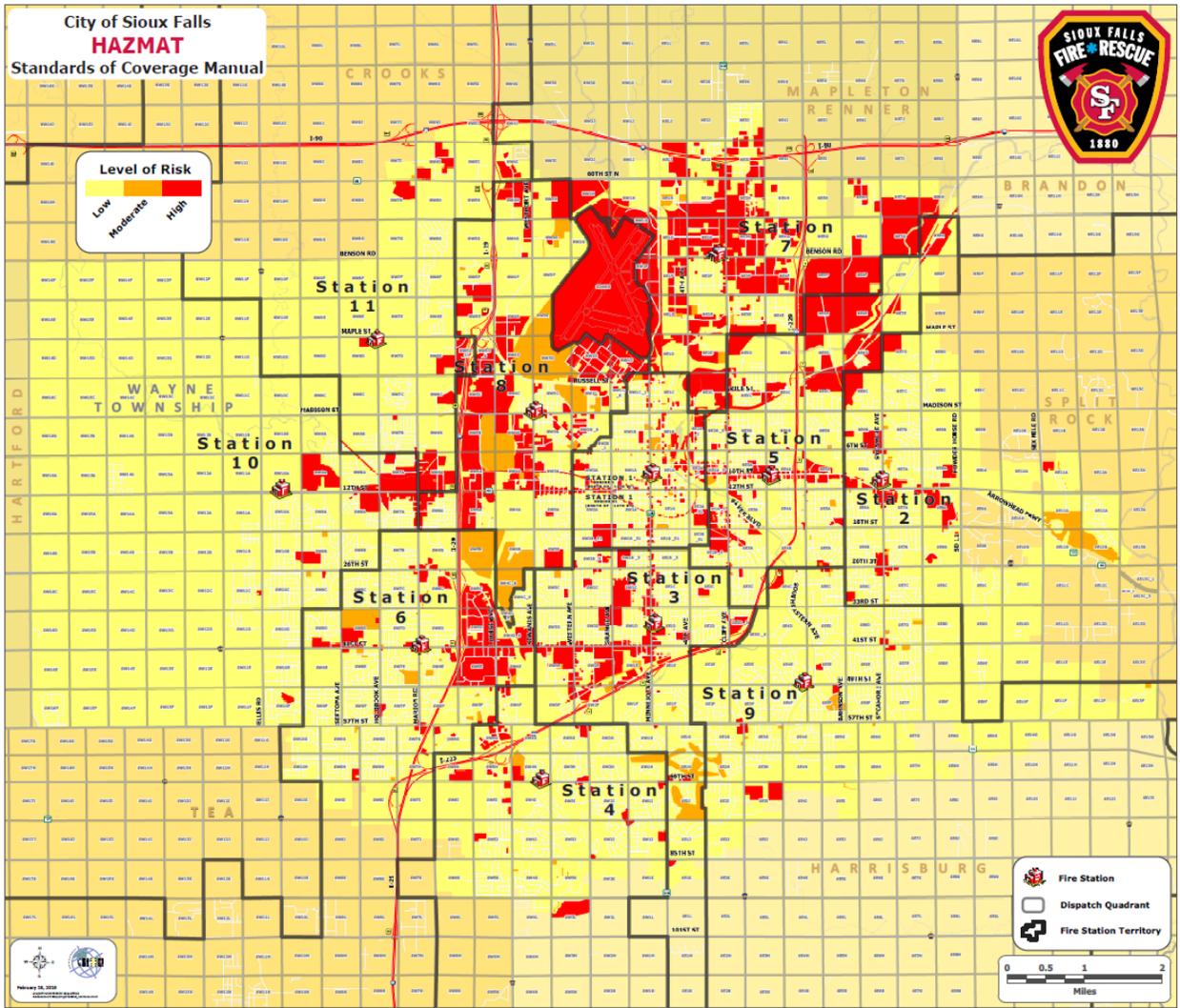
C. Chances per year less than 1 in 1000 - **"low"**

Risk Assessment Maps









Critical Task Analysis City of Sioux Falls

Fire

Low Risk Incident

Command and Safety	1
Pump Operator	1
Attack Line or EMS	2
Total	4

Moderate Risk Incident

Command	1
Safety	1
Pump Operator	1
Attack line/search & rescue	6
Water Supply	1
Rapid Intervention Team	3
Ventilation/Utilities	4
Total	17

High Risk Incident

Command	1
Safety	1
Pump Operator	3
Attack line/search & rescue	8
Water Supply	1
Rapid Intervention Team	3
Ventilation/Utilities	4
Total	21

Special Risk Incident

Command	1
Safety	1
Pump Operator/Aerial Operator	3
Attack line/search & rescue	10
Water Supply	1
Rapid Intervention Team	3
Ventilation/Utilities	6
Total	25 or more

Rescue

Low Risk Incident(simple extrication)

Command and Safety	1
Rescue/EMS	3
Total	4

Moderate Risk Incident(vehicle extrication)

Command	1
Safety	1
Pump Operator	1
Hazard Mitigation	2
EMS	4
Extrication	4
Total	13

High Risk Incident(Ice, high angle, confined space, trench)

Command	1
Pump Operator	1
Hazard Mitigation	4
Rigging/Shoring	6
Entry Team/Backup Team	4
Safety Officer	1
Total	17

Special Risk Incident(Building Collapse)

Command	1
Safety Officer	1
Search Team	5
Breach Team	7
Shoring Team	7
Total	21 or more

EMS

Low Risk Incident

Command and Safety	1
EMS	3
Total	4

Moderate Risk Incident(Vehicle Extrication)

Command and Safety	1
Safety	1
Pump Operator	1
Hazard Mitigation	2
EMS	4
Extrication	4
Total	13

High Risk Incident(Mass Casualty)

Command	1
Safety	1
Triage	7
Treatment	7
Transport	1
Total	17

Special Risk Incident(Large Mass Casualty)

Command	1
Safety	1
Triage	9
Treatment	9
Transport	1
Total	21 or more

Hazmat

Low Risk Incident

Command and Safety	1
Pump Operator	1
Hazmat Mitigation	2
Total	4

Moderate Risk Incident

Command	1
Safety	1
Technical Reference	1
Decon	2
Entry/Backup Team	4
Total	9

High Risk Incident

Command	1
Safety	1
Technical Reference	3
Decon	4
Entry/Backup Team	4
Total	13

Special Risk Incident

Command	1
Safety	1
Technical Reference	3
Decon	6
Entry/Backup Team	6
Total	17 or more

Critical Task Analysis Wayne Township

Fire

Low Risk Incident

Command and Safety	1
Pump Operator	1
Attack Line or EMS	2
Total	4

Moderate Risk Incident

Command	1
Safety	1
Pump Operator	1
Attack line/search & rescue	4
Water Supply	5
Rapid Intervention Team	3
Ventilation/Utilities	2
Total	17

High Risk Incident

Command	1
Safety	1
Pump Operator	3
Attack line/search & rescue	6
Water Supply	5
Rapid Intervention Team	3
Ventilation/Utilities	2
Total	21

Special Risk Incident

Command	1
Safety	1
Pump Operator/Aerial Operator	3
Attack line/search & rescue	8
Water Supply	5
Rapid Intervention Team	3
Ventilation/Utilities	4
Total	25 or more

Rescue

Low Risk Incident(simple extrication)

Command and Safety	1
Rescue/EMS	3

Total **4**

Moderate Risk Incident(vehicle extrication)

Command	1
Safety	1
Pump Operator	1
Hazard Mitigation	2
EMS	4
Extrication	4

Total **13**

High Risk Incident(Ice, high angle, confined space, trench)

Command	1
Pump Operator	1
Hazard Mitigation	4
Rigging/Shoring	6
Entry Team/Backup Team	4
Safety Officer	1

Total **17**

Special Risk Incident(Building Collapse)

Command	1
Safety Officer	1
Search Team	5
Breach Team	7
Shoring Team	7

Total **21 or more**

EMS

Low Risk Incident

Command and Safety	1
EMS	3

Total 4

Moderate Risk Incident(Vehicle Extrication)

Command and Safety	1
Safety	1
Pump Operator	1
Hazard Mitigation	2
EMS	4
Extrication	4

Total 13

High Risk Incident(Mass Casualty)

Command	1
Safety	1
Triage	7
Treatment	7
Transport	1

Total 17

Special Risk Incident(Large Mass Casualty)

Command	1
Safety	1
Triage	9
Treatment	9
Transport	1

Total 21 or more

Hazmat

Low Risk Incident

Command and Safety	1
Pump Operator	1
Hazmat Mitigation	2
Total	4

Moderate Risk Incident

Command	1
Safety	1
Technical Reference	1
Decon	2
Entry/Backup Team	4
Total	9

High Risk Incident

Command	1
Safety	1
Technical Reference	3
Decon	4
Entry/Backup Team	4
Total	13

Special Risk Incident

Command	1
Safety	1
Technical Reference	3
Decon	6
Entry/Backup Team	6
Total	17 or more

On-Scene Operations

It is known that the variables of fire growth dynamics combined with property and life risk determine the fire ground tasks that must be accomplished to diminish the loss. These tasks are interrelated, but can be separated into two basic types—fire flow and life safety. Fire flow tasks are those related to getting water on the fire. Life safety tasks are those related to finding trapped victims and removing them from the building.

Fire flow tasks can be accomplished with handheld hoses or master streams (nozzles usually attached to the engine or ladder). Each 1-3/4-inch hose requires a minimum of two Firefighters. The hose can flow 150 gallons per minute (gpm), so when these lines are used, the fire flow is 75 gpm per Firefighter. The 2-1/2-inch hose can flow 250 gpm and requires a minimum of two or three Firefighters, yielding a flow of 75 to 125 gpm per Firefighter. Master streams can flow from 500 to 2,000 gpm each. They take relatively fewer Firefighters to operate because they are fixed to the apparatus.

The decision to use hand lines or master streams depends upon the stage of fire and threat to life safety. If the fire is in a preflashover stage, Firefighters can make an offensive fire attack into the building with hand lines. The lines are used to attack the fire and shield trapped victims until they can be removed from the building. If the fire is in its post-flashover stage and the fire has extended beyond the capacity or mobility of handheld hoses—or the structural damage is a threat to the Firefighters' life safety—then the structure is declared lost and master streams are employed to keep the fire from advancing to surrounding buildings.

The life-safety tasks are based upon the number of occupants, their location, their status (awake vs sleeping) and their ability to take self-preserving action. For example, ambulatory adults need less assistance than non-ambulatory adults. The elderly and small children always require more assistance.

SFFR performs aggressive offensive attacks whenever possible. The objectives being first, to put a hose line between the victims and the fire; and second, to contain the fire to the room of origin.

When establishing on-scene procedures, a determination of whether the fire ground is operating under an offensive, transitional or defensive strategy must be made. A defensive strategy is one that allows for no interior fire attack; therefore, no rescue of trapped victims is attempted. All firefighting is performed from the outside of the structure with the goal of containing the fire to the initial structure involved. Conversely, the offensive strategy is an aggressive interior fire attack with the top priority being rescue. The offensive strategy requires that fire companies arrive faster than in the defensive strategy. The transitional strategy is to operate a hose line from a safe location outside the structure. Once the fire is cooled, crews then make entry.

It is the goal of SFFR to limit the number of fires that spread beyond the room of origin.

Critical Tasking

Critical tasks are those that must be conducted in a timely manner by Firefighters at structure fires if Firefighters are expected to control the fire prior to flashover. In creating standards of response coverage, an assessment must be conducted to determine the capabilities of the arriving companies and individual Firefighters to achieve those tasks.

SFFR has evaluated the critical tasks needed for a fire in each of the risk categories. When identifying critical tasks, Firefighter safety must be emphasized. Whenever interior fire operations are to be accomplished that require the use of protective clothing (including turnout gear, SCBA, and a minimum 1 3/4-inch hose line); additional personnel must be staged to perform rescue functions for interior Firefighters. A command structure should also be in place.

Below, you will find descriptions of critical tasks that must be accomplished by the initial response force in order for SFFR to meet its mission, goals, and objectives.

Attack Line—A 1 3/4-inch hose that produces 150 gpm and is usually handled by a minimum of two Firefighters, or a 2 1/2-inch hose that produces 250 gpm and is handled by two or three Firefighters. Each Engine, Rescue, or Truck Company carries a set of attack lines that are either preconnected to the pump, folded on the hose bed, or in a special pack for carrying into high-rise buildings. The selection of which attack line to use depends on the type of structure, the distance to the seat of the fire, and the stage of the fire. The preconnected lines are the fastest to use but are limited to fires within 200 feet of the pumper. When attack lines are needed beyond this limit, the hose bed lines or high-rise lines are used. A 2 1/2-inch attack line will be used when the fire is already beyond the flashover stage and threatens an unburned portion of a structure.

Search and Rescue—A minimum of two Firefighters is assigned to search for living victims and remove them from danger while the attack crew moves between the victims and the fire to stop the fire from advancing to them. A two-person crew is normally sufficient for most moderate-risk structures, but more crews are required in multi-story buildings or structures with people who are not capable of self-preservation.

Ventilation Crew—A minimum of two Firefighters is necessary to open a horizontal or vertical ventilation channel when the attack crew is ready to enter the building. Vertical ventilation or ventilation of a multistory building can require more than two Firefighters. Ventilation removes super-heated gases and obscuring smoke, preventing flashover and allowing attack crews to see and work closer to the seat of the fire. It also gives the fire an exit route so the attack crew can “push” the heat out the opening they choose and keep it away from endangered people or unburned property.

