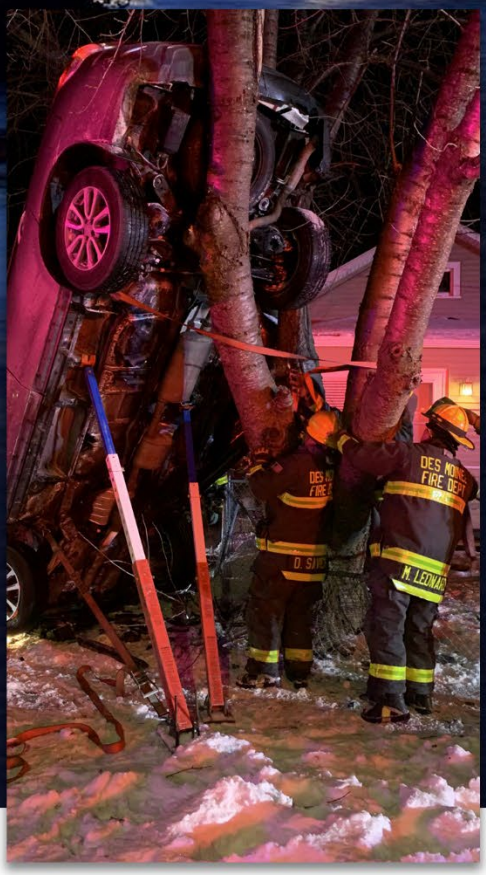
DES MOINES FIRE DEPARTMENT

COMMUNITY RISK ASSESSMENT/ STANDARDS OF COVER

2023



CPSE | Center for Public Safety Excellence®

This page was intentionally left blank.

Des Moines Fire Department

Fire Chief John TeKippe

Community Risk Assessment-Standards of Cover

Contributors

Fire Marshal Jonathan Lund, Assistant Chief Percy Coleman,
Superintendent Michele Bischof, District Chief Andrew Juelfs,
Captains Brian Davis, Tim Nemmers, Devon Sadler, Tony Sposeto, Robert Suarez
Executive Administrative Assistant Sheena Signs, Administrative Assistant Tara Weltz
GIS Support Aaron Greiner and Heather Shaffer

2023

TABLE OF CONTENTS

Executive Summary 1
A. Description of Community Served 2
Introduction 2
Community and Agency Legal Basis 2
History of the Community 3
Community Financial Basis 5
Community Boundaries 7
Community Planning Areas 10
Community Transportation Systems 11
Community Critical Infrastructure 16
Community Land Use and Zoning 18
Community Topography 19
Community Geography 21
Community Geology 21
Community Physiography 23
Community Climate 23
Community Population/Population Densities 25
Community Demographic Features 28
B. History of the Agency 30
Major Historical Milestones of the Department 30
Current Legal Boundary of Service Area 50
Current Organization, Divisions, Programs and Services 52
Fire Stations, Training Facilities, Apparatus, Equipment, and Staffing 53
C. Current Descriptions of Levels of Service with Delivery Programs 54
Fire Suppression 54
Emergency Medical Services 57
Technical Rescue 58
Hazardous Materials 59
Aviation Rescue and Firefighting Services 60
Specialized Services – Water Rescue 60
Community Safety and Remediation Programs 61
D. Current Deployment and Coverage Areas 62
Points of Service Delivery 62
E. Summary of Community Response History 65
F. Community Priorities, Expectations, and Performance Goals 66
Mission Statement 66
Community Service Priorities 66
Community Service Expectations 67

Historical Performance Goals 68
G. Community Risk Assessment and Risk Levels 69
Risk Assessment Methodology 69
Critical Task Analysis and Risk Scoring 72
Risk Classification and Categories 89
Geographical Planning Areas/Zones 94
H. Historical Perspective and Summary of System Performance 95
Distribution Factors 95
Concentration Factors 100
Reliability Factors 101
Dataset Qualification 108
Baseline Performance Tables 109
I. Evaluation of Service Delivery 114
Performance Objectives – Benchmarks 114
Performance Objectives – Baselines 116
Performance Gaps – Baseline to Benchmark Time Gap 128
Community Areas for Program Delivery and Coverage Improvement 132
Recommendations for Improved Effectiveness in Deployment and Coverage 135
J. Performance Maintenance and Improvement Plans 137
Compliance Team/Responsibility 137
Performance Evaluation and Compliance Strategy 138
Compliance Verification Reporting 138
Continuous Improvement Strategy 138
K. Appendices 139
Appendix A: Strategic Plan 139
Appendix B: Transportation Additional Information 140
Appendix C: Stakeholder Comments 141
Appendix D: Doane's Formula 151
Appendix E: Workload and Reliability (Engines and Trucks) 152
Appendix F: Task Analysis 153
Appendix G: Risk Analysis 154
Appendix H: Planning Zone Details 155
Appendix I: 90th Percentile Calculation 156
Appendix J: Analysis Recommendations 157
Appendix K: 2022 Data 159

TABLES

Table 1: FY21 CIP Expenditures 7
Table 2: Future CIP Planning 7
Table 3: Station Apparatus and Minimum Personnel 54
Table 4: Response Summary (2019-2021) 65

Table 5: Community Service Priorities 66
Table 6: Frequency 69
Table 7: Community Consequence 70
Table 8: Organizational Impact 70
Table 9: Statistics of Risk Scores 71
Table 10: Risk Category 71
Table 11: Risk Score by Classification and Category 89
Table 12: Stations, Apparatus, and Minimum Personnel 96
Table 13: Planning Zone Incidents (2021) 98
Table 14: Station Unit Response Totals (2021) 98
Table 15: Emergent Workload and Reliability - Medic Squads 102
Table 16: Emergent Workload and Reliability - Suppression Apparatus 103
Table 17: Unit Utilization Value 103
Table 18: Commitment Factors (UU) for Medic Squads, Engines, and Trucks 104
Table 19: Out-of-Service Percentages for Medic Squads, Engines, and Trucks 107
Table 20: ERF - Fire 114
Table 21: ERF - EMS 115
Table 22: ERF - Technical Rescue 115
Table 23: ERF - Hazardous Materials 116
Table 24: ERF - WET 116

MAPS

Map 1: City Council Wards 2
Map 2: Annexation (1846-2010) 4
Map 3: City Limits 7
Map 4: Fire Districts 8
Map 5: Des Moines in Relation to Surrounding Counties 9
Map 6: Land Use 10
Map 7: Roadway Network 11
Map 8: Trails 12
Map 9: Rail Network 13
Map 10: Air Transportation 14
Map 11: DART Bus Transportation 15
Map 12: Water Utilities 16
Map 13: Stormwater System 17
Map 14: Zoning 18
Map 15: Topography 20
Map 16: City of Des Moines 21
Map 17: Soils 22
Map 18: Population Density 26
Map 19: Entertainment 27
Map 20: Education 27
Map 21: Social Vulnerabilities Index 29
Map 22: City Limits 50
Map 23: Des Moines in Relation to Surrounding Counties 51
Map 24: Fire Stations 53
Map 25: Parks 56

Map 26: Unit Type – Ambulance Stations 62
Map 27: Unit Type - Engine Stations 63
Map 28: Unit Type - Truck Stations 64
Map 29: First Due 94
Map 30: Station First Due Areas 95
Map 31: First Due 4.5-Minute Travel Time 97
Map 32: Incidents with >4-Minute Travel First Unit 134

FIGURES

Figure 1: Fort Des Moines 3
Figure 2: FY21 Fire Operating Budget Revenue 6
Figure 3: Des Moines Lobe 19
Figure 4: Water Cycle (Kendall M. FitzGerald) 22
Figure 5: Climate 23
Figure 6: Tornado Alley 24
Figure 7: Age Breakdown 28
Figure 8: Demographic Details 28
Figure 9: Census Data Elements in SVI 29
Figure 10: Organizational Chart 52
Figure 11: Cardiac Arrest Data 58

Executive Summary

The community risk assessment and standards of cover document is a collaborative effort to document, analyze and assess the risks, performance, and future sustainability of the provision of fire and emergency services throughout the city of Des Moines. The accreditation team, comprised of members of our department representing multiple ranks and assignments, has spent countless hours working on this document to ensure we continue to provide exceptional service delivery for the residents and guests of Des Moines.

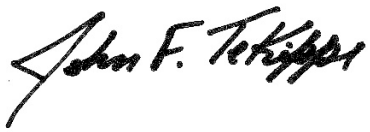
This document goes into profound detail regarding the risks within and around our community, how the department has responded to those risks in the past, and how we continue to prepare and adjust our response to those risks in the future. Near the end of the document are recommendations for improvements to ensure our ability to meet the needs of a growing and vibrant community.

The Des Moines Fire Department is an all-hazards response agency of women and men dedicated to serving our community. It is our privilege to serve, and we look forward to tackling the challenges a rapidly changing environment presents. This document will assist in making critical decisions about our preparation, service delivery, and future needs to ensure we remain ready to respond when needed.

If you are interested in learning more about the hazards and risks within our community, Section A, "Description of Community Served," will provide an in-depth look at those challenges. If you are more interested in learning about the history of the Des Moines Fire Department, Section B contains a fairly comprehensive historical overview of how the department has evolved since its inception in 1865 and its charter in 1883. The department's deployment and performance are analyzed in Section C, Section D, Section E, Section H, and Section I. Finally, plans for ongoing performance monitoring and maintenance are contained in Section J. Within these sections are recommendations identified by other studies for additional analysis to be considered for future document updates.

Many thanks to the accreditation team, the Center for Public Safety Excellence, and everyone who assisted in the community risk assessment and standards of cover process. Their work has been commendable and enables our department and our community to utilize this document to make data-based decisions to plan for service delivery going forward. My thanks also to the reader whose interest, input, and advocacy may also contribute to our success in the future.

Sincerely,



John F. TeKippe
Chief of the Department

A. Description of Community Served

Introduction

Des Moines is Iowa's capital and largest city, with a population of 214,133 (2020 U.S. Census). The city is comprised of approximately 91 square miles and is situated in the center of a metropolitan statistical area with a population of 709,466 people. Des Moines was officially incorporated in 1851, and its first fire company was organized in 1865. The fire department was established as a paid department in 1883 with 17 paid employees.

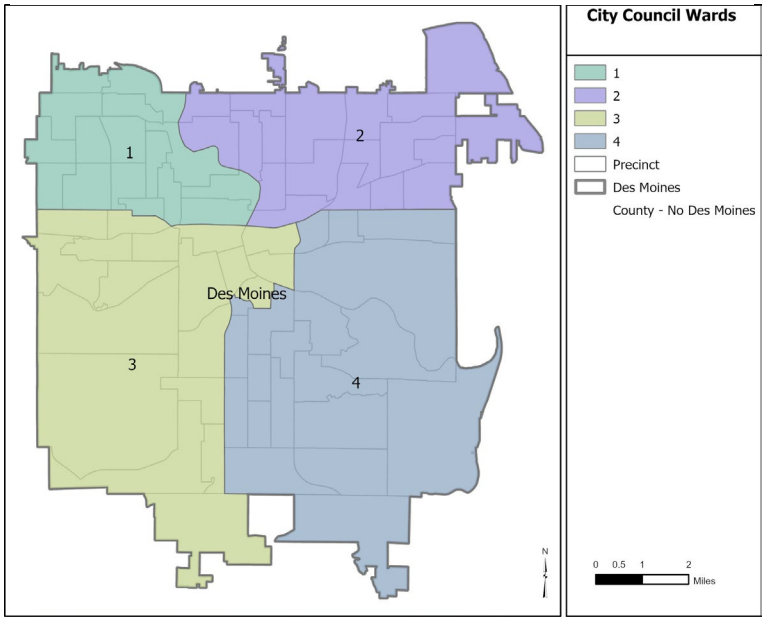
The Community Risk Assessment and Standards of Cover (CRA/SOC) document is an important step for the Des Moines Fire Department (DMFD) and the City of Des Moines to formally understand the community's risks and appropriately evaluate the response to historical requests for service. The impetus for this study is both an internal desire to quantitatively analyze system performance and a city council strategic goal of achieving fire department accreditation through the Center for Public Safety Excellence®.

