Community Risk Assessment Standards of Cover

TEMPE FIRE MEDICAL RESCUE DEPARTMENT

2022

Table of Contents

Executive Summary

The 2021 Tempe Fire Medical Rescue Department (TFMRD) Community Risk Assessment and Standards of Cover (CRA/SOC) has been updated for TFMRD's fifth accreditation cycle. The updated CRA/SOC contains an in-depth examination of the risk in Tempe based on guidelines from the Center for Public Safety Excellence. Based on a five-year set of data and extensive self-assessment, the CRA/SOC has become a vital resource to TFMRD, providing valuable insight to systematically assess the human resources, physical assets both fixed and mobile, and how effectively those assets are deployed to provide services in our community. This CRA/SOC describes the TFMRD service delivery model with a complete overview of the most recent Community Risk Assessment process and commitments on the part of TFMRD to continual process and quality improvements going forward.

As with each previous version of the CRA/SOC, this document follows the model defined in the latest edition of the Center for Fire Public Safety Excellence (CPSE) publication: *Quality Improvement for the Fire and Emergency Services*. Included in this document are descriptions of TFMRD programs and services, an all-hazard risk assessment of the community, current deployment and performance goals, an evaluation of the current deployment model, and a plan for maintaining and improving response capabilities.

The Standards of Response Coverage Statement contains the TFMRD response benchmarks and baseline measures that have been established and regularly updated by the executive staff and labor representatives in accordance with our established labor/management process. Following a process of analyzing performance measures relating to the distribution and concentration of resources, TFMRD has continued to use response time standards established by the Commission on Fire Accreditation International (CFAI) and the National Fire Protection Association (NFPA) 1710: *Organization and Deployment of Fire Suppression Operations by Career Fire Departments 2020 ed.* as the benchmarks for setting response time goals.

Detailed information on TFMRD's adopted response time goals can be found in Section four, 90th Percentile Benchmark and Baseline Performance. Low, medium, and high-risk baselines for emergency response include the following incident categories:

- Emergency Medical Services
- Fire Incidents
- Technical Rescue
- Hazardous Materials

The Department has established effective response force (ERF) total response time baselines, benchmarks, and critical task analyses for each of the incident categories.

The description of area characteristics provides an overview of the City of Tempe:

- Population
- Climate
- Geography
- Built environment
- Major utilities
- Transportation networks

The CRA/SOC also covers the city's governance structure, lines of authority, financial management, and human resources. The Review of Services Provided section details the core services the Department provides based on general resource/asset capability and basic staffing complements.

During the service analysis, the critical task analyses were updated for EMS, fire, hazardous materials, and technical rescue incidents at three different risk levels, high, medium, and low. Importantly, this critical task analysis required a more in-depth review of staffing requirements and actions necessary to mitigate a wide range of emergencies.

The review of current system performance examined every component of emergency response time including:

- Call processing
- Turnout
- Travel time

The CRA/SOC contains additional components of coverage including concentration, distribution, and reliability of units. Based on the analysis contained in this document, the reader should walk away with an understanding of:

- The characteristics and risk inherent in the community of Tempe, Arizona
- The structure and services provided by the Tempe Fire Medical Rescue Department
- The benchmarks TFMRD strives to reach for each service discipline
- The baseline performance TFMRD is currently providing
- Recommendations to improve delivery of fire and emergency services to the community

This document contains specific recommendations made by the executive staff that are intended to improve TFMRD's ability to meet the benchmark response and service goals. The material, benchmarks, and recommendations contained in this document have been adopted by TFMRD staff and the City of Tempe and are an essential component of the Department's Strategic Plan.

Section 1: Introduction

Organizational History

Tempe is one of the oldest communities in the Valley of the Sun. Founded in 1871 and incorporated in 1894 at the site of two previously founded communities San Pablo and Hayden's Ferry, Tempe has been one of the most densely populated cities in Arizona since its beginning.

The Tempe Fire Department was legally established January 3, 1903, and operates under the authority granted by the Mayor and City Council as defined in the City Charter and City Code.

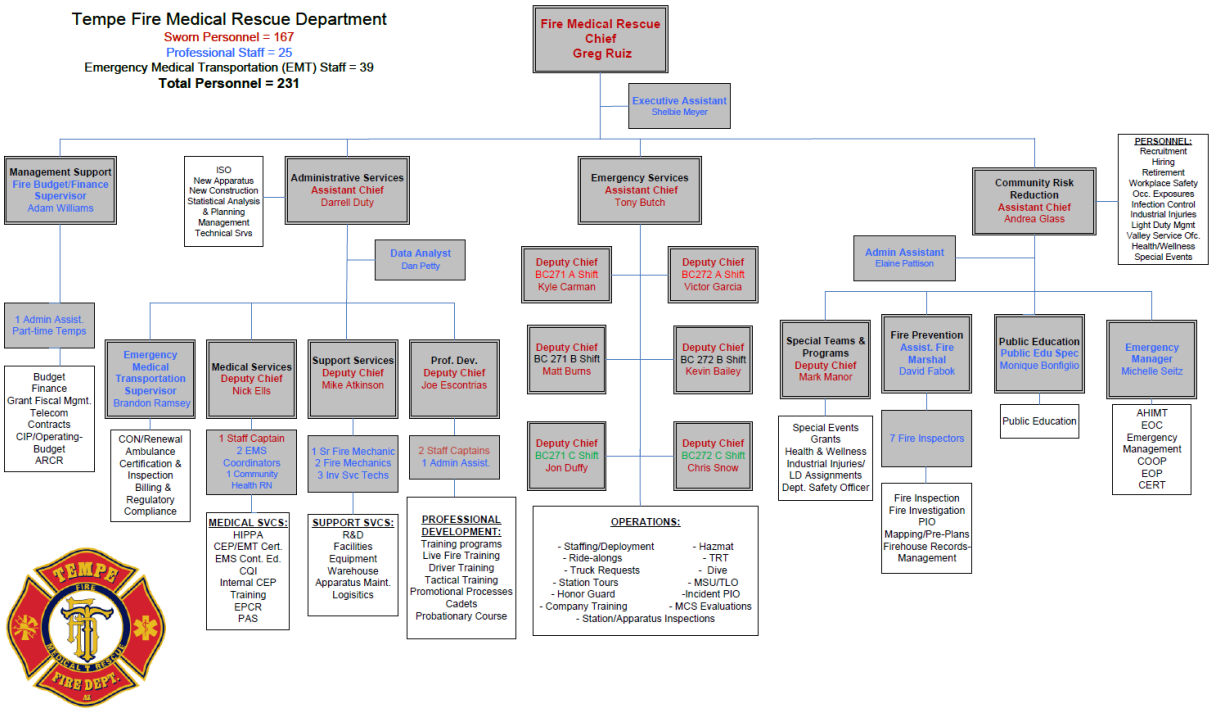
In 2014, The Tempe Fire Department legally changed its name to Tempe Fire Medical Rescue Department (TFMRD) to better reflect the range of services it provides including:

- fire suppression
- hazardous materials mitigation
- fire and life safety code compliance
- fire prevention
- public education
- emergency medical services
- emergency medical transportation
- technical rescue
- community health
- organization-wide disaster prevention activities
- administrative support services

Mission Statement

We, the members of the Tempe Fire Medical Rescue Department, dedicate our efforts to provide for the safety and welfare of the public through preservation of life, health, property, and the environment.

Organizational Chart



The Community of Tempe

At slightly more than forty square miles, the City of Tempe is situated between the cities of Phoenix, Guadalupe, Chandler, Mesa, and Scottsdale, in the geographic heart of the Phoenix metropolitan area, which is located in Maricopa County. Arizona is the 4th fastest growing state with a population of 7.2 million as of 2021. The City of Tempe was organized in 1871, named in 1879 and incorporated in 1894. The 220-acre Tempe Town Lake forms the northern edge of downtown and resulted from the damming of the Rio Salado (Salt River) in 1999.

Tempe Community Profile

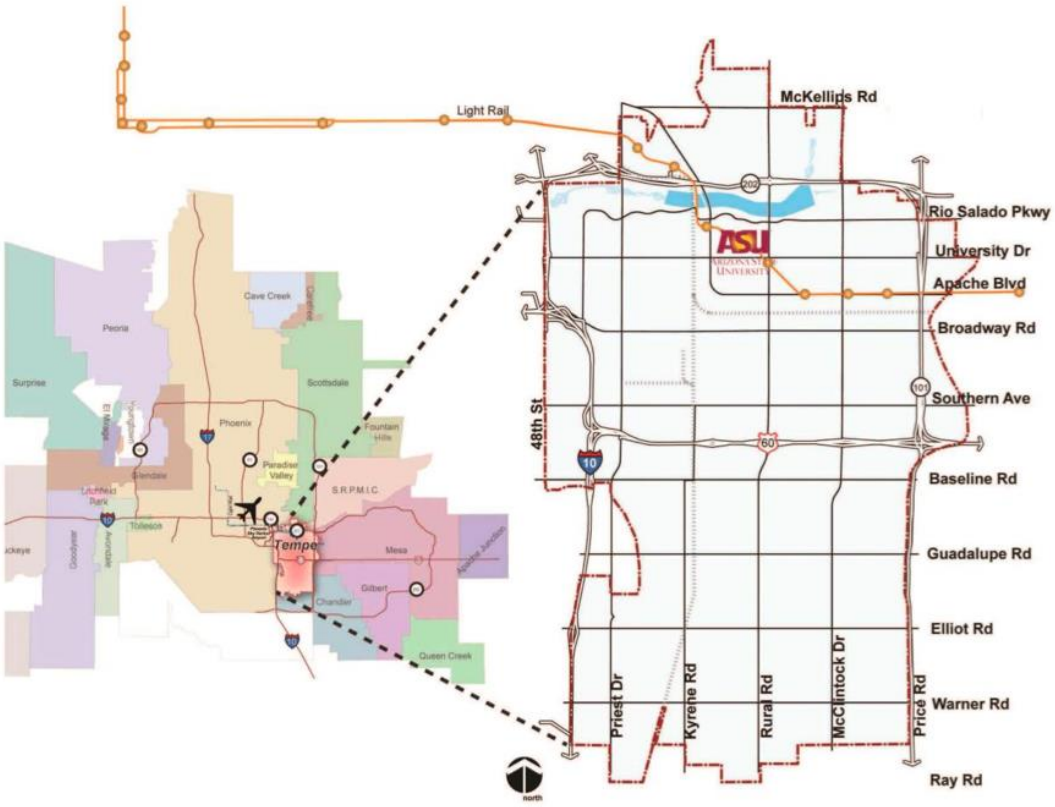


Figure 1- Tempe City Limits

Tempe is the eighth largest city in Arizona and the 117th largest city in the United States, with a modern economy based on commerce, tourism, and electronics manufacturing. Tempe is the

most densely populated city in Arizona with a residential population of 192,364 as of 2020. Tempe has a population density of 5,101 people per square mile. The population has increased by 26.10% since 2010, and historically has grown at a rate of 2.03% annually. The city is surrounded by freeways on all four sides with another intersecting through the center that creates easy movement around the city.

The City of Tempe is rapidly growing not only in population, but in development. More than 98% of land area within the City's borders is developed. Approximately 48% of the land used in the jurisdiction is residential followed by 29% commercial / industrial, 18% private and open space / recreational, and 5% civic / educational. Tempe had an estimated 82,626 households from 2015-2019 identified from the U.S. Census in 2020, with 75,530 occupied and 7,096 vacant. Housing units within Tempe are projected to reach 91,000 by 2040.

In compliance with the Arizona State Statutes, the City of Tempe has established the General Plan 2040, which is a comprehensive, long-range plan to guide the physical development of the community. The General Plan 2040 is the community's vision for the future. The Plan must be general enough to apply to all aspects of the city and flexible enough to respond to changes in the economy, environment, or community.

Parameters for development density are identified within the General Plan 2040. Seven separate categories have been defined and can be found in Table 1. Figure 2 illustrates the areas designated as high density. The highest density is anticipated to continuously occur in the northern portion of Tempe based on the number of dwelling units per acre.

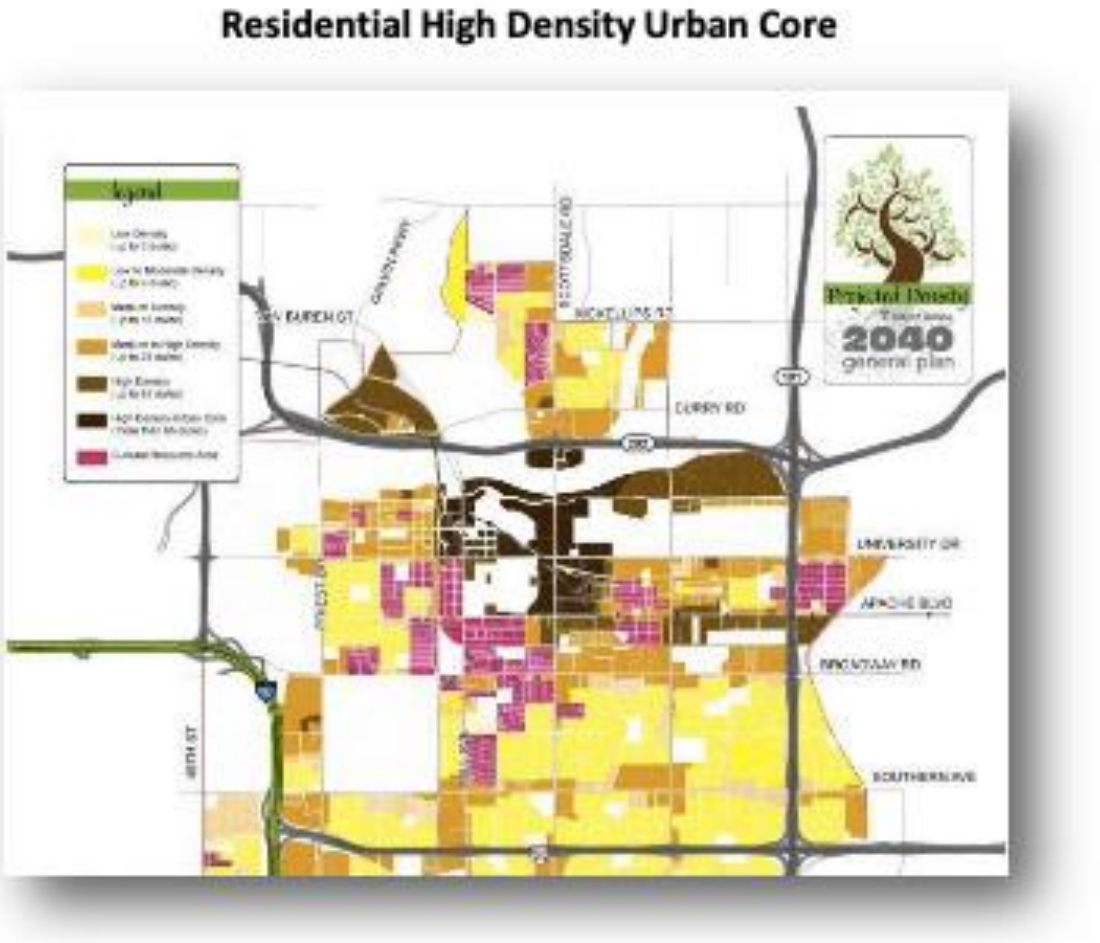
Table 1 - Residential Density

Residential Density Distribution 2013

Residential Density Category	Acres	Distribution
Low-Density (0-3 du/acre)	1,266	10.3
Low-to-Moderate Density (4-9 du/acre)	5,062	41.2
Cultural Resource Area (zoning dependent)	838	6.8
Medium-Density (10-15 du/acre)	1,274	10.4
Medium-to-High (16-25 du/acre)	2,770	22.6
High-Density (>26 du/acre)	1,074	8.7
High-Density Urban Core (>65 du/area)	0	0

Notes: Tempe General Plan 2040

Figure 2– Residential High Density Urban Core



Local Government

The city operates under a council-manager form of government. The Mayor is elected for a four-year term along with six council members that are elected at-large for staggered four-year terms. The City Council appoints the City Manager who has the responsibility for carrying out Council policies, directives, and City operations.

The City of Tempe operates with a total of 11 departments. The City Manager appoints the department heads as specified in the City Charter. The Tempe Fire Medical Rescue Department is overseen by the Fire Chief, who reports directly to the City Manager.

Geography

Tempe is generally flat, desert land located in the Salt River Valley. Major geographic features include the Tempe Town Lake, Tempe Buttes, Hayden Butte, Papago Park, and a rapidly growing skyline. Tempe's elevation ranges from a high point of 1,495 feet atop the Hayden Butte (A-Mountain) to a low point of 1,140 feet at the dry bottom of the Salt River. Arizona State University's (ASU) main campus is located in the downtown portion of the city.

The central and southern portions of Tempe are less dense, consisting largely of single-family homes, apartment complexes, strip malls, low-density office parks, and light industry. The western area of Tempe has Diablo Stadium with the Tempe Buttes as its backdrop. Sky Harbor International Airport, located along the shared western border with Phoenix, has led to significant land development in northwest Tempe including hotels, corporate parks, and industrial facilities.

Demographics

Tempe has a population of 192,364 in 2020 with a projected population of 246,982 by 2040. Figure 4 shows the detailed Demographics from the City of Tempe Fiscal Year 2020/2021 Annual Budget.

Figure 3– City of Tempe Demographics

Demographics

Population (Census)

2015	Interim Census	175,826
2010	U.S. Census	161,719
2005	Interim Census	165,796
2000	U.S. Census	158,625
1995	Interim Census	153,821
1990	U.S. Census	142,165
1985	Interim Census	132,942
1980	U.S. Census	106,743
1970	U.S. Census	63,550
1960	U.S. Census	24,897
1950	U.S. Census	7,906

Population by Sex/Age (Census)

Male	84,200
Female	77,519
Under 18	27,208
18 & over	134,511
20 - 24	30,009
25 - 34	29,327
35 - 49	26,089
50 - 64	23,723
65 & over	13,660

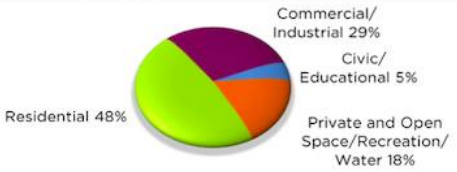
Population by Ethnicity (Census)

Hispanic or Latino	34,092
Non-Hispanic or Latino	127,627

Population by Race (Census)

White	117,457
African American	9,551
Asian	9,217
American Indian and Alaska Native	4,671
Native Hawaiian and Pacific Islander	645
Other	13,793
Identified by two or more	6,385

Land Use (2013) (%)



General/Special Election (2018)

Registered Voters: 82,777	
Ballots Cast:	22,038
Voter Turnout:	26.62%

School Registration

Tempe Elementary School District	10,124
Kyrene School District	3,495
Tempe Union High School District	7,818
ASU Tempe Campus	73,000

Bond Ratings

Fitch	AAA
Standard and Poor's	AAA

Employment Trends (MAG and USBLS)

	Employment	Unemployment Rate
2019	165,300	3.8%
2018	159,100	3.8%
2017	105,123	3.9%
2016	99,447	4.3%
2015	95,449	4.8%

Building Permits (Fiscal Year Data)

	Number	Value ($000)
2020	2180	791,822
2019	2,167	858,636
2018	2,000	815,553
2017	1,272	440,643
2016	1,250	607,804
2015	1,328	709,152
2014	1,143	608,064
2013	947	178,259
2012	915	257,176
2011	843	104,000
2010	975	182,876

Major Employers	Employees
Arizona State University	8,010
State Farm Insurance	6,570
SRP	2,910
Freedom Financial Network	2,660
Wells Fargo	2,520
JP Morgan Chase Bank National Assn	2,320
Amazon	2,160
ABM Industries Inc	2,000
City of Tempe	1,983
Tempe Elementary School District 3	1,650
Honeywell	1,540
American Airlines	1,160

City Sales Tax

General Fund	1.2%
Transit Fund	0.5%
Performing Arts Fund	0.1%
Total	1.8%

Property Tax Rate

Primary	0.8917
Secondary	1.5042
Total	$2.3959

Largest Property Taxpayers	% of Net Secondary Assessed Valuation
Verizon Wireless	1.70%
Arizona Public Service Company	1.50%
Arizona Mills Mall LLC	1.04%
JP Morgan Chase Bank NA	0.88%
Cousins Fund II Phoenix IV LLC	0.58%
Quest Corporation	0.58%
JDM II Tempe OC LLC	0.46%
Honeywell International Inc.	0.46%
San Sonoma Apartments LLC	0.44%
PKW W Rio Salado LLC	0.39%

Police

Sworn Personnel	335
Non-Sworn Personnel	173.5
Total	508.5
911 calls answered in less than 10 seconds	90.41%
Crime Index	8,328

Fire Medical Rescue

Sworn Personnel	156
Non-Sworn Personnel	66
Total	222
Fire Stations	7
Response to Emergency (Basic and Advanced Life Support) Medical Incidents in Tempe	21,761
Total Number of Dispatched Calls in Tempe	26,085

Solid Waste

Residential Accounts Serviced (annual monthly average)	32,564
Commercial Accounts Serviced (as of June 2020)	1,568
Residential Recycling Diversion Rate	21.1%

Water/Wastewater

Customer Accounts (annual monthly average)	43,428
Water Gallons Treated (million)	15,325
Sanitary Sewers (miles)	495

Table 2 – Building Permits

Building Permits (Fiscal Year Data)

	Number	Value ($000)
2020	2180	791,822
2019	2,167	858,636
2018	2,000	815,553
2017	1,272	440,643
2016	1,250	607,804
2015	1,328	709,152
2014	1,143	608,064
2013	947	178,259
2012	915	257,176
2011	843	104,000
2010	975	182,876

Table 3—Major Employers

Major Employers	Employees
Arizona State University	8,010
State Farm Insurance	6,570
SRP	2,910
Freedom Financial Network	2,660
Wells Fargo	2,520
JP Morgan Chase Bank National Assn	2,320
Amazon	2,160
ABM Industries Inc	2,000
City of Tempe	1,983
Tempe Elementary School District 3	1,650
Honeywell	1,540
American Airlines	1,160

Table 4 - Existing and Projected Land use

	2013 EXISTING LAND USE[1]		2040 PROJECTED LAND USE	
LAND USES	ACRES	Percent of total existing land use	ACRES	Percent of total projected land use
RESIDENTIAL	9,877	48.1	9,609	47.3
COMMERCIAL	3,157	15.4	2,189	10.8
MIXED USE	8	0.0	1,892	9.3
INDUSTRIAL	2,806	13.7	3,536	17.4
CIVIC	75	0.4	74	0.4
EDUCATIONAL	919	4.5	442	2.2
PUBLIC OPEN SPACE	1,511	7.4	2,016	9.9
WATER	697	3.4	387	1.9
PRIVATE OPEN SPACE [2]	102	0.5	0	0.0
RECREATIONAL/CULTURAL	724	3.5	174	0.9
VACANT	658	3.2	0	0.0
TOTAL OF LAND USES (EXCLUDING RIGHT-OF-WAY)	20,535	100	20,319	100
GROSS TOTAL (ACRES):	25,701 acres		25,956 [3]	
GROSS AREA (SQUARE MILES)	40.1 square miles		40.4 square miles	

1 Existing land use map is found in Appendix A, Figure 1. Categories on existing land use map vary from projected land use categories, and have been adjusted to reflect additional right of way.
2 Private open space requires property owner approval to appear on the Projected Land Use Map
3 Includes County islands and land annexed after 2013

Transportation Network

According to the Maricopa Association of Governments (MAG), more than 1.1 million cars drive the freeways in Tempe every day. Ten major roadways support the greatest daily traffic volume serving the residential, educational, business, industrial, and commercial corridors of the city. The major arterial and collector roadways are illustrated in Figure 4. The City's transportation network includes 16 miles of railroad freight lines with 44 railroad/roadway crossings.

Figure 4 – Tempe Arterial and Collector Streets

City's Arterial and Collector Street and Freeway Classifications

Freeways

Tempe is surrounded by freeways making it convenient to travel to destinations in and out of the city. The City of Tempe is served by the following six freeways:

- Red Mountain Loop 202 – North end (Runs East & West)
- Loop 101 – East end (Runs North & South)
- Superstition Freeway U.S. 60 – Through Middle (Runs East & West)
- Interstate I-10 – West end – (Forms the Western border of City)
- I-143 – Northwest corner of the City. Connects Tempe with Sky Harbor International Airport
- I-153 – Northwest corner of the City. Connects Tempe with Sky Harbor International Airport

Biking/Walking

As a "Bicycle Friendly Community," Tempe has more than 175 miles of on-street bike lanes, 23 miles of multi-use pathways, and a 20-mile path known as the Western Canal Path that connects Tempe to Phoenix, Chandler, Gilbert, and Mesa. Tempe has one of the highest percentages of bicycle commuters in the country with almost four percent of residents utilizing a bicycle to commute around the city.

Public Transit

Light Rail

The 26-mile Light Rail system runs from 19th Avenue and Dunlap Avenue in central Phoenix, to Tempe and Mesa, ending at Mesa Drive and Main Street. It operates 365 days a year at 20+ hours a day with over 12 million passengers riding the Metro Light Rail system in 2020, reflected in Figure 5 "Yellow Line". The trains travel at the posted speed limits and take 85 minutes to travel the 26-mile route. Tempe has 9 light rail stops with 5.5 miles of track through the city.

Tempe Streetcar

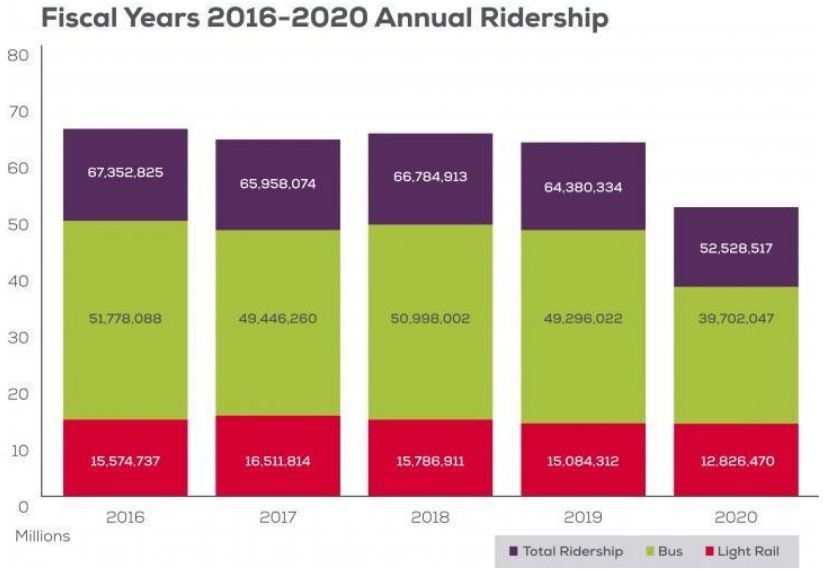
The Tempe Streetcar is the region's first modern streetcar line. The three-mile streetcar will add to Tempe's comprehensive transit network with 14 stops, including 2 that connect with Valley Metro Light Rail. The streetcar will travel in a loop that is reflected in Figure 5– "Blue Line". It will serve one of the highest transit ridership centers in the region and connect riders to neighborhoods, events, ASU, major business centers and numerous destinations.

Figure 5 - Tempe Streetcar Map

Bus Service

Bus lines create a continuous valley-wide transit system, connecting with light rail stations which are about one-half mile apart. The bus routes in Tempe consist of 16 local and three express service routes covering every arterial street.

Figure 6 – Public Transit Ridership



Education

Primary and Secondary Education

Primary and secondary education systems are divided into three school districts: Tempe Elementary School District, Kyrene School District, and Tempe Union High School District. Primary and secondary education facilities in Tempe include:

- 8 public high schools
- 4 public middle schools
- 18 public elementary schools
- 23 Charter Schools
- 16 Private Schools

Rio Salado College

Rio Salado College is part of the Maricopa County Community College District, which is the largest provider of health care and vocational training in Arizona. Rio Salado College provides two-year degrees as a distance learning college. It is a resource for individuals seeking education and job training. Approximately 1,000 occupational programs and 37 academic associate degrees are offered within the college system.

Arizona State University

Tempe is home to the main campus of Arizona State University (ASU), a Tier I research university. ASU is a publicly owned, nationally renowned education and research institute. As the largest employer and one of the largest land holders in Tempe, ASU is an important part of the community. As a State of Arizona entity, ASU planning and development is subject to state planning laws. The main campus in Tempe includes ASU Bio-design, Fulton School of Engineering, WP Carey School of Business, ASU School of Earth, and Space Exploration. ASU has been named the Nation's Most Innovative University five years running, according to US News and World Report.

The overall enrollment is typically one of the largest undergraduate populations in the country with more than 100,000 students and approximately 12,000 employees. The main campus of ASU has more than 77,000 students as of 2021. Bachelor, Master, and Doctorate level programs are available through ASU.

Quality of Life

The City of Tempe's recreation programs provide health and fitness, music and theater, arts and crafts, dance, reading, sports, and special interests. Tempe appeals to recreation enthusiasts and is renowned as a place for events and outdoor activity. Recreation programs in Tempe provide for all ages and abilities.