Ventilation must be closely timed with the fire attack. If it is performed too soon, the fire will get additional oxygen and grow. If performed too late, the attack crew cannot push the heat in the direction they want. Instead, the gases and smoke will be forced back toward the Firefighters and their entry point, which endangers them, any victims they are protecting, and unburned property.

Backup Line—A line that is equal to or greater than the attack line size and length that is taken in behind the attack crew to cover the attack crew in case the fire overwhelms them or a problem develops with the attack line. This needs a minimum of two Firefighters if a 1 3/4-inch line is used.

A 2 1/2-inch line will be used for backup instead of a 1 3/4-inch line where the type of fire is one that could grow rapidly if not stopped by the attack line.

Rapid Intervention Crew—A minimum of two Firefighters equipped with self-contained breathing apparatus (SCBA) and available near the entry point to enter the structure is assigned to perform search and rescue, or to backup crew if something goes wrong. This particular requirement is an OSHA rule.

Exposure Line—A 1 3/4-inch attack line staffed by two Firefighters to be taken above the fire in multistory buildings to prevent fire expansion and may also be used externally to protect nearby structures from igniting from the radiant heat. In situations where the heat release is great, or structures are built close together, a 2 1/2-inch line or deluge gun would be used. If 2 1/2-inch lines are used the staffing requirement doubles.

Pump Operator—One Firefighter is assigned to deliver water under the right pressure to the attack, backup, and exposure lines. This Firefighter will also monitor the pressure changes caused by changing flows on each line and ensure that the water hammer doesn't endanger any of the hoseline crews. This Firefighter also completes the hose hookups to the correct discharges and completes the water supply hookup to the correct intake. The pump operator can sometimes make the hydrant hookup alone if the pumper is near a hydrant, but the hydrant spacing for moderate-risk fires normally precludes this.

Water Supply—A crew of one or two Firefighters is assigned to pull the large diameter hose between the pumper and the nearest hydrants, hook up at the hydrant, and deliver a water supply to the pumper before the pumper's water tank runs dry. A pumper has about four minutes of water if one, 1 3/4-inch line is flowing.

Incident Command—An officer is assigned to remain outside of the structure to coordinate the attack, evaluate results and redirect the attack, arrange for more resources, and monitor conditions that might jeopardize crew safety.

Utilities—At least one Firefighter is needed to secure natural gas, electrical supply, and water to the affected structures. Before interior Firefighters can open any concealed spaces such as an attic, utilities must be secured.

Ladder Operations—If vertical ventilation is performed, at least one Firefighter—preferably two Firefighters—are needed to set up the aerial ladder and a ground ladder to provide access to the roof of the structure.

EMS/Rehabilitation—At least one Firefighter will be assigned to establish a treatment and rehabilitation sector to prepare for any victims found and any Firefighters who are injured or physically drained (Rural/Metro may be used).

Safety Officer—One Firefighter will be dedicated to the exterior of structure with the sole responsibility of Firefighter safety and scene safety.

Emergency Medical Services Critical Tasks

SFFR responds to several thousand EMS calls a year. These calls include car accidents, childbirths, strokes, heart attacks, difficulty breathing, and cardiac arrests. For the single-patient EMS call, the American Heart Association (AHA) recommendations of four treatment personnel will be recognized as the staffing required. Additionally, two ambulance personnel (Paramedics Plus) will respond to facilitate transportation of the patient to the appropriate medical facility.

In addition, SFFR routinely responds to EMS calls that have more than one patient to be treated. These calls include vehicle accidents, chemical exposures, construction or industrial accidents, and any other event that occurs with several people in close proximity. Within these events, patient conditions can range from minor cuts and bruises to several people with life-threatening injuries. Dispatchers have the responsibility of screening calls to establish the correct initial response, with the first fire officer on scene amending the response once actual conditions have been assessed. Standard Operating Procedures will be utilized to request adequate personnel for these types of calls. Rules of thumb include one Fire Company per critically injured patient and one Fire Company per three patients with minor injuries.

Hazardous Materials Critical Tasks

SFFR currently maintains a Hazardous Materials Medical Unit at Station 3 and three hazardous materials units, providing for triple redundancy. These units each consist of a Ford F-550 response apparatus and enclosed trailer. These units are stationed at Station 2, Station 6, and Station 7. Personnel are trained to NFPA 472 competencies. Guidelines for response and critical tasks are set forth in SOP 400.1 Hazardous

Response Incidents. The following tables highlight the critical tasks required to mitigate hazardous materials incidents:

- Incident command
- Communications
- Hazardous materials operations officer
- Incident control team/backup team
- Site safety officer
- Hazardous materials equipment technician
- Incident research technician

Critical tasks include:

- Initial response action
- Subsequent response action
- Securing of area/ensuring safety
- Establishing action plan
- Containment
- Rescue
- Extinguishment
- Determination of resources

The minimum number of special operations personnel to operate the hazardous materials call is four for low-risk, nine for moderate-risk, and 17 for high-risk. Additional personnel are available through the call-back procedure.

Technical Rescue Critical Tasks

SFFR currently maintains Technical Rescue Units at Fire Station 5 and Fire Station 8 for swift water/ice rescues, confined space/high angle rescues, trench rescues and structural collapse rescues. Personnel are trained to NFPA 1006 competencies and utilize NFPA 1670 as an operational guide. Guidelines for response and critical tasks are set forth in SOP 500.1, Urban Search and Rescue Operations. The following tables highlight the critical tasks required to mitigate technical rescue incidents:

- Incident command
- Rescue branch officer
- Urban search and rescue team/backup team
- Division officer
- First responder
- Safety officer

Critical tasks include:

- Scene control
- Staging
- Hazard mitigation
- Communications
- Rescue procedures
- Personal protective equipment
- Rescue operations

Each technical rescue station utilizes a rescue engine as the primary response vehicle.

Objectives and Performance Measures for City of Sioux Falls(Urban)

Fire

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

Distribution Performance Measure for Fire-All: The first engine (or truck with engine capabilities – quint or rescue) staffed with a minimum of four personnel shall arrive within six minutes and forty two seconds total Sioux Falls Fire Rescue response time, for ninety percent of all Code 3/Priority2 requests for emergency service.

Concentration Performance Measure for Fire-Low: Same as distribution performance measure.

Concentration Performance Measure for Fire-Moderate: The battalion chief, second-due engine, third-due engine and the first-due truck companies with a total of seventeen personnel shall arrive within eleven minutes and fifty four seconds total Sioux Falls Fire Rescue response time, for ninety percent of all Code 3/Priority2 requests for emergency service.

Concentration Performance Measure for Fire-High: The battalion chief, second-due, third-due engine, fourth-due and the first-due truck companies with a total of twenty one personnel shall arrive within eleven minutes and fifty four seconds total Sioux Falls Fire Rescue response time, for ninety percent of all Code 3/Priority2 requests for emergency service.

Concentration Performance Measure for Fire-Special: The battalion chief, second-due, third-due engine, fourth-due engine, fifth-due engine, and the first-due truck companies with a total of twenty five personnel or more shall arrive within eleven minutes and fifty four seconds total Sioux Falls Fire Rescue response time, for ninety percent of all Code 3/Priority2 requests for emergency service.

Note: Sioux Falls Fire Rescue made policy changes in 2010 to assist in capturing times of the battalion chief, second unit, and third in unit.

EMS

Objective-For all emergency medical incidents, Sioux Falls Fire Rescue shall arrive in a timely manner with sufficiently trained and equipped personnel to provide medical services that will stabilize the situation, provide care and support to the patient and reduce, reverse, or eliminate the conditions that have caused the emergency while providing for the safety of the responders.

Distribution Performance Measure for EMS-All: The first unit (with BLS capabilities) staffed with a minimum of four personnel shall arrive within six minutes and forty two seconds total Sioux Falls Fire Rescue response time, for ninety percent of all requests for Code 3/ Priority 2 emergency services.

Concentration Performance Measure for EMS-Low: Same as distribution performance measure.

Concentration Performance Measure for EMS-Moderate: Vehicle extrication/high speed accidents, the battalion chief, second-due engine or truck and the first-due rescue companies with a total of thirteen personnel shall arrive within eleven minutes and fifty four seconds total Sioux Falls Fire Rescue response time, for ninety percent of all Code 3/Priority 2 requests for emergency service.

Concentration Performance Measure for EMS-High: Multiple victim incident, the first unit (with BLS capabilities) staffed with a minimum of four personnel shall arrive within six minutes and forty two seconds total Sioux Falls Fire Rescue response time, for ninety percent of all requests for Code 3/Priority 2 emergency services. The incident commander will call for a first or second fire alarm once he has assessed the scene.

Rescue

Objective-For all incidents where rescue of victims is required, Sioux Falls Fire Rescue shall arrive in a timely manner with sufficient resources to stabilize the situation and extricate the patient(s) from the emergency situation or location without causing further harm to the patient, responders, public or the environment.

Distribution Performance Measure for Rescue-All: The first engine (or truck with engine capabilities – quint or rescue) staffed with a minimum of four personnel shall arrive within six minutes and forty two seconds total Sioux Falls Fire Rescue response time, for ninety percent of all Code 3/Priority2 requests for emergency service.

Concentration Performance Measure for Rescue-Low: Same as distribution performance measure.

Concentration Performance Measure for Rescue-Moderate: Vehicle extrication, the battalion chief, second-due engine or truck and the first-due rescue companies with a total of thirteen personnel shall arrive within eleven minutes and fifty four seconds total Sioux Falls Fire Rescue response time, for ninety percent of all Code 3/Priority 4 requests for emergency service.

Concentration Performance Measure for Rescue-High: Technical rescue, the battalion chief, both technical rescue companies, and a hazmat unit with a total of 17 personnel shall arrive within twenty minutes total Sioux Falls Fire Rescue response time, for ninety percent of all Code 3/Priority2 requests for emergency service.

Hazardous Materials

Objective-For all incidents involving a hazardous materials release, Sioux Falls Fire Rescue shall arrive in a timely manner with sufficient resources to stabilize the situation, stop the escalation of the incident, contain the hazard, and establish an action plan for the successful conclusion of the incident while providing for the safety and security of the responders, public, and the environment.

Distribution Performance Measure for Hazmat-All: The first engine (or truck with engine capabilities – quint or rescue) staffed with a minimum of four personnel shall arrive within six minutes and forty two seconds total Sioux Falls Fire Rescue response time, for ninety percent of all Code 3/Priority 2 requests for emergency service.

Concentration Performance Measure for Hazmat-Low: Same as distribution performance measure.

Concentration Performance Measure for Hazmat-Moderate: the battalion chief and a hazmat unit with a total of 9 personnel shall arrive within eleven minutes and fifty four seconds total Sioux Falls Fire Rescue response time, for ninety percent of all Code 3/Priority 2 requests for emergency service.

Concentration Performance Measure for Hazmat-High: The first engine (or truck with engine capabilities – quint or rescue) staffed with a minimum of four personnel shall arrive within six minutes and forty two seconds total Sioux Falls Fire Rescue response time, for ninety percent of all Code 3/ Priority 2 three requests for emergency service.

The incident commander will call for a first or second fire alarm once he has assessed the scene.

Objectives and Performance Measures for Wayne Township(Rural)

Fire

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

Distribution Performance Measure for Fire-All: The first engine (or truck with engine capabilities – quint or rescue) staffed with a minimum of four personnel shall arrive within fourteen minutes and thirty seconds total Sioux Falls Fire Rescue response time, for ninety percent of all Code 3/Priority2 requests for emergency service.

Concentration Performance Measure for Fire-Low: Same as distribution performance measure.

Concentration Performance Measure for Fire-Moderate: The battalion chief, second-due engine, third-due engine and the first-due truck companies with a total of seventeen personnel shall arrive within nineteen minutes and forty two seconds total Sioux Falls Fire Rescue response time, for ninety percent of all Code 3/Priority2 requests for emergency service.

Concentration Performance Measure for Fire-High: The battalion chief, second-due, third-due engine, fourth-due engine, and the first-due truck companies with a total of twenty one personnel shall arrive within nineteen minutes and forty two seconds total Sioux Falls Fire Rescue response time, for ninety percent of all Code 3/Priority2 requests for emergency service.

Concentration Performance Measure for Fire-Special: The battalion chief, second-due, third-due engine, fourth-due engine, fifth due engine, and the first-due truck companies with a total of twenty five personnel or more shall arrive within nineteen minutes and forty two seconds total Sioux Falls Fire Rescue response time, for ninety percent of all Code 3/Priority2 requests for emergency service.

EMS

Objective-For all emergency medical incidents, Sioux Falls Fire Rescue shall arrive in a timely manner with sufficiently trained and equipped personnel to provide medical services that will stabilize the situation, provide care and support to the patient and

reduce, reverse, or eliminate the conditions that have caused the emergency while providing for the safety of the responders.

Distribution Performance Measure for EMS-All: The first unit (with BLS capabilities) staffed with a minimum of four personnel shall arrive within fourteen minutes and thirty seconds total Sioux Falls Fire Rescue response time, for ninety percent of all requests for Code 3/Priority2 emergency services.

Concentration Performance Measure for EMS-Low: Same as distribution performance measure.