Community and Agency Legal Basis

Des Moines is a municipal corporation legally established by Iowa law, including the Iowa Constitution and Iowa Code. The city's election precinct and ward boundaries are established by the council and ratified by ordinance as required to ensure equitable representation based on population.

Chapter 46 of the City of Des Moines Municipal Code establishes the chief of the fire department, also known as the fire chief, who shall be appointed by the city manager and responsible for managing the functions of the fire department.

Map 1: City Council Wards



History of the Community

The origins of Des Moines, Iowa, trace back to May 1843 when United States Army Captain James Allen began overseeing the construction of a military fort at the junction of the Des Moines and Raccoon Rivers. Captain Allen's choice to name the new site Fort Raccoon was overruled by the United States War Department's choice of Fort Des Moines. The name Des Moines, meaning "of the monks," was given to the river by French colonists after a group of French Trappist monks who lived in huts on mounds in Illinois near the Mississippi River in the 17th century. By 1846, the need for the military fort ended, settlers to the area remained behind to mine coal, and the state legislature deemed the town of Fort Des Moines to be the county seat of Polk County, Iowa.

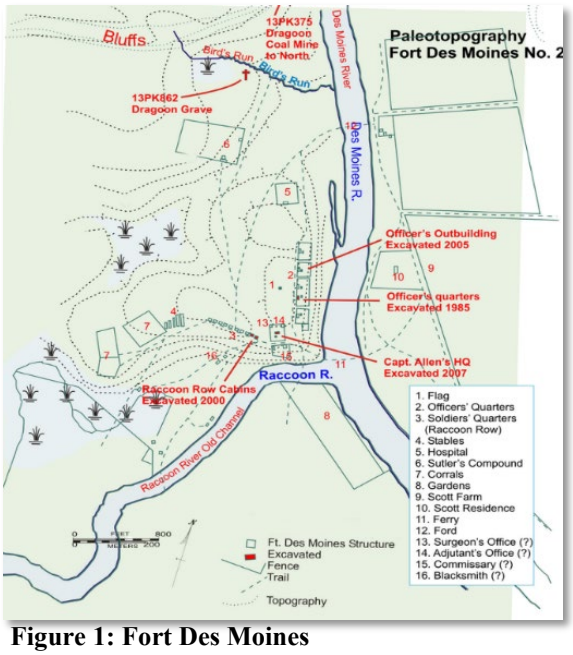


Figure 1: Fort Des Moines

Spring rains in May of 1851 destroyed most of the town, especially the land east of the Des Moines River. When the flood water receded, work immediately began to rebuild and expand the town.

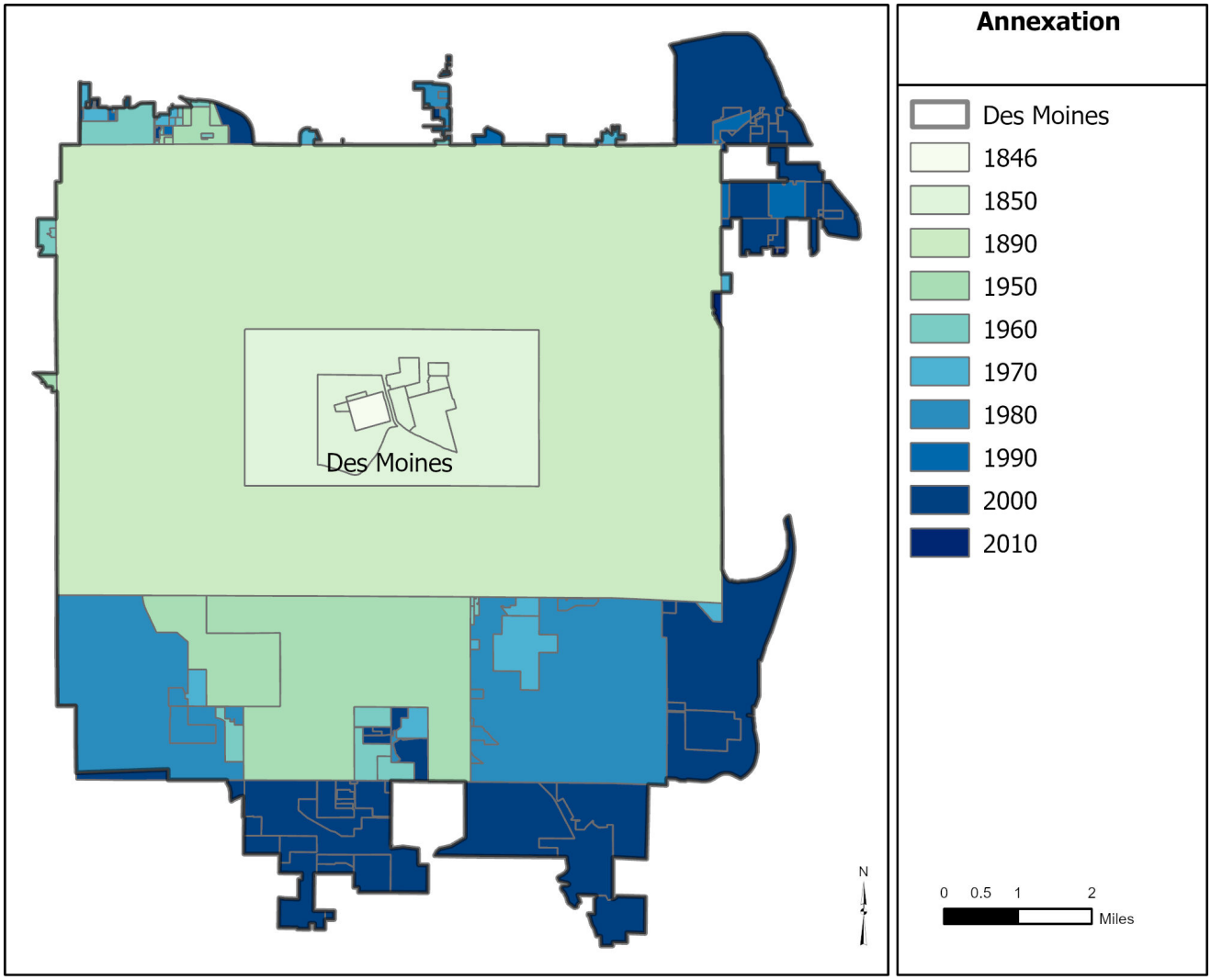
Fort Des Moines Flood of 1851

On September 22, 1851, Des Moines was officially incorporated as a city. October 18, 1857, brought another major distinction to Des Moines when the capital of the State of Iowa was moved to the growing city. The post-civil war railroad expansion into the area brought more growth and prosperity to the region, especially helping to expand the mining industry, which aided the city's success.

The 19th century showed steady growth with infrastructure improvements and shifts in employment opportunities. By 1880, Des Moines grew in population to become the largest city in Iowa for the first time since its incorporation, a distinction that continues to this day. As the city's borders grew and the mining industry slowly faded as the primary source of prosperity, new forms of industrialized success formed. Improved road and rail systems made Des Moines a hub for manufacturing and distributing consumable goods, making it a valuable resource for the Midwest and ensuring the capital city's continued population growth.

Iowa State Capitol

Map 2: Annexation (1846-2010)



The 20th century brought prosperity in other ways as companies invested in Des Moines by building Iowa's tallest buildings in the city's downtown area. As early as 1924, the Des Moines skyline has continually seen change as building construction projects raised the city upward to match the outward growth of the residential neighborhoods. Industrial jobs were matched with a healthy business community that has grown to make Des Moines the third-largest insurance capital of the world.

East Village & Downtown Des Moines

The 21st century has seen continued growth with annexation in the northeast and southeast sections of the city and continued growth of the downtown area. Des Moines continues to improve with new construction and revitalization of residential units, events centers, activity venues, and infrastructure improvements. Des Moines serves as the central hub for political, social, and business events.

Community Financial Basis

State law requires that cities, such as Des Moines, publish each fiscal year (FY) a complete set of audited financial statements in conformity with generally accepted accounting principles in the United States of America and that their financial condition and transactions be examined by the Auditor of State or by a certified public accountant. This report was published to fulfill that requirement for the fiscal year that ended June 30, 2022. The city council is required by Chapter 384 of the Code of Iowa to adopt an annual budget on or before March 31 of each year. This annual budget serves as the foundation for the City of Des Moines' financial planning and control. The adopted budget provides appropriations (authority to spend) for operations for the fiscal year that begins on July 1 and ends on June 30 of the following year. Budget amendments (revisions to the adopted budget) must be prepared and adopted in the same manner as the original budget.

The city council and administration routinely consider the long-term view regarding financial matters. Operating budget decisions are based on long-term sustainability. A budget plan considers multi-year trends for all major revenues and expenditures. In addition, the city has a detailed Capital Improvement Plan (CIP) that considers the impact of the investment in infrastructure, the associated debt burden, and any changes in operating costs associated with maintaining new assets. The CIP shows funding for the current year and the next four years.

The city's financial outlook is stable, evidenced by an AA+ bond rating. Operationally, the city received a 2021 property valuation of $16,498,583,060. This represents an increase of 9.5 percent and represents 31.7 percent of the total valuation for Polk County. The 2020-2021 (FY 2021) City of Des Moines Amended Operating Budget was $1,115,592,966 with actual expenditures of $817,474,246. The Fire Department Amended Operating Budget for 2020-2021 was $45,603,469, with actual expenditures of $43,454,745.

Fire Department Revenue Sources

General Fund

The general fund is used to support the day-to-day operations of the city. The principal source of revenue for the general fund is property taxes. For FY2021, the general fund represented about 70 percent of the fire department's operating revenue.

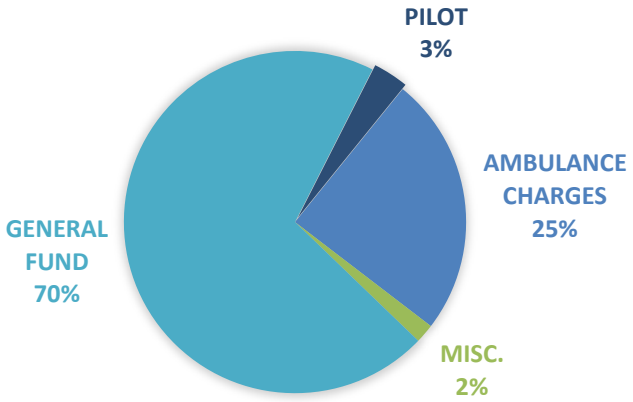


Figure 2: FY21 Fire Operating Budget Revenue

Ambulance Charges

The department's operating budget is partially funded by fees collected for emergency medical services (EMS) provided. These transport fees are set by city council ordinance and are reviewed on an annual basis. The totality of ambulance charges made up about 25 percent of the fire department's operating revenue.

Ground Emergency Medical Transportation (GEMT)

A portion of ambulance charges is funded through reimbursement by the GEMT program. This voluntary program allows publicly owned or operated emergency ground ambulance transportation providers to receive supplemental payments that cover the difference between a provider's actual costs per GEMT transport and the Medicaid base payment, mileage, and other sources of reimbursement. A portion of the money collected through GEMT is paid to the state for program administration. The remaining money for FY2021 and future years has been designated for capital-related expenses (e.g., ambulance purchases and station reconstruction).

Payment in Lieu of Taxes (PILOT)

PILOT is another mechanism for the fire department to receive operating revenue. PILOT revenues comprised about three percent of the fire department operating revenue in FY2021. PILOT revenues are generated from some tax-exempt, non-profit entities (e.g., airports and hospitals).

Local Option Sales & Service Tax (LOSST)

In March 2019, the citizens of Polk County approved a one-cent LOSST. The Des Moines City Council appropriated a portion of the LOSST proceeds to support public safety improvements, including additional fire department staffing. These funds are specifically allocated and are not appropriated within the fire department's operating budget.

Fire Department Capital Improvement Plan

The Capital Improvement Budget includes all the capital improvement projects (CIP).