Special events

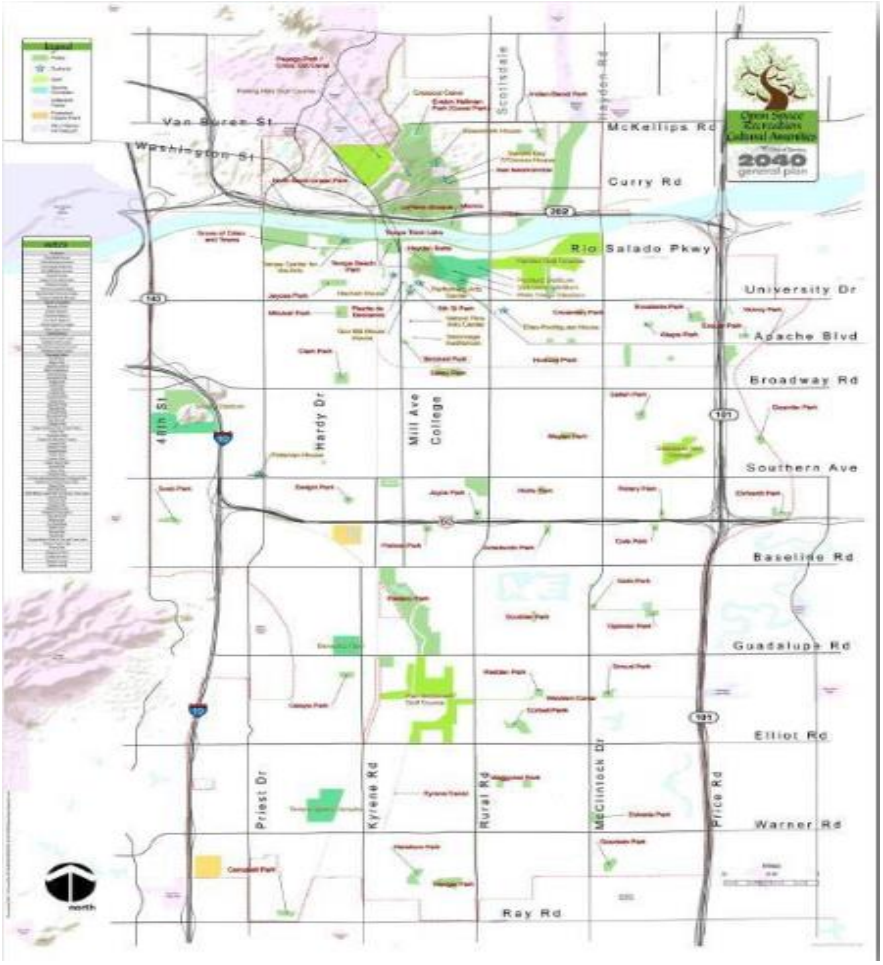
The City hosts more than 300 special events annually with major events including:

- Ironman (Full and 70.3)
- Rock ‘n’ Roll Marathon
- Pat Tillman Run
- Los Angeles Angels of Anaheim Spring Training Games
- Multi-Day Music Festivals
- Spring and Fall Festival of the Arts
- Tempe Sister City Oktoberfest
- Tour de Fat (Fat Tire Beer)
- Fourth of July celebration

Parks and Open Spaces

The City of Tempe residents have access to more than 50 neighborhood and community parks adding up to approximately 1,550 acres of open-space, public parks, and preserves within the city limits (Figure 7). Major amenities include Tempe Beach Park, Tempe Sports Complex, Kiwanis Park, and Tempe Town Lake. Strategically located throughout the city, most residents are within one half-mile of a park.

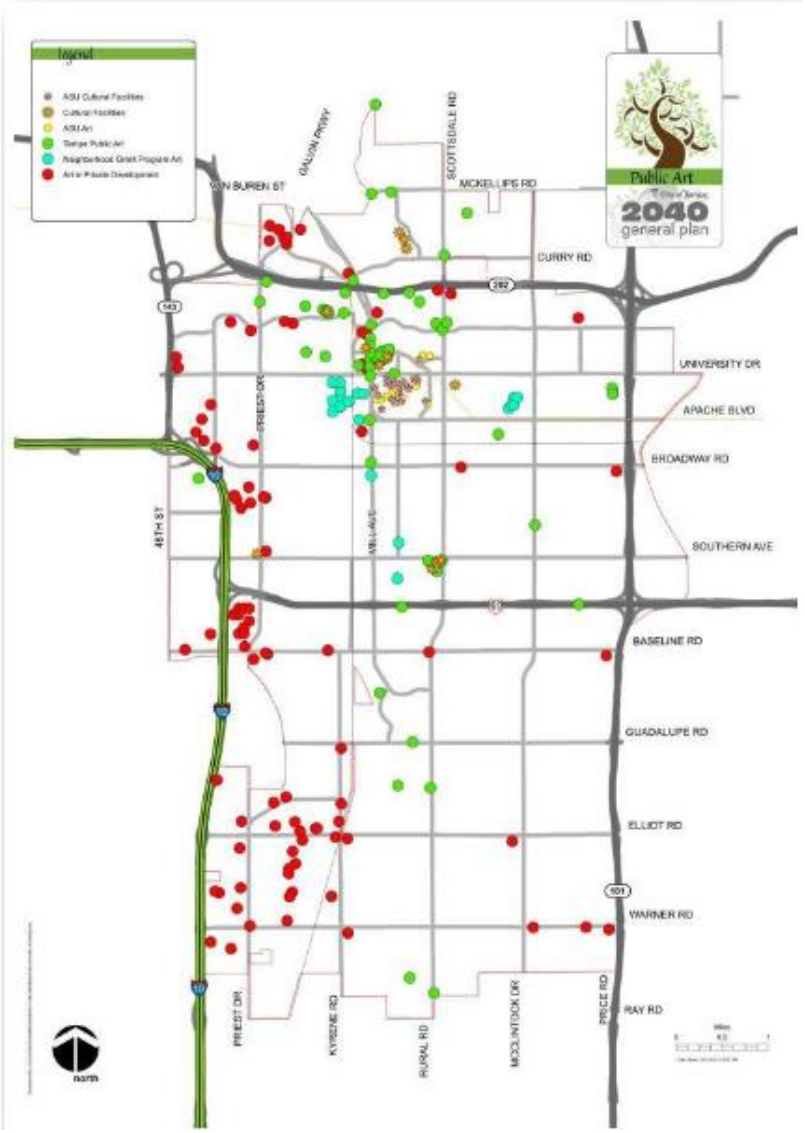
Figure 7 – Park/Open-space/Recreation facilities



Cultural Amenities

Tempe is dedicated to preserving and promoting elements of historic and cultural significance. The City's cultural amenities include museums, libraries, visual and performing arts centers, and numerous works of public art. Arizona State University is a significant contributor to Tempe's cultural amenities. Art installations are distributed around the Tempe in streetscapes, pathway enhancements, parks, transit facilities, public buildings, and other public spaces.

Figure 8 - Public Art



The Grady Gammage Auditorium, designed by Frank Lloyd Wright, provides a venue for a variety of national and international performances. The main library on the Tempe ASU campus is The Charles Trumbull Hayden Library. The specialty law, architecture/design, music, and science/engineering libraries are also located throughout the campus.

The Arizona Historical Society (AHS) Museum is an 80,000 sq foot facility at Papago Park that provides exhibitions about the contemporary history of the Salt River Valley, public events,

educational programs, and public access to one of the largest Arizona history collections. The museum carries more than 3 million objects.

Historic Preservation

The City of Tempe's historic preservation goal is to enhance community character and heritage through the identification and preservation of significant sites, districts, and properties. Tempe has 41 properties and three districts listed on the National Register of Historic Places. There are 44 properties and four districts listed on the Tempe Historic Property Register. Nearly 50 properties are classified as eligible for listing.

Protection and enhancement of Tempe's heritage is critical to preserving the unique identity of the community. Tempe has curated an environment that tells the story of its growth through a blend of historic and contemporary development.

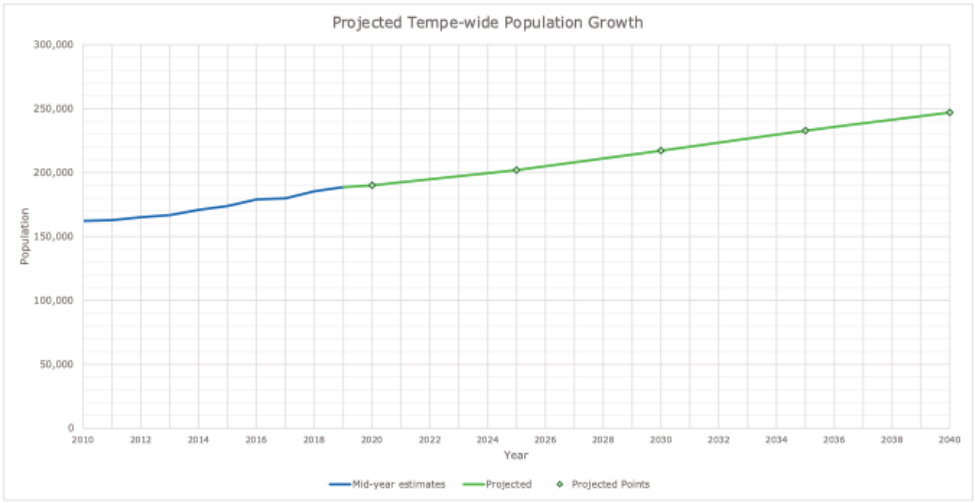
Future Growth

Population growth modeling predicts the largest percentage increase will likely occur in downtown Tempe, north of Broadway Road (MAG). As a landlocked city, urban intensification leads to larger, more complex structures and increased population density per square mile. Projected population growth is demonstrated in Graphs 1.

Housing units within Tempe are projected to reach 91,000 in 2040, which is an increase of more than 18,000 units over a period of nearly 30 years. MAG prepares socioeconomic modeling that uses data, surveys, and population estimates that include housing and employment data to develop growth projections in 10-year increments through 2040. (Graph 2). The Arizona Department of Economic Security (DES) develops population projections for each city and town with a population greater than 1,000 people. According to these projections, Tempe is expected to grow by more than 55,000 residents and add nearly 75,000 jobs by 2040.

Graph 1 – Projected Tempe Population Growth

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030	2035	2040
Population	162,221	162,809	165,079	166,690	170,814	173,868	179,015	179,794	185,344	188,616	190,009	201,942	217,107	232,838	246,982
Annual Growth	-	0.4%	1.4%	1.0%	2.5%	1.8%	3.0%	0.4%	3.1%	1.8%	0.7%	1.2%	1.5%	1.4%	1.2%



Graph 2 – Source: Maricopa Associations of Governments

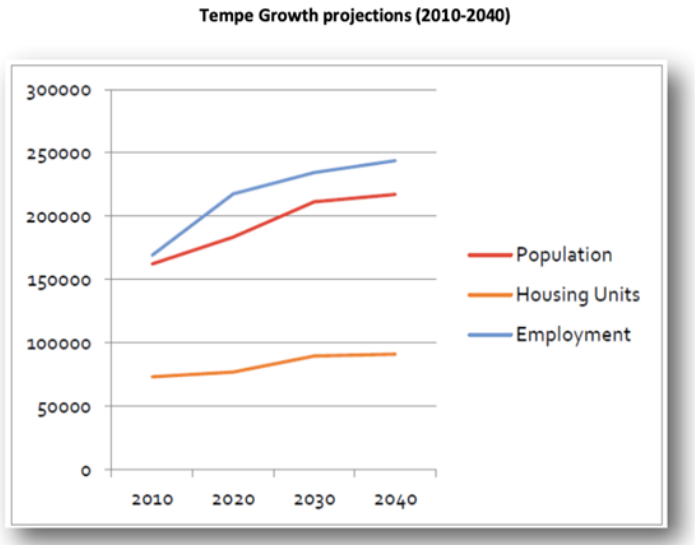
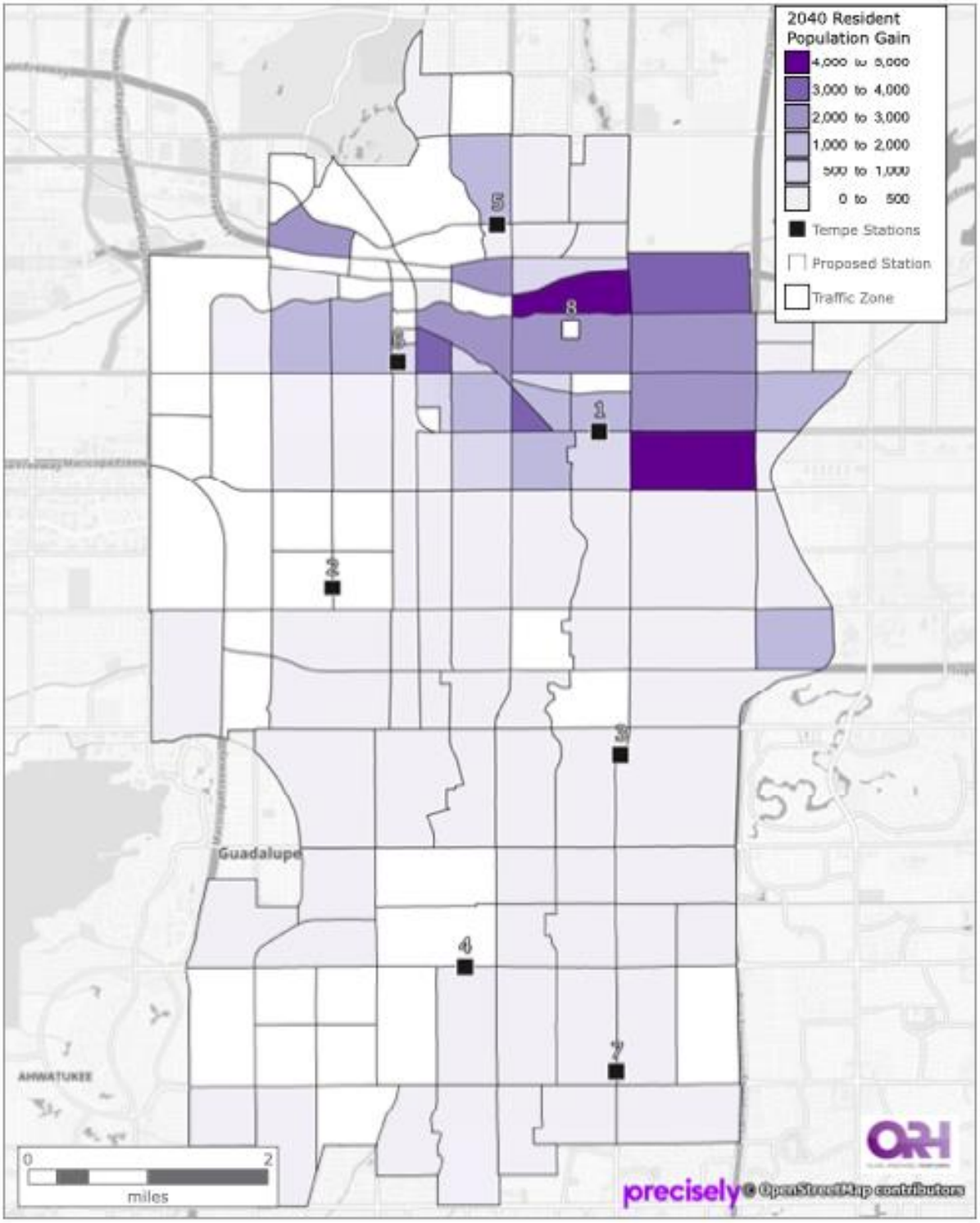


Figure 9 – Map of Predicted Population Increase



Novus Innovation Corridor

ASU recently has identified 330 acres just south of Tempe Town Lake for an urban, master-planned development. The project timeline is 20 years to full development, with dense, urban settings. ASU's goal is to efficiently and effectively utilize the campus buildings, infrastructure, and open space to provide the best campus environment while achieving the institutional goals of the University.

Table 5 - Anticipated Development for Novus Innovation Corridor

Anticipated Development within the Stadium District (2018-2022)		
Year	Type of Development	Size/Units/Square Foot
2018	Multi-Family Residence	268 Units
2018	Office	313,500 square feet
2018	Retail	35,000 square feet
2019	Hotel	107 Keys
2019	Multi-Family Residence	151 Units
2019	Office	265,000 square feet
2019	Retail	65,000 square feet
2021	Multi-family Residence	222 Units
2021	Office	552,250 square feet
2021	Retail	3,000 square feet
2022	Multi-Family Residence	309 Units
2022	Office	125,000 square feet

Figure 10- Projected Novus Innovation Corridor

Public Protection Classification

The Insurance Services Office (ISO) issues Public Protection Classifications to fire departments and districts across the United States. These ratings are used to determine the fire risk portion of property insurance premiums. The ISO ratings are based on a scale from 1 to 10. A rating of 1 is considered the best level of service, while a 10 rating indicates no service. TFMRD was surveyed in 2020 and was assigned a rating of 1 for the first time in its history. The chart below contains the score awarded to TFMRD for each major category surveyed by the ISO.

Table 6 – ISO Rating Criteria Score

ISO Criteria	TFMRD Score	Maximum
Emergency Communications	**9.91**	**10**
Fire Department	**45.03**	**50**
Water Supply	**38.18**	**40**
Divergence	**-1.08**	**-**
Community Risk Reduction	**3.79**	**5.5**
Total Score	**95.83**	**105.5**

The ISO Public Protection Classification is an important factor in the underwriting process for insurance companies providing coverage for commercial, industrial, and privately-owned properties. The ISO rating program incorporates nationally recognized standards developed by the National Fire Protection Association (NFPA) and the American Water Works Association.

Regional Operations

In 1981, TFMRD entered into an agreement with the cities of Glendale and Phoenix to create a three-city Automatic Aid Consortium. The original three cities agreed to respond to emergencies in the response areas of all parties, regardless of jurisdiction, the primary consideration being the closest appropriate unit would respond. Since the inception of the original agreement, 27 fire departments and districts covering more than 2,000 square miles have joined the regional consortium. These agencies train and respond together, conducting operations outlined in a regional set of policies and procedures known locally as “Phoenix Regional Operations Manual.” The agreement also provides for an automatic aid dispatch system through the Phoenix Fire Department Regional Dispatch Center (PFDRDC), which provides dispatching services for the 27 jurisdictions. All participating apparatus are

equipped with Automatic Vehicle Location (AVL). This technology enables the PFDRDC center to dispatch the closest appropriate unit regardless of jurisdictional boundaries, creating a seamless dispatching system.

Community Expectations and Performance Measures

The Department has maintained the established intergovernmental agreement (IGA) with the Tempe Fire County Island District since 2008. The IGA identifies the City of Tempe and TFMRD as the provider of fire, emergency medical, and rescue response to the district. The Fire Chief or designee attends Tempe County Island Fire District board meetings to brief the district board on calls for service within the County Island District.

Section 2: Agency Programs and Services

TFMRD is headed by the Fire Chief and three Assistant Chiefs who oversee the three divisions of the Department. These divisions are Administrative Services, Community Risk Reduction, and Emergency Services. TFMRD publishes an organizational chart that can be found on page 8 of this document. The three divisions are further separated into five sections: Operations, Support Services, Medical Services, Training and Professional Development, and Personnel.

Administrative Staffing

The Department reorganized its staffing in February of 2022 with the addition of three Deputy Chiefs. The new Deputy Chiefs were assigned to an additional responding command unit with the intent of reducing the span of control for line personnel. Four Deputy Chiefs are assigned to administrative support roles within their sections. Additional support staff exist in each section in the form of staff Captains and/or civilian administrative support. Table 7 provides the breakdown of the Departments professional staff. The priority of the administrative and professional staff is to ensure the organization is equipped, trained, and properly deployed to meet the mission of the Department.

Table 7 - Department Staffing Breakdown

CURRENT FIRE MEDICAL RESCUE DEPARTMENT STAFFING	
1	Fire Medical Rescue Chief
3	Assistant Fire Chiefs
6	Deputy Fire Chiefs – Shift Commanders
1	Deputy Fire Chief – Medical Services
1	Deputy Fire Chief – Personnel
1	Deputy Fire Chief – Support Services
1	Deputy Fire Chief – Training / Professional Development
3	Fire Captain Assignments – Training / Professional Development
1	Fire Captain Assignment – Medical Services
2	Emergency Medical Services Coordinators
1	Emergency Manager
1	Community Medicine RN
1	Assistant Fire Marshal
7	Fire Inspector II's
1	Fire Education Specialist
1	Executive Assistant
3	Administrative Assistant II's
1	Budget / Finance Supervisor
1	Data Analyst
1	Senior Fire Mechanic
3	Fire Mechanics
3	Fire Services Inventory Technicians
1	Emergency Medical Transportation Services Supervisor
18	Non-Sworn Emergency Paramedics
18	Non-Sworn Emergency Medical Technicians
35	Fire Captains
36	Engineers
78	Firefighters
230	**Total**

Administrative Services

The Administrative Services Division is responsible for general policy and direction by providing management and leadership for Department operations as delineated in the TFMRD Five-Year Strategic Plan and Operational Guide. Administrative Services is also responsible for the development and administration of the budget. The Administrative Services Division includes the following sections:

- Support Services
- Medical Services
- Training and Professional Development
- Emergency Medical Transportation

Emergency Services

The Emergency Services Division is responsible for all responding personnel located in the Department's seven stations and special operations programs such as hazardous materials, technical rescue, and dive.

Operational Staffing (24-hour personnel)

The goal of the Emergency Services Division is to deliver rapid, effective service when fire, medical, and other emergencies occur. These services are extended using eight engine companies, two ladder trucks, on low acuity unit, six ambulances, one heavy rescue squad, one hazmat support vehicle, one technical rescue support vehicle, one scene support air/light truck, and two battalion command vehicles. Apparatuses are located throughout the City in seven fire medical rescue stations. Services provided by this division are as follows:

- respond to and extinguish fires
- deliver effective medical and rescue services for injuries, illnesses, and accidents
- respond to and control hazardous materials emergencies
- provide technical rescue services. Staffing for emergency response vehicles can be found in Figure 11.

Emergency Response Personnel Certifications

- Firefighter I and II

All Department members with emergency response duties are certified firefighter level 1 and 2 by the Arizona Center for Fire Service Excellence (AzCFSE).

- Emergency Medical Technician (EMT)/ Emergency Certified Paramedic

  Department members are either EMT Basic or Paramedic level certified by the Arizona Department of Health Services, Bureau of Emergency Medical Services. The Department is funded for and approved to have 78 full-time paramedic positions.

- Hazardous Materials First Responder

  All Department members with emergency response duties are certified Hazardous Materials First Responders.

- Hazardous Materials Technician

  Haz Mat technicians are certified by the Phoenix Fire Department. There are 27 Hazardous Materials Technician spots available on the Haz Mat team. As of 2017 there are 28 members on the team.

- Technical Rescue Technician

  Members of the Technical Rescue Team are certified by the Phoenix Fire Department as Technical Rescue Technicians. This certification covers high-angle, trench, swift water, confined space and building collapse rescue. There are 30 TRT spots available on the TRT team. As of 2017 there are 27 members on the team.

- Dive Team

  Divers are certified by Emergency Rescue Divers International (ERDI) Dive Tenders are certified as Tenders by ERDI. There are 12 spots available on the dive team. As of 2017 there are 11 members on the team.

- National Incident Management System (NIMS)

  The Department is compliant with federal directives concerning NIMS qualification of its members. As such, all employees are trained to NIMS standards appropriate with their responsibilities within the organization

Figure 11 - Staffing for Emergency Response Vehicles

Staffing for Emergency Response Vehicles and Staffing	
Emergency Vehicle Type	Staffing
Engine Company	Staffed with a minimum of four personnel each shift; each Engine Company will have a minimum of two ALS personnel and two BLS personnel. The configuration of the two ALS personnel can be in any of the positions, for example, one ALS Captain, one ALS Engineer and two BLS firefighters.
Ladder Company	Staffed with a minimum of four personnel each shift. Ladder 276 is staffed with one captain, two engineers, and one firefighter. Ladder 273 is staffed with one captain, one engineer, and two firefighters. The configuration of the two ALS personnel can be in any of the positions, for example, one ALS Captain, one ALS Engineer and two BLS firefighters.
Ladder Tender	Co-staffed by ladder crews for incidents not requiring an aerial device.
Technical Rescue Support Vehicle	Staffed by one person from an on-duty company from Station 6 when required (includes dive team gear and other support equipment).
Heavy Rescue Squad	Co-staffed by Engine 278
Battalion Command Vehicle	Staffed with a Deputy Chief and a Field Incident. Technician-qualified Captain each shift.
Hazardous Materials Vehicle	Staffed by one person from an on-duty company from Station 2 when required.
Fire/Rescue Boat	Cross staffed by crew members from Engine 275 or Ladder 276.
Scene Support	Staffed by one engineer to provide (air, light, and rehabilitation) support at incidents.
Low Acuity Unit (LA)	Staffed with a minimum of two personnel each shift. LA 272 is staffed with one captain and one firefighter. The configuration of one ALS personnel can be in either of the positions.
Ambulance Medic Units	Staffed with a minimum of two personnel each shift, with one emergency medical technician (EMT) as the driver and one paramedic.

Community Risk Reduction

The goal of the Community Risk Reduction Division is to prevent loss of life, injury, and property to fire through the creation, implementation, and management of comprehensive programs. Services include:

- conduct a risk assessment of occupancies
- inspection of high-risk occupancies on an annual basis
- inspection of moderate risk occupancies and industrial properties on a biennial basis
- response to fire and life hazard complaints
- approval of plans for and inspections of new construction and tenant improvements
- determination of the origin and cause of fires
- public information office
- life safety education programs

In the reorganization, the Deputy Chief assigned to Community Risk Reduction was reassigned as the Personnel Chief for the Department. Responsibilities include recruitment, hiring, health and wellness, occupational safety, and retirement/separation.

Critical Task Analysis

TFMRD has updated its critical task analysis for the 6th edition of the Standards of Cover. The critical task analysis was conducted by senior staff in conjunction with the Operations Subcommittee of the Central Arizona Life Safety Council (CALSC). The analysis is updated with each successive edition of the Standard of Cover and is used to determine staffing requirements for effective response force (ERF) capabilities for each incident type. The following sections outline each risk category, TFMRD's response protocols for those risk categories, and the critical task analysis for each in chart form.

Incidents typically fall into the following categories:

- Fire
- EMS
- Hazardous Materials
- Technical Rescue
- Aircraft Related
- Special Duty
- Service Calls
- Greater Alarm

Each incident type has differing levels of response based on the risk for that incident. Risk levels for each incident type are High, Medium, or Low Risk. Descriptions of each can be found below in the appraisal for each incident type.

The Department's highest priorities when determining response resource levels for incidents are the preservation of life, health, property, and the environment. With those priorities in mind, the initial resource commitments for each incident type are designed to be proactive to stabilize incidents as quickly as possible. For example, minimum staffing for a dispatched CODE (cardiac arrest) is eight personnel, and minimum staffing for an incident dispatched as a structure fire is 21 personnel. On declaration of a working fire, the minimum is upgraded to 27 personnel. Descriptions of the critical task analyses for these incident types can be found in the sections titled Fire Incidents and EMS Incidents respectively.

A sample of Phoenix Regional incident dispatch types include:

- Still Assignments- Car fires, trash fires, grass fires, etc. These incidents typically require one engine company
- Basic Life Support (BLS) EMS Assignments- Ill person, check welfare, minor injuries, etc.- These incidents typically require one BLS or ALS unit. Certain incidents in this dispatch type have protocols which allow for two-person Low Acuity units (LA) to be dispatched.
- Advanced Life Support (ALS) EMS Assignments- Difficulty breathing, chest pain, stroke, major trauma, etc.- These incidents require one ALS, four-person unit. Ambulances are automatically dispatched on certain ALS incidents only:

- CODE (cardiac arrest)
- CVA (stroke)
- Stabbing
- Shooting
- Drowning

- 3 & 1 Medical Assignments- Serious Medical Incidents including violent incidents and vehicle collisions with multiple patients – These incidents require three engines, one ladder, one ambulance, one utility and one Battalion Chief
- 3 & 1 Structure fire- This is the initial dispatch for any structure with a reported fire. These incidents require three engines, one ladder, two Battalion Chiefs. Upon declaration of a working structure fire, the incident is upgraded to include one ambulance, one utility unit, and one additional engine for a Rapid Intervention Crew
- First Alarm High Rise Fire- Seven engines, three ladders, four Battalion Chiefs, one Deputy Chief, one squad (heavy rescue), one ambulance, one high rise unit, two utility units, one command vehicle, and one rehabilitation unit

Fire Suppression

The following is a list of fire incident dispatch codes depending on the information reported to the Phoenix Fire Department Regional Dispatch Center (PFDRDC). These tables are a sample of dispatch codes available from the PFDRDC intended to illustrate the relationship between risk categorization and corresponding critical task analyses for each risk level. A complete list of

PFDRDC dispatch codes can be found in the exhibits. The incident types have been divided into the risk classifications Low, Medium, and High used to determine dispatch protocols, critical task analyses, and Effective Response Force staffing.

Low Risk Fire

Still (ST) assignments are dispatched for fire incidents requiring one engine company and are considered low risk fires with little to no lives or values at risk. These types of incidents include, but are not limited to, dumpster or trash fires, fence fires, and vehicle fires.

Brush assignments (BR) are dispatched for reported vegetation fires. A Still Brush (ST-BR) assignment consists of one engine company and one brush truck. A Still Brush assignment will be dispatched for vegetation fires that are small in nature. A full BR assignment consists of two engine companies, two brush trucks, one water tender, and a command officer. Full BR assignments are dispatched for vegetation fires that are serious in nature. Brush assignments are different than urban interface assignments. Those would fall into the Medium or High-risk categories depending on the fireground factors for that incident. The City of Tempe does not have any true wildland urban interface.

Low Risk Fire Dispatch Protocol		
Incident Type	**Dispatch Code**	**Response Requirement**
Still assignment	ST	1. Engine
Brush assignment	BR	1. Engine (1) Brush unit

Table 8

ST Assignment Critical Task Analysis		
Task	**Personnel**	**Unit(s) Assigned**
Scene size up/incident command	1	Company officer
Pump operation	1	Engineer
Water supply	1	Firefighter A
Hoseline mgmt./fire suppression	1	Firefighter B
Total personnel	4	

Table 9

Medium Risk Fire

3 & 1 assignments are dispatched for structure fires that are considered medium risk. These dispatches are used for an initial report of fire in a structure. Once Department units have confirmed a fire in the structure, the incident commander will declare a working fire. The PFDRDC will dispatch a fourth engine company, a utility unit (air and light support), and one ambulance. 3-1 assignments are appropriate for incidents in which fire companies are engaged in active fire suppression efforts that can be controlled safely with the assigned units.