Concentration Performance Measure for EMS-Moderate: High speed accidents, the battalion chief, second-due engine or truck and the first-due rescue companies with a total of thirteen personnel shall arrive within nineteen minutes and forty two seconds total Sioux Falls Fire Rescue response time, for ninety percent of all Code 3/Priority2 requests for emergency service.

Concentration Performance Measure for EMS-High: Multiple victim incident, the first unit (with BLS capabilities) staffed with a minimum of four personnel shall arrive within fourteen minutes and thirty seconds total Sioux Falls Fire Rescue response time, for ninety percent of all requests for Code 3/Priority2 emergency services. The incident commander will call for a first or second fire alarm once he has assessed the scene.

Rescue

Objective-For all incidents where rescue of victims is required, Sioux Falls Fire Rescue shall arrive in a timely manner with sufficient resources to stabilize the situation and extricate the patient(s) from the emergency situation or location without causing further harm to the patient, responders, public or the environment.

Distribution Performance Measure for Rescue-All: The first engine (or truck with engine capabilities – quint or rescue) staffed with a minimum of four personnel shall arrive within fourteen minutes and thirty seconds total Sioux Falls Fire Rescue response time, for ninety percent of all Code 3/Priority2 requests for emergency service.

Concentration Performance Measure for Rescue-Low: Same as distribution performance measure.

Concentration Performance Measure for Rescue-Moderate: Vehicle extrication, the battalion chief, second-due engine or truck and the first-due rescue companies with a total of thirteen personnel shall arrive within nineteen minutes and forty two seconds total Sioux Falls Fire Rescue response time, for ninety percent of all Code 3/Priority2 requests for emergency service.

Concentration Performance Measure for Rescue-High: Technical rescue, the battalion chief, both technical rescue companies, and a hazmat unit with a total of 17 personnel shall arrive within twenty minutes total Sioux Falls Fire Rescue response time, for ninety percent of all Code 3/Priority2 requests for emergency service.

Hazardous Materials

Objective-For all incidents involving a hazardous materials release, Sioux Falls Fire Rescue shall arrive in a timely manner with sufficient resources to stabilize the situation, stop the escalation of the incident, contain the hazard, and establish an action plan for the successful conclusion of the incident while providing for the safety and security of the responders, public, and the environment.

Distribution Performance Measure for Hazmat-All: The first engine (or truck with engine capabilities – quint or rescue) staffed with a minimum of four personnel shall arrive within fourteen minutes and thirty seconds total Sioux Falls Fire Rescue response time, for ninety percent of all Code 3/Priority2 requests for emergency service.

Concentration Performance Measure for Hazmat-Low: Same as distribution performance measure.

Concentration Performance Measure for Hazmat-Moderate: the battalion chief and a hazmat unit with a total of 9 personnel shall arrive within twenty minutes total Sioux Falls Fire Rescue response time, for ninety percent of all Code 3/Priority2 requests for emergency service.

Concentration Performance Measure for Hazmat-High: The first engine (or truck with engine capabilities – quint or rescue) staffed with a minimum of four personnel shall arrive within fourteen minutes and thirty seconds total Sioux Falls Fire Rescue response time, for ninety percent of all Code 3/Priority2 requests for emergency service. The incident commander will call for a first or second fire alarm once he has assessed the scene.

Performance Measurement

Distribution

Distribution involves locating geographically distributed, first-due resources for all-risk initial intervention. Distribution is simply describing first-due arrival. These station locations are needed to assure rapid deployment to minimize and terminate average or routine emergencies. Distribution can be evaluated by the percentage of the jurisdiction covered by the first-due units within adopted public policy service objectives.

Distribution Policy Statement

For 90 percent of Fire/EMS incidents in the City of Sioux Falls, the first-due unit shall arrive within 5 minutes and 12 seconds of travel time. The balance of the first alarm will arrive within 10 minutes and 24 seconds of travel time. For technical rescue/hazardous materials incidents in the City of Sioux Falls or Wayne Township, the technical rescue and hazardous materials teams will arrive within 16 minutes of travel time. The first-due unit shall be capable of advancing the first line for fire control or starting rescue when a life hazard is present or providing basic life support with defibrillation for medical incidents. The technical rescue team or hazardous materials team will be capable of mitigating the incident.

For 90 percent of fire/EMS incidents in Wayne Township, the first-due unit shall arrive within 13 minutes of travel time. The first-due unit shall be capable of advancing the first line for fire control or starting rescue when a life hazard is present or providing basic life support with defibrillation for medical incidents.

For 90 percent of EMS incidents in the City of Sioux Falls or Wayne Township, the units will have a turnout time of 1 minute and 30 seconds. For 90 percent of fire/rescue/hazardous materials incidents in the City of Sioux Falls or Wayne Township, the units will have a turnout time of 1 minute and 30 seconds.

For the purpose of this manual, turnout time plus travel time equals Sioux Falls Fire Rescue response time.

SFFR will continue to focus on the turnout and travel times in an effort to reduce the total Sioux Falls Fire Rescue response time. It is the goal of SFFR to come into compliance with *National Fire Protection Association Standard 1710*. These goals are as follows:

National Fire Protection Standard 1221, "Installation, Maintenance, and Use of Emergency Services Communications Systems," has established the following call processing time objectives:

1. Ninety-five percent of alarms shall be answered within 30 seconds, and in no case shall the initial call taker's response to an alarm exceed 60 seconds.
2. The dispatch of the emergency response agency shall be made within 60 seconds of the completed receipt of an emergency alarm.

National Fire Protection Standard 1710, "Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments," has established the following response time objectives:

1. The time objective for turnout time shall be one minute (60 seconds).
2. Four minutes (240 seconds) or less for arrival of a unit with first responder or higher-level capability at an emergency medical incident.
3. Eight minutes (480 seconds) or less for the arrival of an advanced life-support unit at an emergency medical incident, where this service is provided by the Fire Department. (ALS is provided through contract by Paramedics Plus Ambulance Service in Sioux Falls, South Dakota.)
4. Four minutes (240 seconds) or less for the arrival of the first arriving Engine Company at a fire suppression incident and/or eight minutes (480 seconds) or less for the deployment of a full alarm assignment at a fire suppression incident.

Distribution of the station and resource locations is needed to assure rapid first-due response deployment in order to minimize and terminate emergencies. Distribution is measured by the percent of the jurisdiction that is covered by the first-due units within adopted public policy.

TotalStatistics

Fire Districts	Sq. Miles	Population*	Residential Units	Road Miles
1	3.219168	16740	7966	67.3726
2	8.020288	12911	4972	73.9054
3	6.123787	18059	8389	102.7899
4	5.84867	11366	5037	75.4119
5	6.992417	20311	8959	98.2450
6	8.148974	26334	11907	115.4984
7	8.532378	4345	1075	66.7651
8	12.26	13280	6254	124.3858
9	9.719408	18812	7665	103.0197
10	4.366285	12120	5047	64.6441
SDANG	1.638243	0	0	0.0000
Total	74.869618	154278	67271	892.03784

*Population = Population from the 2010 census blocks.

Percent of Totals

Fire Districts	Sq. Miles	Population	Residential Units	Road Miles
1	4.24%	10.83%	11.38%	7.37%
2	10.66%	8.37%	7.45%	8.51%
3	8.07%	11.68%	12.30%	11.40%
4	8.33%	7.40%	7.75%	8.68%
5	9.21%	13.14%	12.65%	10.79%
6	10.75%	17.05%	16.86%	12.65%
7	11.24%	2.82%	1.60%	7.32%
8	16.16%	8.59%	9.43%	13.79%
9	12.80%	12.18%	12.47%	11.76%
10	6.39%	7.94%	8.10%	7.72%
SDANG	2.15%	0.00%	0.00%	0.00%
Total	100.00%	100.00%	100.00%	100.00%

SFFR has utilized brain death and flashover as benchmarks when determining distribution of units, specifically to arrive before brain death on the EMS call, and prior to flashover for the fire call.

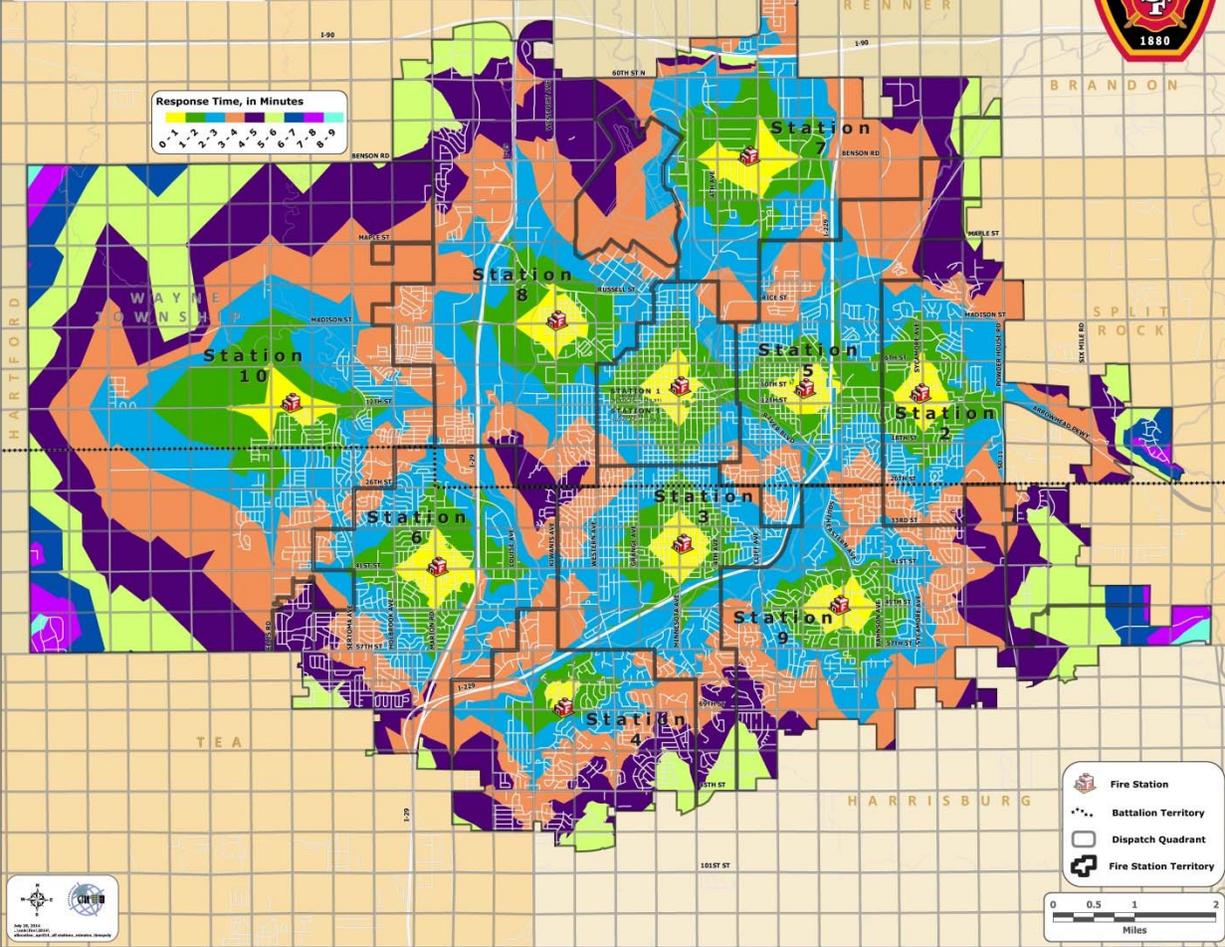
Currently, SFFR operates from eleven stations, each containing an Engine, Rescue, or Truck Company staffed with four personnel running first due in each. Station 1 contains two Engine Companies staffed with four personnel running first due each. In 2004, SFFR purchased additional hazardous materials units with trailers to provide for double redundancy. This allows continued coverage in the city should we be called for mutual aid response outside of the city. In 2007, Squad 3 was put in service to provide medical support to responding personnel during hazardous materials/USAR incidents. USAR 8 was put into service in 2008 and responds to trench and structural collapse, high angle, water, ice and confined space emergencies. USAR 5 was put into service in 2009 and also responds to trench and structural collapse, high angle, water, ice, and confined space emergencies. Station 5 opened in the summer of 2009 and additional stations are planned. Station 4 specializes in wide area and technical search responses starting in 2013. Station 11 specializes in SCBA repair and maintenance.

After performing the critical task analysis, we found that four-person staffing is optimum.