CIP funding includes major expenditures involving all aspects of construction, renovation, and repair of buildings, infrastructure, fire trucks, ambulances, and major equipment. These are typically divided into three separate areas: fire building improvements (station infrastructure), specific building projects (e.g., northeast fire station), and equipment acquisition (apparatus and ambulances).

CIP items are generally defined as having a minimum useful life of 10 years, costs exceeding $10,000, and funded in whole or in part through the issuance of bonds, federal funds, state funds, and user fees specifically designated for that purpose.

Table 1: FY21 CIP Expenditures

Description	Project	Actuals FY21 Expenses
Fire Facilities Improvement	BL063	138,865.25
Equipment Acquisition-Fire	FR013	1,894,653.21
Fire Station Expansion	FR041	4,661,137.47
		6,694,655.93

Table 2: Future CIP Planning

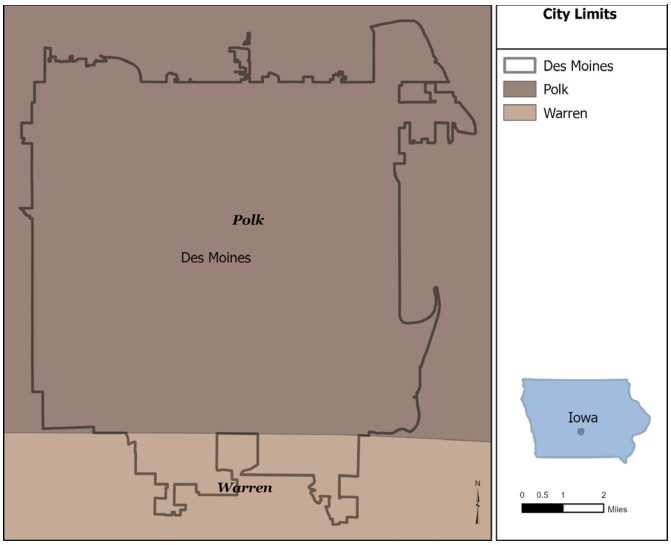
Department	Project #	2021	2022	2023	2024	2025	Total
Fire							
Fire Equipment Acquisition	*FR013 C041FR*	4,441,140	2,325,000	2,750,000	2,240,000	2,500,000	*14,256,140*
NE Fire Station	*FR041 C041FR*	3,154,959					*3,154,959*
Fire Total		**7,596,099**	**2,325,000**	**2,750,000**	**2,240,000**	**2,500,000**	***17,411,099***
Fire Building Improvements	*BL063 C034PK*	325,188	2,074,812	200,000	3,000,000	2,900,000	*8,500,000*

Community Boundaries

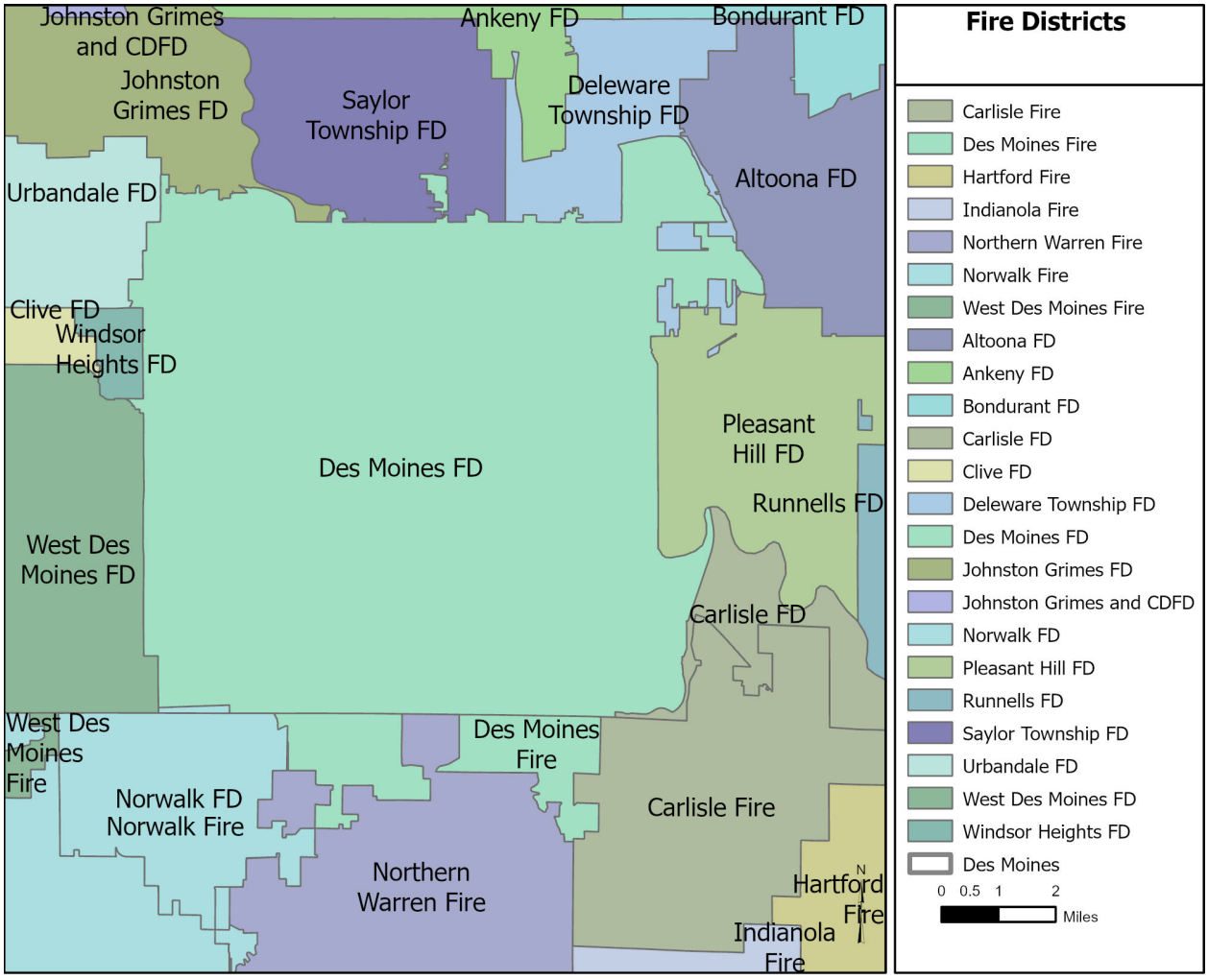
The city limits of Des Moines serve as the jurisdictional boundaries for the Des Moines Fire Department. Des Moines is primarily located in the southern portion of Polk County, with the extreme southern portions of the city extending into the northern portion of Warren County.

Des Moines city limits and Des Moines Fire Department jurisdictional boundaries are bordered by several surrounding fire departments. On the north, Saylor Township and Delaware Township fire departments. On the east, Altoona, Pleasant Hill, and Carlisle fire departments. To the south, Northern Warren and Norwalk fire departments. West Des Moines, Windsor Heights, and Urbandale fire departments are to the west.

Map 3: City Limits



Map 4: Fire Districts

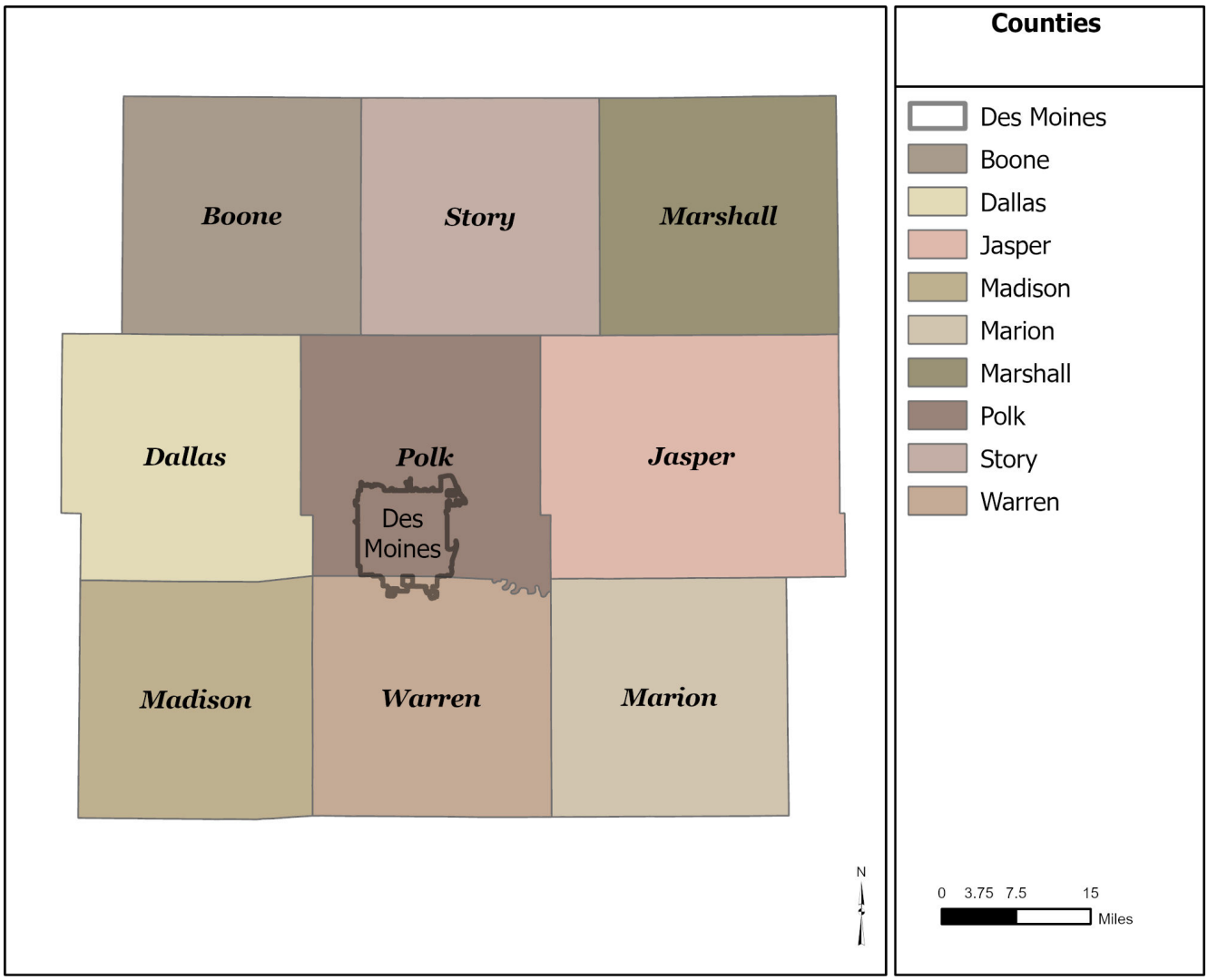


Since January 2018, the Des Moines Fire Department has had an operational agreement with Altoona to ensure the best possible response to northeast Des Moines and the City of Altoona. This arrangement provides service level improvement and shared or reduced costs as both cities grow.

The DMFD operates a Federal Emergency Management Agency (FEMA) Type 1 Hazardous Materials Team and, through a 28E agreement, provides technician-level response to the surrounding seven counties, including the entire metro area. The DMFD Hazardous Materials Team also serves as one of three Iowa Weapons of Mass Destruction (WMD) Teams. This agreement with Iowa Homeland Security provides grant funding for equipment and joint training. In return, team members may be requested to respond within the state to aid such as advanced detection and sampling.

The Des Moines Fire Department is part of a 28E agreement to provide mutual aid for fire and/or EMS needs in Polk County and/or the adjoining counties of Boone, Dallas, Story, and Warren, as well as Jasper, Madison, Marion, and Marshall counties. The detailed agreements are on the Iowa Secretary of State's website.