Medium Risk Fire Dispatch Protocol		
Incident Type	**Dispatch Code**	**Response Requirement**
Reported structure fire	3. STR	(3)E (1)L (2)BC
Confirmed working structure fire	3. WF	(4)E (1)L (2)BC (1)AMB (1)U

Table 10

3 and 1 Working Fire Critical Task Analysis		
Task	**Staff**	**Unit Assigned**
Initial incident command/ fire attack/primary search	2	1st Engine company officer, (1) Firefighter
Pump operations, 2 in / 2 out	1	1st Engine company Engineer
Water supply, 2 in/2 out	1	1st Engine company Firefighter
Back-up line, search and rescue	4	2nd Engine
Ventilation and utilities	4	1st Ladder
Rapid Intervention Crew and 2nd water supply	4	3rd Engine
On Deck crew	4	4th Engine
Ongoing incident Command	2	1st Battalion Chief and Field Incident Tech
Support Officer and Safety Officer	2	2nd Battalion Chief and Field Incident Tech
Transportation standby	2	Ambulance
Scene Support-air & light utility	1	Scene Support
Total Personnel	27	

Table 11

High-Risk Fire

High-risk fires typically involve incidents in which victims need rescue or treatment, large volumes of fire, extensive structural involvement, or complex structures which require large numbers of resources. Fire incidents considered high-risk would receive a First Alarm or greater dispatch or request for resources from an incident commander (IC). Incidents may be initially dispatched as First Alarm or greater assignments at the discretion of the PFDRDC staff, based on reports from civilians calling 911, fire units on scene, or other reports which indicate a high-risk fire incident. A First Alarm assignment consists of five engine companies, two ladder companies, one ambulance, one utility unit, and two battalion or deputy chief command units.

The PFDRDC will dispatch a sixth engine and a second ambulance to First Alarm assignments when reports indicate a working fire. Greater Alarms (2nd Alarm, 3rd Alarm, etc.) are dispatched when requested by an IC. Each additional alarm includes four engines, two ladders, and a command unit (BC or DC).

High Risk Fire Dispatch Protocol		
Incident Type	**Dispatch Code**	**Response Requirement**
Reported high rise structure fire	3. HR	(3)E (1)L (2)BC (1)DC (1)SQ (1)U
Confirmed high rise fire	2A-HR	(13)E (7)L (5)BC (1)DC (1)AMB (2)SQ (3)U (1)CRV (1)HR

Table 12

1st Alarm High Rise Fire Critical Task Analysis		
Task	**Staff**	**Unit Assigned**
Building systems	4	1st Engine
Initial attack team	4	2nd Engine
Primary search		2nd Engine-initial attack
Back-up line, search and rescue	4	3rd Engine
Initial attack team	4	1st Ladder
Rapid Intervention Crew and 2nd supply	4	4th Engine
"On Deck" crew	4	Squad
Incident Command	2	1st Battalion Chief and Field Incident Tech
Senior Advisor and Safety Officer	2	1st Deputy Chief and Battalion Safety Officer
Forward Sector Officer and Safety Officer	2	2nd Battalion Chief and Field Incident Tech
Scene Support-air & light utility	1	Scene Support
Medical support/transport	2	Ambulance
Total Personnel	33	

Table 13

Emergency Medical Services

The following is a list of EMS incident dispatch codes depending on the information reported to the PFDRDC. These tables are a sample of dispatch codes available from the PFDRDC intended to illustrate the relationship between risk categorization and corresponding critical task analyses for each risk level. A complete list of PFDRDC dispatch codes can be found in the

exhibits. The incident types have been divided into the risk classifications Low, Medium, and High used to determine dispatch protocols, critical task analyses, and ERF staffing.

Low Risk EMS:

Low Risk EMS Dispatch Protocol			
Incident Type	**Dispatch Code**	**Responder Level**	**Response Requirement**
Minor EMS	EM-B	BLS	1. 4-person company
Minor vehicle collision	EM-V	BLS	1. Engine company

Table 14

EM-B Critical Task Analysis		
Task	**Personnel**	**Unit(s) Assigned**
Scene size up/triage	1	Company member
Documentation/info gathering	1	Company member
Obtain vital signs	1	Company member
Basic physical assessment and treatment	1	Company member
Total personnel	4	

Table 15

Medium Risk EMS:

Medium Risk EMS Dispatch Protocol			
Incident Type	**Dispatch Code**	**Responder Level**	**Response Requirement**
ALS EMS	EM-A	ALS	1. 4-person ALS company
Vehicle accident w/inj	EM-VA	ALS	1. ALS Engine company
Vehicle/Pedestrian	EM-VP	ALS	1. 4-person ALS company

Table 16

EM-A Critical Task Analysis		
Task	**Personnel**	**Unit(s) Assigned**
Scene size up/triage	1	Company member
Documentation/info gathering	1	Company member
Obtain vital signs	1	Company member
Advanced physical assessment and treatment	1	Company member
Transportation	2	Ambulance personnel
Total personnel	6	

Table 17

High Risk EMS:

High Risk EMS Dispatch Protocol			
Incident Type	**Dispatch Code**	**Responder Level**	**Response Requirement**
Vehicle collision w/Ext.	EM-VX	ALS	1. E (1) EXT (1) BC (1) AMB≥ 1 ALS unit
Non-vehicular ext.	INJX	ALS	1. ALS (1) EXT (1) BC (1) AMB
3 and 1 Medical	3-1-M	ALS	2. E (1) L (1) BC (2) AMB (1) Utility ≥ 2 ALS units
1st Alarm Medical	1-A-M	ALS	3. E (2) L (2) BC (3) AMB (1) Utility ≥ 3 ALS units

Table 18

EM-VX (2 Immediate Patients) Critical Task Analysis		
Task	**Personnel**	**Unit(s) Assigned**
Scene size up/triage/initial incident command	2	1st company
Protection hose line	2	1st company
Treatment sector officer	1	Company officer
Patient treatment	8	(1) ALS company per patient
Extrication	4	Extrication company
Transportation sector	1	Company Officer
Ongoing command	2	Battalion Chief/FIT
Patient transportation	4	(2) Ambulances
Air and light support	1	Utility Company
Total personnel	25	

Table 19

Hazardous Materials

Low Risk Hazardous Materials

Hazardous materials (HAZ) assignments are typically dispatched on incidents that involve hazardous materials considered to be low risk. HAZ assignments consist of (1) four-person Fire Department unit closest to the incident, (1) four-person Hazardous Materials units which is a part of the Hazardous Materials Response Team, and one battalion chief closest to the incident.

Low Risk HAZ Dispatch Protocol		
Incident Type	**Dispatch Code**	**Response Requirement**
Check an odor of gas in the area	HAZ	(1)E, L, or SQ (1)HM (1)BC

Table 20

HAZ Check Hazard Critical Task Analysis		
Task	**Staff**	**Personnel assigned**
Scene size up/Safety Officer	1	Company Officer
Hose Line (if necessary)	2	Firefighter
Pump operations	1	Engineer
Hazard investigation	2	HazMat company
Hot zone establishment/isolation	2	HazMat company
Ongoing Command	2	BC
Total personnel	10	

Table 21

Medium Risk Hazardous Materials

2 & 1 Hazardous Materials (HAZ2-1) assignment are typically dispatched on most situations involving leaks or spills of hazardous materials. This dispatch type is the most common Hazardous Materials response and is appropriate for situations that are moderate in size and

complexity. These incidents do not create a major risk to the community by virtue of location, amount, or characteristics of the hazard. Two and One Hazardous (HAZ 2-1) assignments consist of the (2) closest engines and (1) closest ladder, the Hazardous Materials Response Team, a special operations battalion chief, and (1) closest battalion chief to the incident.

Medium Risk HAZ2-1 Dispatch Protocol		
Incident Type	**Dispatch Code**	**Response Requirement**
Gas leak inside a structure	HAZ2-1	(2)E (1)L (2)HM (1)Sp Ops BC (1)BC (1) Sp Ops Safety

Table 22

HAZ2-1 Natural Gas Leak Inside Structure Critical Task Analysis		
Task	**Staff**	**Unit(s) assigned**
Scene size up/initial incident command	1	1st Company officer
Evacuation, isolation, limit entry	3	1st Engine or Ladder
Establish water supply	2	2nd Engine
Hose line for protection	2	2nd Engine
Establish hazard sector	1	1st Hazmat company officer
Establish hot, warm, cold zones	3	1st Hazmat company
Establish atmospheric monitoring	2	2nd Hazmat company
Mitigate hazard if possible	2	2nd Hazmat company
Ongoing command	2	BC
Safety/Liaison with SW Gas	2	Special Ops BC
Total Personnel	24	

Table 23

High Risk Hazardous Materials

First Alarm Hazardous (HAZ1A) assignments are typically dispatched for incidents which represent a high potential for injury, death, environmental harm, or property loss due to the nature and/or quantities of the materials involved, location of the incident, fire, or explosion risk and/or a large number of people exposed. First Alarm Hazardous (HAZ1A) assignments require the (2) closest engine and (1) closest ladder companies in addition to a Hazardous Materials Response Team, a special operations battalion chief, the closest battalion chief, (1) utility, and (1) ambulance.

High Risk HAZ1A Dispatch Protocol		
Incident Type	**Dispatch Code**	**Response Requirement**
Gas leak inside a structure	HAZ1A	(4)E (2)L (4)HM (1)Sp Ops BC (1)BC (1)U (1)AMB (1)Sp Ops Safety

Table 24

HAZ1A Chemical Leak Inside Structure Critical Task Analysis		
Task	**Staff**	**Unit(s) assigned**
Scene size up/initial incident command	4	1st Engine or ladder company
Evacuation, isolation, limit entry		1st Engine
Evacuation if needed	4	1st Ladder
Establish water supply	1	2nd Engine
Hose line for protection	2	2nd Engine
Hazard sector officer	1	1st Hazmat company
Research	2	1st Hazmat company
Responsible person contact/liaison	1	1st Hazmat company

Atmospheric monitoring	4	2nd Hazmat company
Ongoing command	2	BC
Assume hazard sector officer and safety functions per ISOS	2	Special Operations BC
Liaison officer/safety	1	Special operations safety officer
Treatment sector	4	Engine or ladder company
Transportation	2	Ambulance
Hazard sector support/donning and doffing, logistics support, decontamination	4	3rd Hazmat company
Rehabilitation sector	5	Engine or ladder company and utility company
Hazard sector support/mitigation	4	4th Hazmat company
Total Personnel	43	

Table 25

Technical Rescue

Technical Rescue assignments are dispatched for incidents requiring specialized equipment and training to rescue or extricate victims from confined spaces, collapsed trenches, high-angle or other rope rescue situations, surface and swift water emergencies, structural collapses, and mountain rescues.

Low Risk Technical Rescue

Low risk technical rescue incident may include low angle rescues less than one mile into an area in which the patient is located when ambient temperatures are not considered a hazard.

Low Risk TRT Dispatch Protocol		
Incident Type	**Dispatch Code**	**Response Requirement**
Mountain rescue (low angle, no temp. hazard)	3-1TRT	(1)E (3)TRT (1)Sp Ops BC (1)BC (1)Sp Ops Safety

Table 26

Low Risk Technical Rescue Critical Task Analysis		
Task	**Staff**	**Unit(s) Assigned**
Scene size up/initial incident command, patient contact if safe	4	1st Company
Rescue Sector officer/forward info gathering/patient contact	4	1st TRT Company
Support rescue sector with rescue efforts	4	2nd TRT Company
Technical Sector Officer/ Safety Officer	1	C957 or equivalent
Ongoing Command	2	BC
Treatment	4	ALS Company
Transportation (special call)	2	1st Ambulance
Total Personnel	21	

Table 27

Medium Risk Technical Rescue

Medium risk technical rescue incidents may include low angle rescues greater than one-mile travel distance to reach a patient, or a low angle rescue when temperatures are considered extreme.

Medium Risk 3-1TRT Dispatch Protocol		
Incident Type	**Dispatch Code**	**Response Requirement**
Mountain rescue (low angle)	3-1TRT	(1)E (3)TRT (1)Sp Ops BC (1)BC (1)U (1)Sp Ops Safety

Table 28

Medium Risk Technical Rescue Critical Task Analysis		
Task	**Staff**	**Unit(s) Assigned**
Scene size up/initial incident command, patient contact if safe	4	1st Company
Rescue Sector officer/forward info gathering/patient contact	4	1st TRT Company
Support rescue sector with rescue efforts	4	2nd TRT Company
Technical Sector Officer/Safety Officer	1	C957 or equivalent
Ongoing Command	2	BC
Treatment	4	ALS Company
Transportation (special call)	2	1st Ambulance
Total Personnel	21	

Table 29

High Risk Technical Rescue

High risk technical rescue incidents include any:

- High or steep angle rescue
- Confined space entry
- Trench rescue
- Structural collapse
- Helicopter rescue
- Swift water rescue

High Risk TRT1A Dispatch Protocol		
Incident Type	**Dispatch Code**	**Response Requirement**
High angle mountain rescue	TRT1A	(4)E (2)L (4)TRT (1)Sp Ops BC (1)BC (1)U (1)AMB (1)Sp Ops Safety

Table 30

High Risk Technical Rescue Critical Task Analysis		
Task	**Staff**	**Unit(s) Assigned**
Scene size up/initial incident command	4	1st Company
Rescue Sector officer/forward info gathering/patient contact	4	1st TRT Company
Support rescue sector with rescue efforts	4	2nd TRT Company
Technical Sector Officer/Safety Officer	1	Car 2757 or equivalent
Ongoing Command	2	BC
Support rescue sector with rope system assembly	4	3rd TRT Company
Helicopter Landing Zones	4	4th TRT Company
Helicopter Support	2	Firebird
Treatment	4	ALS Company
Transportation	2	1st Ambulance
Total Personnel	31	

Table 31

Special Duty and Service Call Assignments

Special Duty and Service Call Assignments are typically dispatched for incidents considered to have the lowest risk. The PFDRDC will dispatch one company, Code 2 as a Special Duty

assignment for automatic alarm system incidents with no other report of fire. Service Calls are dispatched Code 2 for other low risk situations such as to check flooding or for an open hydrant. The PFDRDC dispatches the closest unit(s) fulfilling the capabilities needed to provide the requested service.

Dive Operations

The TFMRD Dive Team is considered a support function with a primary focus on recovery operations. Performance objectives are not defined as a function of time, with safety of the divers being paramount. The Dive Team responds to water related incidents with certified Emergency Response Divers and equipment. Surface water rescues are dispatched as technical rescue assignments and are mitigated using TRT units. The Dive Team operates within the Automatic Aid System and will respond when requested to participating jurisdictions. Callbacks may be used for dive operations at the discretion of the on-duty IC (Deputy Chief on BC271 or BC272) and/or the Deputy Chief assigned to the Dive Team. Special requests out of the system (Lake Pleasant, Saguaro Lake, Bartlett Lake, etc.) will always be recovery and not rescue in nature, must be approved by the Fire Medical Rescue Chief or the Chief's designated representative, and may require a call back of off-duty Dive Team members.

Medium Risk Dive Dispatch Protocol		
Incident Type	**Dispatch Code**	**Response Requirement**
Dive Operation	DIVE	(1)E TMPDIVE (1)BC271 (1)BC (1)AMB (1)U (1)Sp Ops Safety

Table 32

Medium Risk Dive Critical Task Analysis		
Task	**Staff**	**Unit(s) Assigned**
Scene size up/initial incident command, witness contact if safe	4	1st Company
Primary/backup and 90% divers	3	Tempe Certified Rescue Divers
Diver Support	2	Tempe Certified Dive Tenders
Dive Sector Officer/Safety Officer	1	Tempe Dive Master
Ongoing Command	2	BC271
Treatment	4	ALS Company
Transportation (special call)	2	1st Ambulance
Total Personnel	18	

Table 33

Special Events

The City of Tempe hosts a large number of special events, some of which generate significant attendance and/or are high profile events. The Department is committed to protecting the health, welfare, and safety of those in attendance by performing a risk assessment for specific special events.

The Department's role in special events is focused on community and public safety, including the following:

- Provide medical and all-hazards staffing at special events based on a risk assessment and/or the impact on emergency service delivery to the public
- Review the site plan for compliance, ensuring proper occupancy load for fenced-in special events
- Verify access and egress points, including pathways to exits for alignment with the occupancy load
- Verify exit width requirements based on occupancy load
- Permit and inspect tents and other temporary structures
- Verify emergency vehicle access

- Provide fire and life safety inspections
- Permit and inspect the use of fireworks at an event

Community Risk Reduction

Occupancy Risk Classification Guidelines

The Tempe Fire Medical Rescue Department Community Risk Reduction (CRR) Division performs risk assessments on occupancies within the area of responsibility. These occupancies fall into one of four risk classifications:

- High
- Moderate
- Low
- Critical Infrastructure

Occupancies are classified based on a risk profile which includes several factors including:

- Occupancy use
- Construction type
- Fire protection systems
- Size
- Occupancy load
- Occupancy history
- Presence of hazardous materials

Each occupancy is evaluated to determine the appropriate risk category. It is then assigned to the appropriate first due planning zone used by TFMRD. A list of occupancy risk assessment categorization is maintained for each planning zone and is updated annually.

Occupancy Risk Classification Definitions

High-Risk: The High-Risk classification encompasses those structures that may have a higher probability of fire than other risk classifications or an increased potential for the loss of life or

economic value. Occupancies in this classification may also include those that have a low or moderate probability of fires or loss of life, but a high dependency on built-in fire protection features or staff to assist in evacuation during a fire or other emergency. Examples of High-Risk classification include:

- Malls
- Highrise residential
- Highrise commercial
- Large "big box" stores
- Theaters
- Entertainment centers
- Large industrial or commercial properties
- Hazardous materials production facilities

Moderate-Risk: This occupancy classification has a moderate probability of fires or a moderate potential for loss of life or economic loss. The potential for loss of life and economic values at risk present a greater risk than those in the low-risk category, yet do not meet the criteria for the high-risk classification. Occupancies in this classification include examples such as:

- Commercial strip centers
- Small medical facilities (primary care and specialist offices)
- Multifamily housing with more than one story
- Office buildings of two or more stories
- Government facilities not meeting the definition of critical infrastructure
- Schools

Low-Risk: An occupancy classification that has a low probability of fires and minimal potential for loss of life or economic loss. Occupancies in this classification present a typical fire risk and could be described as those most common to the jurisdiction. Examples of occupancies typically classified as low risk include:

- Single-family housing
- Easily accessible one- and two-story apartments
- Low-risk industrial properties
- Commercial properties under 10,000 square feet

Critical Infrastructure: Any occupancy classification where assets, systems, and networks, whether physical or virtual, and are vital to the community to the point that their damage or destruction would have a debilitating effect and represent an essential economic loss to the community. Incidents occurring at occupancies in this category typically require a large commitment of Fire Medical Rescue resources to control or mitigate hazards which could result in large loss of life, property, or economic value. Examples in the Critical Infrastructure classification include:

- Water treatment plants
- Power generation facilities including substations
- Health care centers and hospitals
- Large employer business facilities
- Stadiums
- Public transportation systems including roadways, bridges, freeways, light rail and streetcar facilities
- Railroads

The TFMRD CRR Division Fire Inspectors work with company officers from the Emergency Services Division to assign occupancies that are in need of updated risk assessments. These occupancies are identified through a process that considers several factors including the last inspection date, relative risk, and TFMRD company officer input.

In 2021, TFMRD updated its Community Risk Assessment Guideline for the CRR Division to categorize occupancies based on criteria set forth in the 2016 edition of NFPA 1730. The

Community Risk Assessment Guideline identifies the requirements of the built environment in a community and establishes a means of determining the necessary fire prevention and community risk reduction activities based on that environment. An updated frequency of inspections has been established based on risk classifications conducted using the risk assessment matrix located in Annex A of NFPA 1730. The Community Risk Assessment Guideline is evaluated annually based on a statistical review of fire incidents, civilian injuries and loss of life related to fire incidents.

The documented methodology for categorizing occupancies within the jurisdiction is represented by the risk categorization table below (Figure 12). High-Risk occupancies are on an annual inspection cycle. TFMRD has a goal of Moderate Risk occupancies being inspected every two years. Low Risk occupancies are inspected every three years.

Tempe Fire Medical Rescue Department
Risk Assessment Guidelines

All occupancies within the jurisdiction should be evaluated by the Community Risk Reduction Division every five years, or more frequently based on community need, to determine the appropriate occupancy risk classification. The risk category classification is the basis for Inspection and Code Enforcement priorities, assignments and frequencies.

Occupancy Risk Classification Definitions:

High-Risk: An occupancy classification that has a higher probability of fires, high potential for loss of life or economic loss, or that has a low or moderate probability of fires or loss of life but the occupants have a high dependency on the built-in fire protection features or staff to assist in evacuation during a fire or other emergency.

Critical Infrastructure: Any occupancy classification where assets, systems, and networks, whether physical or virtual, that is vital to the community that their damage or destruction would have a debilitating effect.

Moderate-Risk: An occupancy classification that has a moderate probability of fires or a moderate potential for loss of life or economic loss.

Low-Risk: An occupancy classification that has a low probability of fires and minimal potential for loss of life or economic loss.

High-Risk Occupancy	*Critical Infrastructure Occupancy*	*Moderate-Risk Occupancy*	*Low-Risk Occupancy*
A – Assembly greater than 300 occupant load ***E*** – Educational ***F-1*** – Factories with hazardous processes. ***H*** – Hazardous ***I*** – Institutional ***R*** – Residential ***All High-Rise Buildings***	Any occupancy classification where assets, systems, and networks, whether physical or virtual, that are vital to the community that their damage or destruction would have a debilitating effect.	***A*** – Assembly less than 300 occupant load ***B*** – Business greater than 75,000 sqft. ***F-2*** – Factories without hazardous processes. ***M*** – Mercantile greater than 75,000 sqft. ***S-1*** - Storage of combustible or hazardous commodities.	***B*** – Business less than 100,000 sqft. ***M*** – Mercantile less than 75,000 sqft. ***S-2*** - Storage of non-combustible commodities. ***U*** – Unclassified
Examples	*Examples*	*Examples*	*Examples*
Bars, night clubs, theaters, arenas, high-rises, schools, daycares, wood working shops, spray finishing operations, semiconductor fabrication facilities, hospitals, assisted living facilities, apartments, hotels and fraternities.	Agriculture, food, water, public health, emergency service, defense, telecommunications, energy, transportation, banking and finance, postal and shipping.	Restaurants, machine shops, retail or wholesale stores, motor fuel dispensing facilities, high pile storage warehouses and repair garages.	Doctors' offices, banks, strip malls, grocery stores, department stores, warehouses, out buildings and protective structures.

Inspection and Code Enforcement priority and frequency based upon Risk Classification

Risk Classification	Inspection Frequency
High-Risk and Critical Infrastructure	*Every Year*
Moderate Risk	*Every 2 Years*
Low Risk	*Every 5 years*

Updated August 2021

Figure 12

Emergency Management

Emergency management includes preventing large-scale emergencies from occurring when possible, mitigating hazards to minimize potential impacts, preparing for and responding to large-scale incidents that do occur, recovering from such incidents, and building resiliency within the City. Emergency management is under the Community Risk Reduction Division and primary responsibilities are assigned to the Emergency Manager.

The City of Tempe (COT) Emergency Operations Plan (EOP) serves as the primary guide for emergency response operations and preparedness along with the Continuity of Operations Plan (COOP). The EOP and COOP were updated in 2022 and distributed to the different departments within the City.

The City's Emergency Operations Center EOC is located at the Fire Medical Rescue Administration Building and when activated the EOC is staffed by members of several City Departments. These staff members have completed training to familiarize them with EOC operations and the National Incident Management System (NIMS). Individual staff members complete training that allows them to function efficiently in their assigned position in the EOC.

Incident Response Statistical Analysis

The Department will continue to track the overall call volume of all emergency response units as an organization, total volume of responses by each individual unit, location of each emergency incident and the various incident types. This was a contributing factor and instrumental in the reduction of one hazardous materials team, the development of the Patient Advocate Services (PAS) and implementing a low acuity vehicle in 2019. The development and evaluation of maps provide a visual clarification of incident clusters, which facilitates planning for response operations.

Figure 13 - Overall Demand 2019

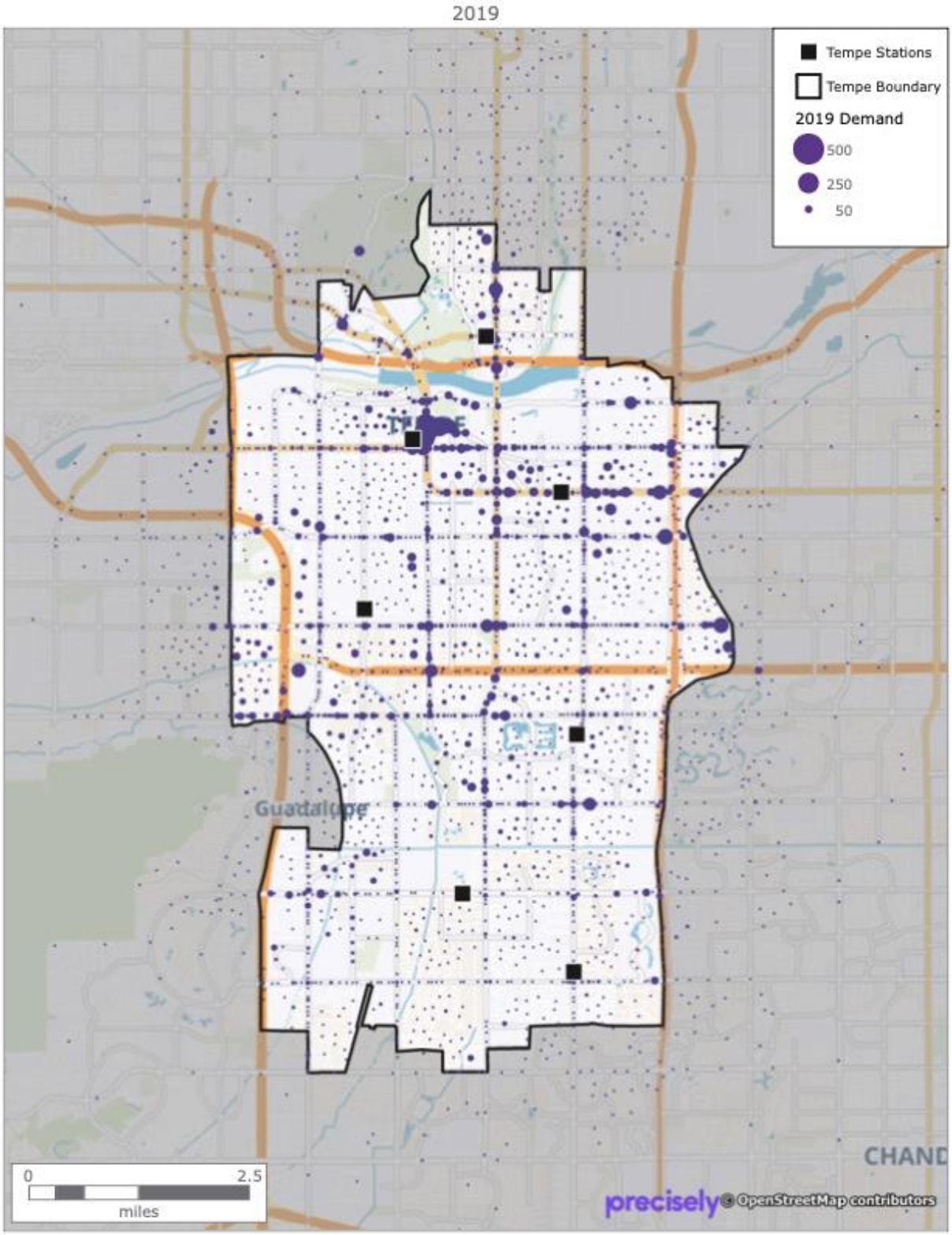
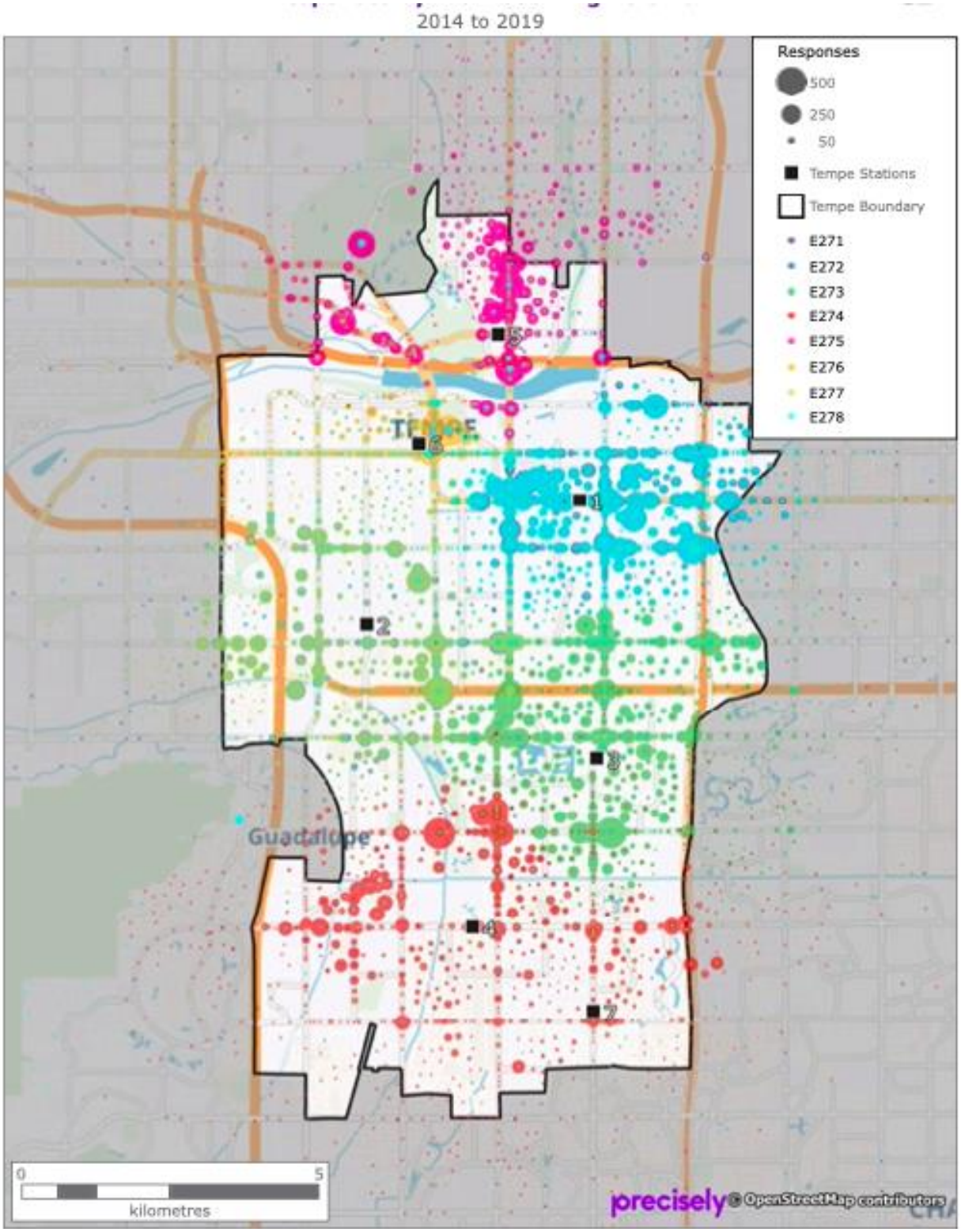
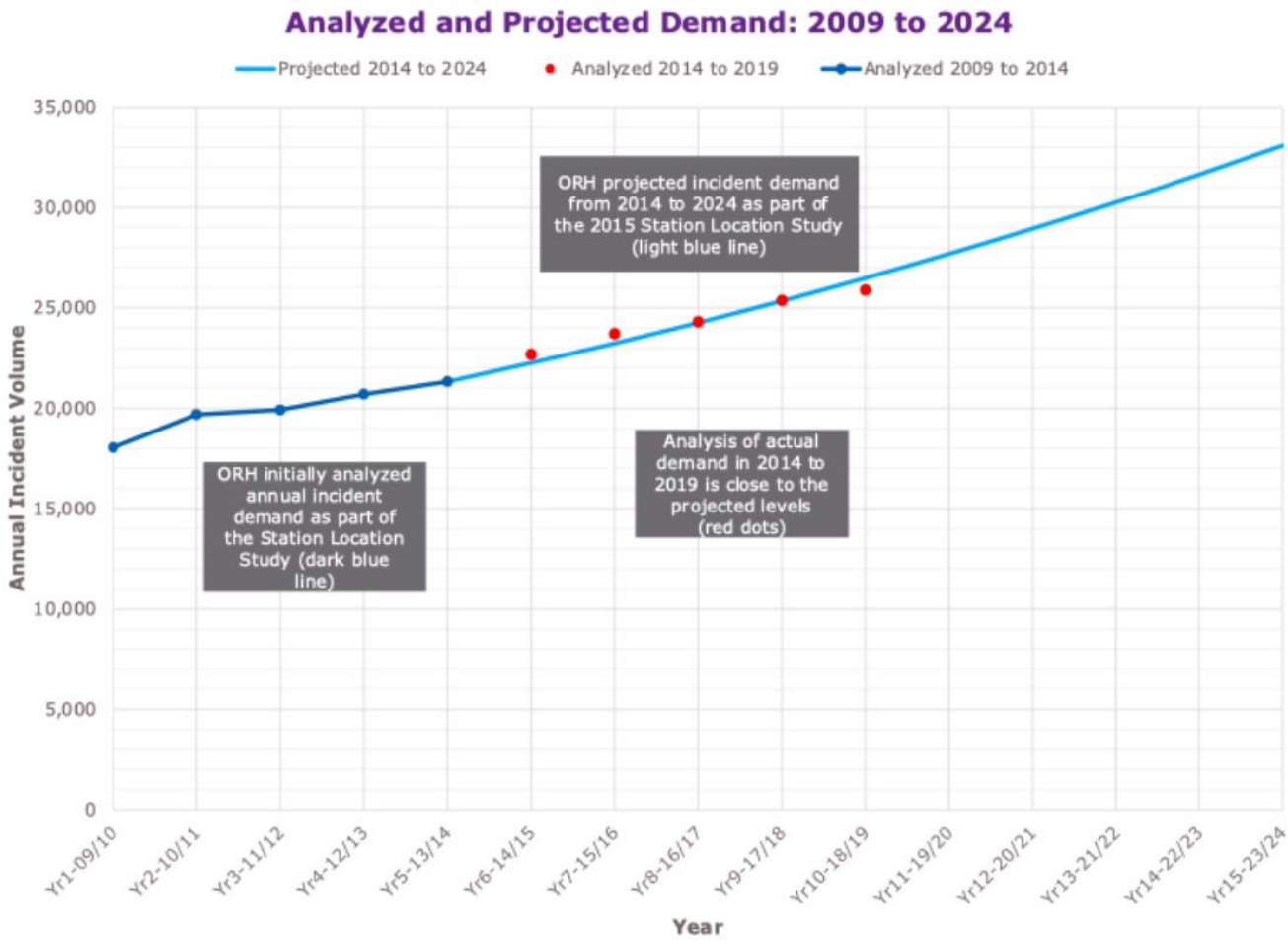