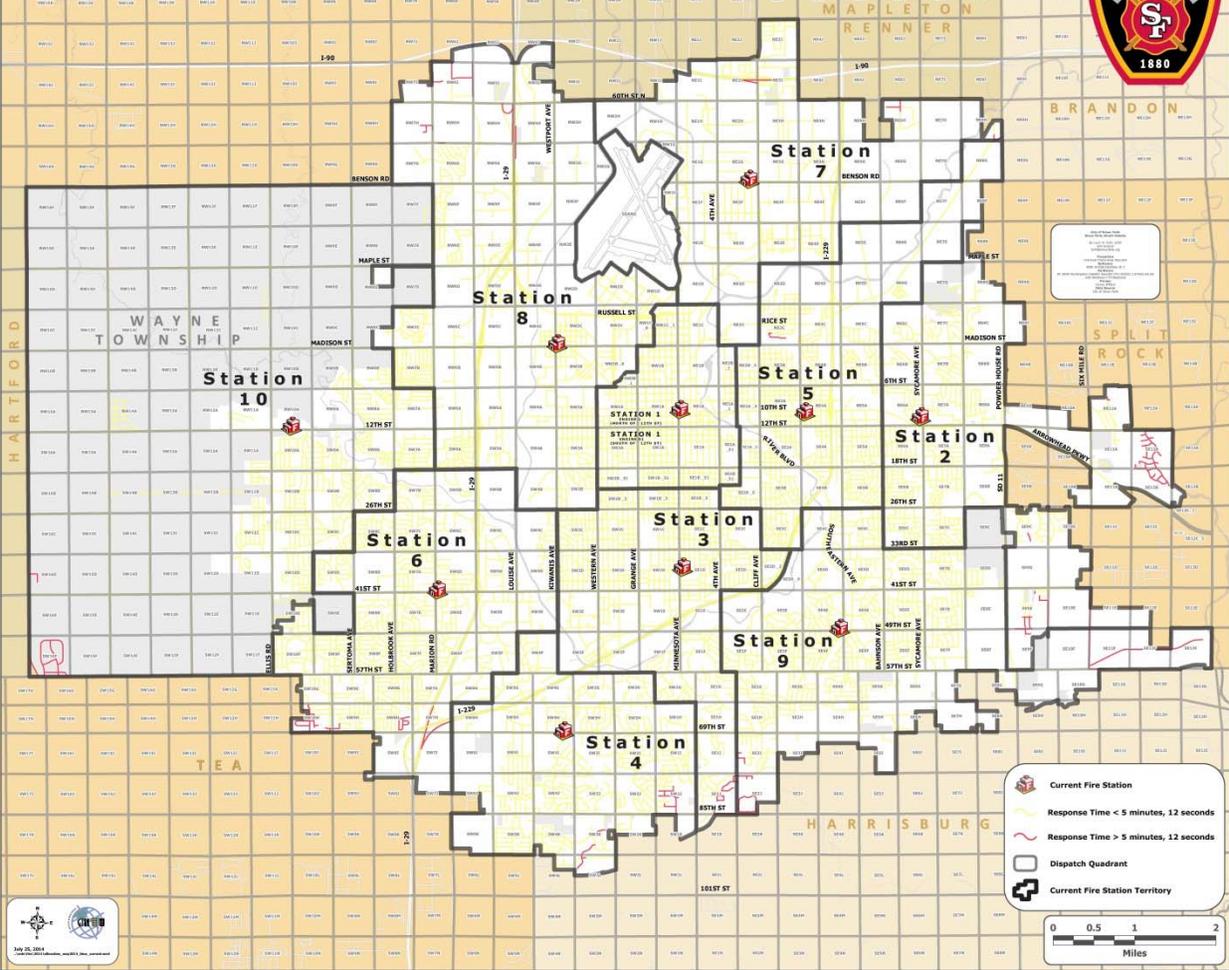
Service Level Performance Gap

1. Automatically Filter 9-1-1 emergent calls from total incidents.
2. Enhance percentage and quality of end dispatch, turnout, and on-scene times captured.
3. Continue to enhance our capability to capture 1st, 2nd, 3rd, 4th, and last unit on-scene times for multi-unit responses.

**City of Sioux Falls
Sioux Falls Fire Rescue
Allocation
All Stations**



**City of Sioux Falls
Travel Response Time
Current Stations**

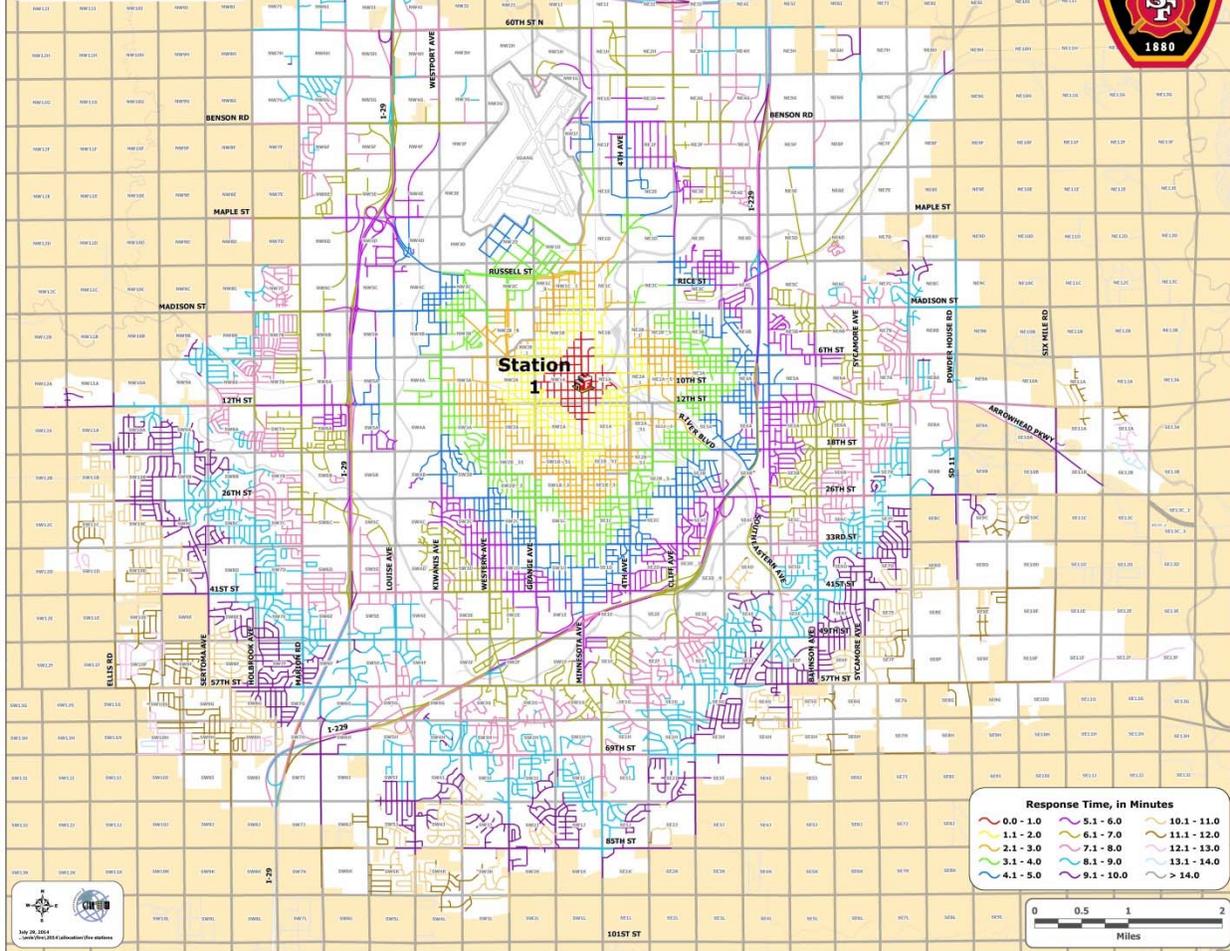


City of Sioux Falls
Fire & Rescue
1880

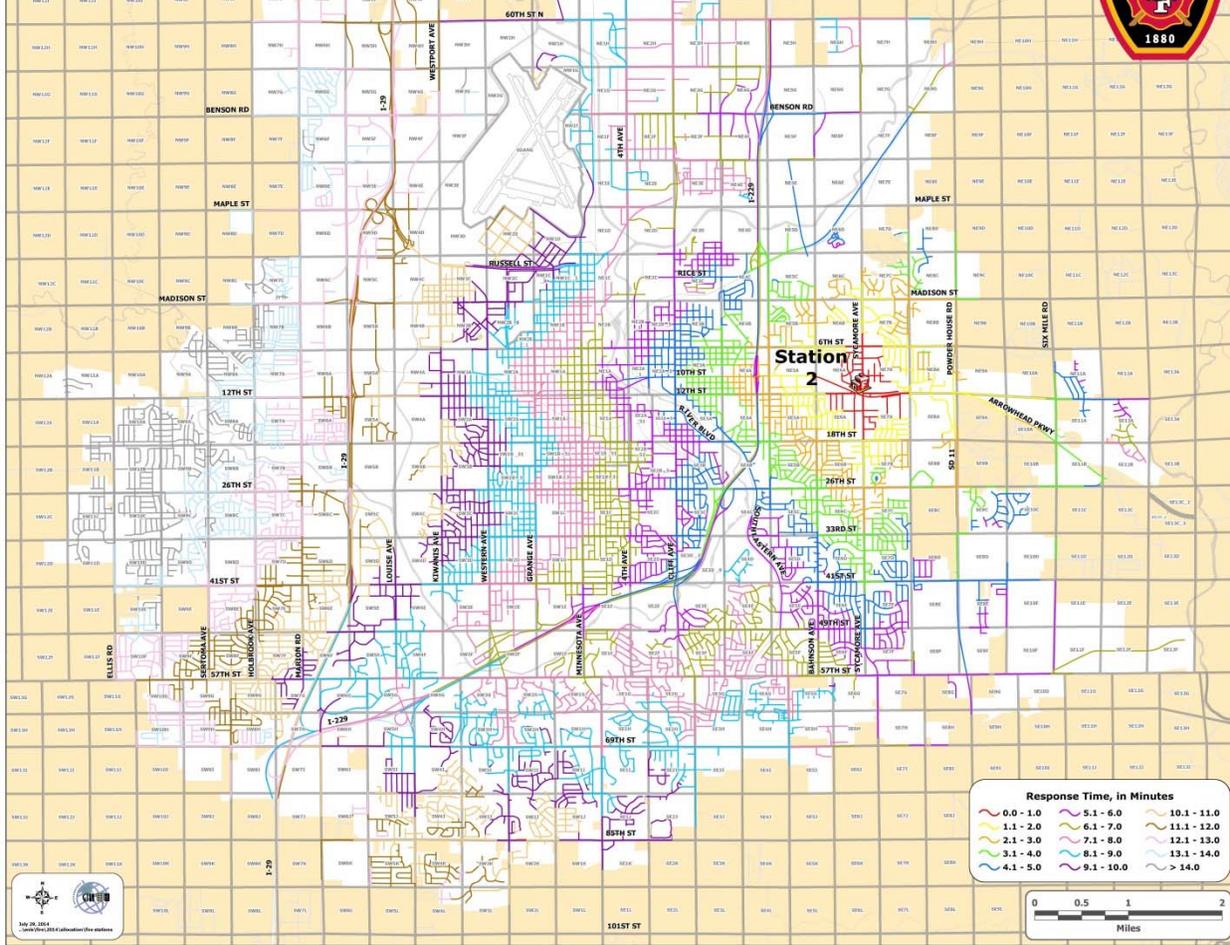
- Current Fire Station
- Response Time < 5 minutes, 12 seconds
- Response Time > 5 minutes, 12 seconds
- Dispatch Quadrant
- Current Fire Station Territory