Map 5: Des Moines in Relation to Surrounding Counties

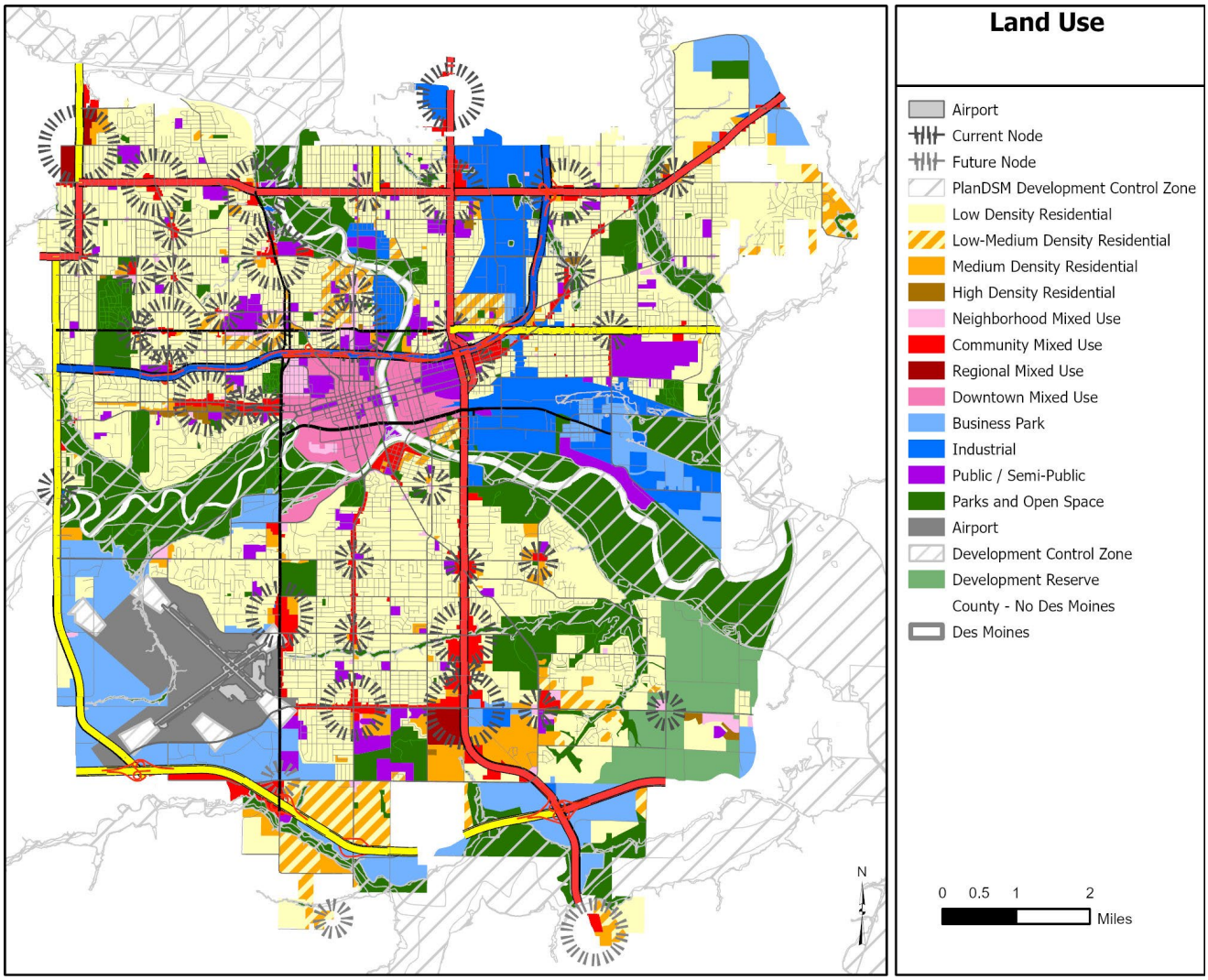


Community Planning Areas

The city council adopted the PlanDSM Comprehensive Plan on April 25, 2016. The plan provides a vision of how the city will evolve through 2040 and beyond. PlanDSM is a policy basis for additional planning efforts, land use decisions, and prioritizing capital projects. Key initiatives of PlanDSM are being implemented by the city, including, but not limited to, the city council's strategic plan (GuideDSM), approval of the city's first Transportation Master Plan (MoveDSM), approval of the city's Park and Recreation Master Plan (LiveDSM), approval of the city's neighborhood revitalization strategy (InvestDSM) and approval of the city's zoning ordinance, planning and design ordinance, and citywide zoning map.

High-level strategic planning and directional documents can be viewed in Appendix A. The most recent land use map (shown below) illustrates the planning priorities for the city.

Map 6: Land Use



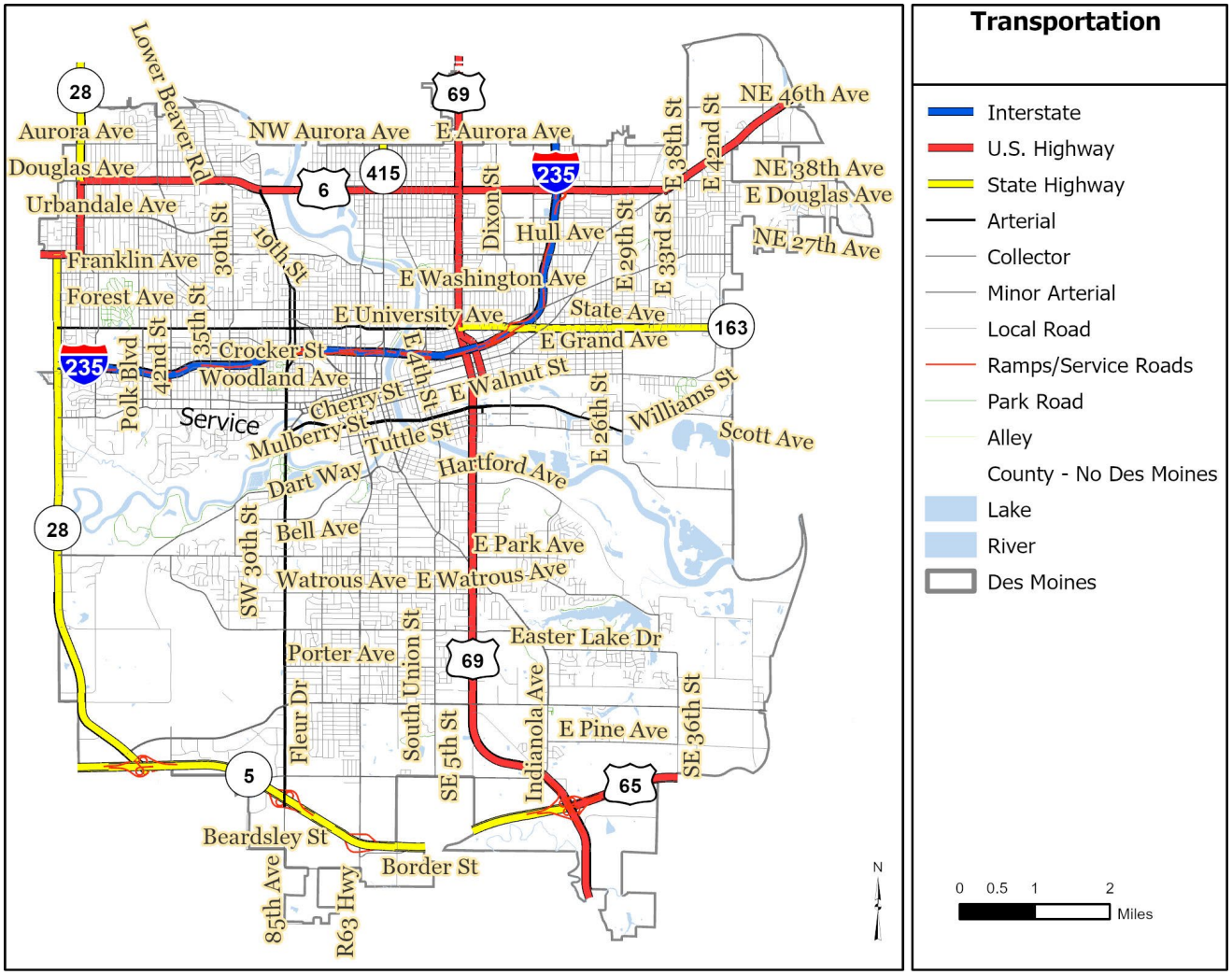
Community Transportation Systems

Roadways

Des Moines classifies roadways into interstates, U.S. highways, state highways, arterials, collectors, minor arterials, and local roads. I-235 is the downtown Des Moines direct connection between I-80 and I-35 and, in 2019, had the highest traffic counts in all of Iowa, totaling 133,200 vehicles per day between 42nd and 56th Street. I-235 runs from the city's west limits through the downtown corridor and, once on the east side, turns north to connect back to I-80 and I-35 outside the city limits. Many fire stations respond to different portions of I-235, including Stations 2, 3, 4, 5, and 7.

Two U.S. highways cross the city. Highway 6, or Douglas Avenue, connects the northeast and northwest sides. Highway 69, or E. 14th Street, connects the city's north and south sides. State Highway 28 forms the west city limit between Des Moines and West Des Moines, and Des Moines and Urbandale on the northwest side. Highway 5 closely matches the southern edge of the city and runs through mostly rural property. This highway is covered by Station 8 on the west and Station 10 on the east.

Map 7: Roadway Network



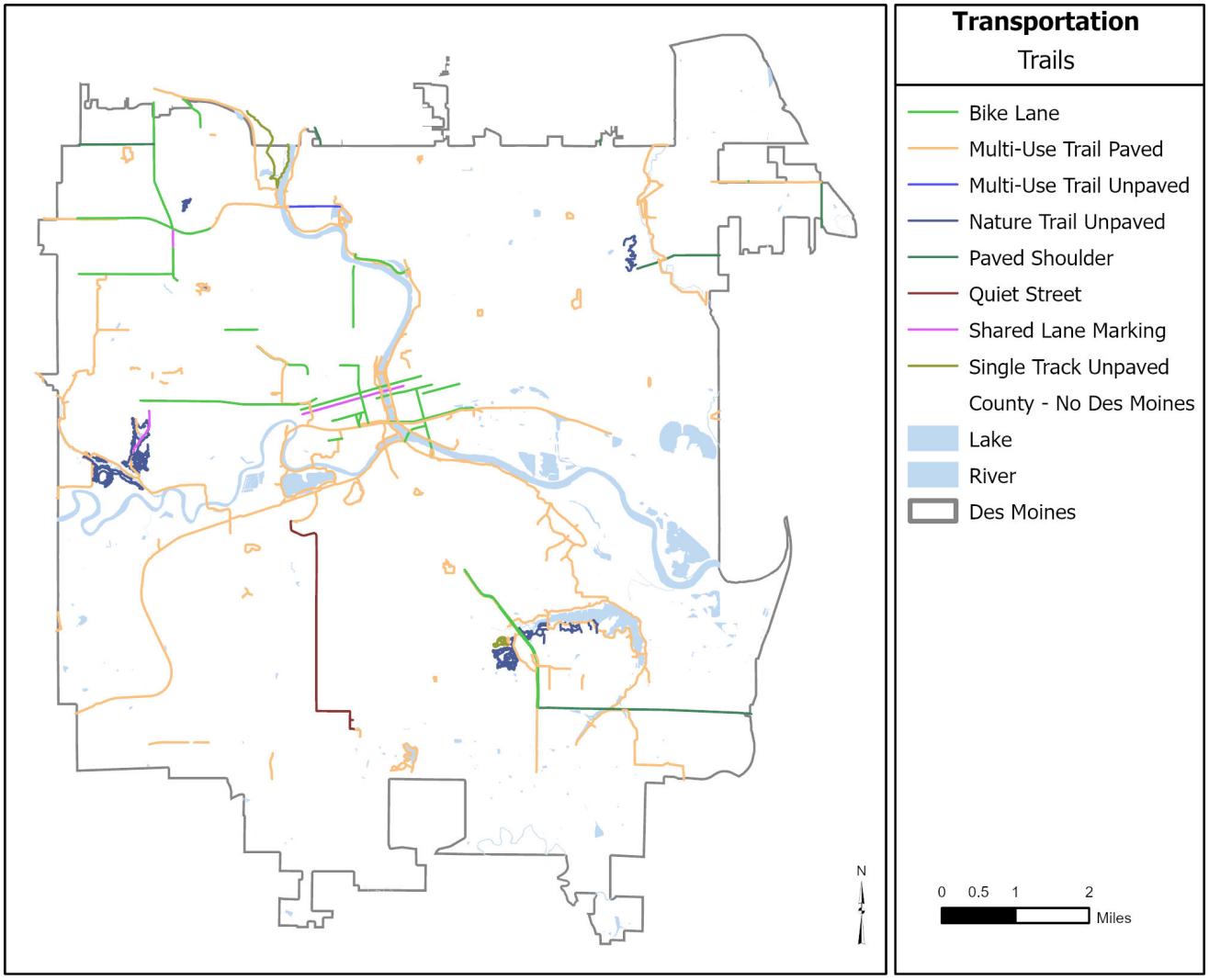
Trails

Des Moines provides a very robust trail system for hiking, biking, and walking. There are 68 miles of paved trails and 19 miles of soft trails that make up the 16 trails in the network. In 2021, trail use counts yielded an average approximate use of 255,000 per trail per year. The city also has a few streets with dedicated bike lanes that share the road with cars.