Figure 14– Responses Locations by Engine Company for 2014-2019



Graph 3– ORH Projected Incident Demand from 2014 to 2024

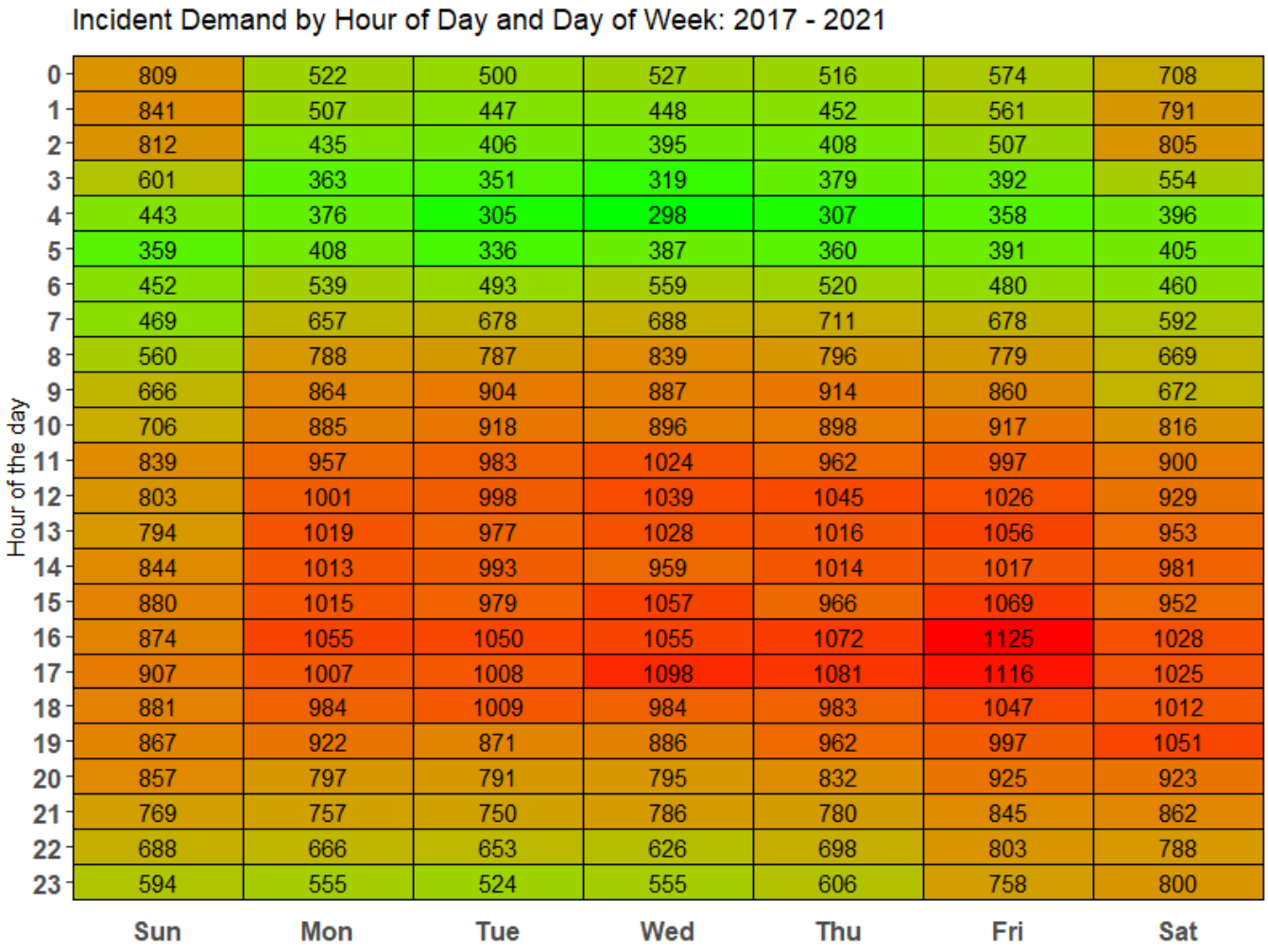


A review of incident demand by hour of day and day of the week reveals when the lowest and greatest response demand is occurring. Time analysis provides a variation in response activity based on the hour of the day.

The highest response demand occurs between 1100 hours and 1900 hours. The lowest response demand occurs between 0300 hours and 0600 hours. Weekend calls for service peak on Saturday and Sunday mornings at 0200 hours, whereas weekday peaks occur at approximately 1700 hours, with the highest rate occurring on Wednesday.

An analysis of incident demand illustrates a variation in response activity based on the hour of day (Figure 15). Demands for service are not evenly distributed across the city. A review of total responses by apparatus is necessary to identify disparities in unit utilization and reliability.

Figure 15- Incident Demand by Hour of Day and Day of Week: 2017 - 2021



Section 3: All Hazard Community Risk Assessment

Community Risk Factors

This section analyzes certain categorical risks that are present with the service area. TFMRD responds to the risk assessment by strategically placing assets within its service area to efficiently respond to the identified hazards.

Risk assessment and risk management are two important terms in this section. The risk assessment is a systematic process of evaluating the potential risks that may impact a community. Risk management is the practice of strategically committing sufficient resources to address the hazards identified in the risk assessment in the most effective and efficient manner.

In 2020, the City of Tempe created the Tempe Emergency Management Collaboration Team, which is made up of representatives from various City departments to include: IT Security Administration, TFMRD, Tempe Police, Municipal Utilities, Internal Services-Finance and Sustainability, and the City's Emergency Manager. This group conducts a yearly Hazard Vulnerability Assessment (HVA) that focuses solely on the City and addresses the following hazards (Appendix A):

- Natural
- Technological
- Human
- Transportation
- Fire
- EMS
- Hazardous Materials

Unincorporated Areas

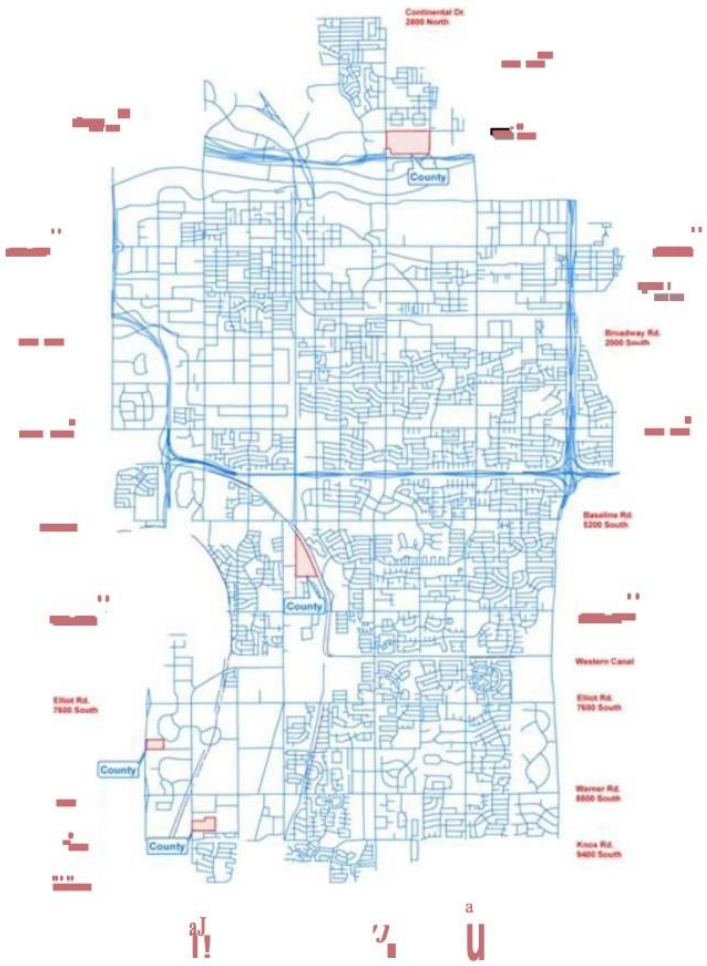
The area serviced by the Department is defined by the City limits, apart from four unincorporated areas laying within the boundaries of the City. These areas are covered under

an all-hazard protection arrangement in an Intergovernmental Agreement (IGA) between the City of Tempe and the Tempe County Island Fire District. This agreement is effective through 2024 and is extendable through 2034. Code enforcement for existing buildings is under the jurisdiction of Maricopa County, while new buildings are to comply with the adoption of the International Fire Code (IFC) 2018 edition and accompanying amendments, as approved by the City of Tempe Mayor and Council. As required by Arizona Revised Statute, the Fire District is required to carry $1,000,000 in liability insurance.

Figure 16:

Tempe Fire County Island District Map

{County Islands outlined in Red)



Open Spaces and Recreational Areas

The Tempe Town Lake covers 220 surface acres in the northern portion of the city, is approximately two miles long, with a width ranging from 800 to 1,200 feet, and a capacity of 3,000 acre-feet or 977 million gallons. The depth of the lake ranges from seven to nineteen feet with an average depth of 12.5 feet. Tempe Town Lake is Arizona's second-most visited public attraction. Levies have been created on both sides of the river channel to contain water which is present from rain or upstream dam releases. The Town Lake levy and dam system were designed to withstand a 100-year flood event. The steel gated dam that creates the west end of the Tempe Town Lake can be lowered to allow flood waters to flow through the Salt River Channel.

The Tempe Town Lake is utilized by sail boats, dragon boats, outrigger canoes, paddle boarders, and more than 2,000 rowers each year. This area tends to be high in pedestrian traffic since there are more than five miles of paths around the lake for skating, running, bicycling, and walking. Pedestrians can also use these paths to get to the Tempe Marketplace, Mill Avenue, the Pedestrian Bridge at the Tempe Center for the Arts, and the Rural Road and McClintock Drive bridges.

Located on the southern shore of Tempe Town Lake, Tempe Beach Park is the oldest park in the city and offers 25 acres of recreational space. It was built in 1931 with renovation in 1999. The Beach Park is Tempe's largest special event venue with more than 40 special events hosted at the lake annually, including Ironman Arizona and Ironman 70.3, Innings Festival, and the Fantasy of Lights Boat Parade. More than 2.4 million people visit the Town Lake each year, resulting in an economic impact of more than $1.5 billion since opening. The lake is an attractive site for major amenities like the Tempe Center for the Arts, Town Lake Marina, Veterans Memorial, Public Safety Memorial, volleyball courts, boat beach, and several natural habitats.

Power Grid

With over 30 electrical substations within City boundaries, loss of power due to fire or extreme weather presents a large risk, particularly in the summer months when temperatures exceed one-hundred degrees Fahrenheit on a regular basis. In the event of failure, substations have built-in redundancies minimizing the impact of power failure. Fire risk exists in older substations involving thousands of gallons of mineral oil, which have proven difficult to extinguish, and resulted in the practice of allowing the fuel to burn itself out. Following these incidents, substations are non-functioning for significant periods of time.

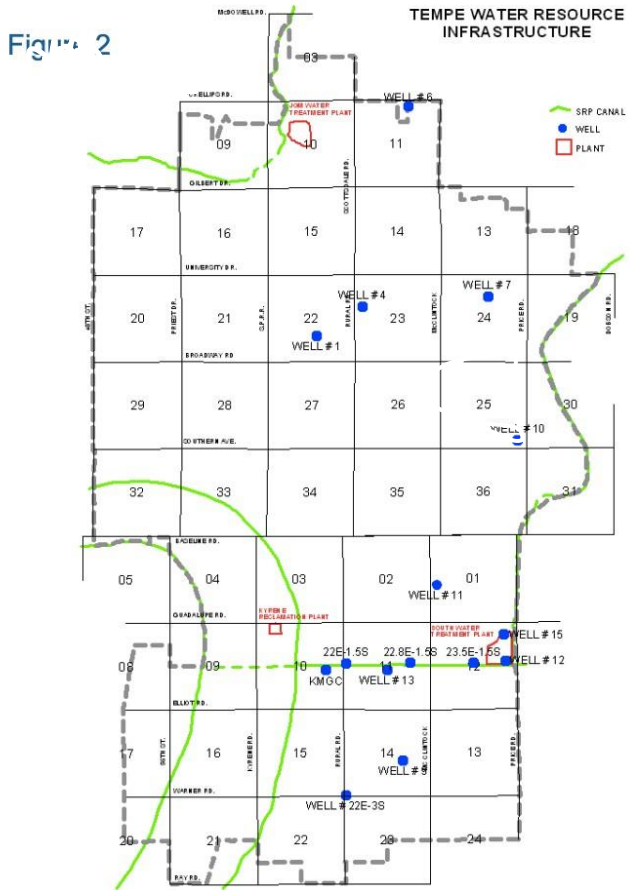
Arizona Public Service (APS) Ocotillo Power Plant Modernization Project was completed in 2020. The modification included installing five, high-tech gas turbine generators to replace the two 1960-era gas-fired steam generators. The project provides a variety of benefits for customers and the community in the areas of environmental, economic, reliability, and flexibility. The project will increase the number of homes it can serve from 83,000 to 165,000. The overall goal of the modernization project is to integrate more renewable energy and to be able to provide 100% clean energy by 2050.

Water System

The City of Tempe received its first Assured Water Supply (AWS) Designation from the Arizona Department of Water Resources (ADWR) on December 31, 1997 (AWS 97-007, Decision and Order No. 26-002043). The AWS Designation was modified and approved again by ADWR on September 29, 2010 (AWS No. 2010-013, Decision and Order No. 86-2043.0001).

Tempe's AWS Designation certifies that Tempe has demonstrated the physical, legal, and continuous availability of groundwater, surface water, Central Arizona Project/Colorado River water, and effluent in an aggregate volume sufficient to meet water demands for a minimum of 100 years. Tempe is designated must be renewed in 2025, at which time Tempe must update its projections and re-apply for the 100-Year AWS Designation.

Figure 17- Water Resource Infrastructure



The Tempe Water Utilities Division (WUD) provides water, wastewater, and environmental services to customers within the Tempe Water Service Area. The water service area covers approximately 42 square miles, which include all lands incorporated within the City of Tempe, the Town of Guadalupe, and several unincorporated county islands.

Natural Hazards

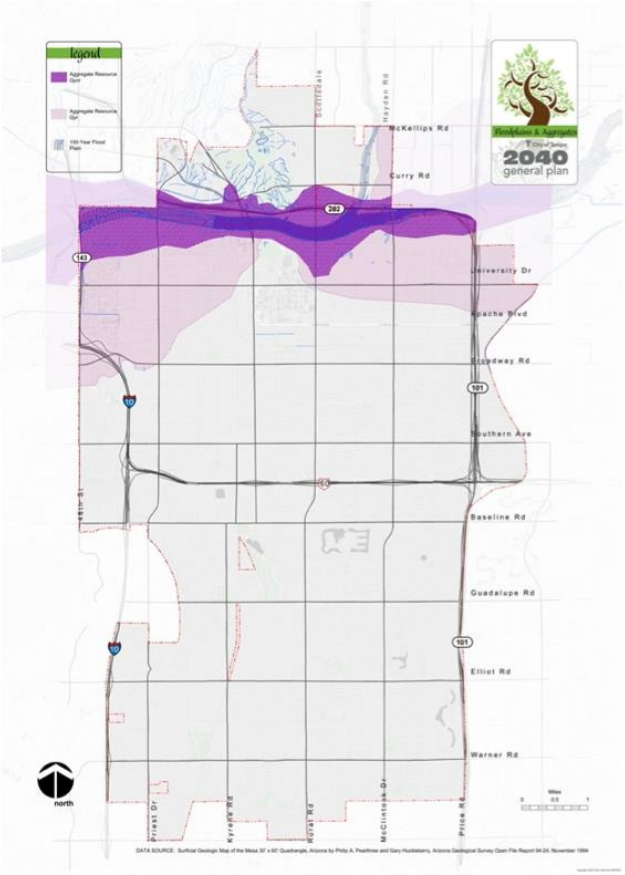
Floodplain

Floodplain management within Tempe City limits is directed by the Engineering and Transportation Department, while actual flood control of the Salt River is directed by the Flood Control District of Maricopa County. The City of Tempe participates in the National Flood Insurance Program (NFIP) which allows Tempe property owners to purchase flood insurance. Properties do not need to be in a flood hazard area to be eligible for flood insurance; however, properties that are in identified flood hazard areas are required by law to be insured. Flood hazard areas are defined as having a 26 percent chance of being flooded over the life of a 30-year mortgage. Tempe flood hazard areas currently exist primarily in and around the Salt Riverbed and adjacent to elevated canals or railroads. Tempe does experience extreme weather in the form of thunderstorms, strong winds, microbursts, and monsoon rains, particularly between the months of July to September. Tempe averages approximately nine inches of rainfall each year. The wettest month of the year is July, with an average rainfall of 1.14 inches.

Land within floodplains is attractive to development for many reasons, including density of vegetation, natural beauty, and for recreational purposes. Drainage corridors are subject to flooding from time to time due to the five miles of the Salt River and one mile of the Indian Bend Wash that traverse Tempe. Historically flooding events have occurred in Tempe when the Salt River inundated the flood plain and destroyed bridges.

Tempe's watershed drains to the Gila River located south of the Salt River Project (SRP) Western Canal. Watershed also drains to Indian Bend Wash and the Salt River, or is captured in local retention basins. Many drainage basins serve as parks, and some freeways drain to common retention facilities, as do certain portions of Tempe.

Figure 18 –Floodplains and Aggregate Soils in Tempe



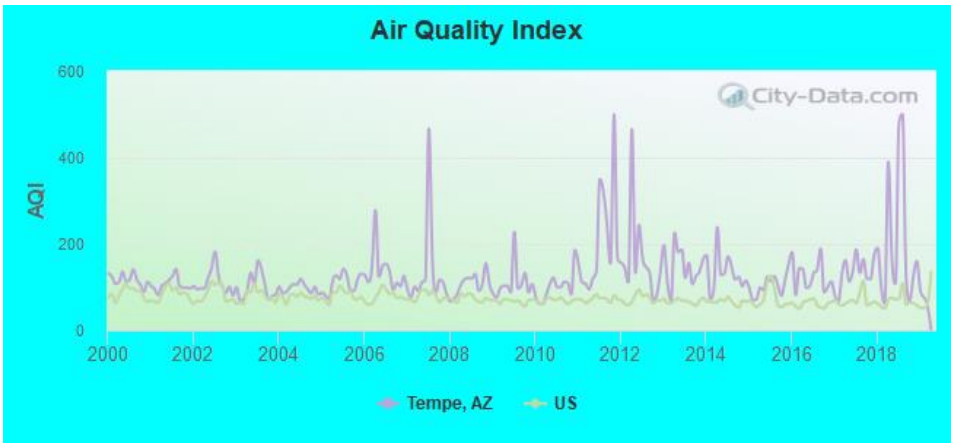
Air Quality

The federal government establishes ambient air quality standards for six pollutants: ozone, carbon monoxide, lead, nitrogen dioxide, particulate matter, and sulfur dioxide. Air quality standards determine if a geographical area meets the federal standards for each air pollutant. When federal standards are not consistently met for a specific pollutant, the area is a non-attainment area for that pollutant. The state of Arizona has created an approved State Implementation Plan (SIP) that demonstrates how the state will maintain the standard for specific pollutants. Failure to obtain an approved plan or to reach the goals set forth in the plan could lead to denial of federal highway funding. Arizona communities within the Phoenix metropolitan area work together to attain air quality standards. Throughout the year, there are

days deemed as high ozone and high pollutant days where citizens are encouraged to limit outdoor activities, carpool, or use public transportation.

Tempe is in a non-attainment area for particulate matter with a diameter of 10 microns (PM10) or less. PM10 is generated from disturbed soil and natural sources such as pollen, which cause or contribute to respiratory problems, together with particulate matter (PM2.5), which is one of the main substances in the "brown cloud" frequently seen over the Valley. The Maricopa region is working to reach attainment with the standards for PM10.

Graph 4 – Air Quality Index



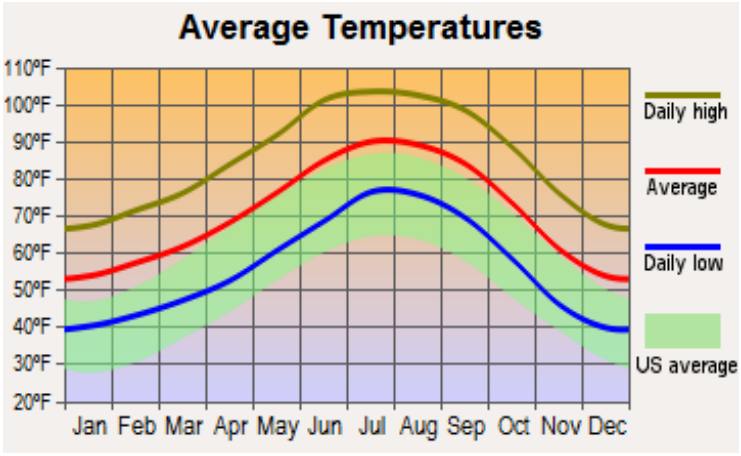
Tempe has adopted dust control regulations intended to reduce PM10. Tempe also implements codes to address dust emissions from private property and other non-government activity by prohibiting vehicles on vacant lots, use of off-road vehicles in city parks, and parking on unpaved commercial, industrial, and multi-family lots.

Weather

Temperatures during the months of June, July and August typically range between 102.5 and 106.4-degrees Fahrenheit. The hot season lasts for 3.7 months, from May 29 to September 20, with an average daily high temperature above 98°F. The hottest day of the year is July 3, with an average high of 106°F and low of 83°F. The cool season lasts for 3.2 months, from November

21 to February 26, with an average daily high temperature below 73°F. The coldest day of the year is December 28, with an average low of 44°F and high of 65°F.

Graph 5 – Average Temperatures



Technological and Human Hazards

Public Safety Communications

Public Safety Communications are an essential part of the emergency response system, which include public safety answering points and dispatch centers. The core mission of public safety Communications Centers is to serve as the community's point of access to public safety resources and as a resource to first responders. Emergency Communication centers need to ensure the transmitting and receiving equipment is always fully functional for emergency responses. The Tempe Police Department is the initial Public Safety Answering Point (PSAP) for 911 calls initiated in the City of Tempe. Phoenix Regional Dispatch Center provides dispatch service to 27 regional fire agencies. Tempe is a member of the Regional Wireless Cooperative (RWC) along with 19 other cities. The RWC is a multi-jurisdictional, interagency cooperative that ensures radio communications are secure and uninterrupted in the Phoenix metropolitan area. There are 5 radio towers and equipment sites strategically placed in Tempe that are maintained by the Regional Wireless Cooperative (RWC) for public safety communications. The Assistant

Chief of Community Risk Reduction sits as the primary representative for the city on the RWC Board of Directors.

A major hub for Verizon Wireless is in the southern part of Tempe and is identified as a critical infrastructure. TFMRD works closely with Verizon to ensure updated response protocols are established.

Transportation

Tempe has 24.2 linear miles of heavily traveled freeways. A large number of vehicle collisions and hazardous material transport occur daily. The major roadways support large traffic volumes that serve the residential, educational, business, industrial, and commercial corridors of the city. The two freight rail lines pass through Tempe with a total of 44 railroad/roadway crossings with a section spanning the Tempe Town Lake. Freight line derailments pose significant hazardous materials and fire risks for the community.

The light rail consists of 9 light stops with 5.5 miles of travel in the city, operating 365 days a year at 20+ hours a day with over 12 million passengers in 2020. Vehicle collisions with the light rail occur regularly posing risk to light rail passengers and drivers. Bus lines in Tempe connect to light rail stations and consist of 16 local and 3 express service routes covering every arterial street. Vehicle collisions with buses present an additional hazard. The new three-mile Streetcar will add to Tempe's comprehensive transit network with 14 stops, including 2 that connect with Valley Metro Light Rail. The Streetcar travels in the lane of traffic and presents a vehicle collision risk and potential for response delay of emergency vehicles.

Sky Harbor Airport

Tempe is on the arrival and departure path for Sky Harbor International Airport, which occupies 3,400 acres directly west of the city. Sky Harbor is rated among the top 8 busiest in the country by moving 46,288,337 passengers in 2019.

On a typical day, more than 1,200 aircraft arrive or depart, moving approximately 120,000 passengers. In addition, more than 800 tons of air cargo are handled daily through Sky Harbor International Airport. The flight paths are directly above the site of the Rio Salado (Tempe Town Lake)**,** ASU Sun Devil Stadium, and several other significant structures in the city which are identified as maximum fire and non-fire risks. While the approach and landing phases of air

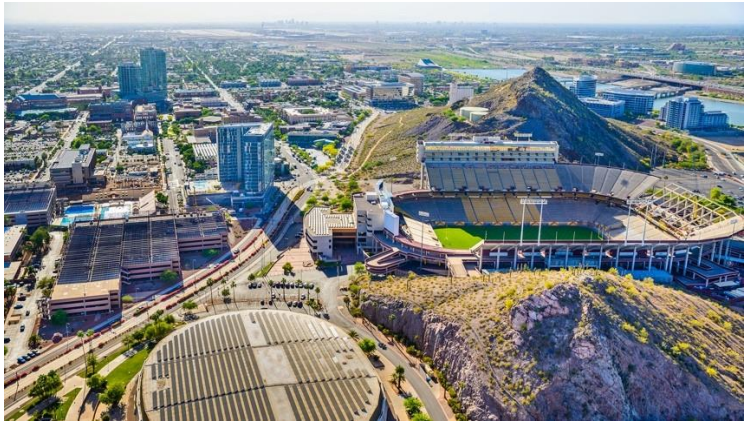
travel comprise only four percent of average flight time, over half of total air accidents happen during this brief period, placing Tempe directly amid the risk for an event.