**City of Sioux Falls
Sioux Falls Fire Rescue
Fire Station Allocation
Station 1**



**City of Sioux Falls
Sioux Falls Fire Rescue
Fire Station Allocation
Station 2**

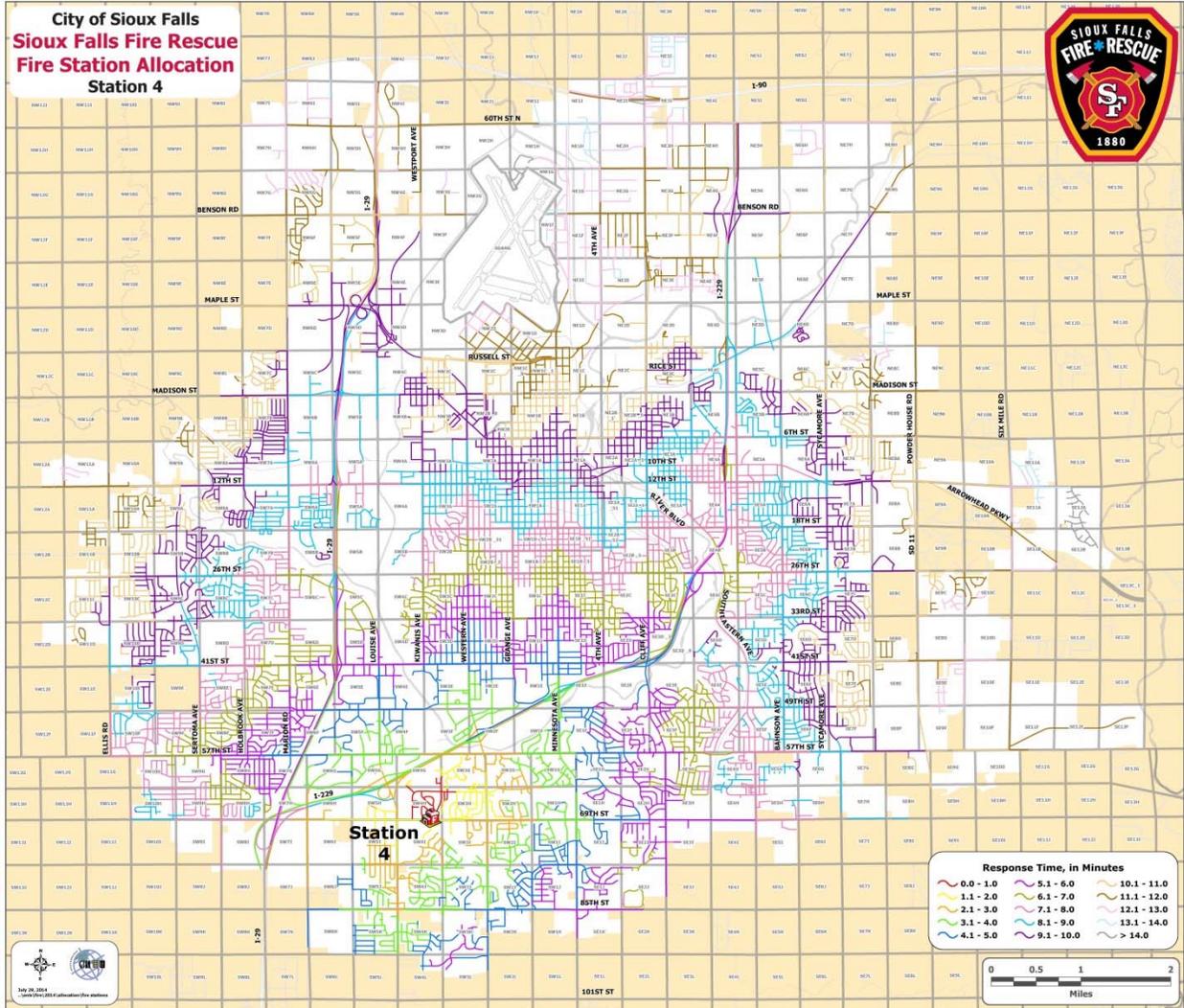


Response Time, in Minutes

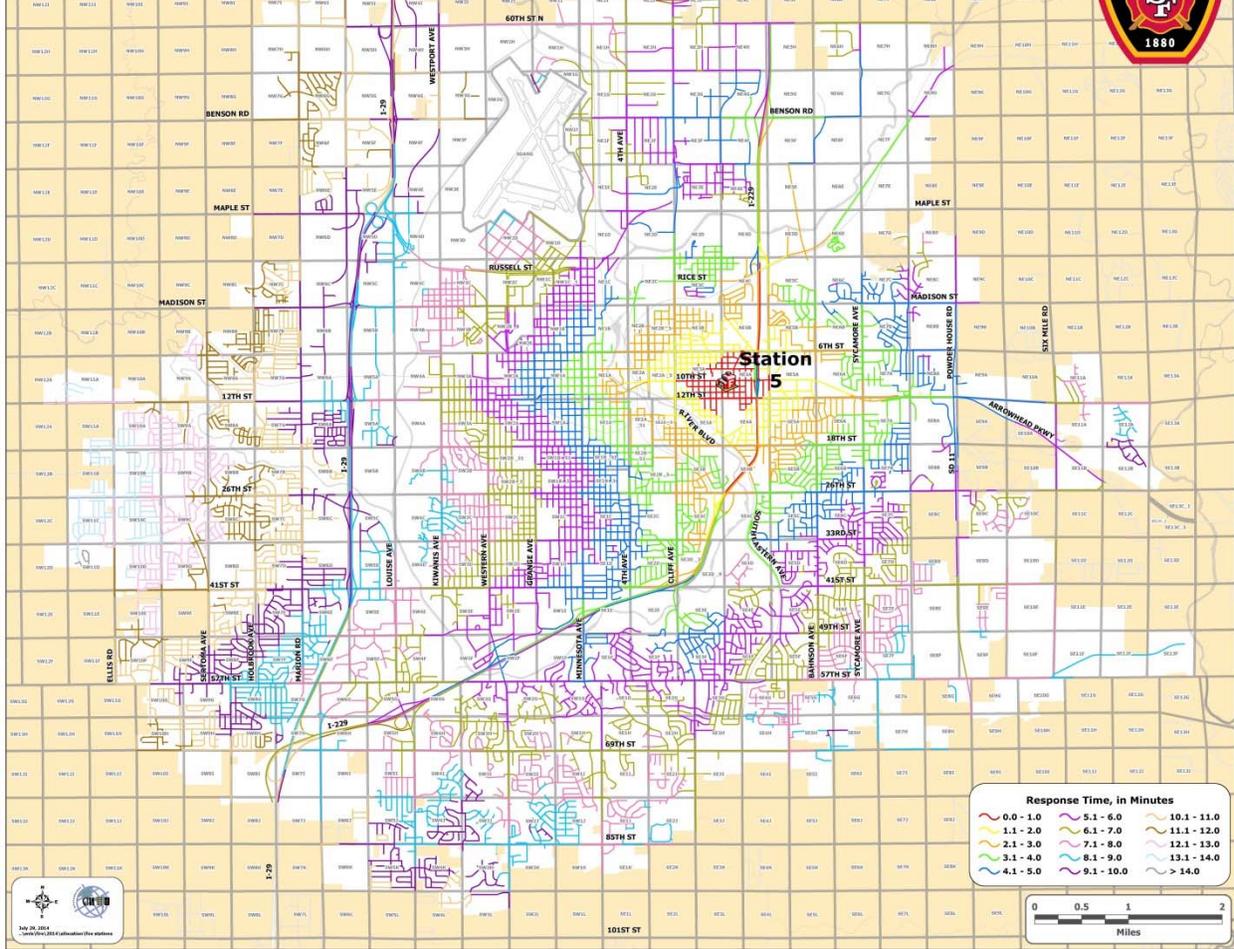
0.0 - 1.0	5.1 - 6.0	10.1 - 11.0
1.1 - 2.0	6.1 - 7.0	11.1 - 12.0
2.1 - 3.0	7.1 - 8.0	12.1 - 13.0
3.1 - 4.0	8.1 - 9.0	13.1 - 14.0
4.1 - 5.0	9.1 - 10.0	> 14.0



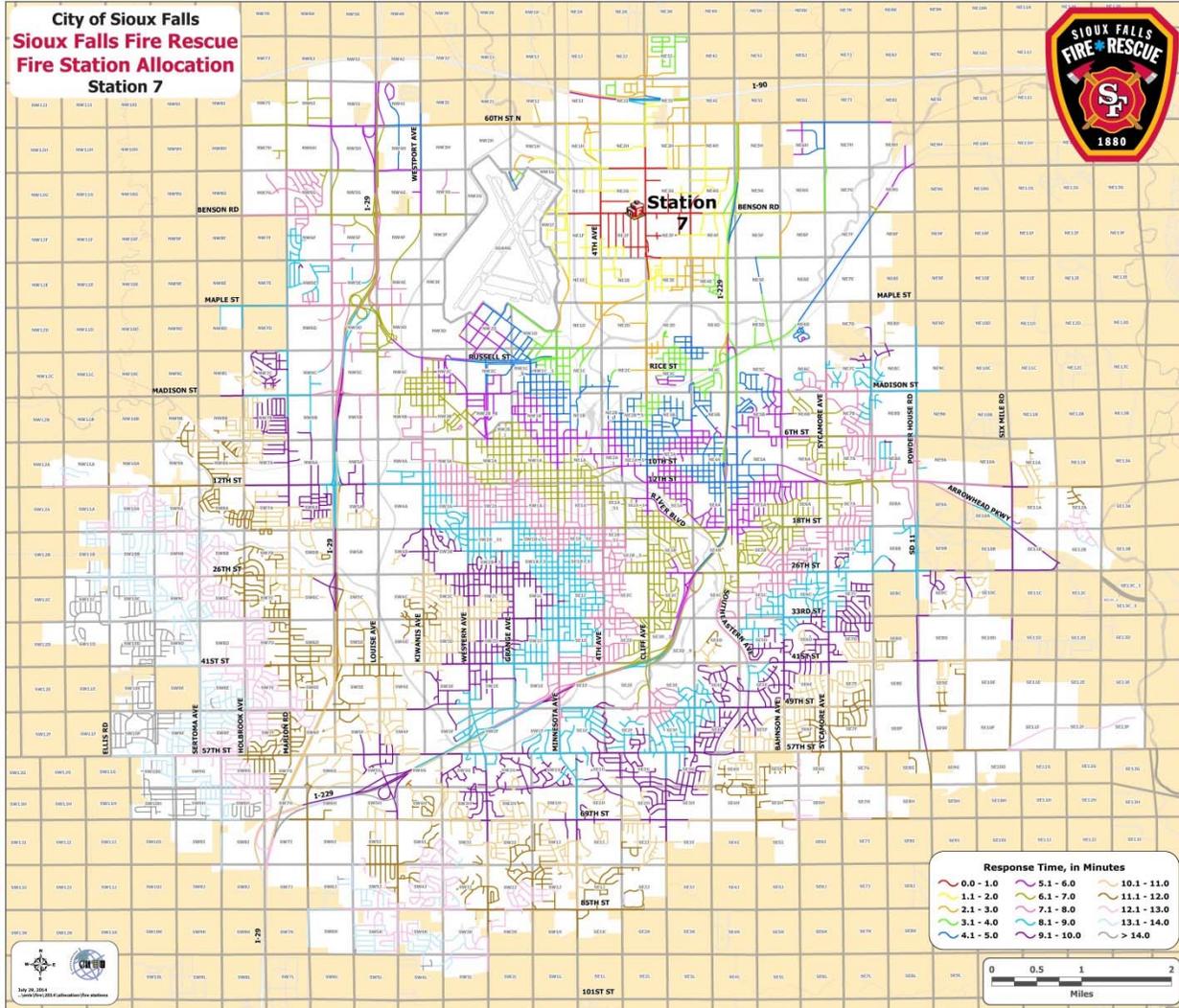
**City of Sioux Falls
Sioux Falls Fire Rescue
Fire Station Allocation
Station 4**



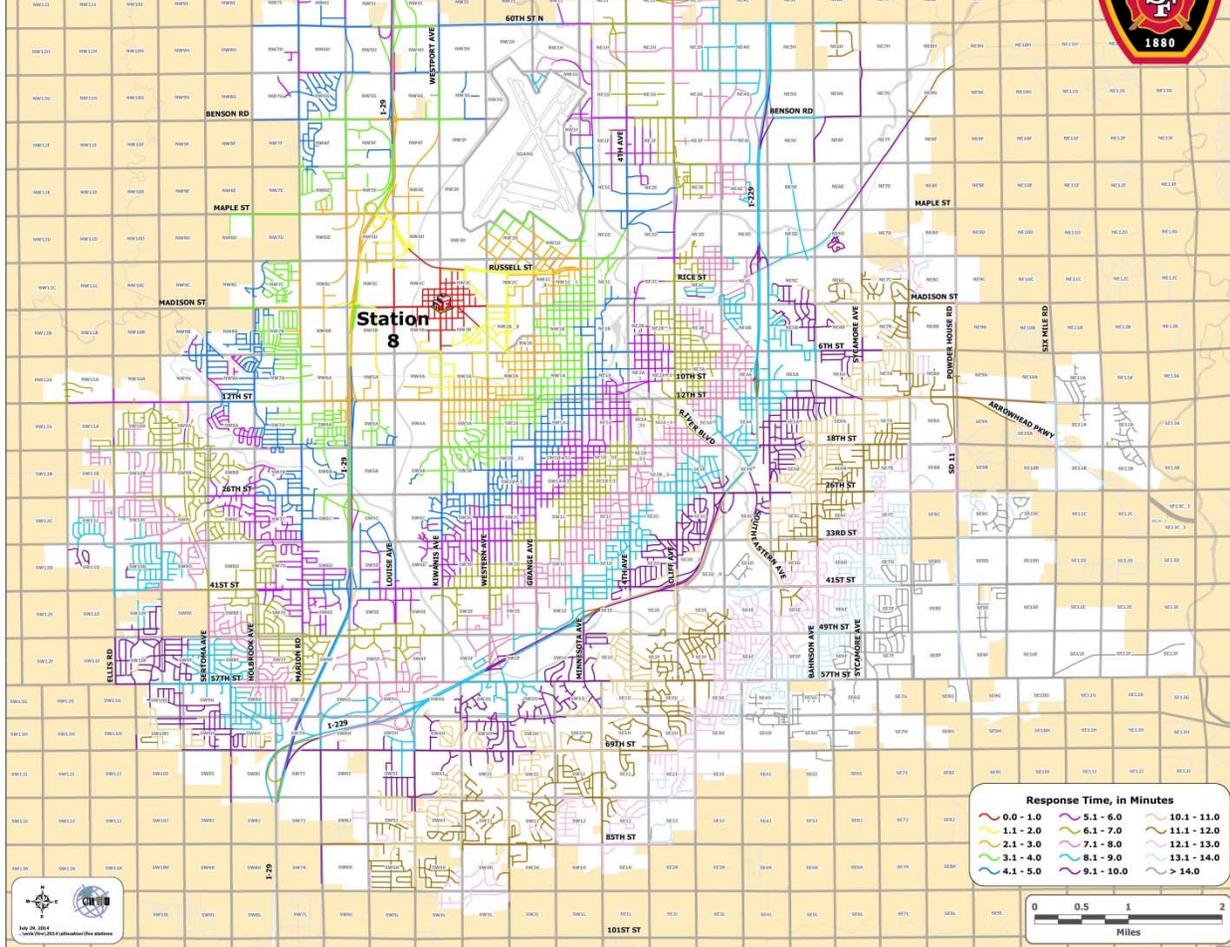
**City of Sioux Falls
Sioux Falls Fire Rescue
Fire Station Allocation
Station 5**