The downtown area provides 4.2 miles of skywalks that connect 55 buildings and 12 parking garages. These walkways help the thousands of downtown workers and tourists navigate the area without ever waiting for traffic or entering the central Iowa elements.

There are plans to change the current water flow and arrangement of the area surrounding the confluence of the rivers to accommodate a new water trail attraction. The Iowa Confluence Water Trails Organization began this $41 million portion of the project in February of 2023 in downtown Des Moines for the trail along the river, and it is anticipated to be completed by 2026. Specific to Des Moines, plans include removing the current low head dams, lowering the water level to create a white-water course, boat launches, fishing docks, and walking trails.

Map 8: Trails

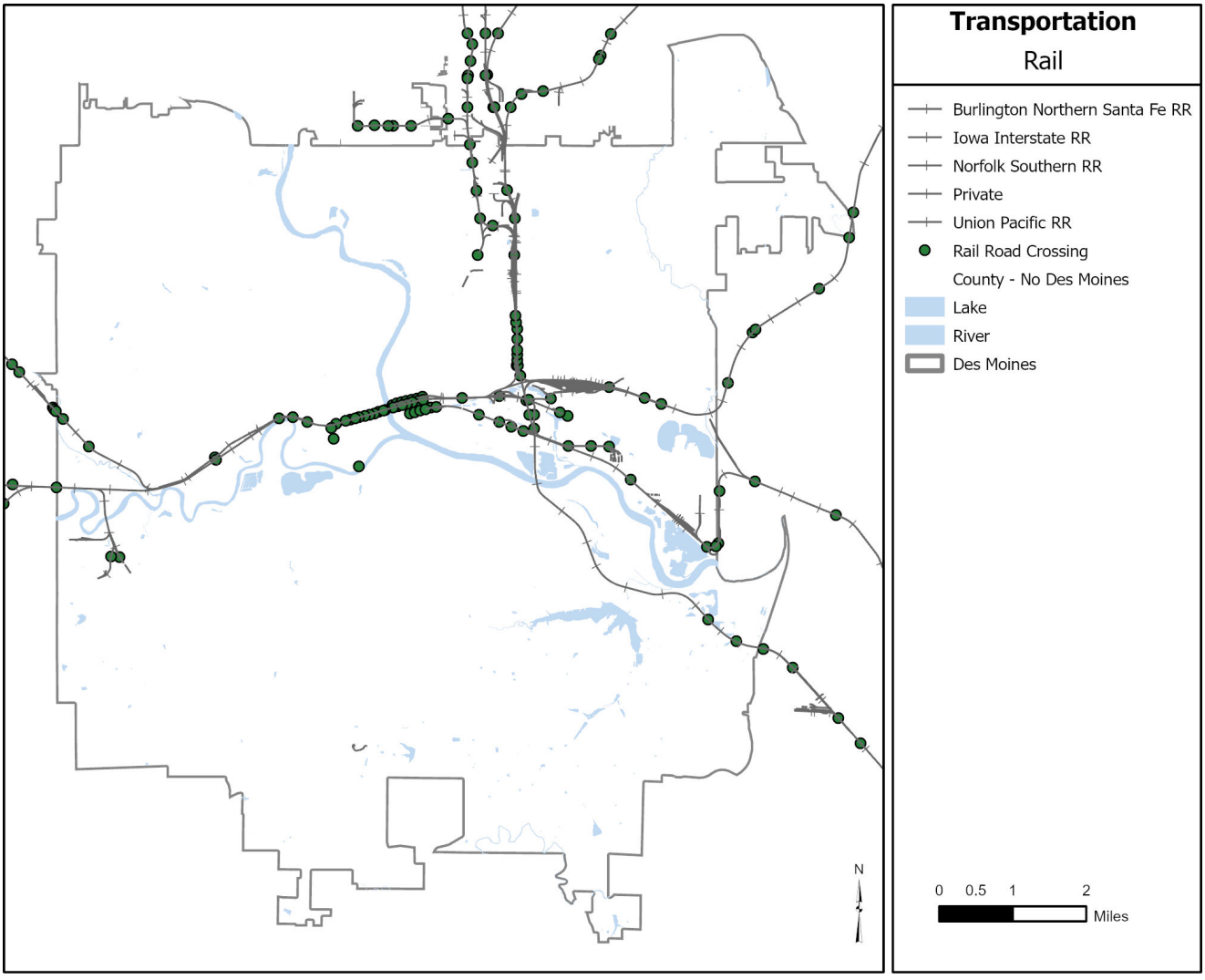


Rail

Rail systems in Des Moines are utilized by four companies on both shared and proprietary lines. Burlington Northern Santa Fe (BNSF), Iowa Interstate, Norfolk Southern, and Union Pacific can all be found within Des Moines. The current rail system runs east/west directly through the downtown district and north/south on the east side. These two primary railways create some geographically isolated areas within the city. Stations 2 and 3 on the east side are most impacted by trains blocking surface roadway crossings. Station 1 is also impacted by the downtown railroad but to a lesser extent than the east side. Transfer and loading yards are located on the city's southeast side.

A new industrial transfer loading station described as a premier rail-based transport hub in Iowa opened in early 2022. The station will interface rail goods with commercial trucks. The site has direct access to Iowa Interstate Railroad, Norfolk Southern, and BNSF railroads. The site is located almost directly east of the E. 14th viaduct and just one mile from Interstate 235, which accesses the nation's busiest commercial trucking intersection of Interstates 35 and 80.

Map 9: Rail Network

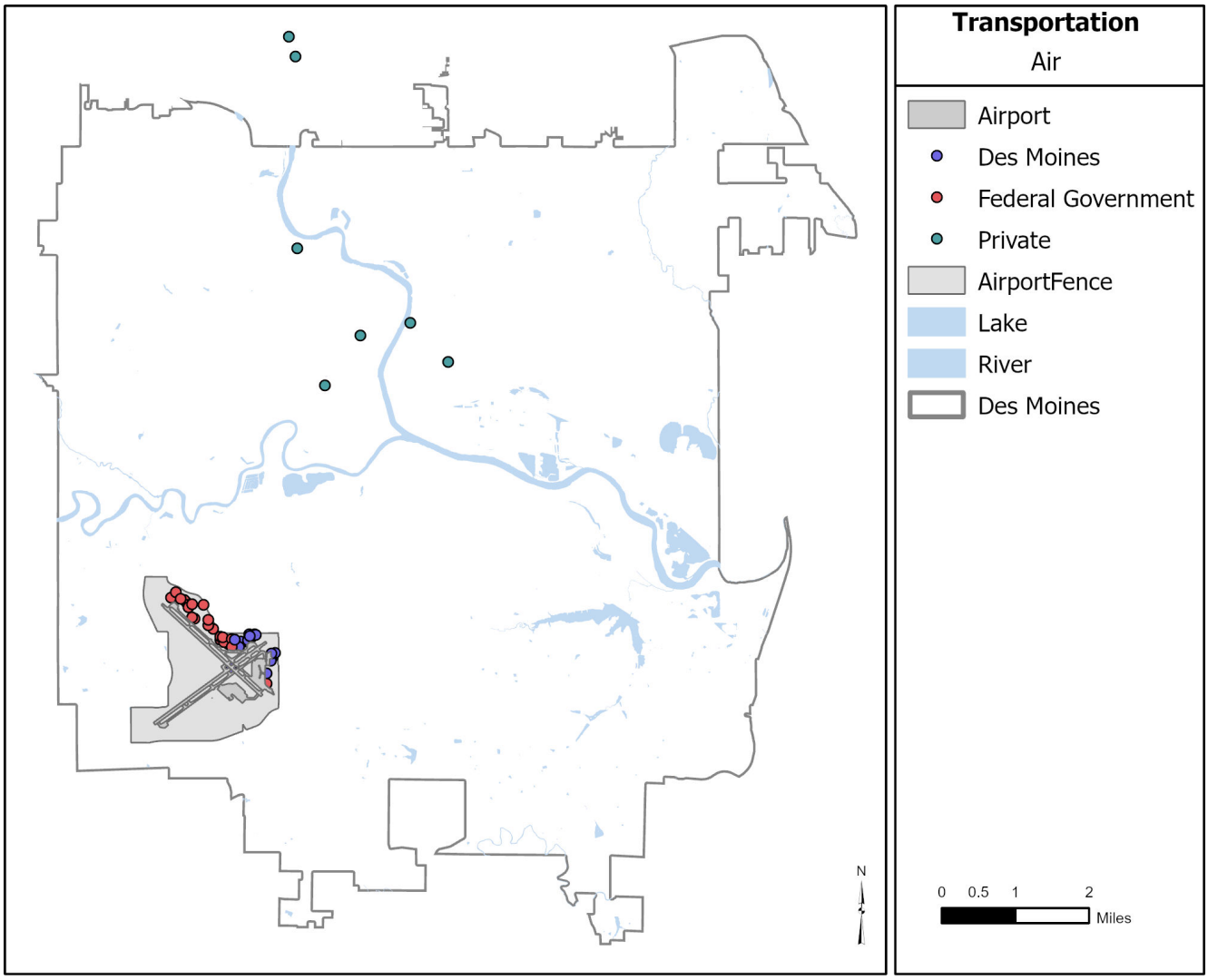


Air

The Des Moines International Airport is located in the city's southwest region. In 2019, the airport saw a record number of passengers flying through Des Moines, totaling 2,919,904. The airport has begun expansion planning for a new terminal, with the design process starting this year and construction completion estimated for 2027. This expansion is expected to provide capabilities to accommodate larger planes and additional passengers. Though the Airport Authority has a private vendor hired for aircraft fire suppression, DMFD Station 8 is positioned blocks away from the grounds and is utilized in the event of EMS calls on-premises, mass casualty incidents, or fire response. The private contractor holds primary responsibility for fires involving aircraft, and the Des Moines Fire Department retains fire and EMS responsibility for buildings and non-aircraft-related fires.

Currently, two hospitals operate air medical transport services within the City of Des Moines: Mercy One and Unity Point Iowa Methodist, both located in downtown Des Moines. Each has a primary rooftop and secondary ground landing pads. Two other ground landing pads are at Unity Point Iowa Lutheran and Broadlawns Hospitals.