Built Environment Fire Risk

As part of the threat vulnerability assessment performed in 2020, the City of Tempe Emergency Management Collaboration Team determined that Tempe is not at great risk of natural disasters such as extreme weather events and earthquakes. The greatest risk of property loss and human mass casualty incidents is most likely to be human caused, whether intentional or accidental. Due to the changing nature of the built environment in Tempe, the agency's risk profile is shifting to one of increased density through larger, more complex structures. These new structures include high rise apartments, condos, and office buildings as well as large, complex industrial facilities. According to TFMRD criteria, these structures will typically be classified as High-Risk, thus requiring significant preplanning and inspections through the TFMRD Community Risk Reduction Division.

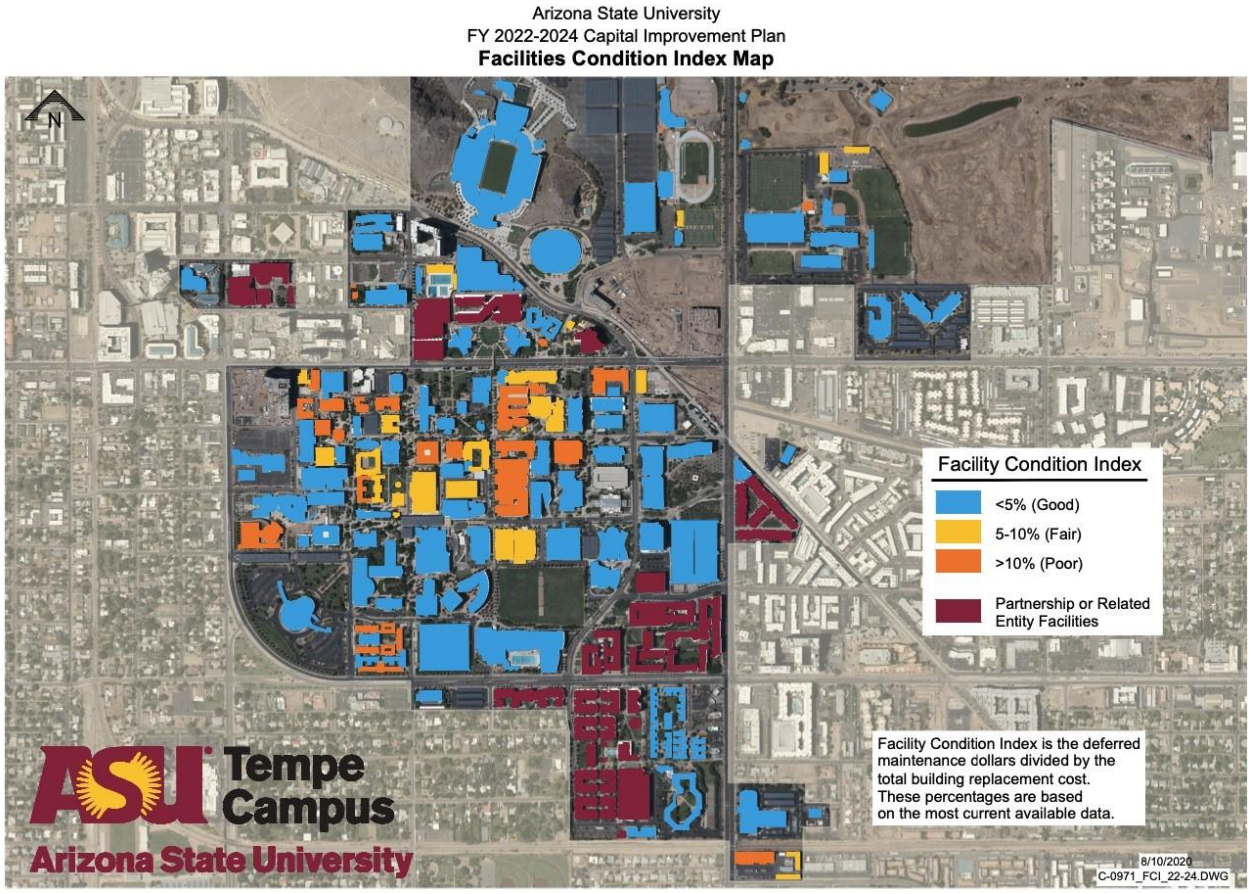
Arizona State University

Arizona State University employs its own fire marshal, who works closely with the Department's Community Risk Reduction Division. To provide improved access for responding apparatus on campus, pedestrian mall sidewalk weight limits have been increased by strengthening of underground infrastructure.



The Arizona State University Tempe campus consists of 374 facilities on 650 acres with 23.5 million square feet of space. It is the most densely populated of the existing ASU campuses. The university regularly renovates labs and existing academic space. This coupled with the need to replace aging facilities and accommodate greater research growth continues to spur development, adding to existing square footage.

Figure 19 – Arizona State University Facilities Condition Index Map



The Tempe Fire Medical Rescue Department responds to all fire and emergency medical calls on campus. All on-campus student housing at Arizona State University is equipped with automatic fire sprinkler and alarm systems. On-campus housing is under the jurisdiction of the Arizona State Fire Marshal's Office, which conducts yearly inspections to make sure that all buildings on campus are compliant with the adopted code.

Approximately 80% of the total square footage of the ASU facilities buildings are protected with some type of suppression system (fire sprinkler, FM200, or other acceptable Halon alternative system). There are 130 buildings completely protected with automatic fire sprinkler systems, and 44 buildings are partially protected with automatic fire sprinkler systems (an average of 50% of the building area protected). The university is committed to installing fire protection systems in its buildings as they undergo major renovation. The Administration and Science buildings on campus are listed in the National Register of Historic Places.

The large population at ASU increases risk in terms of fire and life safety issues. The Department and university work closely to evaluate risk and lessen impacts should an event occur. To mitigate risks from sudden cardiac events, the university has installed automatic external defibrillators in over 75% of the occupied buildings on campus.

Industrial Areas and Commercial Complexes

Land in Tempe is 98% developed, with 27% dedicated to commercial and industrial use. Tempe has nearly 600 industrial occupancies, totaling approximately 13 million square feet. In addition, it has over 6,000 occupancies under the broad classification of commercial, which total over 57 million square feet.

City of Tempe Government Facilities

The City of Tempe Public buildings consists of civic and community centers, libraries, police and fire stations, public schools, and other public buildings. City of Tempe owns and operates 66 buildings that accommodate city services and programs.

Tempe uses Condition Management Estimation Technology (COMET) to determine the condition, performance, and priorities of all facilities.

Historic Structures

In November of 1995, the Tempe City Council unanimously adopted the Tempe Historic Preservation Ordinance. The Tempe Historic Property Survey and the Tempe Historical Society are involved in identifying more than 350 buildings and structures in Tempe that exhibited potential historical and/or architectural significance. The city has 45 listings on the National Register of Historic Places, which includes three historic neighborhood districts. Significant

structures include the Hayden Flour Mill (1918), the Frank Lloyd Wright designed Grady Gammage Auditorium (1964), and the Petersen House (1892).

Mill Avenue Entertainment District/ Tempe Market Place

The largest employers in the City of Tempe include Microsoft, LifeLock, Waste Management, Carvana, Microchip, Wells Fargo, and State Farm. The northern portion of Tempe continues to see tremendous growth, with more than 100 restaurants, retailers, and nightclubs that supply more than 20,000 jobs. Development encompasses areas around the Mill Avenue Entertainment District, Tempe Town Lake, and the Tempe Market Place.

The Tempe Market Place is 1.3 million square feet of retail space, over 100 shops and restaurants, and more than 300 events a year.

The downtown area attracts large numbers of individuals with many activities, businesses, ASU, public transportation, and various residential living options. The Department regularly evaluates risk in this area to ensure the safety of the citizens and the community.

Schools

The City of Tempe currently has 16 private schools and 53 public schools within city limits, including 23 charter schools. Schools are classified as critical infrastructure and fall under the jurisdiction of the State Fire Marshal. During the school year, approximately 29,000 students may be present during school hours between the months of August and May.

All Tempe schools are protected by automatic fire protection systems. In 2021, the Arizona State Fire Marshal's Office adopted the International Fire Code (IFC) 2018 edition.

In response to increasing acts of violence involving schools, the Department secured funding in 2014 for ballistic vests and helmets. The Department has also established the SWAT Medical Support Unit (MSU) that consists of 10 trained department members working with and training directly with law enforcement in the event of major incident. The Department trains with the Tempe Police Department regularly to respond to active threat situations involving schools.

Emergency Medical Services

The delivery of Medical Services plays a major role in the operation of the Department. Over 85% of the Department's annual emergency response activity is medical in nature. The role of Medical Services reaches beyond emergency response to improve the health status of individuals, families, and the community. The Department identifies in the ORH Fire Station Plan to 2040, increasing call volume over the next 18 years with forecasted occurrence of Basic Life Support (BLS) calls outpacing Advanced Life Support (ALS) calls. An increase has also been seen in time-sensitive illness and injury, specifically cardiac arrests, strokes, and ST Elevation Myocardial Infarction (STEMI).

Hazardous Materials

Through the City of Tempe Hazards Vulnerability Assessment (HVA), the Department identified the need for a comprehensive effort to prevent and respond to hazardous materials (hazmat) emergencies. Development patterns in the city reflect increased utilization of chemicals, extensive amounts of high-tech research, and industrial activity. Hazmat calls include natural gas leaks, unknown substance calls, and leaks or spills of any chemical.
A major consideration for hazardous materials risk in Tempe includes natural gas. A large diameter natural gas pipeline runs from Texas into the Phoenix metropolitan area traveling through Tempe.

Technical Rescue

Technical rescue incidents include confined space rescue, trench collapse, high and low angle rope rescues from buildings and rough terrain, swift water rescues, surface water rescues, structural collapses, operating from helicopters and other non-typical/unique accidents. These incidents require specialized training and equipment to conduct safe operations. The most frequent technical rescue incidents are mountain rescues.

Dive Operations

Public safety diving is a high-risk, low frequency operation. Dive incidents require special training and equipment to conduct safe operations. Several types of emergency incidents require this level of response including dive rescue and recovery operations and evidence recovery. In addition, the TFMRD Dive Team works with special events to provide support for triathlons and other water related events.

Special Events

Historically, Tempe averages 300 community events per year. Most special events are located at or near the Tempe Town Lake. These events can attract up to 100,000 people daily and staffing for EMS and fire protection ranges from one Department member to 45 Department members. Examples include:

- Spring Training baseball
- spring and fall Festival of the Arts
- Rock-n -Roll Marathon
- Arizona Ironman Triathlon
- Ironman Arizona and 70.3
- Pat Tillman Run
- Fantasy of Lights Parade
- Innings Festival
- Tour de Fat festival
- Oktoberfest

These events pose unique challenges for the Department because of the large number and concentration of people, traffic, access to and egress from the events, and the required public safety resources to manage the events.

The special Events Task Force Meetings are held on a bi-weekly basis, where the Department and multiple City department representatives who may be impacted meet to discuss the event. Formal Incident Action Plans (IAPs) are created during these meetings and put in place using the National Incident Management System (NIMS) for any event needed. A special events risk assessment is also conducted by the Community Risk Reduction division prior to the special event to consider the overall number of attendees, history of similar events, if alcohol will be served, temperature concerns, safety concerns, and crowd demographics (drug concerns, mosh pits, etc.). An additional risk assessment is performed during the event to verify the initial considerations along with any new considerations.

Section 4: System Performance

Tempe Fire Medical Rescue Department (TFMRD) has seen substantial growth over the last few years regarding the population and development not only within the community, but also within the Department. Population density can affect the number, probability, and severity of emergency responses. The increasing demands for service are most notably within the areas of Community Risk Reduction, Medical Services, Special Teams, and Special Events services. The Department has contracted Operational Research in Health, Inc. (ORH) to conduct deployment modeling and station location studies to identify gaps in service. Information from ORH is used to guide the strategic planning process toward improving system performance.

In 2017, TFMRD was granted approval by Arizona Department of Health Services (ADHS) and the City Council to obtain a Certificate of Necessity (CON), which provides the Department with the authority to provide emergency medical transportation services. The Department purchased its first three ambulances in 2017 and staffing was completed with one civilian Emergency Medical Technician (EMT) and one civilian Paramedic on each ambulance. The business model to transition from contracting private ambulance services to serving as the primary provider for emergency medical transportation was completed using a phased approach. The Department began implementing the transition by placing two ambulances into service and then expanded at an appropriate rate to a total of six ambulances within a five-year period. This approach ensured TFMRD was fiscally responsible while maintaining service delivery. The transition increased accountability, reliability, improved quality of service, and the ability to control response time expectations more effectively.

The ORH Fire Station Plan to 2040 identified the impacts of growth within the city in relation to emergency responses where calls for service increased from 20,921 to 24,457, respectively, demonstrating an average increase of 4.0% per year. The large growth in population and development within the city reinforces the need to place appropriate resources in the right location, to ensure response times and adequate emergency coverage is maintained over the next 18 years. As a result of recommendations from an ORH Station Location Study completed in 2015, the Department identified land, constructed, and opened a new Fire Station 7 in the

southeast area of the city. Station 7 opened in 2019 and has dramatically improved response times to that area of the city as well as improved reliability throughout the city. The Fire Station Plan to 2040 identified the need for Fire Stations 8, 9, and 10 in the future as well as strategically relocating Fire Stations 3 and 4 for more optimal response capabilities.

The Department will use the Fire Station Plan to 2040 to identify the best location for land to relocate Fire Station 3, which will be completed in fiscal year (FY) 2024-2025. TFMRD will also design Fire Station 8 in FY 2024-2025, with anticipated construction to begin for both Fire Station 3 and 8 in FY 2025-2026. Strategically planning for growth and development will enable the Department to have quicker response times, improved reliability of coverage, and proper placement of resources in the city.

Graph 6 – Annual incidents by category (2014-2019)

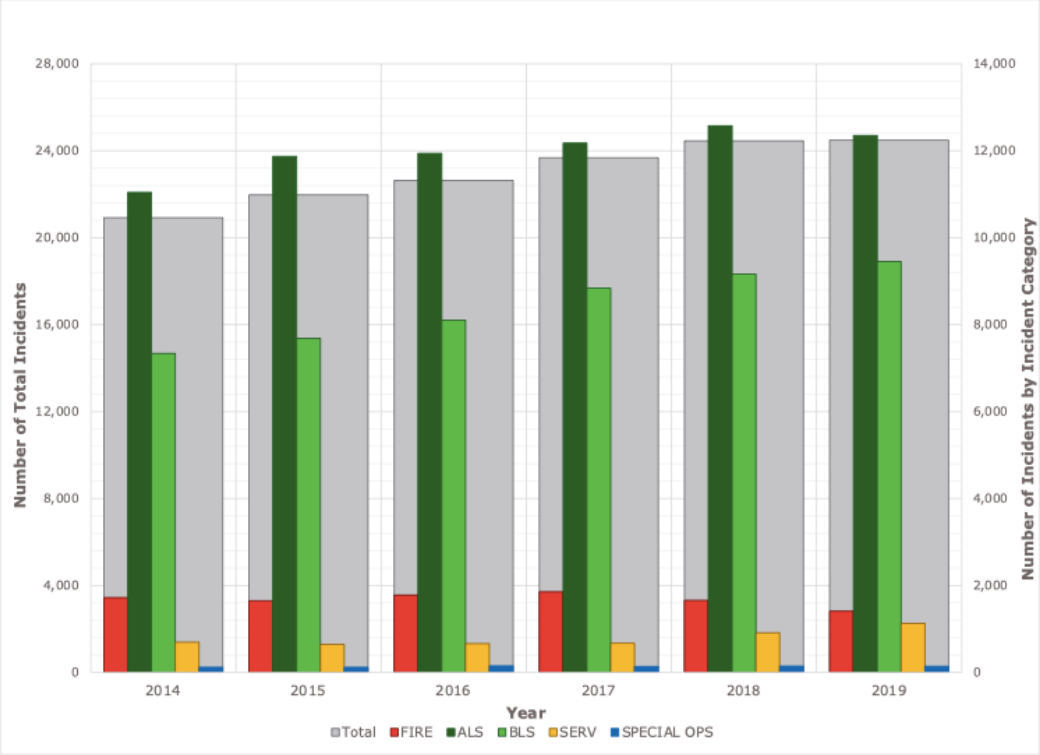


Table 34

Tempe Fire Medical Rescue Department

Demand Projection by Category

Demand Growth - Average Annual %

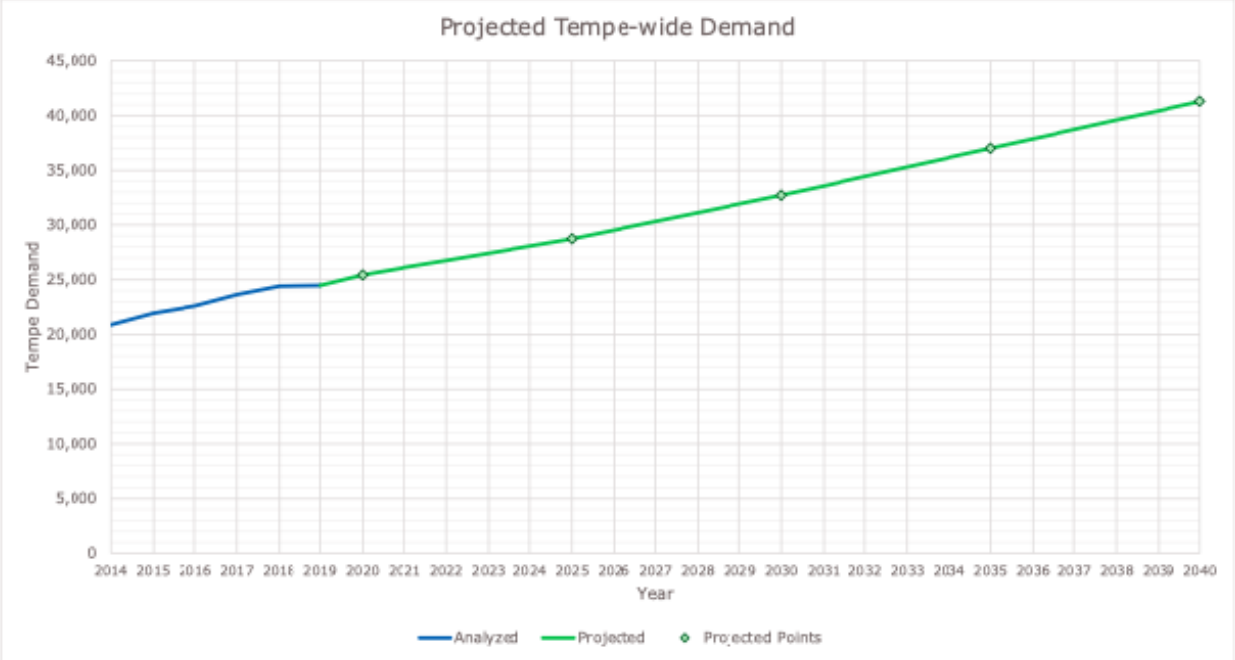
Year	ALS	BLS	FIRE	SERV	SPECIAL OPS	Total
2019	-	-	-	-	-	-
2020	3.2%	5.2%	2.1%	2.1%	2.2%	**3.9%**
2025	1.4%	4.1%	1.0%	1.0%	1.0%	**2.5%**
2030	1.6%	4.0%	1.3%	1.3%	1.3%	**2.6%**
2035	1.6%	3.7%	1.2%	1.2%	1.2%	**2.5%**
2040	1.3%	3.2%	1.0%	1.0%	1.0%	**2.2%**

Relative to Year	
0 % Growth	
10% Growth	

Demand Growth

Year	ALS	BLS	FIRE	SERV	SPECIAL OPS	Total
2019	12,353	9,452	1,410	1,128	142	**24,485**
2020	12,752	9,946	1,440	1,152	145	**25,436**
2025	13,663	12,184	1,517	1,213	153	**28,730**
2030	14,807	14,833	1,615	1,292	163	**32,710**
2035	15,996	17,755	1,715	1,371	173	**37,010**
2040	17,089	20,788	1,800	1,439	182	**41,297**

Graph 7 – Projected incident demand



Community Feedback

Community feedback is extremely valuable to TFMRD. The Department conducts regular, ongoing customer surveys from users of TFMRD services in Tempe in both the Emergency Services and Community Risk Reduction arenas. The purpose of these surveys is to gather feedback from external customers after services have been provided. The survey gives customers an opportunity to provide feedback to the Department and share ideas for improvement. These surveys play a critical role in assessing how well TFMRD meets community expectations.

Methodology

The Department uses three main timelines to gain community feedback on its services. Surveys are emailed to customers on a regular basis, periodically one time, or as a special survey when deemed necessary. Recent examples of special surveys include:

- Covid vaccination survey
- EMS training survey

TFMRD has used two different survey programs (Survey 123 and Survey Monkey). The Department changed from Survey Monkey to Survey 123 in October of 2020 due to its ability to post to the City of Tempe's open books dashboard in real time. Department survey data, which is included as part of a Strategic Council Priority performance measure, is updated automatically and available in real time for review.

TFMRD Emergency Medical Services (EMS) Satisfaction Survey is emailed weekly to customers who receive services and is willing to provide an email address. Typically, between 100 and 120 emails are sent each week. The email addresses are retrieved from Image Trend database weekly. Recipients are sent an email with instructions to click on a link to complete a short survey concerning services provided and are given information on the location where survey results may be viewed.

The survey consists of ten questions with the first four questions inquiring about response time. Respondents are then asked to rate emergency response personnel based on the following qualities:

- Helpful
- Caring

- Professional
- Competent
- Knowledgeable

Respondents have the option of rating the qualities as:

- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly disagree

Question five asks “Overall, how would you rate the Fire/EMS service you received?” Respondents have the following choices:

- Exceeded my expectation
- More than met my expectation
- Met my expectation
- Less than met my expectation
- Did not meet my expectation

Question six provides an opportunity to type in suggestions or feedback specific to the overall experience. The last four questions are intended to collect contact information and very limited demographic data, with the opportunity to be added to the Public Safety quarterly newsletter.

Approximately 50% of respondents leave a comment or suggestion. Since October 2020, TFMRD has received 534 comments. The comments are used as an opportunity to identify opportunities to improve services, communication, and when appropriate, educate the public on policies and procedures. Survey results are shared monthly with all members of the Department.

Response Time, Concentration, and Distribution

Responses to incidents are determined by type of incident, type of structure, and description of the incident provided to the call taker in the communications center. Tempe Fire Medical

Rescue Department (TFMRD) has adopted the time standards of calls for service set by NFPA 1710.

Response Time Benchmarks

As reflected in the TFMRD Operational Guide 2021-22, the goal of the Department is as follows: To deliver efficient and consistent all-hazard emergency response services in a safe and efficient manner 90% of the time, with a response time benchmark (call processing time plus turnout time plus travel time) of:

- 6:00 minutes (360 seconds) or less for emergency medical incidents
- 6:20 minutes (380 seconds) or less for fire related incidents
- 8:00 minutes (480 seconds) or less for hazardous materials incidents
- 8:00 minutes (480 seconds) or less for technical rescue incidents

Response Time Components

TFMRD defines response time as the total amount of time that elapses from the time the Phoenix Fire Department Regional Dispatch Center (PFDRDC) receives a call until the assigned unit is on the scene of the emergency. Total response time consists of three elements: alarm processing time, turnout time and travel time.

1. Alarm Processing Time – Defined as the time interval from when the alarm is acknowledged at the communication center until response information begins to be transmitted via voice or electronic means to emergency response facilities and emergency response units. The benchmark is 60 seconds.
2. Turnout Time – Defined as the period-of-time from receipt of dispatch to departure of the apparatus from its parked location. The benchmark is 60 seconds for incidents not requiring protective turnout clothing and 80 seconds for incidents that require donning of protective turnout clothing.
3. Travel Time – Defined as the elapsed time from when a unit acknowledges response until arrival on the emergency scene.

Table 35 - Performance Objectives: NFPA 1710 – (2020 Edition)

Measure	Benchmark 1	Benchmark 2
Alarm Answering Time	15 sec 95%	40 sec 99%
Alarm Processing Time	64 sec 90%	106 sec 95%
Turnout Time	60 sec 90% EMS	80 sec 90% Fire
First Engine Arrive on Scene Time	240 sec (4 min)	
Initial Full Alarm (Low and Medium Hazard) Time	480 sec (8 min)	
Initial Full Alarm – High Hazard/ High-Rise Time	610 sec (10 min 10 sec)	

Elements of Response Coverage

Standards of Response Coverage is the adopted, written policies and procedures that determines the distribution, concentration, and reliability of fixed and mobile resources of an organization for fire, emergency medical services, hazardous materials, and technical responses. It is a system that also includes an analysis of risks and expectations to assist in making decisions on deployment. Standards of Response Coverage consist of three key elements:

1) Distribution – Station and resource locations needed to ensure rapid response

2) Concentration – Spacing of multiple resources arranged so that an initial effective response force can arrive on-scene within sufficient time frames

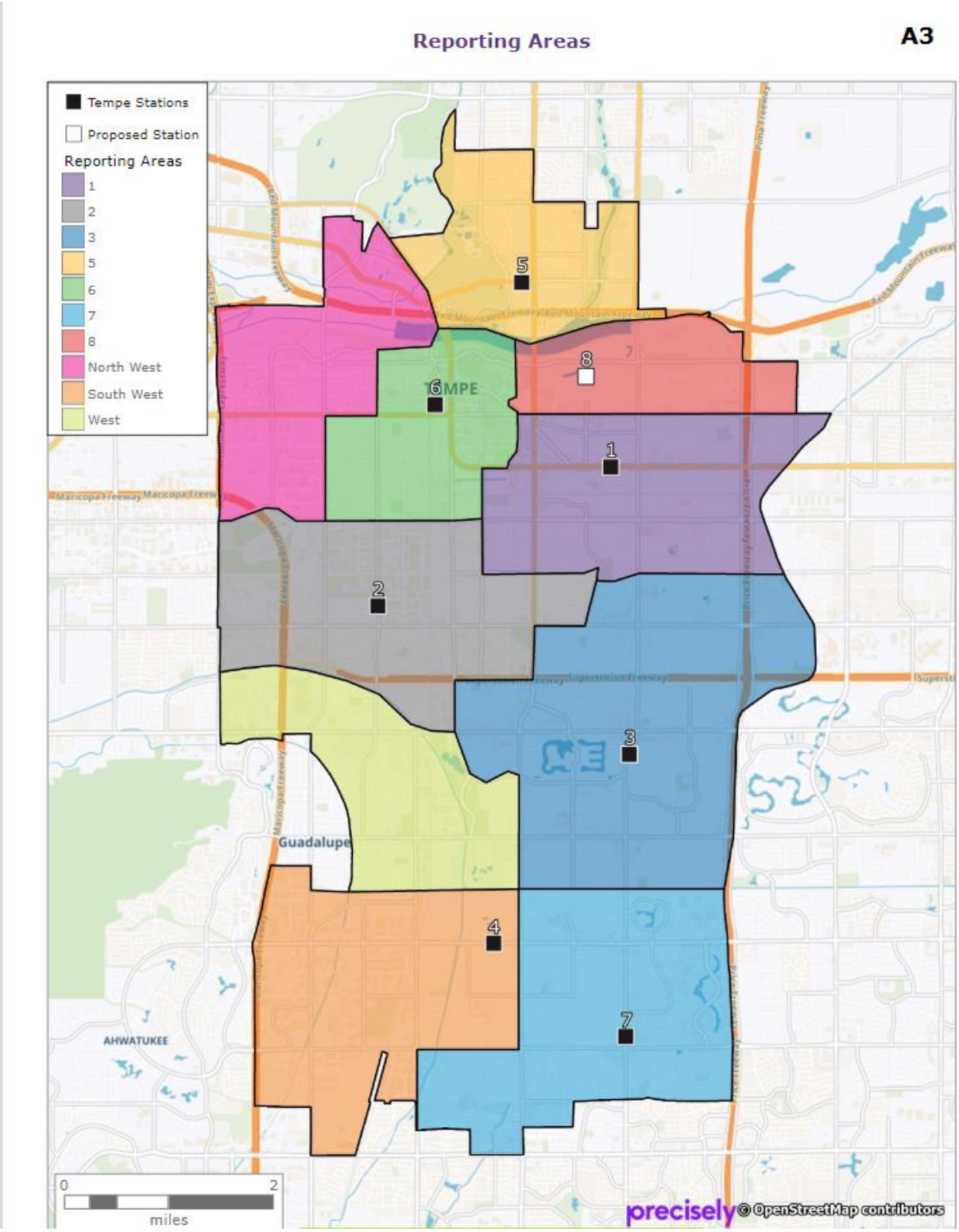
3) Reliability – The ability to meet performance expectations when resources are committed to an existing call for service

The Department determines distribution and concentration of units and unit types based on geographical location of stations, response times, call volume, capabilities of units, and land availability/cost. The Department operates out of seven stations with the following resource configuration:

- Fire Station 1 – two engines, one heavy rescue squad (co-staffed with engine company assigned as technical rescue), one battalion command vehicle, and one ambulance
- Fire Station 2 – one engine, one hazardous material support truck (co-staffed with engine personnel), one low acuity response unit, one ambulance
- Fire Station 3 – one engine, one aerial ladder, one ladder tender
- Fire Station 4 – one engine, one ambulance
- Fire Station 5 – one engine, one ambulance
- Fire Station 6 – one engine, one aerial ladder, one ladder tender, one technical response support truck (co-staffed with ladder personnel assigned as technical rescue), one ambulance
- Fire Station 7 – one engine, one battalion command vehicle, one scene support air/light truck, one ambulance

Each station has an assigned first due area based on Routeware software analytics established by the Phoenix Fire Department Regional Dispatch Center (PFDRDC). All apparatuses are dispatched by the PFDRDC based on Automatic Vehicle Locators (AVLs) and the Global Positioning System (GPS).