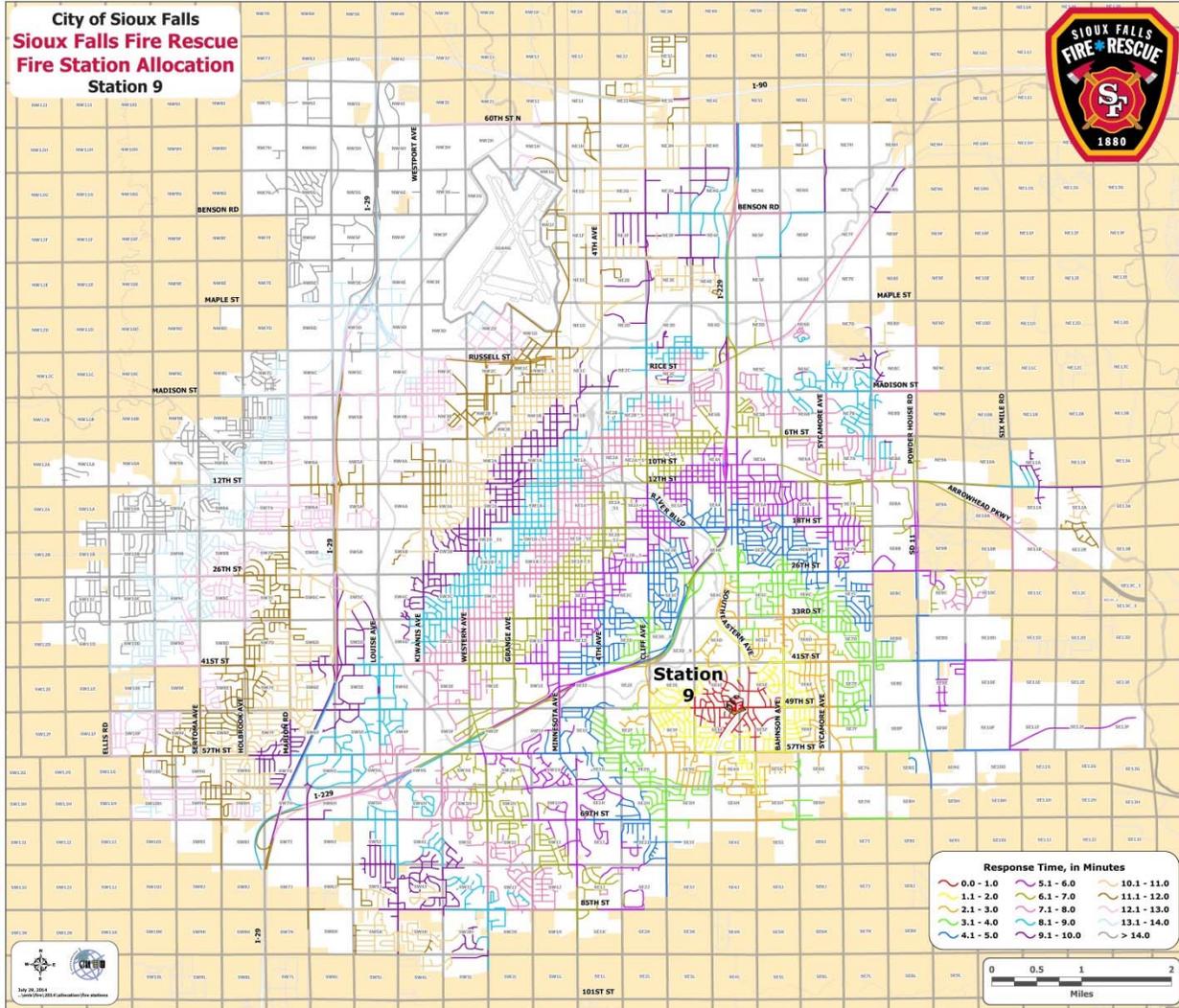
**City of Sioux Falls
Sioux Falls Fire Rescue
Fire Station Allocation
Station 7**



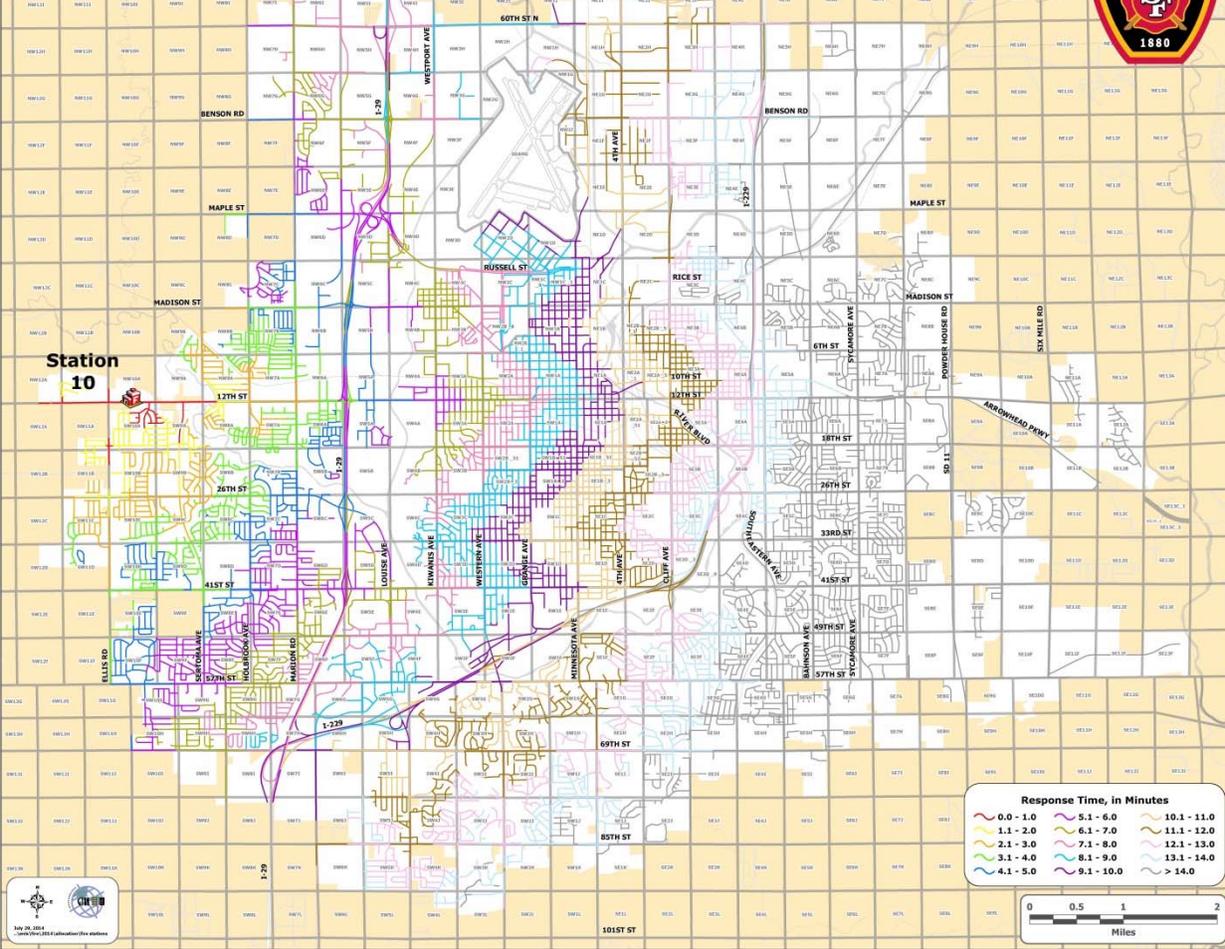
**City of Sioux Falls
Sioux Falls Fire Rescue
Fire Station Allocation
Station 8**



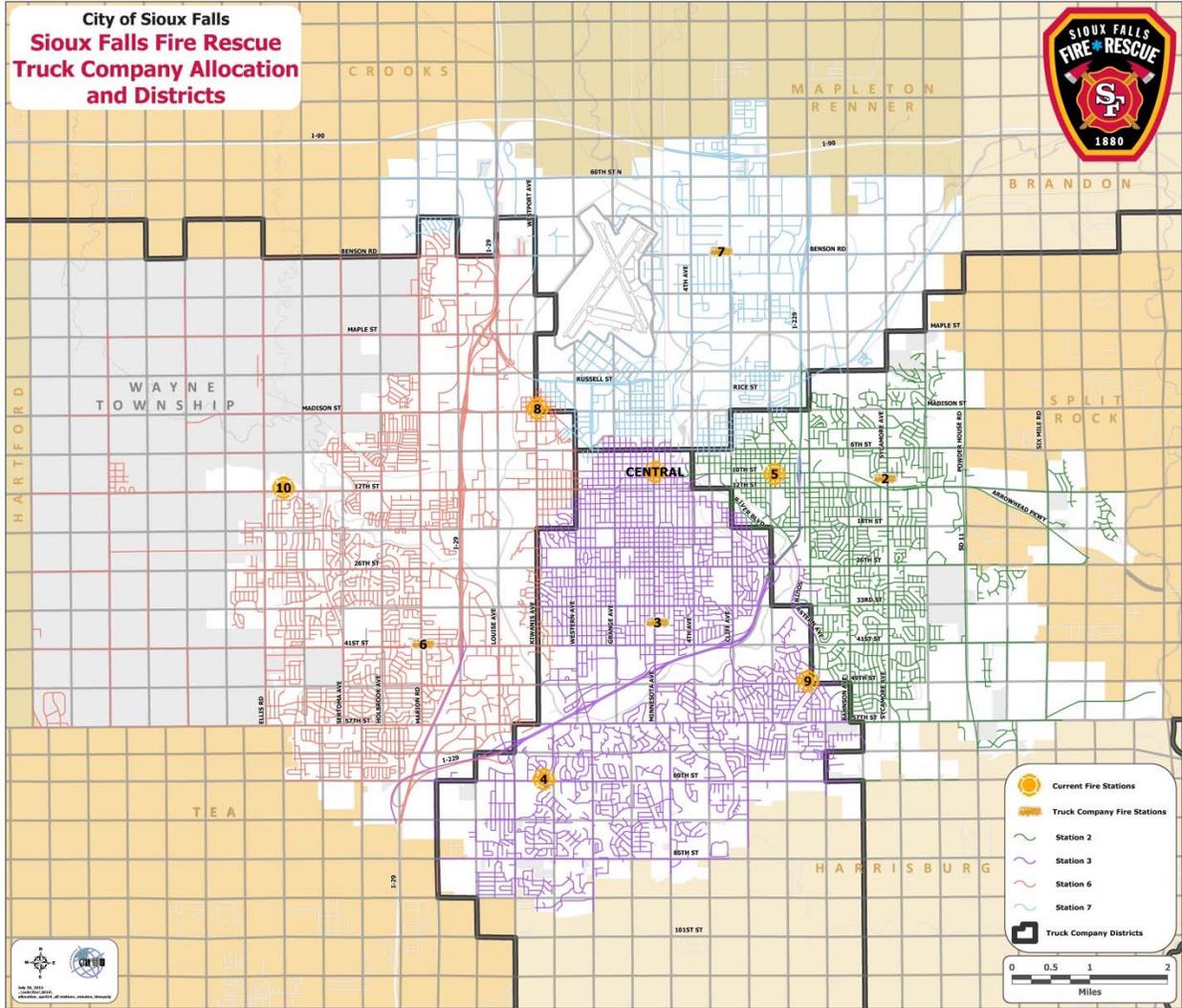
**City of Sioux Falls
Sioux Falls Fire Rescue
Fire Station Allocation
Station 9**



**City of Sioux Falls
Sioux Falls Fire Rescue
Fire Station Allocation
Station 10**



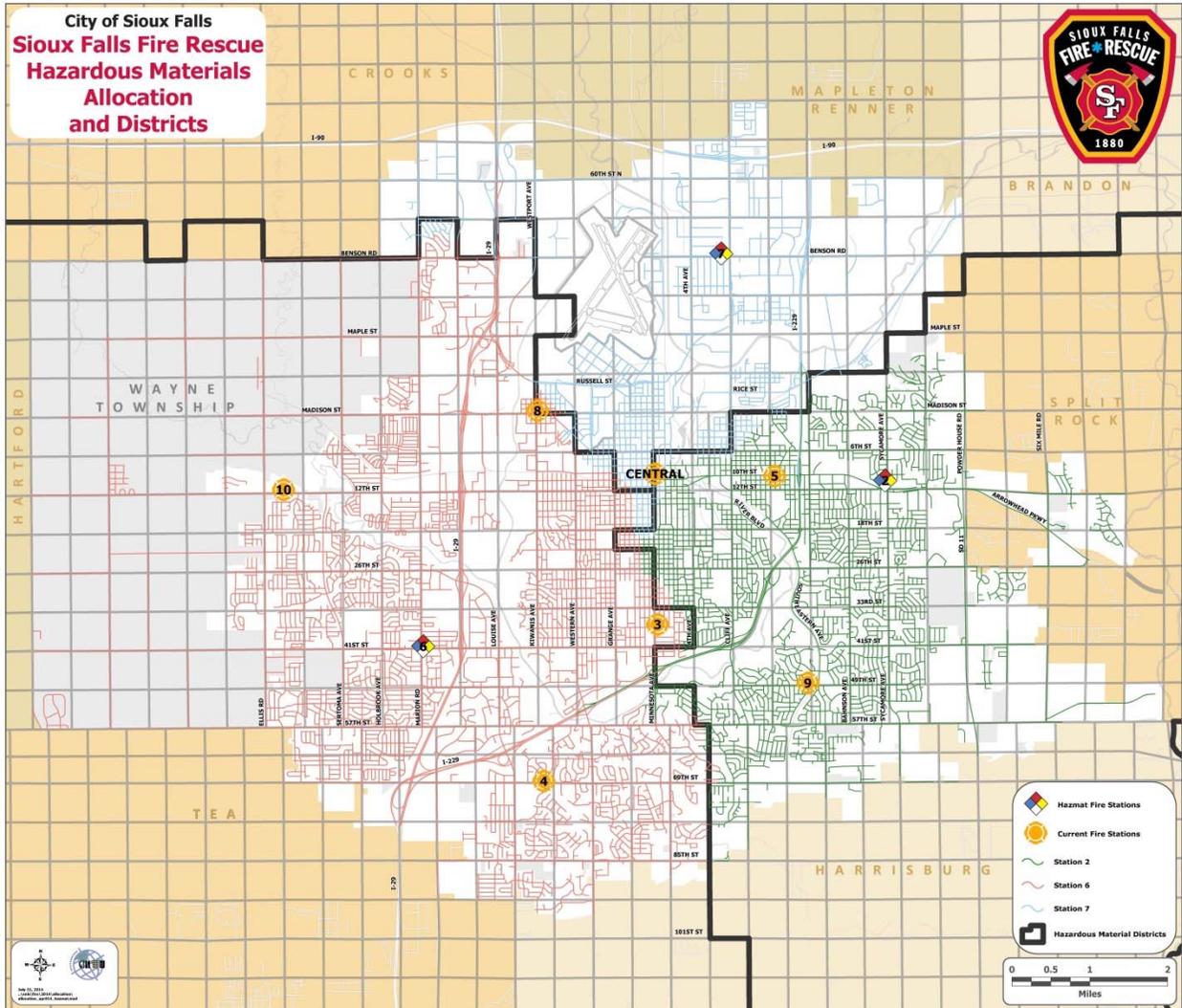
**City of Sioux Falls
Sioux Falls Fire Rescue
Truck Company Allocation
and Districts**