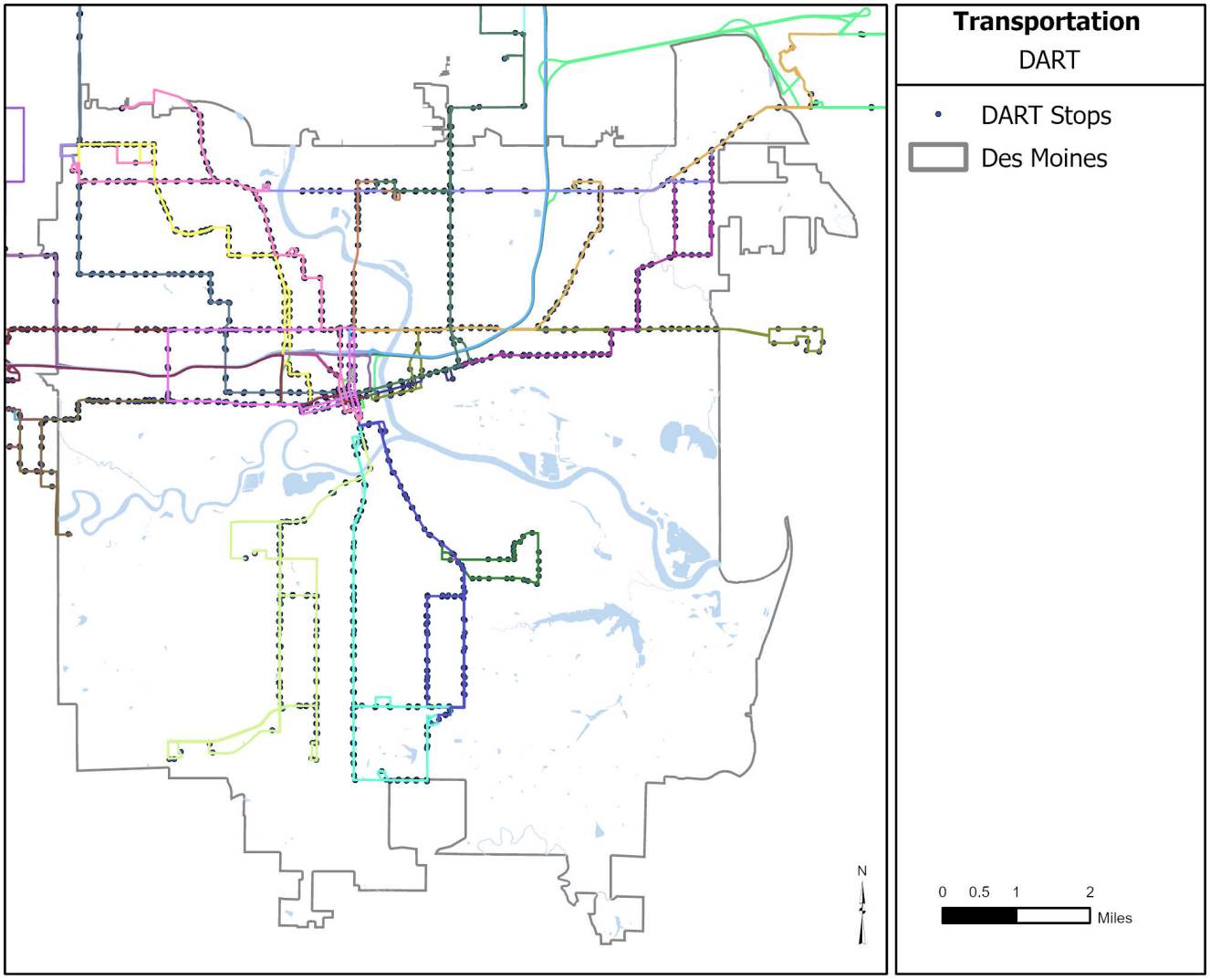
Map 10: Air Transportation



Bus

Des Moines Area Regional Transit (DART) provides local, express, and paratransit bus services to the metro. One hundred fifty buses transport an average of 15,664 riders daily and collectively drive 15,000 miles daily.

Map 11: DART Bus Transportation



Other Transportation

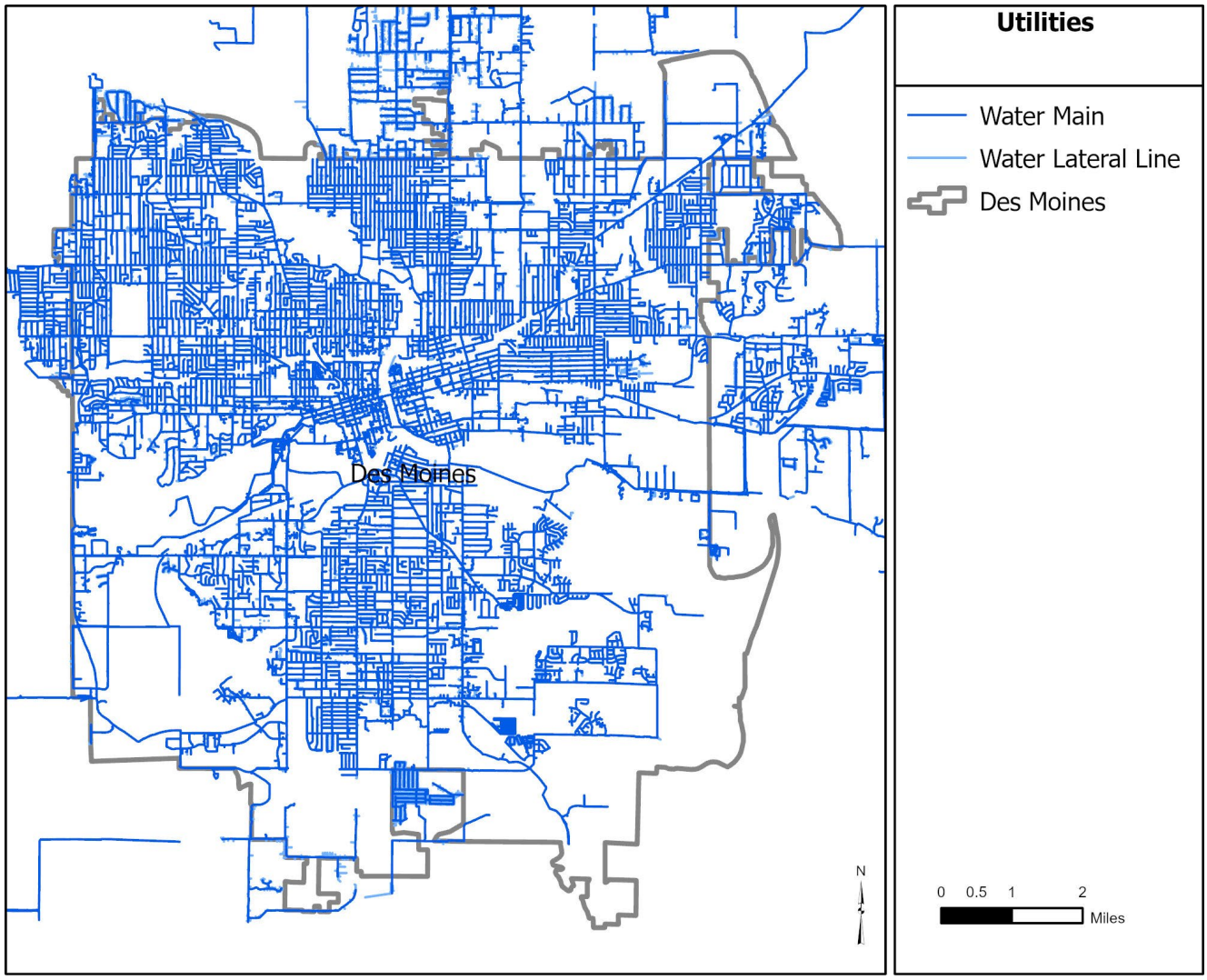
Detailed documents regarding the various transportation modes and critical transportation infrastructures are included in Appendix B.

Community Critical Infrastructure

The city of Des Moines is supported by the regional water utility, Des Moines Water Works (DMWW). DMWW provides drinking water to approximately 600,000 customers in the Des Moines metro area and sells water to many cities and other entities in central Iowa. DMWW maintains a robust network of water distribution piping which has several thousand fire hydrants within the city's service area. As a regional water utility, Des Moines Water Works is responsible for maintaining and upgrading critical infrastructure that supports or supplies water to the residents of Des Moines and surrounding communities.

DMWW operates three water treatment plants: Fleur Drive, L. D. McMullen Treatment Plant at Maffitt Reservoir, and Saylorville Water Treatment Plant. The utility maintains 1,400 miles of buried water mains with 9,800 valves, over 80,000 water meters and automated reading devices, nearly 10,000 fire hydrants, ten water storage tanks, and ten booster pumping stations. A map of the water distribution system can be seen below.

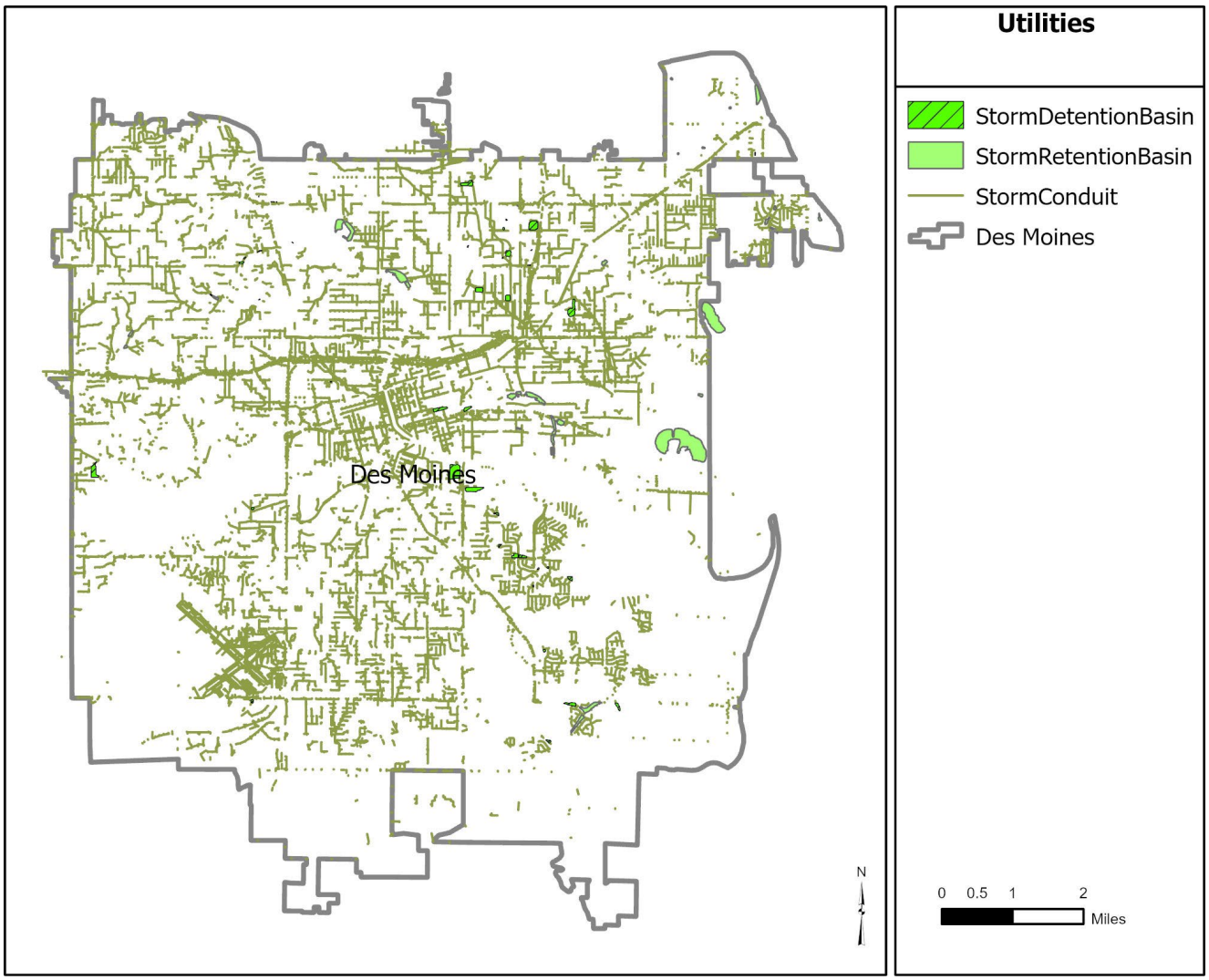
Map 12: Water Utilities



The city of Des Moines has recently made significant investments following its stormwater mitigation strategy. The city has invested in replacing its aging and undersized stormwater infrastructure. This process involves removing and replacing old wooden box culverts with new storm sewers, increasing pipe

diameter to mitigate flooding, and sizing retention/detention areas for current and future needs. In addition, the Stormwater Best Management Practices Rebate Program incentivizes property owners to improve their property to reduce the load on the city's stormwater management system. Examples of such practices include rain barrels, native landscaping, and rain gardens. These practices lead to the enhanced water quality of runoff, decrease the amount of runoff that ends up in the system, and repurpose the energy and nutrients of the water for healthier soils and landscaping. The city will reimburse property owners 50 percent of the cost of their qualified project, with a reimbursement limit of $2,000.