Figure 20 - Reporting Areas and Fire Station Placement



Automatic Aid

TFMRD participates in an Automatic Aid Consortium which is comprised of a partnership with 27 cities that operate through one central regional dispatch center. Participating agencies are trained to the same regional operating procedures and standards for all-hazard emergency response. The Automatic Aid Consortium shares resources without borders based on automatic vehicle locators (AVL) located on apparatus, allowing the closest units to respond to emergencies. When long-term large-scale incidents occur (i.e. multiple alarms) the regional dispatch center strategically backfills stations throughout the system to ensure proper coverage occurs among the cities.

The use of the automatic aide system and regional dispatch center is a cost-effective approach to ensuring resource and response coverage for any type, size, or complexity of emergency can be managed safely and effectively. As a participant in the Automatic Aid Consortium, the Department also provides fire protection services to Phoenix, Mesa, Scottsdale, Chandler, and Guadalupe, along with other cities and towns located in the Phoenix metropolitan area. This added service area may require Tempe units to travel slightly into adjacent cities or towns, or many miles depending on the nature of the incident. ORH completed an analysis of the number of incidents TFMRD responded into other cities versus the number of incidents other cities provided service to Tempe, which can be seen in Table 36.

Table 36 – Automatic aid results for 2014 to 2019

Tempe Fire Medical Rescue Department

Automatic Aid

Into Tempe from

City/Service	2014	2015	2016	2017	2018	2019
Chandler	355	381	455	424	469	448
Guadalupe	856	556	1,231	1,261	1,314	1,411
Mesa	478	708	886	872	873	1,075
Maricopa County	0	0	0	0	0	0
Phoenix	702	904	869	824	917	964
Scottsdale	166	170	208	215	237	227
Salt River	2	2	3	0	1	1
Other	2	6	10	3	7	5
Total	**2,563**	**2,727**	**3,662**	**3,599**	**3,818**	**4,131**

From Tempe into

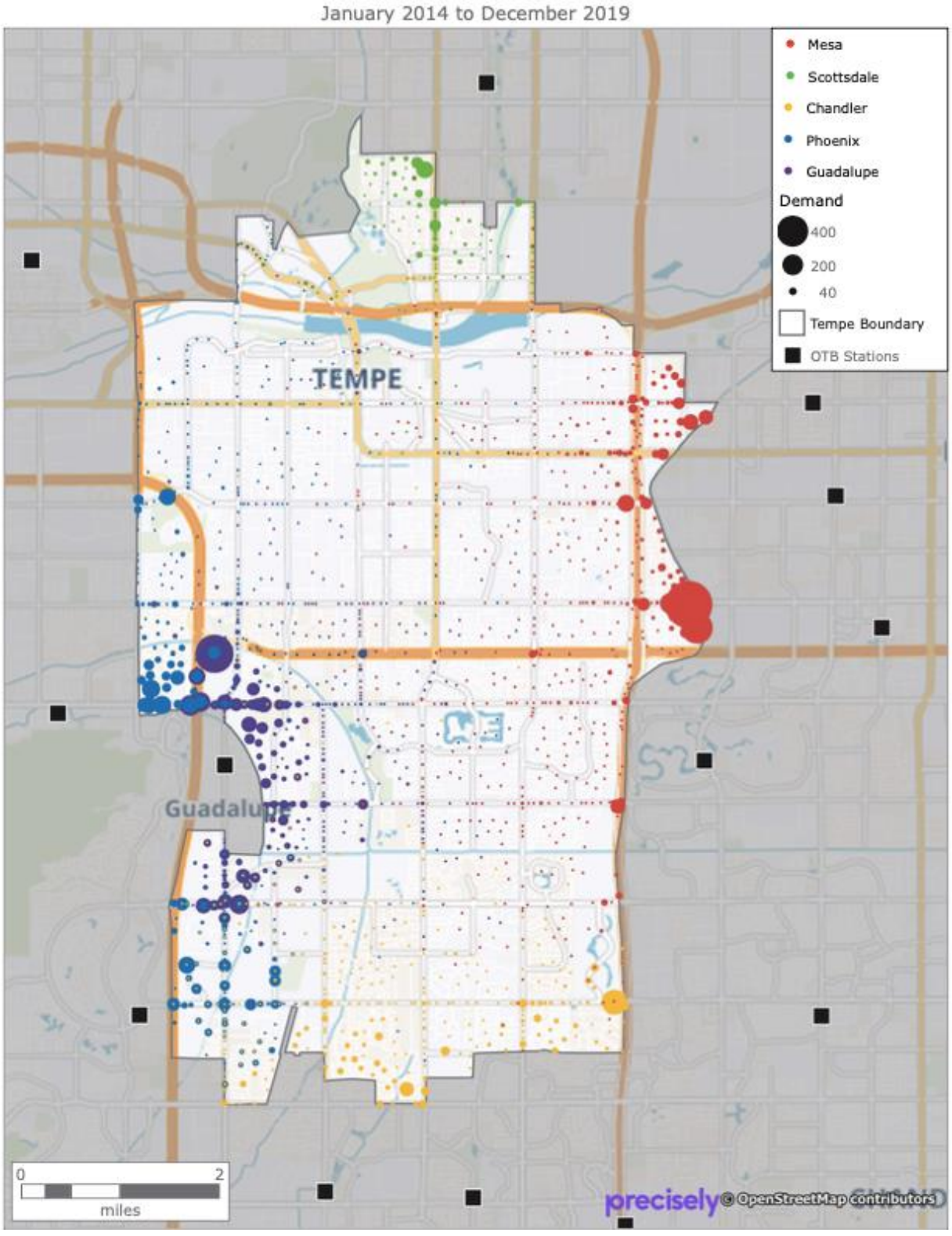
City/Service	2014	2015	2016	2017	2018	2019
Chandler	158	137	167	171	152	280
Guadalupe	79	77	115	106	80	114
Mesa	541	477	544	346	408	374
Maricopa County	27	22	18	21	29	17
Phoenix	632	752	914	920	865	987
Scottsdale	573	632	645	547	525	645
Salt River	8	12	16	24	14	10
Other	7	7	10	4	13	5
Total	**2,025**	**2,116**	**2,429**	**2,139**	**2,086**	**2,432**

Difference

City/Service	2014	2015	2016	2017	2018	2019
Chandler	197	244	288	253	317	168
Guadalupe	777	479	1,116	1,155	1,234	1,297
Mesa	-63	231	342	526	465	701
Maricopa County	-27	-22	-18	-21	-29	-17
Phoenix	70	152	-45	-96	52	-23
Scottsdale	-407	-462	-437	-332	-288	-418
Salt River	-6	-10	-13	-24	-13	-9
Other	-5	-1	0	-1	-6	0
Total	**536**	**611**	**1,233**	**1,460**	**1,732**	**1,699**

Relative to year and city/service	
1300	
-1300	

Figure 21 – Automatic Aid by Service 2014-2019



Unit Hour Utilization

Unit hour utilization (UHU) is a standard method of determining the workload of an emergency response unit. UHU is calculated by using a constant measure of time committed per incident, multiplied by the number of incidents to which an apparatus responds, and then divided by the hours of operation for the unit.

(# of incidents) * (time committed per incident)/Hours of operation

Table 37 details the UHU for each TFMRD responding unit for the five-year analysis period.

UNIT	2017	2018	2019	2020	2021
BC271	8.05%	5.54%	6.05%	6.62%	6.82%
E271	12.33%	13.54%	14.27%	15.77%	18.40%
E272	11.02%	11.33%	13.61%	15.56%	17.47%
E273	9.88%	10.27%	12.37%	12.15%	12.89%
E274	9.57%	9.91%	12.68%	11.42%	11.69%
E275	10.58%	12.27%	14.87%	13.50%	17.58%
E276	11.50%	12.44%	15.07%	14.25%	16.11%
E277	11.02%	11.62%	12.51%	10.61%	11.32%
E278	11.85%	13.13%	13.80%	15.33%	17.39%
HM272			2.13%	1.80%	1.55%
L273	2.70%	2.43%	4.84%	3.86%	3.27%
L276	1.88%	1.42%	2.74%	3.53%	6.06%
LA271	9.21%	8.19%			
LA272			8.91%	8.02%	11.43%
LT273	6.14%	6.76%	6.64%	7.34%	9.46%
LT276	9.69%	11.24%	12.73%	11.94%	10.16%
M271	11.01%	13.81%	25.23%	21.93%	26.46%
M272			23.61%	21.37%	26.42%
M274			21.70%	19.95%	23.35%
M276	10.33%	13.16%	23.60%	19.02%	23.50%
P-272	9.50%	12.17%	6.44%		
P-273	10.35%	13.38%	27.30%	26.17%	29.16%
P-274	9.05%	11.29%	19.96%		
P-275	4.53%	5.49%	10.94%	10.48%	13.12%
SI272	1.54%	1.44%	1.71%		
SQ278	0.27%	0.31%	0.39%	0.39%	0.82%
U277			0.59%	2.09%	2.20%

The UHU for fire apparatus is based on time on scene and number of hours available for service throughout the year. The Department has identified when a fire apparatus UHU exceeds .20 (3500 incidents/year), the time available for important activities such as training, fire inspections, public service duties, equipment maintenance, professional development, and other items is less than desirable. A UHU of .30 would result in a fully committed front line unit. Table 37 above was calculated using the number of hours available for service and the time committed per incident annually. TFMRD has determined that 3,000 to 3,500 incidents per year for response units (.18 to .20 UHU) is the point at which measures should be taken to plan for additional response capacity.

Real estate conditions in Tempe necessitate long lead times when planning for additional stations or expansion. This is a major factor in determining the 3,000 to 3,500 calls as a baseline trigger.

Reliability

Reliability is a measure of the percentage of time first-due units respond in their assigned areas. Factors such as high incident volumes, simultaneous incidents in an area, unit out of service time for training, maintenance, and other activities influence reliability. This important metric examines how likely a person calling 911 in an area is to have a unit assigned to the fire station closest to them respond to their emergency.

Table 38 illustrates the incident totals and reliability percentage for all TFMRD stations for the five-year analysis period. A higher percentage indicates higher reliability for first-due units.

Table 38 Incidents by First Due and First Due Reliability Per Year

Incidents by First Due per Year

	271	272	273	274	275	276	277
2019	5214	3951	3600	2044	2362	4554	N/A*
2020	5229	3763	3536	1712	2286	3575	1441*
2021	6135	4314	3767	1943	2720	4611	1565

First Due Reliability per Year

	271	272	273	274	275	276	277
2019	88.2%	84.3%	86.3%	75.9%	74.8%	86.1%	N/A*
2020	87.5%	82.2%	86.6%	77.6%	78.6%	89.4%	85.2%*
2021	85.2%	82.5%	86.4%	77.4%	77.2%	83.7%	84.2%

*Station 7 opened on 11/21/19. Data for 277 is incomplete prior to 1/13/20

90th Percentile Benchmark and Baseline Performance

Performance Objectives

Critical elements of emergency response are time and resources. The primary measure of performance is the time it takes to deliver an effective response force (ERF) to ensure any victims are safe and initiate application of water to a fire. Response times are critical for incidents involving fire to decrease the likelihood of flashover and to prevent injury or loss of life.

For medical incidents, the measure of performance is response time to the scene for the personnel and equipment needed to deal effectively with the patient's condition. A rapid response is essential for time sensitive medical conditions such as a stroke, drowning, serious trauma, cardiac arrest, or conditions that may lead to cardiac arrest.

Table 39 **- Overall Summary: Percentage of time first unit on scene traveled Code 3**

Risk Classification	2017	2018	2019	2020	2021
EMS High Risk	94.47%	94.56%	93.83%	94.18%	94.32%
EMS Med Risk	96.47%	93.87%	93.53%	93.88%	93.49%
EMS Low Risk	86.96%	40.57%	28.90%	25.31%	25.32%
Fire High Risk	97.96%	84.09%	78.57%	83.33%	79.25%
Fire Med Risk	93.44%	96.49%	91.30%	94.55%	90.48%
Fire Low Risk	89.39%	50.00%	43.86%	45.77%	42.19%
HazMat Med Risk	97.96%	94.17%	93.20%	90.44%	90.06%
HazMat Low Risk	34.44%	20.83%	7.64%	4.08%	7.20%
TRT High Risk	100.00%	94.12%	92.31%	93.75%	93.33%
TRT Med Risk	100.00%	60.00%	100.00%	100.00%	100.00%

Fire Response

The heat and toxic smoke production from burning contents of buildings is significantly greater than in the past. Widespread use of plastics in furnishings and other building contents rapidly accelerate fire spread, increase smoke production, and increase the amount of water needed to effectively control a fire.

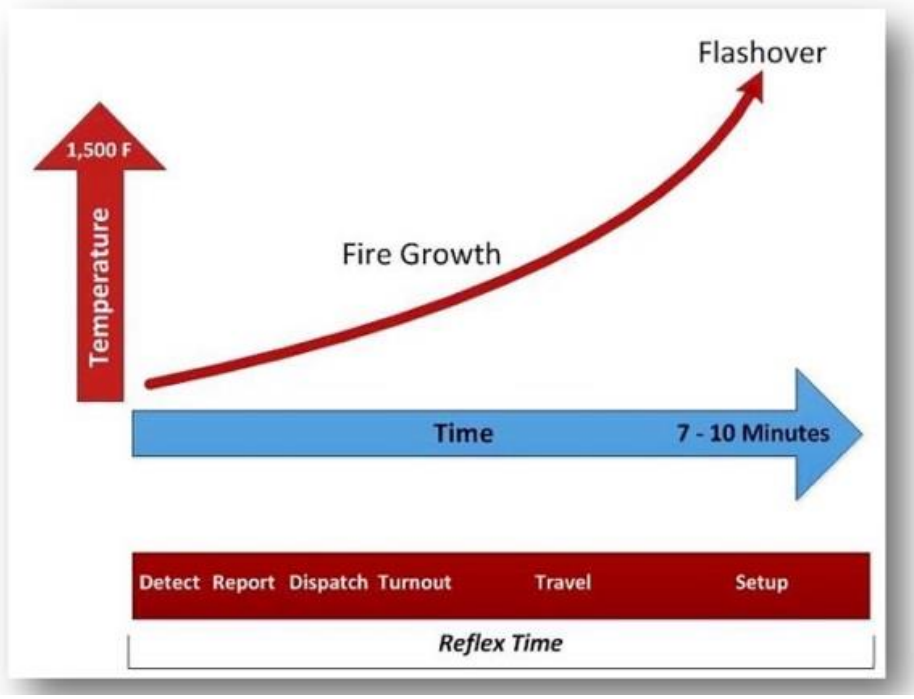
A smoldering fire is just as dangerous as an active fire, especially during times when occupants are sleeping since toxic smoke can be dispersed in the structure causing suffocation. The ignition phase starts the fire sequence, which may take several minutes from the time of ignition until a flame is visible. Once flames appear, the fire sequence continues rapidly where combustible materials adjacent to the flame will heat and ignite.

Although modern fire protection systems and building codes tend to decrease the number of fires in newer structures, scientists at the National Institute of Standards and Technology (NIST) found building occupants had approximately 3 minutes to escape before being overcome by heat and smoke. The necessity of effective early warning (smoke detectors), early suppression

(fire sprinklers), and firefighters arriving on the scene of a fire in the shortest span of time is critical.

The National Fire Protection Association (NFPA) found that fires contained to the room of origin (typically extinguished prior to or immediately following flashover) had significantly lower rates of death, injury, and property loss when compared to fires that had an opportunity to spread beyond the room of origin (typically extinguished post-flashover).

Figure 22 - Fire Sequence and Response Events



Response Criteria

For 90 percent of all low, medium, and high-risk structure fires, the total response time for the arrival of the first-due unit, staffed with four firefighters, has been established to be six minutes and twenty seconds (6:20) in all areas of the city.

The first-due unit for all risk levels shall be capable at a minimum of:

- Providing 500 gallons of water and 1,500 gallons per minute (gpm) pumping capacity
- Initiating incident command (IC)

- Requesting additional resources
- Establishing and advancing an attack line flowing a minimum of 150 gpm
- Establishing an uninterrupted water supply
- Containing the fire
- Rescuing at-risk victims
- Performing salvage operations

These operations shall be done in accordance with departmental standard operating procedures while providing for the safety of responders and the public.

For 90 percent of all medium and high-risk structure fires, the total response time for the arrival of the effective response force (ERF), staffed with 27 firefighters and officers for moderate risk and 33 firefighters and officers for high-risk, shall be ten minutes (10:00) in all areas of the city.

The ERF for all risks shall be capable of:

- Establishing incident command (IC)
- Providing an uninterrupted water supply
- Advancing an attack line and a backup line for fire control
- Complying with the Occupational Safety and Health Administration (OSHA) requirements of two in-two out
- Completing forcible entry
- Searching and rescuing at-risk victims
- Ventilating the structure
- Controlling utilities
- Performing salvage and overhaul

The ERF for high-risk structure fires shall also be capable of placing elevated streams into service from aerial ladders. These operations shall be done in accordance with departmental standard operating procedures while providing for the safety of responders and the public.

Table 40 - Low Risk Fire Incident Type (Still Assignment) – Alarm, Turnout, Travel Time, Total Time for First Unit on Scene (90th Percentile)

Year	2017	2018	2019	2020	2021
Alarm Processing 90th	02:07	02:10	02:12	02:22	02:35
Turnout Time 90th	01:06	01:06	01:11	01:10	01:11
Travel Time 90th	06:20	07:34	07:45	07:32	07:44
Total Response 90th	08:39	09:53	09:55	09:57	10:15
Number	1385	1352	1343	1549	1735
Percent Code 3	89.39%	50.00%	43.86%	45.77%	42.19%

The first responding company for low-risk fire incident:

- Aggregate baseline total response time to the scene of a fire – 9:50 or less, 90% of the time
- Benchmark goal of – 6:20 or less, 90% of the time

Table 41 - Medium Risk Fire Incident Type – Alarm, Turnout, Travel Time, Total Time for First Unit on Scene (90th Percentile)

Year	2017	2018	2019	2020	2021
Alarm Processing 90th	01:35	01:51	01:50	02:16	02:42
Turnout Time 90th	01:26	01:10	01:14	01:16	01:18
Travel Time 90th	04:42	05:10	05:25	04:51	05:02
Total Response 90th (1st Unit)	06:36	07:05	07:23	06:55	07:42
Number	122	114	92	110	126
Percent Code 3	93.44%	96.49%	91.30%	94.55%	90.48%
ERF Total Response 90th	12:00	11:24	11:01	12:07	12:56

ERF Number	87	80	61	81	99

The Department's total response time for the first due unit for a medium risk fire incident:

- Aggregate baseline total response time to the scene of a fire – 7:03 or less 90% of the time
- Benchmark goal of – 6:20 or less, 90% of the time

The Department's aggregate total response time for the effective response force for a medium risk fire incident:

- Aggregate baseline total response time to the scene of a fire – 12:14 or less 90% of the time
- Benchmark goal of – 10:00 or less, 90% of the time

Table 42 - High Risk Fire Incident Type – Alarm, Turnout, Travel Time, Total Time for First Unit on Scene (90th Percentile)

Year	**2017**	**2018**	**2019**	**2020**	**2021**
Alarm Processing 90th	01:47	01:55	02:00	02:14	02:08
Turnout Time 90th	01:07	01:15	01:20	01:22	01:14
Travel Time 90th	04:55	05:30	04:57	05:29	05:36
Total Response 90th (1st Unit)	07:16	07:55	07:30	07:54	08:15
Number	49	44	42	48	53
Percent Code 3	97.96%	84.09%	78.57%	83.33%	79.25%
ERF Total Response 90th	11:10	12:43	11:42	12:59	12:33
Number	45	40	31	43	45

The Department's total response time for the first due unit for high-risk fire incident:

- Aggregate baseline total response time to the scene of a fire – 7:54 or less 90% of the time
- Benchmark goal of – 6:20 or less, 90% of the time

The Department's effective response force for a high-risk 1st Alarm fire:

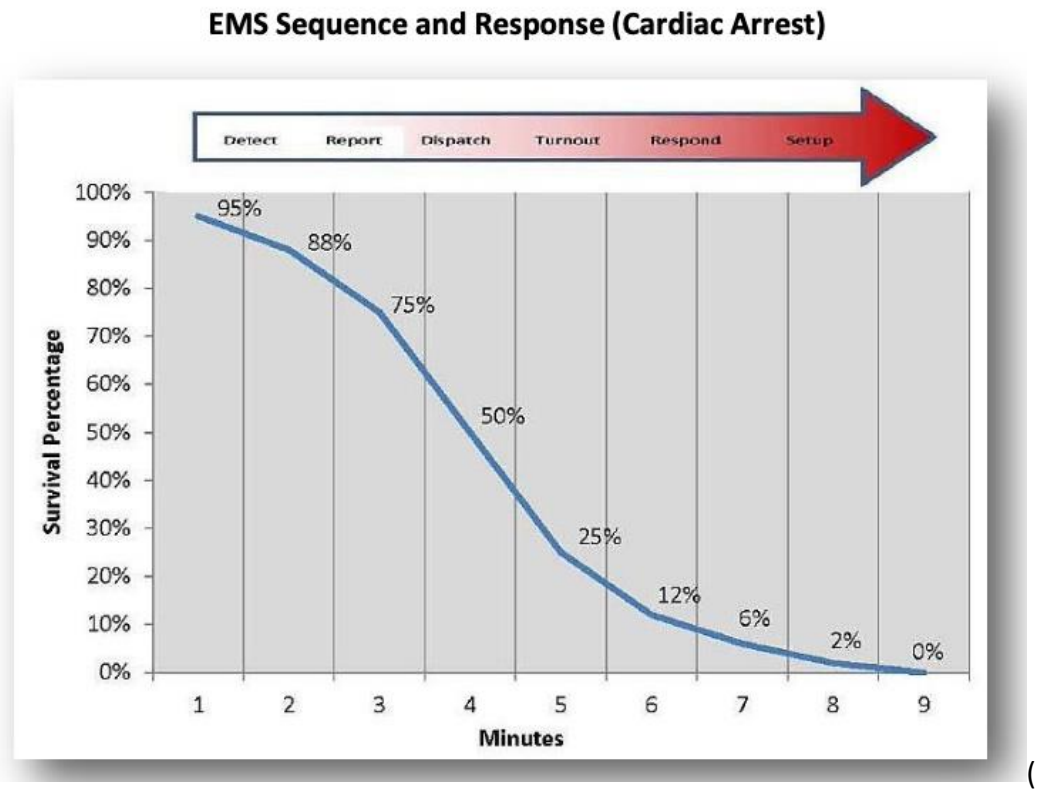
- Aggregate baseline total response time – 12:24 or less, 90% of the time
- Benchmark goal of – 10:00 or less, 90% of the time

Data sets include the following considerations:

- The clock starts at PSAP and ends when at least three engines, one ladder and one BC are on scene.
- Data includes when a full ERF was dispatched within a minute of the first unit being dispatched (to account for incidents where dispatch changes the nature code or sends the balance shortly after dispatch)
- Data includes final nature code including 1st alarm fire, apartment fire, high rise fires, and working fires
- The 90th percentiles for the turnout times and travel times are for the unit that completes the ERF and stops the clock.

EMS Response

Cardiac arrest is the standard for time-sensitive illness and injury illustrated by the chart below. The survivability profile for patients in cardiac arrest decreases significantly for each minute that passes until intervention occurs. Faster ALS response times to high-risk medical incidents is tied to improved outcomes.



(Figure 23)

For 90 percent of all EMS responses, the total response time for the arrival of the first-due unit, staffed with four firefighters, shall be six minutes (6:00).

The first-due unit shall be capable of:

- Assessing scene safety and establishing incident command (IC), when appropriate
- sizing-up the situation
- conducting initial patient assessment
- Obtaining vitals and patient's medical history
- Initiating mitigation efforts within one minute of arrival
- Providing first responder medical aid including automatic external defibrillation
- Assisting transport personnel with packaging the patient.

The Department's baseline statements reflect actual performance during 2017 to 2021. The Department relies on the use of automatic aid based on AVL closest appropriate unit available

from neighboring fire departments to provide its effective response force (ERF) complement of personnel. These resources are immediately available as part of a seamless response system. Tempe has traffic preemption signals at 100% of its 230 traffic signals on arterial and collector routes throughout Tempe to assist with reaching the stated goals.

EMS baseline service level performance 2017 to 2021:

Table 43 - EMS (BLS Low Risk) – Alarm, Turnout, Travel Time, Total Time – First Unit on Scene (90th Percentile)

Year	2017	2018	2019	2020	2021
Alarm Processing 90th	01:42	01:44	01:45	01:53	02:02
Turnout Time 90th	01:06	01:06	01:08	01:09	01:09
Travel Time 90th	05:44	07:18	07:39	07:32	07:51
Total Response 90th	07:48	09:18	09:42	09:45	10:06
Number	8107	8265	8323	7836	9341
Percent Code 3	86.96%	40.57%	28.90%	25.31%	25.32%

The Department's effective response force for an EMS Low-Risk incident staffed with four firefighters:

- Aggregate baseline total response time to the scene of low-risk EMS – 9:29 or less, 90% of the time
- Benchmark goal of – 6:00 or less, 90% of the time

The greatest significant change in response times for BLS low-risk EMS incidents can be attributed to dispatch and response protocols changing from code 3 to code 2 for less critical calls in nature.

Table 44 - EMS (ALS Medium Risk) – Alarm, Turnout, Travel Time, Total Time – First Unit on Scene/Effective Response Force* (90th Percentile)

Year	2017	2018	2019	2020	2021
Alarm Processing 90th	01:26	01:28	01:28	01:38	01:44
Turnout Time 90th	01:06	01:05	01:07	01:08	01:08
Travel Time 90th	05:13	05:23	05:34	05:31	05:35
Total Response 90th	07:03	07:12	07:24	07:35	07:41
Number	9492	9742	9462	8863	10060
Percent Code 3	96.47%	93.87%	93.53%	93.88%	93.49%

The total response time for the arrival of the effective response force for ALS medium risk incident staffed with four firefighters:

- Aggregate baseline total response time – 7:24 or less, 90% of the time
- Benchmark goal of 6:00 or less, 90% of the time

***The total response times at the 90th percentile for the first unit on scene and effective response force are the same due to the requirements to fulfill the ALS medium risk criteria.*

The first due unit is capable of:

- Assessing scene safety and establishing incident command (IC), when appropriate
- Sizing-up the situation
- Conducting initial patient assessment
- Obtaining vitals and patient's medical history
- Initiating mitigation efforts within one minute of arrival
- Providing first responder medical aid including automatic external defibrillation
- Assisting transport personnel with packaging the patient

Table 45 - EMS (ALS High Risk) – Alarm, Turnout, Travel Time, Total Time – First Unit on Scene (90th Percentile)

Year	2017	2018	2019	2020	2021
Alarm Processing 90th	01:27	01:23	01:28	01:31	01:43
Turnout Time 90th	01:07	01:07	01:04	01:04	01:04
Travel Time 90th	05:04	05:02	05:28	05:01	05:10
Total Response 90th	06:54	06:59	07:03	06:49	07:16
Number	633	625	632	705	757
Percent Code 3	94.47%	94.56%	93.83%	94.18%	94.32%

The total response time for the arrival of the first-due unit for ALS high risk incident staffed with four firefighters:

- Aggregate baseline total response time – 7:00 or less, 90% of the time
- Benchmark goal of - 6:00 or less, 90% of the time

Table 46 - EMS (ALS High Risk - ERF) – Alarm, Turnout, Travel Time, Total Time – ERF (90th Percentile)

Year	2017	2018	2019	2020	2021
Alarm Processing 90th	01:46	01:48	01:24	02:13	02:32
Turnout Time 90th	01:34	01:47	01:29	01:36	01:13
Travel Time 90th	10:58	11:35	08:48	09:47	12:10
Total Response 90th	13:32	13:17	10:58	12:44	14:21
Number	71	44	50	41	59

The Effective Response Force (ERF) EMS ALS high risk (1st alarm medical, medical 2-1, medical 3-1, extrications, multiple patient overdoses, gunshot wounds, and stabbings) incident:

- Data Includes when a full ERF was dispatched within a minute of the first unit being dispatched (to account for incidents where dispatch changes the nature code or sends the balance shortly after dispatch)

- The clock starts at PSAP and ends when an ALS company, an ambulance and a BC arrive on scene.
- For extrications: The clock starts at PSAP and ends when an ALS company, a ladder company and an ambulance arrive on scene.
- The 90th percentiles for the turnout times and travel times are for the unit that completes the ERF and stops the clock.

For 90 percent of all EMS high risk incidents, the total response time for the arrival of the ERF, staffed with 14 firefighters and officers, shall be nine minutes and thirty seconds (9:30).

The ERF shall be capable of:

- Establishing incident command (IC)
- Completing patient assessment
- Completing extrication, when necessary
- Providing appropriate treatment
- Performing automatic external defibrillator (AED)
- Initiating cardio-pulmonary resuscitation (CPR)
- Providing intravenous (IV) access-medication administration

The total response time for the arrival of the ERF of all EMS high risk incidents staffed with 14 firefighters and officers:

- Aggregate baseline total response time - 13:30 or less, 90% of the time
- Benchmark goal of – 9:30 or less, 90% of the time

Staffing and Dispatch Protocols

All apparatus maintains a minimum staffing level of four personnel as stated in the Department's policy 107.01 and each company will have a minimum of two ALS personnel. The configuration of the two ALS personnel can be in any of the positions. Staffing of apparatus is strictly maintained daily by a Field Incident Technician (FIT), with oversight by the Duty Chief,

through the Telestaff program. A staffing roster is maintained on the Mobile Computer Terminal (MCT) on each apparatus, which is a component of the Computer Aided Dispatch (CAD) system.

The CAD system is maintained and monitored through the Phoenix Fire Department Regional Dispatch Center (PFDRDC) to ensure an adequate number of personnel are dispatched to emergency scenes, based on the type of incident.

In 2015 the Department changed ambulance dispatch protocols. Prior to 2015 ambulances were dispatched on every medical call resulting in an average of 16,500 ambulance dispatches per year. The Department found this to be an extremely inefficient use of resources, as many of these dispatches resulted in the non-transportation of a patient. Ambulance dispatches in comparison to ambulance transport to the hospital were studied to identify specific types of dispatches that consistently resulted in non-transportation of a patient. Based on this data a narrowing of the type of incidents requiring an ambulance included cardiac arrest, drowning, gunshot wounds, stabbings, extrications, working fires, and strokes. This reduced ambulance dispatches from approximately 16,500 to approximately 13,348 in 2020.