Legend

- Current Fire Stations
- Truck Company Fire Stations
- Station 2
- Station 3
- Station 6
- Station 7
- Truck Company Districts

0 0.5 1 2
Miles



USAR

We do not show a map for technical rescue response because both technical rescue stations (Station 5 and Station 8) are dispatched on all technical rescue calls.

Sioux Falls Fire Rescue Response Benchmarks and Baselines

City of Sioux Falls(urban) Turnout Times-Fire				
	1st Unit	2nd Unit	Balance of a 1st Alarm	Performance
Benchmark	1 minute 20 seconds	N/A	N/A	90%
Baseline	1 minute 30 seconds	N/A	N/A	90%

City of Sioux Falls(urban) Turnout Times-EMS				
	1st Unit	2nd Unit	Balance of a 1st Alarm	Performance
Benchmark	1 minute	N/A	N/A	90%
Baseline	1 minute 30 seconds	N/A	N/A	90%

City of Sioux Falls(urban) Travel Times-Fire/EMS				
	1st Unit	2nd Unit	Balance of a 1st Alarm	Performance
Benchmark	4 minutes	8 minutes	8 minutes	90%
Baseline	5 minutes 12 seconds	10 minutes 24 seconds	10 minutes 24 seconds	90%

City of Sioux Falls(urban) Turnout Times-Technical Rescue/Hazmat				
	1st Unit	2nd Unit	Balance of a 1st Alarm	Performance
Benchmark	N/A	N/A	N/A	90%
Baseline	4 minutes	N/A	N/A	90%

City of Sioux Falls(urban) Travel Times-Technical Rescue/Hazmat				
	1st Unit	2nd Unit	Balance of a 1st Alarm	Performance
Benchmark	N/A	N/A	N/A	90%
Baseline	16 minutes	N/A	N/A	90%

Wayne Township(Rural) Turnout Times-Fire				
	1st Unit	2nd Unit	Balance of a 1st Alarm	Performance
Benchmark	1 minute 20 seconds	N/A	N/A	90%
Baseline	1 minute 30 seconds	N/A	N/A	90%

Wayne Township(rural) Turnout Times-EMS				
	1st Unit	2nd Unit	Balance of a 1st Alarm	Performance
Benchmark	1 minute	N/A	N/A	90%
Baseline	1 minute 30 seconds	N/A	N/A	90%

Wayne Township(rural) Travel Times-Fire/EMS				
	1st Unit	2nd Unit	Balance of a 1st Alarm	Performance
Benchmark	10 minutes	14 minutes	14 minutes	90%
Baseline	13 minutes	18 minutes 12 seconds	18 minutes 12 seconds	90%

Wayne Township(rural) Turnout Times-Technical Rescue/Hazmat				
	1st Unit	2nd Unit	Balance of a 1st Alarm	Performance
Benchmark	N/A	N/A	N/A	90%
Baseline	4 minutes	N/A	N/A	90%

Wayne Township(rural) Travel Times-Technical Rescue/Hazmat				
	1st Unit	2nd Unit	Balance of a 1st Alarm	Performance
Benchmark	N/A	N/A	N/A	90%
Baseline	16 minutes	N/A	N/A	90%

2015 Performance Indicators							
All Code 3-4 Responses	90%	80%	70%	60%	50%	Goal	Compliant
Call to Dispatch Time	0:04:08	0:03:13	0:02:47	0:02:28	0:02:13	1:51:00	34%
Turnout Time	0:01:12	0:00:58	0:00:49	0:00:42	0:00:36	1:18:00	100%
Travel Time	0:05:07	0:04:37	0:04:12	0:03:50	0:03:29	5:12:00	100%
Response Time	0:08:33	0:07:34	0:06:57	0:06:27	0:06:02	8:21:00	88%
Fire	90%	80%	70%	60%	50%	Goal	Compliant
Call to Dispatch Time	0:02:12	0:01:44	0:01:35	0:01:28	0:01:18	1:51:00	83%
Turnout Time	0:01:07	0:00:55	0:00:49	0:00:42	0:00:37	1:44:00	100%
Travel Time	0:05:11	0:04:34	0:04:14	0:03:55	0:03:36	5:12:00	100%
Response Time	0:07:15	0:06:26	0:05:55	0:05:33	0:05:18	8:47:00	100%
EMS	90%	80%	70%	60%	50%	Goal	Compliant
Call to Dispatch Time	0:04:29	0:03:27	0:03:00	0:02:42	0:02:28	1:51:00	21%
Turnout Time	0:01:08	0:00:54	0:00:46	0:00:39	0:00:34	1:18:00	100%
Travel Time	0:05:20	0:04:43	0:04:16	0:03:52	0:03:31	5:12:00	92%
Response Time	0:09:03	0:07:57	0:07:20	0:06:50	0:06:23	8:21:00	85%
Hazmat-Moderate Risk	90%	80%	70%	60%	50%	Goal	Compliant
Call to Dispatch Time	0:04:45	0:04:08	0:02:46	0:02:16	0:01:52	1:51:00	71%
Turnout Time	0:01:20	0:01:09	0:00:52	0:00:47	0:00:41	1:44:00	100%
Travel Time	0:05:44	0:05:02	0:04:41	0:04:18	0:03:57	5:12:00	84%
Response Time	0:10:34	0:08:21	0:07:55	0:07:07	0:06:32	8:47:00	86%
Technical Rescue	90%	80%	70%	60%	50%	Goal	Compliant
Call to Dispatch Time	0:04:06	0:03:34	0:02:58	0:02:23	0:02:16	1:51:00	34%
Turnout Time	0:01:15	0:01:11	0:01:01	0:00:50	0:00:47	1:44:00	100%
Travel Time	0:04:41	0:03:50	0:03:28	0:03:06	0:03:03	5:12:00	100%
Response Time	0:07:50	0:07:48	0:07:41	0:07:35	0:06:33	8:47:00	100%

Wayne Township All	90%	80%	70%	60%	50%	Goal	Compliant
Call to Dispatch Time	0:14:51	0:04:44	0:03:05	0:02:35	0:02:27	1:51:00	24%
Turnout Time	0:01:08	0:00:58	0:00:52	0:00:44	0:00:39	1:18:00	100%
Travel Time	0:10:24	0:08:30	0:07:47	0:06:39	0:05:18	13:00:00	100%
Response Time	0:25:53	0:14:39	0:11:04	0:10:01	0:08:42	16:09:00	81%

Wayne Township Fire	90%	80%	70%	60%	50%	Goal	Compliant
Call to Dispatch Time	0:02:34	0:02:33	0:02:22	0:02:10	0:01:45	1:51:00	52%
Turnout Time	0:01:12	0:01:06	0:01:00	0:00:54	0:00:48	1:44:00	100%
Travel Time	0:08:48	0:08:07	0:07:55	0:07:43	0:07:12	13:00:00	100%
Response Time	0:11:04	0:10:58	0:09:59	0:09:01	0:08:52	16:35:00	100%

Wayne Township EMS	90%	80%	70%	60%	50%	Goal	Compliant
Call to Dispatch Time	0:04:43	0:03:03	0:02:38	0:02:31	0:02:21	1:51:00	26%
Turnout Time	0:01:09	0:00:58	0:00:53	0:00:44	0:00:38	1:18:00	100%
Travel Time	0:06:47	0:05:59	0:05:32	0:05:18	0:04:47	13:00:00	100%
Response Time	0:12:14	0:09:10	0:08:34	0:07:58	0:07:33	16:09:00	100%

Concentration

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

Concentration Policy Statement

For 90 percent of maximum risk areas, an effective response force shall arrive within 10 minutes, 24 seconds travel time and 12 minutes, 8 seconds total response time. This ERF must be able to provide 1,500 gpm for firefighting, or be able to handle a three-patient emergency medical incident.

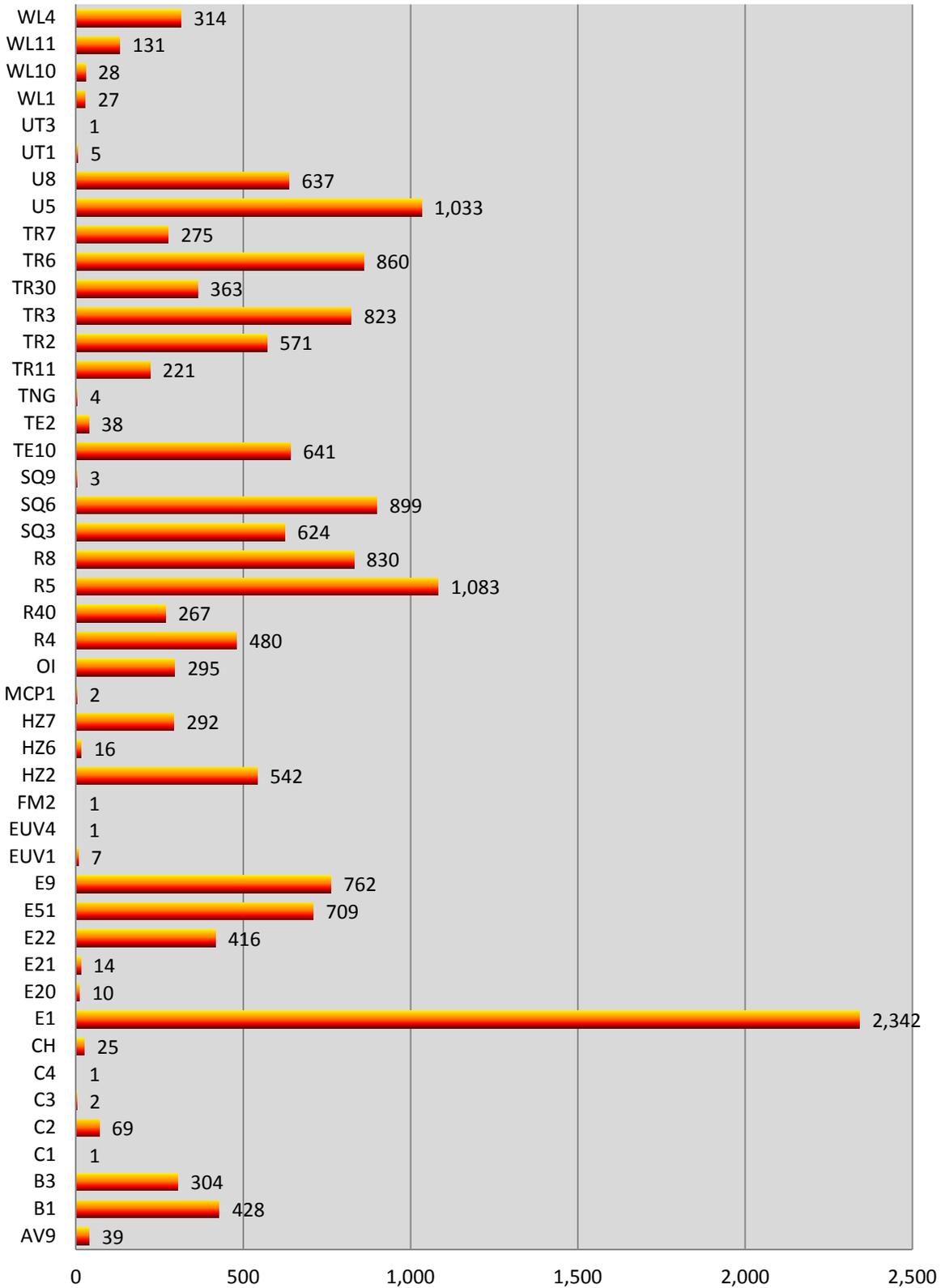
90th Percentile Full Response 0:09:36	90th % turnout	90th % travel
	0:01:56	0:08:24
90th Percentile Truck Co Response 0:08:26		
90th Percentile Initial Response 0:03:59		
Structure fire calls reviewed 8		

Concentration addresses the spacing of multiple resources arranged (close enough together) so that an initial “effective response force” can be assembled on scene within sufficient time frames. An initial effective response force is that which will most likely stop the escalation of an emergency in a specific risk type.