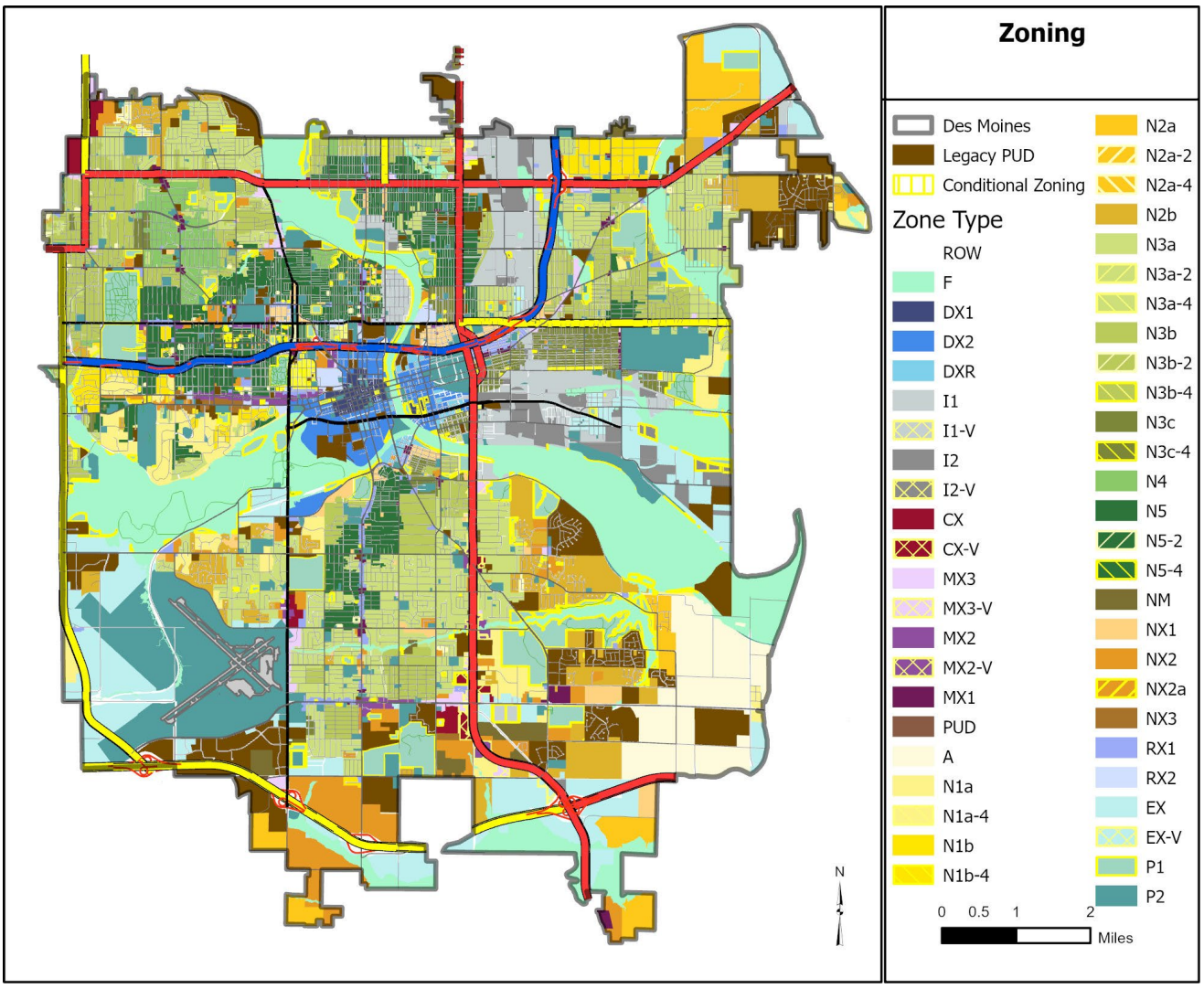
Map 13: Stormwater System



Community Land Use and Zoning

The DSM Planning and Zoning Commission oversees the preparation and administration of the comprehensive plan (PlanDSM Creating Our Tomorrow), zoning, long-range planning, site planning, land subdivisions, and public improvements as defined by codes; sets policy; and determines plan and zoning requirements. Iowa Code Section 414.6 Local authority is established in Chapter 134 of Municipal Code: Zoning Ordinance and Chapter 135 Planning and Design.

Map 14: Zoning



The impact of a strong planning and zoning organization provides insight into changing neighborhood and development impacts on the department. Examples include street design, population density, and construction typology changes. This and evolving construction techniques provide foresight toward ongoing risk analysis.

Community Topography

Most of Iowa's landscape is comprised of gently rolling hills or flat plains. The state's elevation generally increases from east-southeast to west-northwest. The state's terrain and rich soils are the products of the continental ice sheets that periodically covered the state during the Pleistocene Epoch, informally known as "The Great Ice Age" (about 2,600,000 to 11,700 years ago), creating what is now known as the "Des Moines Lobe." The Des Moines Lobe advanced first through Minnesota and South Dakota during the Wisconsinan (most recent) glaciation, across north-central Iowa, and finally stopped at what is now the city of Des Moines. Many river systems across this part of the state, including the Raccoon and Des Moines, are a product of this glacial meltwater.

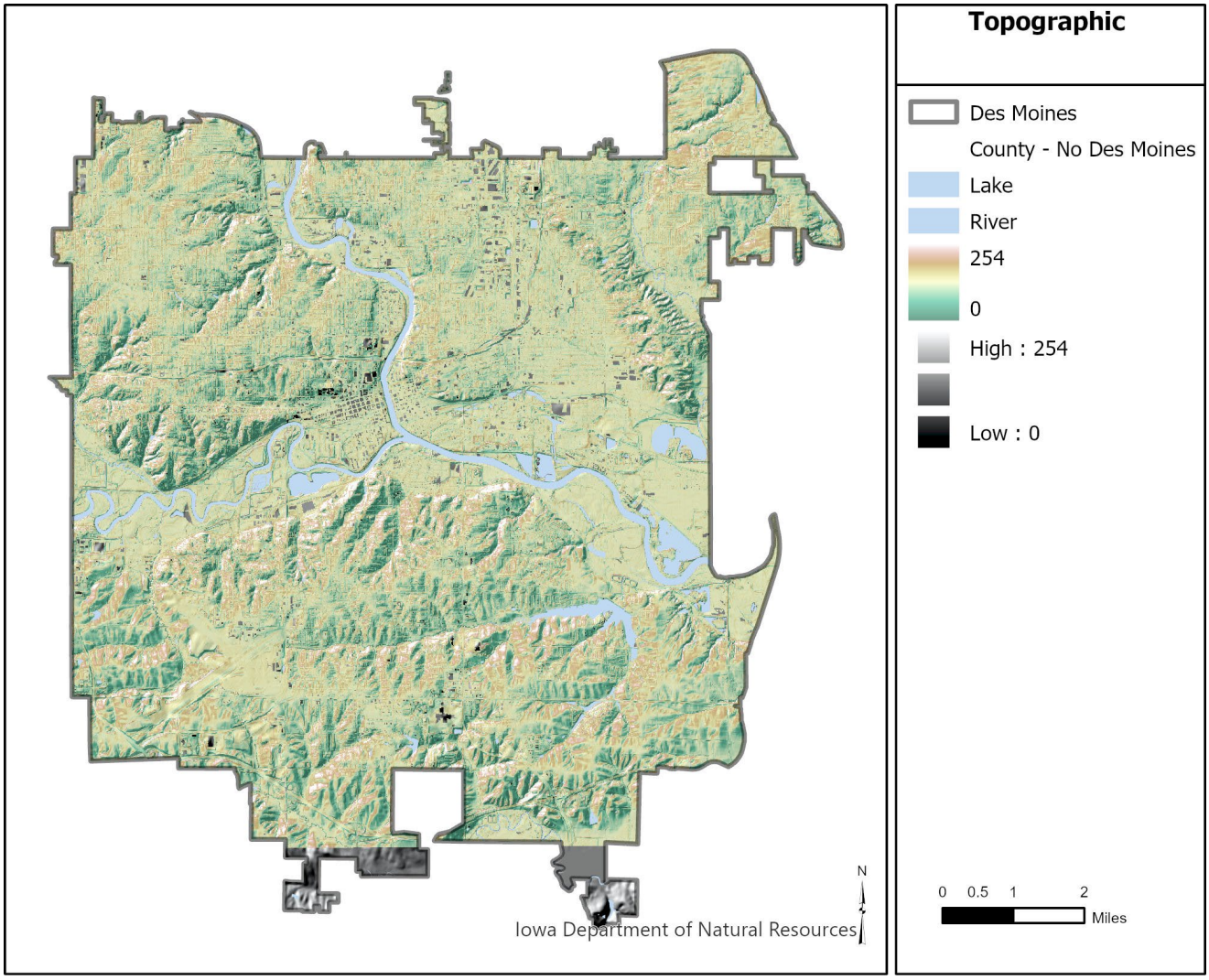
This area of knob-and-kettle topography is outlined by sharp ridges of hummocky terrain are places where the ice sheet remained stagnant for a prolonged period, allowing the glacial material - or drift - to pile up and create small hills (or knobs) and leave potholes (kettles) on the surface. Other features, such as the larger and higher ridges and deposits, formed in an area where glacial ice was especially mobile, where it left thick deposits of pebbly till, creating sharper ridges.

The city of Des Moines lies on the Des Moines River at its juncture with the Raccoon River in the south-central part of the state. The Des Moines River runs north and south, dividing the city into east and west halves. In the most prominent of these valleys, the Des Moines River flows roughly down the axis of the Des Moines Lobe landform region. The steep-sided valley, cut into Pennsylvanian bedrock, is dammed to hold back some of the river's flow, forming Saylorville Lake Reservoir, the only major artificial lake on the Des Moines Lobe.

Figure 3: Des Moines Lobe

The lowest geographical point in the metropolitan area is the Des Moines River, which passes the northeast corner of Warren County and the southeast corner of Polk County. The highest geographical point in Des Moines is the Drake Municipal Observatory operated jointly by the City of Des Moines and Drake University. It is located on the grounds of the Waveland Golf Course at 4908 University Avenue, Des Moines, IA 50311.