Technical Rescue

The Department operates an effective and efficient program directed toward:

- Rescuing trapped or endangered persons from any life-endangering situation confined spaces
- High angle/low angle rope rescues from rough terrain
- Trench collapse/rescues
- Structural collapses
- Swift water or submersion
- Industrial accidents

The Department's eight engines and two Ladders are equipped with adequate equipment to initiate rescue efforts however Ladder 276 (L276) and Engine/Squad 278 (E278/SQ278) are the

Department's designated Technical Rescue Teams (TRT). The Department maintains Fire Boat 271, which is co-staffed and operated with the boat qualified crews of E271, E275, or E276, and is docked at the Tempe Town Lake Marina. The Department operates an emergency response and recovery dive team that Fire Boat 271 can be used along with any other water related incidents.

TRT teams can perform rescues directed toward:

- Swift water
- Confined space
- Mountain Rescues
- Structural and vehicle extrications
- Incidents involving advanced technical training

The Department participates in the Phoenix Automatic Aid Consortium. The Automatic Aid agreement allows for additional resources in the event an incident requires more staffing and equipment The Department's TRT works in conjunction with Phoenix, Mesa, Chandler, Scottsdale, Apache Junction, Peoria, Glendale, and Avondale Fire Departments on large-scale technical rescues. These resources are immediately available as part of a seamless response system.

TRT baseline service level performance 2017 to 2021:

For 90 percent of low-risk technical rescue incidents, the total response time benchmark for the arrival of the first-due unit (low risk), staffed with four firefighters, shall be eight (8:00).

The first-due unit shall be capable of:

- Establishing command
- Sizing up to determine if a technical rescue response is required
- Requesting additional resources

- Providing basic life support to any victim without endangering response personnel

There was not an adequate amount of low-risk technical rescue incidents each year for the past five years to accurately evaluate response times to the 90th percentile.

For 90 percent of Medium-risk technical rescue incidents, the total response time benchmark for the arrival of the first-due unit (Moderate risk), staffed with four firefighters, shall be eight minutes (8:00).

The first-due unit shall be capable of:

- Establishing command
- Sizing up to determine if a technical rescue response is required
- Requesting additional resources
- Providing basic life support to any victim without endangering response personnel

Table 47 - TRT (Medium Risk – Mountain Rescue) – Alarm, Turnout, Travel Time, Total Time – First Unit on Scene (90th Percentile)

Year	2017	2018	2019	2020	2021
Alarm Processing 90th	02:56	03:32	02:19	03:44	04:27
Turnout Time 90th	01:17	00:58	01:26	01:10	00:39
Travel Time 90th	03:53	03:45	04:05	03:24	04:37
Total Response 90th	07:37	08:07	06:58	07:30	08:46
Number	12	5	8	10	9
Percent Code 3	100.00%	60.00%	100.00%	100.00%	100.00%
ERF Total Response 90th	15:34	17:54	12:41	11:02	12:40
Number	9	4	5	9	5

The total response time for the arrival of the first unit on scene for TRT medium risk incidents, staffed with four firefighters:

- Aggregate baseline total response time – 7:46 or less, 90% of the time
- Benchmark goal of – 8:00 or less, 90% of the time

The total response time for the arrival of the ERF for TRT medium risk incidents, staffed with 10 firefighters:

- Aggregate baseline total response time – 15:48 or less, 90% of the time
- Benchmark goal of – 8:00 or less, 90% of the time

Of the initial 47 medium risk TRT responses that have occurred between 2017 to 2021, only 32 had an ERF of at least one engine, one ladder, one BC and one TRT unit arrive on scene. Those 32 incidents are reflected in the above data set.

For 90 percent of mountain related high risk technical rescue incidents, the total response benchmark time for the arrival of the effective response force (ERF), staffed with at least 27 firefighters and officers shall be ten minutes (10:00).

The ERF shall be capable of:

- Establishing patient contact
- Staging and apparatus set up
- Providing technical expertise, knowledge, skills, and abilities during technical rescue incidents
- Providing first responder medical support

First Unit On Scene

Table 48 - TRT (High Risk) – Alarm, Turnout, Travel Time, Total Time - First Unit on Scene (90th Percentile)

Year	2017	2018	2019	2020	2021
Alarm Processing 90th	05:21	04:39	03:14	03:55	05:45
Turnout Time 90th	01:13	01:06	01:01	01:04	01:10
Travel Time 90th	04:03	04:56	05:24	05:20	06:56
Total Response 90th	10:00	11:08	08:14	07:56	11:12
Number	11	17	13	16	15
Percent Code 3	100.00%	94.12%	92.31%	93.75%	93.33%

Table 49 - TRT (High Risk – ERF) – Alarm, Turnout, Travel Time, Total Time - ERF (90th Percentile)

Year	2017	2018	2019	2020	2021
Alarm Processing 90th	05:23	03:54	03:12	04:20	03:24
Turnout Time 90th	02:19	00:52	01:04	02:18	02:17
Travel Time 90th	08:32	09:56	10:43	11:14	11:22
Total Response 90th	15:38	14:04	14:28	16:07	14:31
Number	8	5	5	6	6

The total response time for the arrival of the first unit on scene for TRT high risk incidents, staffed with four firefighters:

- Aggregate baseline total response time – 10:22 or less, 90% of the time
- Benchmark goal of – 8:00 or less, 90% of the time

The total response time for the arrival of the ERF for TRT high risk incidents, staffed with 27 firefighters:

- Aggregate baseline total response time - 14:57 or less, 90% of the time
- Benchmark goal of – 10:00 or less, 90% of the time

The Effective Response Force (ERF) TRT high risk incident:

- Whose final nature code include 1st Alarm rescue, water rescue, confined space rescue.
- The clock starts at PSAP and ends when at least one engine, 1 ladder, 1 TRT team (SQ or S unit type), and 1 BC arrive.
- Data Includes when a full ERF was dispatched within a minute of the first unit being dispatched (to account for incidents where dispatch changes the nature code or sends the balance shortly after dispatch)
- The 90th percentiles for the turnout times and travel times are for the unit that completes the ERF and stops the clock.

Hazardous Materials

For 90 percent of all hazardous materials response incidents (low, medium, and high risk), the benchmark total response time for the arrival of the first-due unit, staffed with four firefighters, shall be eight minutes (8:00) in all areas of the city.

The first-due unit shall be capable of:

- Establishing command
- Sizing up and assessing the situation to investigate the presence of a potential hazardous material or explosive device
- Determining the need for additional resources
- Estimating the potential harm without intervention
- Begin establishing an initial isolation zone

Table 50 - Haz Mat (Low Risk) – Alarm, Turnout, Travel Time, Total Time - First Unit on Scene (90th Percentile)

Year	2017	2018	2019	2020	2021
Alarm Processing 90th	02:20	02:33	02:43	02:37	03:17

Turnout Time 90th	01:12	01:07	01:05	01:17	01:03
Travel Time 90th	08:01	08:17	08:58	08:26	09:20
Total Response9 0th	11:07	10:29	12:04	11:16	11:59
Number	151	168	144	147	125
Percent Code 3	34.44%	20.83%	7.64%	4.08%	7.20%

Table 51 - Haz Mat (Medium Risk) – Alarm, Turnout, Travel Time, Total Time - First Unit on Scene (90th Percentile)

Year	**2017**	**2018**	**2019**	**2020**	**2021**
Alarm Processing 90th	02:45	02:45	02:34	03:00	03:20
Turnout Time9 0th	01:16	01:12	01:19	01:11	01:08
Travel Time 90th	05:56	06:01	06:04	05:40	06:10
Total Response 90th	08:38	08:43	08:08	08:36	09:39
Number	98	103	103	136	161
Percent Code 3	97.96%	94.17%	93.20%	90.44%	90.06%
ERF Total Response 90th	16:22	15:10	16:18	16:31	18:49
Number	40	34	33	31	37

For 90 percent of all medium and high-risk hazardous materials response incidents, the benchmark total response time for the arrival of the effective response force (ERF), staffed with 18 firefighters and officers (moderate risk) and 45 firefighters and officers (high risk), shall be ten minutes (10:00) in all city areas.

The total response time for the arrival of the first unit on scene for hazardous materials low risk incidents, staffed with four firefighters:

- Aggregate baseline total response time - 11:29 or less, 90% of the time
- Benchmark goal of – 8:00 or less, 90% of the time

The total response time for the arrival of the first unit on scene for hazardous materials medium risk incidents, staffed with 18 firefighters:

- Aggregate baseline total response time - 8:52 or less, 90% of the time
- Benchmark goal of – 10:00 or less, 90% of the time

The total response time for the arrival of the first unit on scene for hazardous materials high risk incidents, staffed with 45 firefighters:

- Aggregate baseline total response time - 6:10 or less, 90% of the time
- Benchmark goal of – 10:00 or less, 90% of the time

The total response time for the arrival of the effective response force for hazardous material medium risk incidents, staffed with 18 firefighters:

- Aggregate baseline total response time – 16:32 or less, 90% of the time
- Benchmark goal of –10:00 or less, 90% of the time

The ERF shall provide the equipment, technical expertise, knowledge, skills, and abilities to mitigate a hazardous materials incident in accordance with department standard operating guidelines.

There were only four incidents in five years (one in 2019 and three in 2020) that fell under Haz Mat High Risk. The Department will continue to strive to meet its response time goals for Special Operations incidents, as well as strive to determine areas where improvements can be made.

Section 5: Plan for Maintaining and Improving Response Capabilities

TFMRD is committed to improving response capabilities through a multi-faceted approach. Improvement of complex system performance requires development and use of a practical framework to guide system-level improvement. This framework is grounded in research and examples from industry best practice and principles of organizational behavior. The Department has embarked on several organization-wide improvement initiatives.

The TFMRD operational leadership team monitors system performance monthly and incorporates the findings of those monitoring efforts into the continuous improvement plan.

TFMRD has identified the following opportunities for improvement:

- ALS and fire incident response time
- Time on-scene with immediate trauma patients
- Time to 12 lead EKG monitoring for patients with a suspected cardiac event

ALS Response Time

Performance goal: To deliver efficient and consistent all hazard emergency response services in a safe and efficient manner, with a response time goal (call processing time plus turnout time plus travel time) of 6:00 minutes (360 seconds) or less for medium and high-risk ALS incidents, and 6:20 minutes (380 seconds) or less for low-risk fire related calls, 90% of the time.

Current performance gap: Aggregate total response time to medium risk ALS incidents over the benchmark by 84 seconds; aggregate total response time to high-risk ALS incidents over the benchmark by 60 seconds; aggregate total response time for low-risk fire related calls over the benchmark by 210 seconds.

The Department has identified the following contributing factors to improve the baseline performance of 6:00 or less total response time to medium and high-risk ALS incidents and 6:20 or less total response time for low-risk fire related incidents:

- Increasing incident volume has impacted the reliability of TFMRD units
- Intensifying urbanization is occurring in the downtown area of Tempe, affecting the travel time of several responding units
- Crew turnout times have increased slightly over the five-year timeframe

After identifying the causal factors for performance gaps in the ALS and fire response times, TFMRD proposes the following actions designed to reduce the 84 and 60 second gaps in response times to ALS incidents, and the 230 seconds gap in low-risk fire incidents:

- Adopt the development impact fee proposal report written by the City of Tempe's third-party contractor, Tischler Bise, which states that TFMRD will need 2.85 additional units to maintain service performance
- Adopt the plan outlined in the updated Fire Station Plan to 2040 which does the following:
    - Identifies areas of the city as opportunities for travel time improvement
    - Recommends a plan for station relocation and additions to address travel time improvement
- Construct infrastructure to support additional response units distributed strategically throughout areas of the city which have been identified for travel time improvement
- Analyze the addition of the command response unit, which was placed into service in early February 2022, to reduce span of control and improve command unit travel time
- Analyze the addition of two ambulances, which were placed into service in February 2022, to improve first due unit reliability
- Train TFMRD staff on the importance of crew turnout times and provide the information to the employees

Time On-scene With Immediate Trauma Patients

Performance goal: 10 minutes (600 seconds) or less on-scene time with trauma patients having a triage designation of Immediate. The time is measured from patient contact to when the ambulance leaves the scene enroute to a trauma center.

Current performance gap: The Department has a 71 second gap from the performance goal

TFMRD has identified the following contributing factors requiring improvement for on-scene times with trauma patients following patient contact:

- Ambulance dispatch protocol changes in 2017 impacted on-scene times for traumas that were identified as immediate once on scene but did not have an ambulance on the initial dispatch (i.e. fall injuries, vehicle collisions, etc.)

- Discrepancies in documentation for patient contact times
- Performing non-essential skills while on scene rather than enroute to trauma centers

After identifying the causal factors for performance gaps in the on-scene time with immediate trauma patients, TFMRD proposes the following actions designed to reduce the gap in on-scene times on these incidents:

- Education for crews on calling for ambulances earlier with high-risk patients or upon identification of an immediate patient once on scene
- Establish a consistent parameter for when patient contact occurs to reduce discrepancies in documentation (i.e. prolonged extrication scenarios, staging, etc.)
- Education and training for a "load and go" response for all trauma transports, with non-essential skills being completed while enroute to the trauma center

Time to 12-Lead EKG Monitoring for Patients with Chest Pain

Performance goal: 5 minutes (300 seconds) to acquisition of a 12-lead EKG for all patients with suspected cardiac event to be in line with the updated CARES guidelines under Arizona Department of Health Services (ADHS). The time is measured from patient contact to when the 12 lead-EKG is obtained and interpreted by a TFMRD paramedic.

10 minutes to acquisition of a 12-lead EKG for all patients with chest pain was the measure previously used, which is the standard for the American Heart Association.

Current performance gap: The Department has a 256 second gap from the performance goal

TFMRD has identified the following contributing factors requiring improvement to the 256 second gap to 12-lead EKG monitoring for patients with suspected cardiac event:

- The Department identified that it met the national standard of 10 minutes or less established by the American Heart Association but transitioned to the more stringent standard of 5 minutes or less established by ADHS

- The Department identified that EMS personnel were placing four leads on patients with illness or injury that was suspected to be cardiac in nature, causing delays to 12-lead acquisition times
- Not all suspected cardiac patients received a 12-lead EKG based on four lead findings or time on scene

After identifying the causal factors for performance gaps in the 12-leag EKG acquisition time for patients with chest pain, TFMRD proposes the following actions designed to reduce the gap in 12-lead EKG times on these incidents:

- Retraining all emergency medical technicians (EMTs) and paramedics to immediately place a 12-lead EKG on all suspected cardiac events
- Train all EMS personnel to obtain 12-lead EKG prior to transportation to reduce occurrence of failed 12-lead EKG transmissions or noisy data
- Reinforce guidelines from CAREs guidelines to apply 12-lead EKG in any suspected cardiac event; four-lead EKGs should only be placed on patient refusals or patients that are not suspected of having illness or injury indicative of cardiac events

Identification of targets for improvement occurs during the annual planning cycle. The steps in the cycle include:

- Annual Risk Assessment
- Service Performance Gap Analysis
- Strategic Planning Process
- Publication of the Operational Guide

TFMRD is committed to improving each target area and will report progress in its annual compliance reports for the upcoming accreditation cycle.

Section 6: CRA/SOCCRA/SOC Correlation to CFAI Accreditation Model

PI/CC		TFMRD CRA/SOCCRA/SOC Accreditation Model Correlation Matrix	CRA/SOCCRA/SOC Pg
Category I: Governance & Administration			
Criterion 1A		**Governing Body**	
CC	**1A.1**	**The agency is legally established.**	on page 5
CC	**1A.2**	**The agency has a methodology in place for recognizing and reacting to changes in legal requirements of local, state/provincial and federal governments (i.e., inspection reports, regulatory references, meeting minutes and legal opinions).**	N/A
	1A.3	The governing body of the agency periodically reviews and approves services and programs.	on page 12
	1A.4	The role and composition of various policymaking, planning and special purpose bodies are defined by the governing body in an organizational chart.	on page 12
	1A.5	The governing body or designated authority approves the organizational structure that carries out the agency's mission.	on page 5
	1A.6	The governing body adheres to an approved conflict of interest policy that is applicable to the governing board members and staff.	N/A
	1A.7	A communication process is in place between the governing body and the administrative structure of the agency.	on page 12
Criterion 1B		**Agency Administration**	
CC	**1B.1**	**The administrative structure and allocation of financial, equipment and personnel resources reflect the agency's mission, goals, objectives, size and complexity.**	on page 31; on page 92
	1B.2	Personnel functions, roles, and responsibilities are defined in writing and a current organization chart exists that includes the agency's relationship to the governing body.	on page 7
Category II - Assessment & Planning			
Criterion 2A		**Documentation of Area Characteristics**	
	2A.1	Service area boundaries for the agency are identified, documented, and legally adopted by the authority having jurisdiction.	on page 8
	2A.2	Boundaries for other service responsibility areas, such as automatic aid, mutual aid, and contract areas, are identified, documented, and appropriately approved by the authority having jurisdiction.	on page 29

CC	**2A.3**	**The agency has a documented and adopted methodology for organizing the response area(s) into geographical planning zones.**	on page 94
CC	**2A.4**	**The agency assesses the community by planning zone and considers the population density within planning zones and population areas, as applicable, for the purpose of developing total response time standards.**	on page 27
	2A.5	Data that include property, life, injury, environmental, and other associated losses, as well as the human and physical assets preserved and/or saved, are recorded for a minimum of three (initial accreditation agencies) to five (currently accredited agencies) immediately previous years.	N/A
	2A.6	The agency utilizes its adopted planning zone methodology to identify response area characteristics such as population, transportation systems, area land use, topography, geography, geology, physiography, climate, hazards, risks, and service provision capability demands.	on page 13; on page 65
	2A.7	Significant socioeconomic and demographic characteristics for the response area are identified, such as key employment types and centers, assessed values, blighted areas, and population earning characteristics.	on page 13
	2A.8	The agency identifies and documents all safety and remediation programs, such as fire prevention, public education, injury prevention, public health, and other similar programs, currently active within the response area.	on page 30
	2A.9	The agency defines and identifies infrastructure that is considered critical within each planning zone.	on page 59; on page 65
Criterion 2B		**All- Hazard Risk Assessment and Response Strategies**	
CC	**2B.1**	**The agency has a documented and adopted methodology for identifying, assessing, categorizing and classifying all risks (fire and non-fire) throughout the community or area of responsibility.**	on page 55
	2B.2	The historical emergency and nonemergency service demands frequency for a minimum of three immediately previous years and the future probability of emergency and non-emergency service demands, by service type, have been identified and documented by planning zone.	on page 86
	2B.3	Event outputs and outcomes are assessed for three (initial accrediting agencies) to five (currently accredited agencies) immediately previous years.	on page 100
CC	**2B.4**	**The agency's risk identification, analysis, categorization, and classification methodology has been utilized to determine and document the different categories and classes of risks within each planning zone.**	on page 55
	2B.5	Fire protection and detection systems are incorporated into the risk analysis.	on page 59
	2B.6	The agency assesses critical infrastructure within the planning zones for capabilities and capacities to meet the demands posed by the risks.	on page 65
	2B.7	The agency engages other disciplines or groups within its community to compare and contrast risk assessments in order to identify gaps or future threats and risks.	on page 65
Criterion 2C		**Current Deployment and Performance**	

CC	**2C.1**	**Given the levels of risks, area of responsibility, demographics, and socio-economic factors, the agency has determined, documented, and adopted a methodology for the consistent provision of service levels in all service program areas through response coverage strategies.**	on page 13; on page 86
CC	**2C.2**	**The agency has a documented and adopted methodology for monitoring its quality of emergency response performance for each service type within each planning zone and the total response area.**	on page 100
	2C.3	Fire protection systems and detection systems are identified and considered in the development of appropriate response strategies.	on page 35
CC	**2C.4**	**A critical task analysis of each risk category and risk class has been conducted to determine the first due and effective response force capabilities, and a process is in place to validate and document the results.**	on page 35
CC	**2C.5**	**The agency has identified the total response time components for delivery of services in each service program area and found those services consistent and reliable within the entire response area.**	on page 91
	2C.6	The agency identifies outcomes for its programs and ties them to the community risk assessment during updates and adjustments of its programs, as needed.	on page 119
	2C.7	The agency has identified the total response time components for delivery of services in each service program area and assessed those services in each planning zone.	on page 60; on page 98; on page 100
CC	**2C.8**	**The agency has identified efforts to maintain and improve its performance in the delivery of its emergency services for the past three (initial accreditation agencies) to five (currently accredited agencies) immediately previous years.**	on page 86
	2C.9	The agency's resiliency has been assessed through its deployment policies, procedures, and practices.	on page 29; on page 95; on page 99
Criterion 2D		**Plan for Maintaining and Improving Response Capabilities**	
CC	**2D.1**	**The agency has a documented and adopted methodology for assessing performance adequacies, consistency, reliability, resiliency, and opportunities for improvement for the total response area.**	on page 60; on page 99
	2D.2	The agency continuously monitors, assesses, and internally reports, at least quarterly, on the ability of the existing delivery system to meet expected outcomes and identifies and prioritizes remedial actions.	on page 86
CC	**2D.3**	**The performance monitoring methodology identifies, at least annually, future external influences, altering conditions, growth and development trends, and new or evolving risks, for purposes of analyzing the balance of service capabilities with new conditions or demands.**	on page 25; on page 28; on page 86
	2D.4	The performance monitoring methodology supports the assessment of the efficiency and effectiveness of each service program at least annually in relation to industry research.	on page 60; on page 90; on page 98

	2D.5	Impacts of incident mitigation program efforts, such as community risk reduction, public education, and community service programs, are considered and assessed in the monitoring process.	N/A
CC	**2D.6**	**Performance gaps for the total response area, such as inadequacies, inconsistencies, and negative trends, are determined at least annually.**	on page 86; on page 98; on page 100;on page 119
CC	**2D.7**	**The agency has systematically developed a continuous improvement plan that details actions to be taken within an identified timeframe to address existing gaps and variations.**	on page 86; on page 119
	2D.8	The agency seeks approval of its standards of cover by the authority having jurisdiction (AHJ).	on page 3
CC	**2D.9**	**On at least an annual basis, the agency formally notifies the AHJ of any gaps in current capabilities, capacity, and the level of service provided within its delivery system to mitigate the identified risks within its service area, as identified in its community risk assessment/standards of cover.**	on page 3; on page 119
	2D.10	The agency interacts with external stakeholders and the AHJ at least once every three years, to determine the stakeholders' and AHJ's expectations for types and levels of services provided by the agency.	on page 89
Category III - Goals & Objectives			
Criterion 3A		**Strategic Planning**	
CC	**3A.1**	**The agency has a current and published strategic plan that has been submitted to the authority having jurisdiction.**	on page 119
	3A.2	The agency coordinates with the jurisdiction's planning component to ensure the strategic plan is consistent with the community master plan.	on page 8
Criterion 3B		**Goals and Objectives**	
CC	**3B.1**	**The agency publishes current, general organizational goals and S.M.A.R.T. objectives, which use measurable elements of time, quantity and quality. These goals and objectives directly correlate to the agency's mission, vision and values and are stated in the strategic plan.**	on page 90
	3B.2	The agency conducts an environmental scan when establishing its goals and objectives.	on page 89
CC	3B.3	**The agency solicits feedback and direct participation from internal and external stakeholders in the development, implementation and evaluation of the agency's goals and objectives.**	on page 89
	3B.4	The agency uses internal input to implement and evaluate its goals and objectives and to measure progress in achieving the strategic plan.	on page 119
	3B.5	The governing body reviews the agency's goals and objectives and considers all budgetary and operational proposals in order to ensure success.	N/A
	3B.6	When developing organizational values, the agency seeks input from its members and is in alignment with its community.	on page 89
Criterion 3C		**Implementation of Goals and Objectives**	

CC	**3C.1**	**The agency identifies personnel to manage its goals and objectives and uses a defined organizational management process to track progress and results.**	on page 7; on page 31
CC	**3C.2**	**The agency's personnel receive information explaining its goals and objectives.**	N/A
	3C.3	The agency, when necessary, identifies and engages appropriate external resources to help accomplish its goals and objectives.	N/A
Criterion 3D		**Measurement of Organizational Progress**	
CC	**3D.1**	**The agency reviews its goals and objectives at least annually and modifies as needed to ensure they are relevant and contemporary.**	on page 119
CC	**3D.2**	**The agency reviews, at least annually, its overall system performance and identifies areas in need of improvement, which should be considered for inclusion in the organizational goals and objectives.**	on page 100
	3D.3	The agency provides progress updates, at least annually, on its goals and objectives to the AHJ, its members and the community it serves.	on page 119
Category IV - Financial Resources			
Criterion 4A		**Financial Planning**	
	4A.1	The governing body and regulatory agencies give the agency appropriate direction in budget and planning matters within the agency's scope of services.	N/A
	4A.2	The agency has formally adopted financial policies that address: general fund reserves, reserves in other funds, fund balances, grants, debt, investment, accounting and financial reporting, risk management and internal controls, procurement, long-term financial planning, structurally balanced budgets, capital, revenues, expenditures, operating budgets and charges/fees. The agency reviews financial policies at least every three years and updates as needed.	N/A
CC	**4A.3**	**Guidelines and processes for developing the operating and capital budgets are defined and followed.**	N/A
	4A.4	The financial planning/budget adoption process provides internal and external transparency for all expenditures and revenues for the agency.	N/A
	4A.5	The agency's operating and capital budgets serve as policy documents, operations guides, financial plans and communication devices.	N/A
	4A.6	The agency considers internal and external stakeholders' input in the budget process.	N/A
	4A.7	The agency's budget, short and long-range financial planning, and capital project plans are consistent with the agency's strategic plan and support achievement of identified goals and objectives.	N/A

	4A.8	The agency maintains a long-term financial operating and capital plan, inclusive of all appropriated funds, for a five- to 10-year period. The agency should analyze the financial environment, revenue and expenditure forecasts, debt position and affordability analysis, and strategies for achieving and maintaining financial balance to include plan monitoring mechanisms.	N/A
	4A.9	For each budget cycle, the agency prepares balanced operational and capital budgets.	N/A
Criterion 4B		**Financial Practices**	
	4B.1	Financial resources management adheres to generally accepted accounting practices as used by Government Finance Officers Association of the United States and Canada, National Advisory Council on State and Local Budgeting Practices, or authority having jurisdiction (AHJ), and all financial management including: budgeting, accounting and reporting. Appropriate safeguards are in place for expenditures, fiscal reports are provided for administrative decision-making with sufficient flexibility to meet contingencies.	N/A
	4B.2	The agency has established and implemented a comprehensive internal control framework that includes the control environment, risk assessment, control activities, information and communication, monitoring, and reporting.	N/A
	4B.3	The agency explains projected operating deficit (expenditures exceeding revenues in a budget year) and develops a plan to rectify the deficit.	N/A
	4B.4	The agency reviews its financial position including actual and budgeted expenditures on a monthly basis and reviews overall financial performance with the authority having jurisdiction on an annual basis.	N/A
CC	**4B.5**	**Qualified auditors conduct annual independent financial audits for the prior fiscal year. If deficiencies exist, the agency prepares a plan to resolve audit exceptions for approval by the AHJ.**	N/A
	4B.6	The agency and any subsidiary entities or auxiliaries have financial risk management policies and programs that identify and evaluate risks, establish risk management strategies, and evaluate the risk management program to protect the agency, its assets and employees.	N/A
	4B.7	Programs designed to solicit financial support from external sources are aligned with the objectives of the agency. Agency policies govern all fundraising activities, comply with generally accepted accounting practices and other recognized financial principles, and are subject to public disclosure and periodic independent financial audits.	N/A
	4B.8	Any revenue-producing organizations authorized to use the agency's name and/or reputation comply with agency principles of financial operation.	N/A
	4B.9	The agency is in compliance with all granting agency requirements.	N/A
Criterion 4C		**Resource Allocation**	
CC	**4C.1**	**Given current and forecasted revenues, the agency sustains the level of service adopted by the AHJ.**	N/A

	4C.2	Adequate resources are budgeted for the payment of long-term liabilities and debts.	N/A
	4C.3	The agency budgets future asset maintenance and repair costs are projected with related funding plans.	N/A
	4C.4	Budgets avoid the use of one-time funding sources for recurring standard annual operating expenses.	N/A
CC	**4C.5**	**The agency maintains contingency funds in accordance with generally accepted accounting practice recommendations and anticipates budgetary restrictions and/or shortfalls.**	N/A
Category V - Community Risk Reduction			
Criterion 5A		**Prevention Program**	
CC	**5A.2**	**The code enforcement program ensures compliance with applicable fire protection law(s), local jurisdiction, hazard abatement, and agency objectives as defined in the community risk assessment/standards of cover.**	on page 35; on page 55
CC	**5A.3**	**The prevention program has adequate staff with specific expertise to meet the goals, objectives and identified community risks.**	on page 7; on page 31
	5A.4	A plan review process ensures that adopted codes and ordinances determine the construction of buildings and infrastructure (such as hydrants, access, and street width).	on page 35; on page 55
	5A.5	The prevention program identifies the frequency that occupancies are inspected.	on page 59
	5A.6	The agency sets specific, targeted, and achievable annual loss reduction benchmarks for fire incidents and fire casualties based upon the community risk assessment and baseline performance.	N/A
CC	**5A.7**	**The agency conducts a formal and documented program appraisal, at least annually, to determine the program's impacts and outcomes, and to measure performance and progress in reducing risk based on the community risk assessment/standards of cover.**	on page 119
Criterion 5B		**Public Education Program**	
CC	**5B.1**	**The public education program targets specific risks, behaviors and audiences identified through incident, demographic and program data analysis and the community risk assessment/standards of cover.**	on page 35
CC	**5B.2**	**The program has adequate staff with specific expertise to address identified risks and meet the public education program goals, objectives.**	on page 5
	5B.3	Programs are in place to identify large loss potential or high risk audiences (such as low socio-economic status, age and cultural/ethnic differences, where appropriate), forge partnerships with those who serve those constituencies, and enable specified programs to mitigate fires and other emergency incidents (such as home safety visits, smoke alarm installations, free bicycle helmet programs, fall prevention programs, etc.).	N/A