Such an initial response may stop the escalation of the emergency, even in maximum risk areas. However, an initial “effective response force” is not necessarily the total number of units or personnel needed if the emergency escalated to the maximum potential. For example, if a building is preplanned for a worst-case fire flow of 4,000 gpm, it is possible that the jurisdiction plans an initial effective response force to provide the resources necessary (e.g., 1,500 gpm) to contain the fire to a reasonably sized compartment of origin. Additional “alarms” or units could be planned on from farther away, including mutual aid.

- In determining concentration, the department has again looked at the risk assessment, call volume, population, and critical tasking. It should also be noted that the department has entered into Automatic or Mutual Aid Agreements with all surrounding communities. Future needs are identified in the Strategic Plan and CIP.

Calls For Service by Unit (Primary & Backup)



Reliability

Reliability is the ability of a person or system to perform and maintain its functions in routine circumstances, as well as in hostile or unexpected circumstances. In the case of emergency services, reliability looks at the actual incident history data to measure historical performance in accordance with adopted performance measures. System reliability revolves around time and distance from the resources to the incident and the availability and capability of those resources.

Response Reliability

Response reliability is defined as the probability that the required amount of staffing and apparatus will be available when a fire or emergency call is received. If every piece of Fire Rescue apparatus was available every time a fire call was received, then the department's response reliability would be 100 percent. However, if a call is received for a particular company but that company is busy at another call, a substitute (second-due) company must be assigned from another station. If the substituting station is too far away, that company cannot respond in the maximum prescribed travel time. In addition, as one Battalion Chief is tasked with an emergency incident, the other one is tasked with moving apparatus to ensure adequate coverage of the city. As incidents grow, a call-back procedure is put in place to keep staffing at adequate levels. Prior to implementation of the New World Decision Support Module, the ability to automatically track response time was impossible. Response time analysis has been enhanced immensely due to the capabilities of this recently implemented software module. SFFR previously conducted annual reviews of response statistics by utilizing GIS mapping to reevaluate coverage areas. With the implementation of Decision Support, a monthly analysis of response times has been possible.

When looking at response reliability, it is also important to consider the size of the area that a station covers (the bigger the area, the more likely a second-due call will occur). This information is utilized in placement locations for new stations and equipment.

Emergency Workload Impacts

Incident load locations outside of catchment areas-see Sioux Falls Fire Rescue travel response time map.

Incident frequency-see component D Risk Assessment.

Incident types extending commitment times – In 2015, Sioux Falls Fire Rescue responded to 294 fires, 181 hazardous materials calls, 21 technical rescue, 4 vehicle extrications and 31 automatic/mutual aid calls. This equals 531 calls that have extended commit times. The average is approximately 1.5 extended commit calls per day.

Unit Availability

Concurrent incident/queuing/stacking- We are unable to track this data at this time. We are in the process of procuring new RMS software to assist us in isolating station-specific data.

Non-Emergency Workload-Sioux Falls Fire Rescue has addressed many factors that affect response time. The training center provides most of the training to two stations at a time. This training is held in-station so that one company can remain in service. The other company receiving the training usually covers the territory near the station where the training is being held. Crews may leave their territory for training when multi-company drills are held at the training center. Crews also remain available for calls when conducting engine company surveys.

Maintenance for Sioux Falls Fire Rescue is provided by our mechanics. We have one reserve ladder truck, one reserve rescue truck, and four reserve engines to use while vehicles are in for maintenance.

Calculation of Remaining Capacity

Sioux Falls Fire Rescue's performance measurements for the City of Sioux Falls are six minutes and 42 seconds for an EMS call 90% of the time for the first due unit, six minutes and 42 seconds for a fire call 90% of the time for the first due unit, and twenty minutes for a hazardous materials incident/technical rescue 90% of the time. We are currently meeting these times. Sioux Falls Fire Rescue's performance measurements for Wayne Township are fourteen minutes and eighteen seconds for an EMS call 90% of the time, fourteen minutes and forty four seconds for a fire call 90% of the time, and twenty minutes for a hazardous materials incident/technical rescue 90% of the time. We are currently meeting these times.

Stop-Loss Point/Resource Exhaustion

The stop-loss point for Sioux Falls Fire Rescue is generally one fire alarm assignment sent out of the city for automatic/mutual aid. However, if a catastrophic event would occur in the county or the state, Sioux Falls Fire Rescue would send more units. Sioux Falls Fire Rescue would have to implement its emergency call-in of off duty personnel policy 400.1.

Resource exhaustion for Sioux Falls Fire Rescue is generally when we have all but four units deployed on extended calls. The emergency call in of off duty personnel policy 400.1 would be implemented when we have less than four units in service. Sioux Falls Fire Rescue also follows staffing guide policy 401.1 that allows for increased staffing for weather events, major fires etc.

Comparability

Sioux Falls Fire Rescue uses ISO and NFPA 1710 as benchmarks for our system performance. We use ISO to help us space our fire stations the correct distance apart and to have the right number of apparatus. We use NFPA 1710 as a guide line for staffing and for response times.

Performance Measures Objective Adoption

Dynamic Effect of Fire Growth

The stage of a fire affects staffing and equipment needs. Both can be reasonably predicted for different risk levels and fire stages. The ability to correlate fire staffing and equipment is the basis for a response coverage study for SFFR.

The fire suppression tasks that are required at a typical fire scene vary a great deal depending upon risk level. What the fire companies must do, simultaneously and quickly, if they are to save lives and limit property damage, is to arrive at the right time, with adequate resources to do the job. Matching the arrival of resources with a specific point of fire growth or number of patients found is one of the greatest challenges to fire managers.

The answer for controlling the variation in fire dynamics lies in finding a common reference point, something that is common to all fires regardless of the risk level of the structure, the contents of the structure, or the time the fire has burned. Such a reference point exists. Regardless of the speed of growth or length of burn time, all fires go through the same stages of growth. One particular stage emerges as very significant, because it marks a critical change in conditions. Flashover is the point at or before which it is desirable to have fire companies arrive on scene. When flashover occurs, everything in the room instantaneously erupts into flame. This eruption into flame generates a tremendous amount of heat, smoke, and pressure, resulting in enough force to extend the fire beyond the room of origin through doors and windows or breaches in walls. The combustion process then speeds up because it has an even greater amount of heat to transfer to unburned objects through convection, radiation, direct flame contact, and conduction.

Flashover is a critical stage of fire growth for two reasons: First, no living thing in the room of origin will survive, so the chances of saving lives drop dramatically. Second, flashover creates a quantum jump in the rate of combustion and significantly greater amounts of water and resources are needed to reduce the temperature of the burning material below its ignition temperature. A fire that has reached flashover means it is too late to save anyone in the room of origin and a greater amount of resources (equipment and personnel) are required to handle larger hose streams needed to extinguish the fire. A post-flashover fire will burn hotter and move significantly faster, compounding the search and rescue problems in the remainder of the structure at the same time that more firefighters are needed for fire attack and extinguishment. Flashover normally occurs from four to ten minutes after free burning begins.

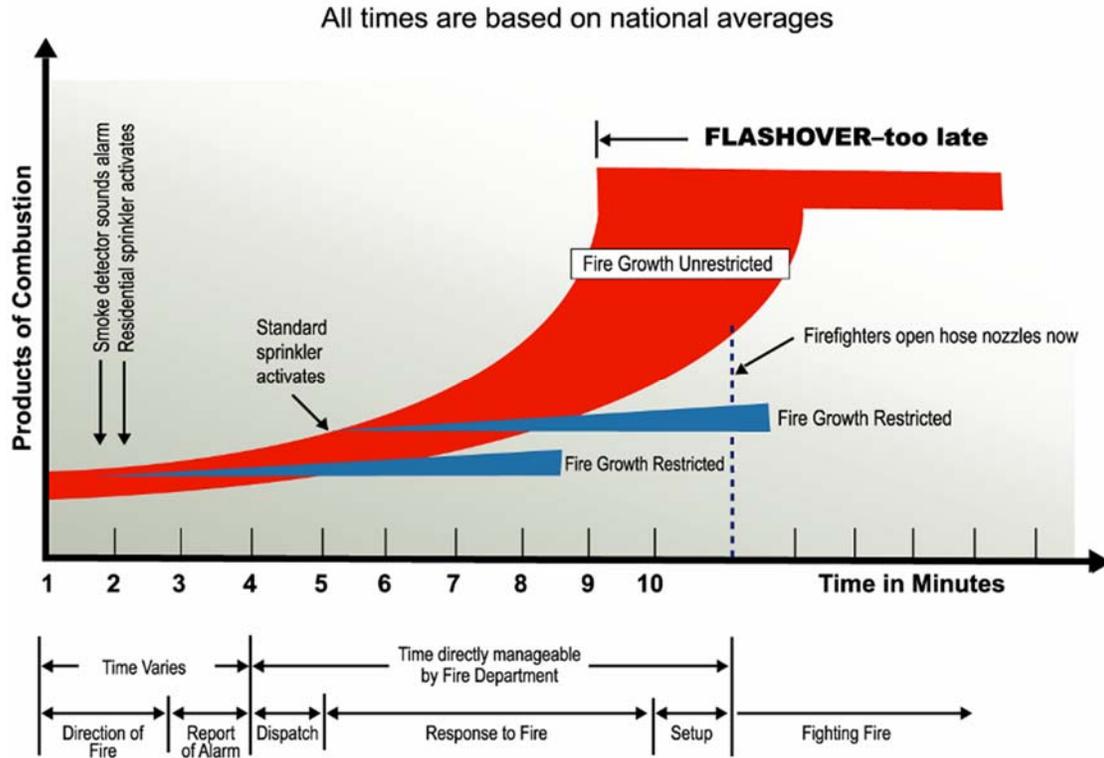


Figure 1: Time Versus Products of Combustion

					Response Time	
Ignite and Free Burn	Detection (:30)	Notify (:30)	Call Process (1:00)	Dispatch Time (1:00)	Turnout (1:44)	Travel (5:12)
0	:30	1:00	2:00	3:00	4:44	9:56
Cardiac Arrest		Brain death starts in 4 to 6 minutes			Death	

Figure 2: Total Reflex Time in Minutes (Cumulative)

Cardiac Arrest

Studies show that the faster CPR and defibrillation are started, the higher the probability is of surviving cardiac arrest.

Collapse to CPR	Collapse to Defibrillation	Probability of Survival
≤ 5	≤ 10 Minutes	37%
≤ 5	> 10 Minutes	7%
> 5	≤ 10 Minutes	20%
> 5	> 10 Minutes	0%

1998 Emergency Medical Directors' Association of California

Integrated Performance Statements-see Component D Risk Assessment

Compliance Methodology

Compliance Model



Overall Evaluation

Identification of System Strengths and Weakness

Sioux Falls Fire Rescue has the ability to describe its community served, services provided, and community expectations. Risks have been identified through risk assessment of historical data and by working with the Geographical Information Services (GIS) department. GIS and ISO requirements to help with distribution and concentration of resources. Policies and the dispatch system help with reliability issues. Historical data, studies, and practical application support the fact that apparatus staffed by 4 crewmembers work the best for the city of Sioux Falls. The majority of our performance measurements are being met.

There are some weaknesses in the system. For risk analysis, a limited ability to capture our second, third, fourth, and command unit response times during multi-unit responses is experienced. Dispatch policy has been changed. Our efforts continue to consistently capture this data. Requirements written and included in our RFP for a new Records Management System will discover when a second due unit arrives prior to a first due unit and when another unit takes a call outside of its territory for another unit. Quantification of non-emergency work loads continue to be evaluated.

During the 2013 CFAI Accreditation site visit, a recommendation was made to capture call processing time. Currently, there is no system in place to capture the time when a call is received by the 911 dispatch center so capturing call taking time is not possible. However, call creation time is captured. A previous Division Chief of Operations was a member of Metro Communications' strategic planning committee and was able to include in their goals working towards NFPA standards 1221 Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems, and NFPA 1061 Standard for Professional Qualifications for Public Safety Telecommunications Personnel.

Monthly performance indicator data is provided to SFFR captains to monitor and improve our response performance. The installation of mobile mapping in each apparatus has helped to improve turnout times by assisting the driver operator identify locations in a more efficient manner. The dispatch quadrant system has been updated to a uniform and has proven more useful for locating emergency incidents. When a station receives a call for service, the quadrant location is automatically displayed on the rip-and-run print out and on pagers.

The SOC data continues to be utilized to review historical trends and performance. It has been beneficial to use this data in a proactive manner to improve our performance measurements throughout the year; not just at year's end. New World's Decision Support module assisted in meeting this goal.

Continual investigation by SFFR members identified the need for a new RMS (Records Management Software) program to allow for better access to our own response data. The goal is to purchase and implement software that will resolve the issues identified regarding multi-unit response times and out of station responses. This selection is now in an official RFP process and will be implemented as the selection and its timeline permits.