CC	**5B.4**	**The agency conducts a formal and documented program appraisal, at least annually, to determine the program's impacts and outcomes, and to measure performance and progress in reducing.**	on page 119
Criterion 5C		**Fire Investigation, Origin and Cause Program**	
CC	**5C.1**	**The agency's fire investigation, origin, and cause program is authorized by adopted statute, code, or ordinance.**	on page 5
CC	**5C.2**	**The agency uses a systematic approach based on the scientific method to investigate all fire and explosion incidents. The investigation should determine or render an opinion as to the incident's origin, cause, responsibility and/or prevention to include the damage and injuries that arise from such incidents.**	N/A
CC	**5C.3**	**The program has adequate staff with specific expertise to meet the fire investigation, origin, and cause program goals, objectives, and identified community risks.**	on page 7; on page 31
CC	**5C.4**	**The agency conducts a formal and documented program appraisal, at least annually, to determine the program's impacts and outcomes, and to measure performance and progress in reducing risk.**	on page 119
Criterion 5D		**Domestic Preparedness, Planning and Response**	
CC	**5D.1**	**The agency maintains a local emergency operations/all-hazards plan that defines roles and responsibilities of all participating departments and/or external agencies. The agency participates in maintaining and revising the plan with the AHJ.**	on page 60
	5D.2	The agency complies with the National Incident Management System, or other appropriate incident management system, and its operational methods are compatible with all external response agencies.	N/A
	5D.3	The agency has a process in place for requesting additional resources not readily available in the community served.	on page 95
	5D.4	The agency has processes to record information and provide data on needed resources, the scope and nature of the event, and field resources deployed to local, state/provincial, and federal agencies.	N/A
	5D.5	The agency conducts and documents a vulnerability assessment and has operational plans to protect the agency's specific critical infrastructure, including but not limited to materials, supplies, apparatus, facilities security, fuel, and information systems.	on page 65
	5D.6	The agency has a documented continuity of operations plan, that is reviewed annually and updated at least every five years, to ensure essential operations are maintained.	on page 60
	5D.7	The agency has processes in place for intelligence sharing with other public safety agencies.	N/A
	5D.8	The agency has a crisis communications or public information plan.	N/A
CC	**5D.9**	**The agency conducts a formal and documented program appraisal, at least annually, to determine the program's impacts and outcomes, and to measure performance and progress in reducing risk.**	on page 119

Criterion 5E		**Fire Suppression**	
CC	**5E.1**	**Given the agency's community risk assessment/standards of cover and emergency performance statements, the agency meets its staffing, response time, station(s), pumping capacity, apparatus and equipment deployment objectives for each type and magnitude of fire suppression incident(s).**	on page 102
CC	**5E.2**	**The agency uses a standardized incident command/management system, which is supported by agency policy and training programs.**	on page 102
CC	**5E.3**	**The agency conducts a formal and documented program appraisal, at least annually, to determine the impacts, outcomes, and effectiveness of the program, and to measure its performance towards meeting the agency's goals and objectives.**	on page 119
Criterion 5F		**Emergency Medical Services (EMS)**	
CC	**5F.1**	**Given the agency's community risk assessment/standards of cover and emergency performance statements, the agency meets its staffing, response time, station(s), apparatus, and equipment deployment objectives for each type and magnitude of emergency medical incident(s).**	on page 106
CC	**5F.2**	**The agency has standing orders/protocols in place to direct EMS response activities to meet the stated level of EMS response including determination criteria for specialty transport and receiving facility destination.**	N/A
	5F.3	The agency annually reviews and updates, as needed, orders/protocols and engages external stakeholders in the process.	N/A
CC	**5F.4**	**The agency has online and offline medical control.**	N/A
CC	**5F.5**	**The agency creates and maintains a patient care record, hard copy or electronic, for each patient encountered. This report records a provider impression, patient history, data regarding treatment rendered, and the patient disposition. The agency must make reasonable efforts to protect reports from public access and maintain them as per local, state/provincial, and federal records retention requirements.**	N/A
CC	**5F.6**	**The agency has a program to maintain compliance with privacy laws such as the Health Insurance Portability and Accountability Act (HIPAA) or equivalent (e.g., Canada's Freedom of Information and Protection of Privacy) that meets federal and state/provincial guidelines. All personnel are trained in HIPAA/FOIP regulations and procedures.**	N/A
	5F.7	The agency has a quality improvement/quality assurance (QI/QA) program in place to improve system performance and patient outcomes including provisions for the exchange of patient outcome data between the agency and receiving facilities.	N/A
	5F.8	The agency has implemented or developed a plan a cardiopulmonary resuscitation (CPR) and public access defibrillation program for the community.	N/A

CC	**5F.9**	**The agency conducts a formal and documented program appraisal, at least annually, to determine the impact, outcomes and effectiveness of the program and to measure its performance toward meeting the agency's goals and objectives.**	on page 119
Criterion 5G		**Technical Rescue**	
CC	**5G.1**	**Given the agency's community risk assessment/standards of cover and emergency performance statements, the agency meets its staffing, response time, station(s), apparatus, and equipment deployment objectives for each type and level of risk of a technical rescue incident(s).**	on page 112
CC	**5G.2**	**The agency conducts a formal and documented program appraisal, at least annually, to determine the impact, outcomes and effectiveness of the program and to measure its performance toward meeting the agency's goals and objectives.**	on page 119
Criterion 5H		**Hazardous Materials (Hazmat)**	
CC	**5H.1**	**Given the agency's community risk assessment/standards of cover and emergency performance statements, the agency meets its staffing, response time, station(s), apparatus and equipment deployment objectives for each type and magnitude of hazardous materials incident(s).**	on page 117
	5H.2	The agency complies with all aspects of applicable hazardous material regulations such as annual refresher training, medical monitoring of response personnel, annual physical examinations as applicable per standards, and exposure record retention.	N/A
CC	**5H.3**	**The agency conducts a formal and documented program appraisal, at least annually, to determine the impacts, outcomes, and effectiveness of the program, and to measure its performance toward meeting the agency's goals and objectives.**	on page 119
Criterion 5I		**Aviation Rescue and Fire Fighting Services**	
CC	**5I.1**	**Given the agency's community risk assessment/standards of cover and emergency performance statements, the agency meets its staffing, response time, station(s), extinguishing agent requirements, apparatus and equipment deployment objectives for each type and magnitude of aviation incident.**	N/A
CC	**5I.2**	**The agency conducts a formal and documented program appraisal, at least annually, to determine the impacts, outcomes and effectiveness of the program, and to measure its performance toward meeting the agency's goals and objectives.**	N/A
Criterion 5J		**Marine and Shipboard Rescue and Fire Fighting Services**	
CC	**5J.1**	**Given the agency's community risk assessment/standards of cover and emergency performance statements, the agency meets its staffing, response time, station(s), extinguishing agency requirements, apparatus and equipment deployment objectives for each type and magnitude of marine and shipboard incident.**	N/A

CC	**5J.2**	**The agency conducts a formal and documented program appraisal, at least annually, to determine the impacts, outcomes and effectiveness of the program, and to measure its performance toward meeting the agency's goals and objectives.**	N/A
Criterion 5K		**Wildland Fire Services**	
CC	**5K.1**	**Given the agency's community risk assessment/standards of cover and emergency performance statements, the agency meets its staffing, response time, station(s), apparatus and equipment deployment objectives for each type and magnitude of wildland fire services incident.**	N/A
	5K.2	The agency has developed a wildland risk assessment including: a fuel management plan, a fire adapted communities plan, and an inspection and code enforcement program.	N/A
CC	**5K.3**	**The agency conducts a formal and documented program appraisal, at least annually, to determine the impact, outcomes and effectiveness of the program, and to measure its performance toward meeting the agency's goals and objectives.**	N/A
Category VI - Physical Resources			
Criterion 6A		**Physical Resources**	
	6A.1	The development, construction or purchase of physical resources is consistent with the agency's goals and strategic plan.	on page 86
CC	**6A.2**	**The governing body, administration, and staff are involved in the planning for physical facilities.**	on page 86
Criterion 6B		**Fixed Facilities**	
	6B.1	Each function or program has adequate facilities and storage space. (e.g., operations, prevention, training, support services, and administration).	on page 92
	6B.2	Buildings and outbuildings are clean and in good repair, and the surrounding grounds are well kept. Maintenance is conducted in a systematic and planned manner.	N/A
CC	**6B.3**	**Facilities comply with federal, state/provincial and local codes and regulations at the time of construction; required upgrades for safety are identified and, where resources allow, addressed. For those items that warrant further attention, a plan for implementation is identified in the agency's long-term capital improvement plan (i.e. fire alarm systems, sprinkler system, seismic, vehicle exhaust system, asbestos abatement, etc.).**	N/A
Criterion 6C		**Apparatus, Vehicles, and Maintenance**	
CC	**6C.1**	**Apparatus and vehicle types are appropriate for the functions served (e.g., operations, staff support services, specialized services and administration).**	on page 92
	6C.2	A current replacement schedule exists for all apparatus and support vehicles based on current federal and state/provincial standards, vehicle condition, department needs and requirements.	N/A

	6C.3	A process exists for writing apparatus and vehicle replacement specifications with employee input.	N/A
Criterion 6D		**Apparatus Maintenance**	
CC	**6D.1**	**An apparatus maintenance program is established.**	N/A
	6D.2	The maintenance and repair facility has adequate space and is equipped with appropriate tools.	N/A
	6D.3	The program is adequately staffed, supervised, trained and certified to meet the agency's needs.	on page 7; on page 31
	6D.4	The reserve vehicle fleet is adequate, or a documented contingency plan is in place for when an apparatus must be taken out of service.	N/A
CC	**6D.5**	**The inspection, testing, preventive maintenance, replacement schedule, and emergency repair of all apparatus are well established and meets the needs of the agency.**	N/A
Criterion 6E		**Tools, Supplies, and Small Equipment**	
	6E.1	Tools and equipment are distributed appropriately, are in adequate quantities and meet the operational needs of the specific functional area or program (e.g., fire suppression, prevention, investigations, hazmat, etc.).	N/A
	6E.2	Tool and equipment replacement is scheduled, budgeted and implemented, and is adequate to meet the agency's needs.	N/A
CC	**6E.3**	**Equipment maintenance, testing and inspections are conducted by qualified personnel, following manufacturer's recommended schedules.**	N/A
	6E.4	Inventory control and maintenance tracking systems are in place and current.	N/A
	6E.5	Supplies and materials allocation is based on established objectives and appropriate to meet the operational needs of the specific functional area or program (e.g., fire suppression, prevention, investigations, hazmat, etc.), and is compliant with local, state/provincial, and national standards.	N/A
Criterion 6F		**Safety Equipment**	
CC	**6F.1**	**Safety equipment is identified and distributed to appropriate personnel.**	N/A
	6F.2	Distributed safety equipment is adequate for the functions performed.	N/A
	6F.3	Safety equipment replacement is scheduled, budgeted and implemented, and adequate to meet the agency's needs.	N/A
	6F.4	Safety equipment maintenance, testing and inspections are conducted by trained and qualified personnel, and appropriate records are kept.	N/A
	6F.5	Safety equipment inventory control and maintenance tracking system are in place and current.	N/A
Category VII - Human Resources			
Criterion 7A		**Human Resources Administration**	

CC	**7A.1**	**A human resources manager is designated.**	N/A
	7A.2	The human resources program has adequate staffing to accomplish the human resources administrative functions.	N/A
	7A.3	Policies are established to direct the human resources administrative practices in accordance with local, state/provincial and federal requirements. The policies are reviewed annually and updated as needed.	N/A
Criterion 7B		**Recruitment, Selection, Retention and Promotion**	
	7B.1	A mechanism is in place to identify and announce potential entry-level, lateral, and promotional positions	N/A
	7B.2	The agency's administration and its members are part of the recruiting process.	N/A
CC	**7B.3**	**Processes and screening/qualifying devices used for recruitment and selection of initial, lateral, and promotional candidates are job-related and comply with all local, state/provincial, and federal requirements, including equal opportunity and discrimination statutes.**	N/A
	7B.4	The agency's workforce composition is reflective of the service area demographics, or the agency has put forth a reasonable effort by instituting an effective recruitment plan to achieve the desired workforce composition.	N/A
	7B.5	A new-member orientation program is in place.	N/A
CC	**7B.6**	**A supervised probationary process is used by the agency to evaluate new and promoted members based on the candidates' demonstrated knowledge, skills and abilities.**	N/A
	7B.7	The agency has an employee/member recognition program.	N/A
	7B.8	The agency's working conditions and environment accommodate diverse and qualified applicants and retains a tenured workforce that is reflective of the community.	N/A
	7B.9	The agency conducts exit interviews, periodic employee surveys or other mechanisms to acquire feedback for improving policies and procedures.	N/A
	7B.10	The agency conducts workforce assessments and has a plan to address projected personnel resource needs, including retention and attrition of tenured and experienced employees/members.	N/A
Criterion 7C		**Personnel Policies and Procedures**	
CC	**7C.1**	**Personnel policies, procedures, and rules are current, documented and communicated to all personnel.**	N/A
CC	**7C.2**	**The agency has a policy that defines and prohibits harassment, bias and unlawful discrimination of employees/members based on sex, race, disability or other legally protected characteristics, and describes the related reporting procedures. The policy and organizational expectations specific to employee behavior are communicated formally to all members/employees and are enforced.**	N/A
	7C.3	A corrective actions system, which ensures accountability, is in place.	N/A

CC	**7C.4**	**An internal ethics and conflict of interest policy is published and communicated to employees/members.**	N/A
	7C.5	An employee/member grievance/complaint process is published and communicated to employees/members.	N/A
Criterion 7D		**Use of Human Resources**	
CC	**7D.1**	**A position classification system and a process by which jobs are audited and modified are in place.**	N/A
	7D.2	Current documented job descriptions exist for all positions, and incumbent personnel have input into revisions.	N/A
	7D.3	A personnel appraisal system is in place.	N/A
	7D.4	The agency has a policy or program for receiving employee/member input or suggestions.	N/A
	7D.5	Career and professional development programs are in place for all members and encourage the pursuit of professional credentialing.	N/A
	7D.6	The agency has a succession plan that incorporates mentoring.	N/A
Criterion 7E		**Personnel Compensation**	
CC	**7E.1**	**Rates of pay and compensation are published and available to all employees/members.**	N/A
	7E.2	Member benefits are defined, published, and communicated to all employees/members.	N/A
Category VIII - Training & Competency			
Criterion 8A		**Training and Education Program Requirements**	
CC	**8A.1**	**The organization has a process in place to identify training needs, including tasks, activities, knowledge, skills and abilities.**	N/A
	8A.2	The agency's training program is consistent with the mission statement, goals and objectives, and helps the agency meets those goals and objectives.	N/A
	8A.3	The training program is consistent with legal requirements for mandatory training.	N/A
	8A.4	The agency identifies minimum levels of training and education required for all positions in the organization.	N/A
Criterion 8B		**Training and Education Program Performance**	
	8B.1	A process is in place to ensure that personnel are appropriately trained.	N/A
	8B.2	The agency provides a training schedule that meets the organization's needs.	N/A
CC	**8B.3**	**The agency evaluates individual and crew performance through validated and documented performance-based measurements.**	N/A
	8B.4	The agency analyzes student evaluations to determine reliability of training conducted.	N/A

	8B.5	The agency maintains a training records management system that meets its needs.	N/A
CC	8B.6	**The agency conducts a formal and documented program appraisal, at least annually, to determine the program's effectiveness and compliance with meeting the needs of the organization.**	N/A
Criterion 8C		**Training and Education Resources**	
CC	**8C.1**	**Facilities and apparatus are provided to support the agency's all-hazards training needs. The agency has plans addressing any facilities and apparatus not available internally to complete training activities.**	N/A
CC	**8C.2**	**The agency has access to instructional personnel, within the organization or from identified external resources, with teaching qualifications and expertise to meet its needs.**	N/A
	8C.3	Instructional materials are current, easily accessible, and support the training program's stated objectives.	N/A
	8C.4	The agency has a process for purchasing, developing or modifying existing curriculum to meet its needs.	N/A
	8C.5	Equipment utilized for training is adequately maintained in accordance with the agency's operational procedures. The agency makes training equipment readily accessible to instructional personnel.	N/A
	8C.6	The agency maintains a current inventory of all training equipment and resources.	N/A
	8C.7	A selection process is in place for training and educational resource materials.	N/A
CC	**8C.8**	**Training materials are evaluated, at least annually, to reflect current practices and meet the needs of the agency.**	N/A
Category IX - Essential Resources			
Criterion 9A		**Water Supply**	
CC	**9A.1**	**The agency establishes minimum fire flow requirements for new development in accordance with nationally and/or internationally recognized standards and includes this information in the fire risk evaluation and pre-incident planning process.**	on page 29
CC	**9A.2**	**An adequate and reliable water supply is available for firefighting purposes for identified risks. The identified water supply sources are adequate in volume and pressure, based on nationally and/or internationally recognized standards, to control and extinguish fires.**	on page 29
	9A.3	The agency has a contact list on file and maintains regular contact with the managers of public and private water systems to stay informed about available water supplies.	N/A
	9A.4	The agency maintains copies of current water supply sources and annually reviews fire hydrant maps for its service area to ensure they are accurate.	N/A

	9A.5	Fire hydrant adequacy and placement are based on nationally and/or internationally recognized standards and reflect the hazards of the response area.	on page 29
	9A.6	Public fire hydrants are inspected, tested, maintained, visible and accessible in accordance with nationally and/or internationally recognized standards. The agency's fire protection-related processes are evaluated, at least annually, to ensure adequate and readily available public or private water.	on page 29
	9A.7	The agency identifies, plans and trains for the possibility of a water supply system failure, including fire hydrants with insufficient capacity and areas where fire hydrants are unavailable or inaccessible	on page 29
	9A.8	The agency has operational procedures in place outlining the available water supply and reviews those procedures as part of their documented review policy.	N/A
Criterion 9B		**Communication Systems**	
CC	**9B.1**	**A system is in place to ensure communications with portable, mobile, and fixed communications systems in the field. When an area is identified as not being capable of adequate emergency scene communications, such as inside buildings or below grade level, an operational plan is written.**	on page 29
	9B.2	The emergency communications system is capable of receiving automatic and/or manual early warning and other emergency reporting signals.	N/A
	9B.3	The agency's communications center(s) is/are adequately equipped and designed (e.g., security, telephones, radios, equipment status, alarm devices, computers, address files, dispatching circuits, playback devices, recording systems, printers, consoles, desks, chairs, lighting, and map displays).	N/A
	9B.4	The uninterrupted electrical power supply for the primary communications equipment in the communications center is reliable and tested and has automatic backup capability.	N/A
	9B.5	Adequate numbers of fire or emergency telecommunicators, supervisors and management personnel are on duty to handle the anticipated call volume.	on page 29
	9B.6	A maintenance program is in place with regularly scheduled and documented system tests.	N/A
	9B.7	The agency has established time-based performance objectives for alarm handling. These objectives are formally communicated to communications center managers through direct report, contracts, service level agreements and/or memorandums of agreement and are reviewed at least annually to ensure time-based performance objectives are met.	on page 91
	9B.8	Communications training programs for emergency telecommunicators and emergency response personnel ensure adequate, timely, and reliable agency emergency response.	N/A
	9B.9	The interoperability of the communications system is documented, tested and evaluated. The agency has processes in place to provide for interoperability with other public safety agencies in the field including portable, mobile and fixed communications systems, tools and equipment.	on page 29

	9B.10	The dispatch process utilizes a formal and recognized emergency medical dispatch (EMD) system that allows for pre-arrival instructions and adequate triaging of medical calls for service.	N/A
	9B.11	The agency has a documented and tested system in place for the notification and recall of off-duty agency personnel and telecommunicators for unplanned, large-scale incidents.	N/A
	9B.12	The agency has a documented plan, which is reviewed and tested annually, to ensure continuity in communicating during any partial or total disruption or failure of a communications system or facility.	N/A
CC	**9B.13**	**A formal and documented appraisal is conducted, at least annually, to determine the effectiveness of the emergency communications systems and their impact of meeting the agency's goals and objectives.**	on page 100
Criterion 9C		**Administrative Support Services and Office Systems**	
CC	**9C.1**	**The administrative support services are appropriate for the agency's size, function, complexity, and mission, and are adequately managed.**	on page 7; on page 31
	9C.2	Public reception, public information, and electronic communications components support the customer service needs of the agency.	N/A
CC	**9C.3**	**Organizational documents, forms, standard operating procedures or general guidelines, and manuals are reviewed at least every three years and updated as needed for all agency programs.**	N/A
	9C.4	Public records are maintained, available and disposed of in accordance with local, state/provincial and federal legal mandates. Record retention and destruction are documented in accordance with an adopted procedure.	N/A
Criterion 9D		**Information Technology**	
CC	**9D.1**	**Hardware, software and IT personnel are appropriate for the agency's size, function, complexity and mission.**	N/A
	9D.2	Software systems are integrated, and policies are in place addressing data governance, data accuracy and data analysis.	N/A
	9D.3	A comprehensive technology plan is in place to update, evaluate and procure hardware and software.	N/A
	9D.4	A cybersecurity policy is in place to protect the integrity of the infrastructure, including networks, programs and devices, from unauthorized access that could disrupt essential services.	N/A
Category X - External Systems Relationships			
Criterion 10A		**External Agency Relationships**	
CC	**10A.1**	**The agency develops and maintains external relationships that support its mission, operations, and/or cost-effectiveness.**	on page 29; on page 95
	10A.2	The agency's strategic plan identifies relationships with external agencies/systems and outlines a process to identify any impact or benefit to the agency's mission, operations or cost-effectiveness.	on page 29; on page 96

	10A.3	The agency researches, evaluates and considers all types of functional relationships that may aid in the achievement of its goals and objectives.	N/A
	10A.4	A conflict resolution process exists between all external organizations with whom the agency has a defined relationship.	on page 29
Criterion 10B		**External Agency Agreements**	
CC	**10B.1**	**External agency agreements are reviewed every three years and revised as necessary to meet objectives.**	on page 29
	10B.2	The agency has a process to manage, review and, if needed, revise agreements.	on page 29
	10B.3	The agency evaluates external agency performance annually to ensure that external agencies are capable and effective in supporting the agency's goals and objectives.	on page 95
Category XI - Health & Safety			
Criterion 11A		**Occupational Health, Safety and Risk Management**	
	11A.1	A specific person or persons are assigned responsibility for implementing the occupational health, safety and risk management programs.	N/A
	11A.2	The agency has policies and procedures for reporting, evaluating, addressing and communicating workplace hazards as well as unsafe/unhealthy conditions and work practices.	N/A
	11A.3	The agency documents steps taken to implement risk reduction and address identified workplace hazards.	N/A
	11A.4	The agency has established and communicated procedures and guidelines for preventing the transmission of blood-borne pathogens and other infectious diseases and reducing exposure to harmful chemicals. Guidelines should include an improvement of practices process.	N/A
CC	**11A.5**	**The agency's occupational health and safety training program instruct the workforce in general safe work practices, from point of initial employment through each job assignment and/or whenever new substances, processes, procedures or equipment are introduced. It provides instructions on operations and hazards specific to the agency.**	N/A
	11A.6	The agency uses near miss-reporting to elevate the level of situational awareness in an effort to teach and share lessons learned from events that, could have resulted in a fatality, injury, or property damage.	N/A
	11A.7	The agency has a process in place to investigate and document accidents, injuries, legal actions, etc., to determine root cause. The agency's information management system supports this process.	N/A
	11A.8	The agency incorporates risk management practices to increase the level of decision making and the ability to identify unsafe conditions and practices during emergency operations.	N/A
	11A.9	The agency has adopted a comprehensive program to address direct- and cross-contamination of clothing, personal protective equipment, other equipment, apparatus and fixed facilities.	N/A

	11A.10	The agency collects and maintains exposure records in accordance with local laws, regulations and/or current research.	N/A
	11A.11	The agency has established procedures to ensure effective and qualified deployment of an Incident Safety Officer to all risk events.	N/A
	11A.12	The agency establishes and consistently follows procedures for maintaining accountability of all personnel operating at all risk events.	N/A
Criterion 11B		**Wellness/Fitness Programs**	
CC	**11B.1**	**The agency provides for initial, regular, and rehabilitative medical, and fitness evaluations.**	N/A
	11B.2	The agency provides personnel with access to fitness facilities and equipment.	N/A
	11B.3	The agency makes available wellness/fitness training to all employees/members.	N/A
	11B.4	The agency provides an employee/member assistance program with timely access to critical incident stress debriefing, peer support and counseling, and other behavioral health resources.	N/A
	11B.5	The agency provides for cancer and behavioral health screenings and a cardiac assessment.	N/A
CC	**11B.6**	**A formal and documented appraisal is conducted, at least annually, to determine the effectiveness of the wellness/fitness programs and its impact on meeting the agency's goals and objectives.**	N/A

Appendix and Exhibits

Appendix A Hazard Vulnerability Assessment (HVA) 2021

Tempe Fire Medical Rescue

Fire Risk Assessment

EVENT	PROBABILITY	SEVERITY = (CONSEQUENCE-MITIGATION)							RISK
		CONSEQUENCE				IMPACT ON INCIDENT RESPONSE SYSTEM			
		HUMAN	PROPERTY	ENVIRONMENTAL	CRITICAL INFRASTRUCTURE	PREPAREDNESS	INTERNAL RESPONSE	EXTERNAL RESPONSE	*Relative threat**
	Likelihood this will occur	*Possibility of death or injury*	*Physical losses and damages*	*Damage and contamination*	*Interruption of services*	*Preplanning*	*Time, effectivness, resouces*	*Community/ Mutual Aid staff and supplies*	*0 - 100%*
SCORE	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = High 2 = Moderate 3 = Low or none*	*0 = N/A 1 = High 2 = Moderate 3 = Low or none*	*0 = N/A 1 = High 2 = Moderate 3 = Low or none*	
1-2 family residence	3	2	3	1	1	1	1	1	56%
multi-family residence	3	2	3	1	1	1	1	1	56%
Commercial-high	1	1	3	3	2	1	1	1	22%
Commercial-moderate	1	1	3	3	2	2	1	1	24%
commercial-low	2	1	3	2	1	3	1	1	44%
critical infrastructure	1	1	3	3	3	2	1	1	26%
AVERAGE SCORE	1.83	1.33	3.00	2.17	1.67	1.67	1.00	1.00	6%

*Threat increases with percentage.

RISK = PROBABILITY * SEVERITY			
0.06	0.23		0.25

Tempe Fire Medical Rescue

Emergency Medical Services

EVENT	PROBABILITY	SEVERITY = (CONSEQUENCE-MITIGATION)							RISK
		CONSEQUENCE				IMPACT ON INCIDENT RESPONSE SYSTEM			
		HUMAN	PROPERTY	ENVIRONMENTAL	CRITICAL INFRASTRUCTURE	PREPAREDNESS	INTERNAL RESPONSE	EXTERNAL RESPONSE	*Relative threat**
	Likelihood this will occur	*Possibility of death or injury*	*Physical losses and damages*	*Damage and contamination*	*Interruption of services*	*Preplanning*	*Time, effectivness, resouces*	*Community/ Mutual Aid staff and supplies*	*0 - 100%*
SCORE	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = Low 2 = Moderate 3 = High*	*0 = N/A 1 = High 2 = Moderate 3 = Low or none*	*0 = N/A 1 = High 2 = Moderate 3 = Low or none*	*0 = N/A 1 = High 2 = Moderate 3 = Low or none*	
Stroke	3	3	1	0	0	2	2	2	56%
STEMI	3	3	1	0	0	2	2	2	56%
Trauma	3	3	3	1	1	2	2	1	72%
Multi-casualty	2	3	3	1	3	2	2	2	59%
ALS	3	2	1	0	0	1	2	1	39%
BLS	3	1	1	0	0	1	2	1	33%
Cardiac Arrest	3	3	2	0	0	1	2	2	56%
Opioid Probable	3	2	0	0	0	1	2	1	33%
AVERAGE SCORE	2.88	2.50	1.50	0.25	0.50	1.50	2.00	1.50	13%

RISK = PROBABILITY * SEVERITY			
0.13	0.48		0.27

Tempe Fire Medical Rescue

Special Operations

EVENT	PROBABILITY	SEVERITY = (CONSEQUENCE-MITIGATION)							RISK
		CONSEQUENCE				IMPACT ON INCIDENT RESPONSE SYSTEM			
		HUMAN	PROPERTY	ENVIRONMENTAL	CRITICAL INFRASTRUCTURE	PREPAREDNESS	INTERNAL RESPONSE	EXTERNAL RESPONSE	Relative threat*
	Likelihood this will occur	Possibility of death or injury	Physical losses and damages	Damage and contamination	Interruption of services	Preplanning	Time, effectivness, resouces	Community/ Mutual Aid staff and supplies	0 - 100%
SCORE	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = Low 2 = Moderate 3 = High	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	0 = N/A 1 = High 2 = Moderate 3 = Low or none	
Natural gas leak	3	1	1	1	2	1	1	1	44%
Chemical release-liquid	1	2	3	3	3	2	1	1	28%
Chemical Release-gas (other)	2	2	1	1	2	2	1	1	37%
White Powder	1	1	0	0	3	1	1	1	13%
Mountain Rescue	3	3	0	0	0	1	1	1	33%
Confined Space Rescue	1	3	1	1	3	1	1	1	20%
Trench Rescue	1	3	1	1	3	1	1	1	20%
Water Rescue	1	2	1	0	0	1	1	1	11%
Dive Operation	1	3	1	0	0	1	1	1	13%
AVERAGE SCORE	1.56	2.22	1.00	0.78	1.78	1.22	1.00	1.00	8%

RISK = PROBABILITY * SEVERITY			
0.08	0.29		0.28

Summary of Tempe Fire Medical Rescue Risk Assessment

SUMMARY OF CITY OF TFMR RISK ASSESSMENT				
	Fire Risk	EMS	Special Ops	Total Risk
Probability	0.23	0.48	0.29	1.00
Severity	0.25	0.27	0.28	0.80
Hazard Specific Relative Risk:	0.06	0.13	0.08	0.80

Exhibits: List of Figures, Graphs, and Tables

Figures

Graphs

Tables

Tables (Cont.)