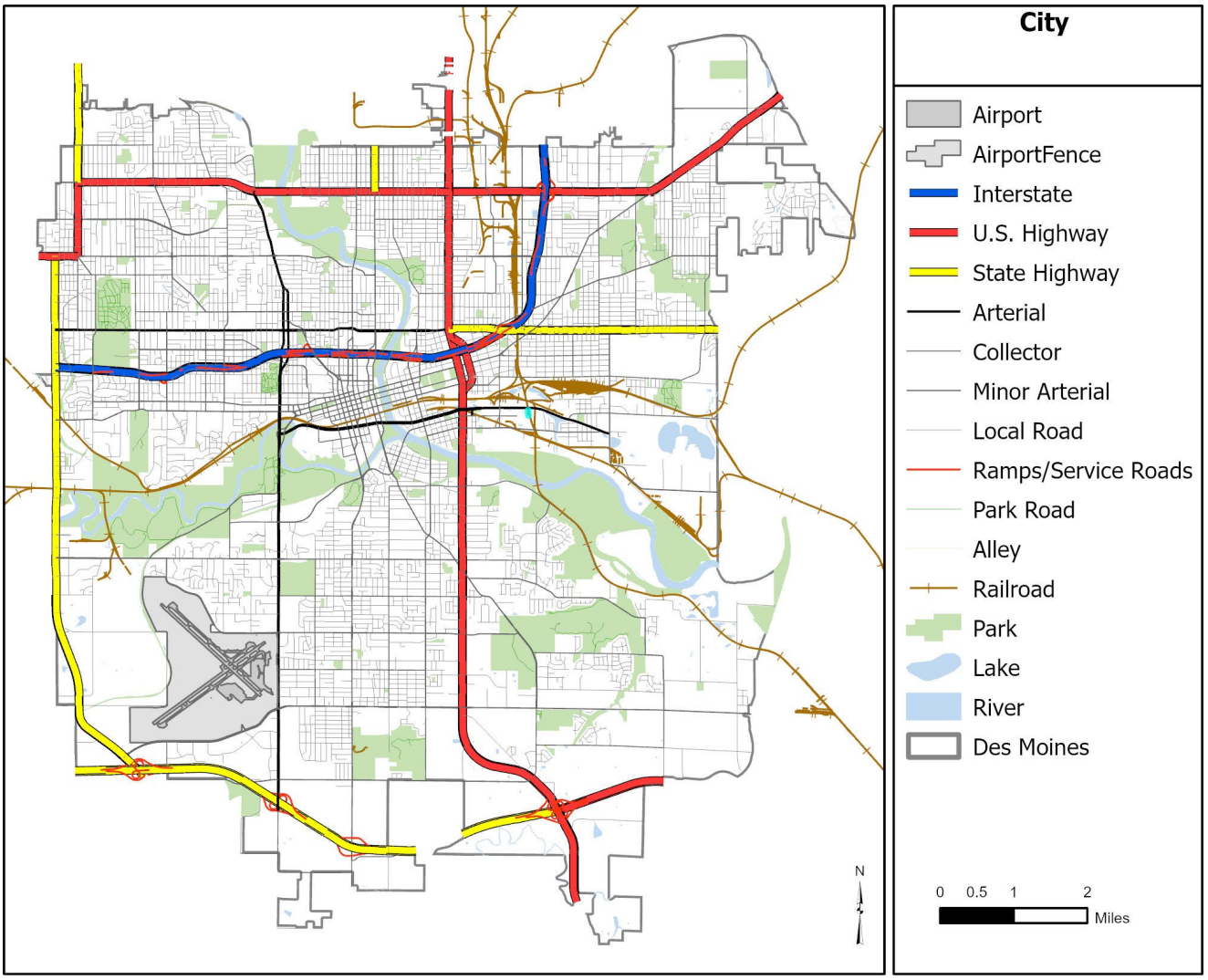
Map 15: Topography



Community Geography

The city of Des Moines, Iowa, is located at the confluence of the Raccoon and Des Moines rivers in South Central Iowa. It is the state capital and the state's most populated city. Its geography is an area of 91 square miles (1.7 square miles of which is water). Des Moines is centered on Latitude 41.6005448 and Longitude -93.6091064 decimal degrees with an average elevation of 850 feet above sea level.

Map 16: City of Des Moines



Community Geology

Geological concerns for Des Moines are focused on their effects on the natural water transportation systems and soil stability during construction activities. There are no other geologic interest in the Des Moines area.

The effectiveness of the water transportation systems is monitored due to the confluence of the Des Moines and Raccoon Rivers in the city's center and the other smaller creeks that pass through the residential neighborhoods. According to studies conducted by the United States Geological Survey, the bed of gravel and sand that makes up the alluvial aquifer in the waterways serves effectively during normal water flow. During times of increased water flow, the geological makeup of the alluvial aquifer has a negative effect on the waterways. It creates the potential for significant flooding in the area, as observed during past historical

flooding events. Porous soil conditions also allow for increased water nitrate levels from regional agricultural activities. The Des Moines River alluvial aquifer is an important water source for Des Moines Water Works, the municipal water utility that serves residential and commercial water needs in Des Moines and surrounding municipalities.

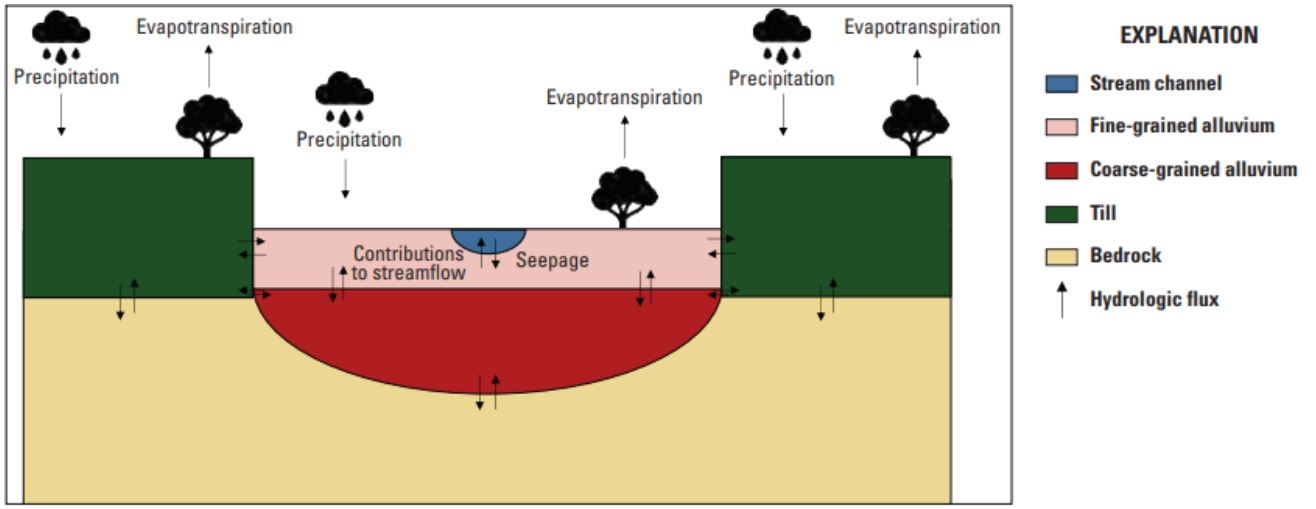
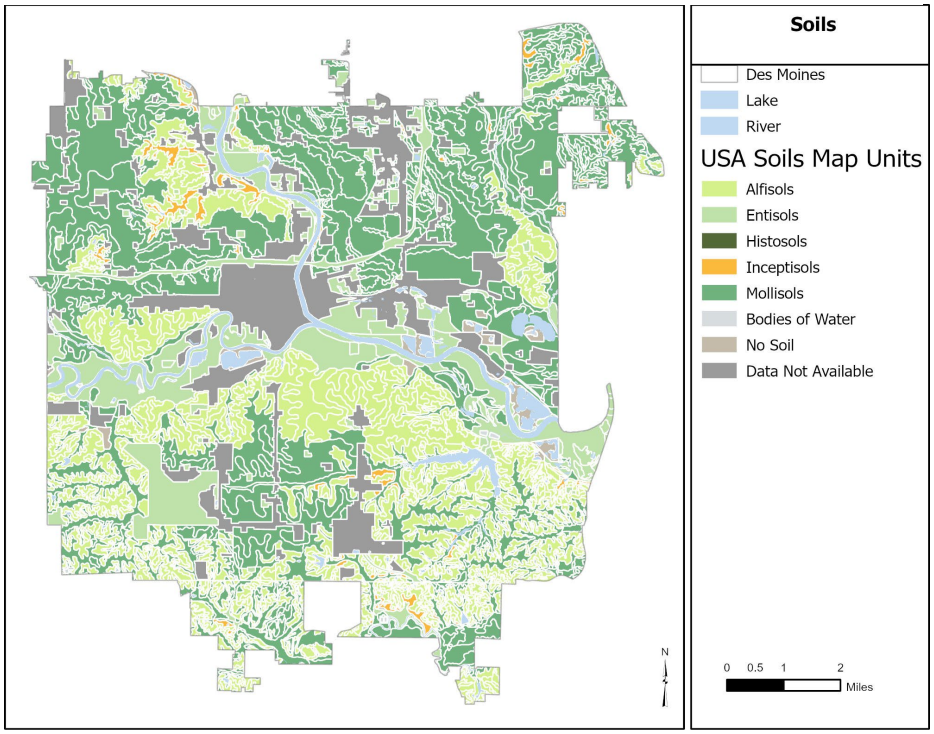


Figure 4: Water Cycle (Kendall M. FitzGerald)

Soil classifications in the Des Moines area are rated as Type B by Occupational Safety and Health Administration guidelines due to its loose composition and the ability to fissure. The geological composition of the soil includes sand, silt, gravel, and other granular compounds that limit the ability of the soil to be cohesive. The lack of soil cohesion makes any manufactured trench or excavation susceptible to collapse without shoring support.

Map 17: Soils



Community Physiography

Des Moines River Matin Luther King Pkwy Bridge

The city of Des Moines is situated on rolling terrain in south-central Iowa, 850 feet above sea level, along the banks of the Des Moines River, the longest river in the state. The tree canopy consists of green ash, silver maple, Norway maple, and sugar maple - the most popular tree species since the 1960s. This urban forest enhances the community by providing shading that cools homes during the summer, preventing soil erosion, and increasing property value. The emerald ash borer (EAB) was discovered in Iowa in 2010. EAB is a significant threat to all species of ash trees. The wood-boring pest tunnel beneath the bark in the vascular tissue, disrupting the transport of water and nutrients. Infested trees usually die within two to four years and are susceptible to damage in high wind events.

Community Climate

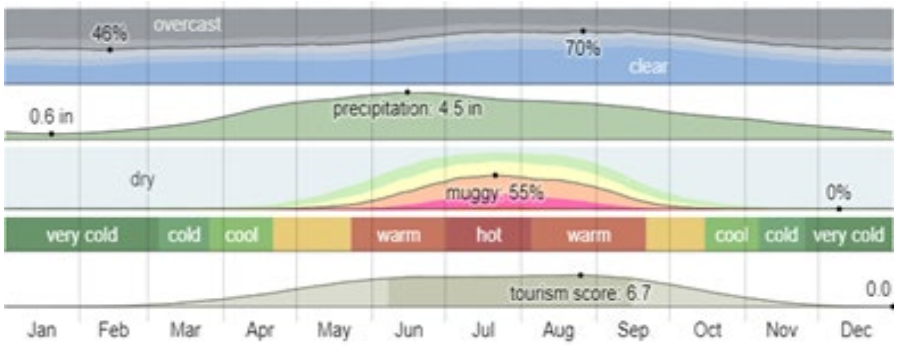


Figure 5: Climate

Des Moines, located near the center of North America and far removed from large bodies of water, experiences four distinct seasons. The Des Moines area has a hot summer-type humid continental climate, with summer temperatures often in the 90s and occasionally reaching 100°F. Humidity can be high in the spring and summer, with frequent afternoon thunderstorms. Fall brings pleasant temperatures and colorful fall foliage. Winters vary from moderately cold to bitterly cold, with low temperatures venturing below 0°F. Snowfall averages 35.3 inches per season, and annual precipitation averages 36 inches, peaking in the warmer months. Winters are slightly colder than Chicago but still warmer than Minneapolis, with summer temperatures similar to other Upper Midwest metropolitan areas.

Extreme winter condition

Firefighters are exposed to the extreme climate changes in Des Moines, which impacts the amount of time personnel and crews are able to operate before receiving rehab and recovery efforts. Heat exhaustion is a risk factor during the summer months, and icy conditions contribute to firefighter loss of time injuries due to slip and fall hazards. The snowy period of the year lasts for 4.3 months, from November 13 to March 22. The month with the most snow in Des Moines is December, with an average snowfall of 3.3 inches. Road conditions impact response times during the winter months due to snow and

ice hazards. Apparatus often utilize snow chains on apparatus when there are five inches or more of unplowed roads in the city.

The rainy period of the year lasts for ten months, from February 13 to December 25. The month with the most rain in Des Moines is June, with an average rainfall of 4.5 inches. The Des Moines River, the largest in Central Iowa, has a history of too much or too little water, depending on the season. Major floods occurred on the Des Moines River in 1851, 1903, 1935, 1938, and 1944. Following these floods, the Senate authorized a study of the Des Moines River to provide additional flood protection for Des Moines. Congress authorized the Des Moines local flood protection project on December 22, 1944. In 1958, Congress authorized the construction of Saylorville Lake by the U.S. Army of Engineers at a site about 11 miles upstream from the city. The principal purpose of Saylorville Lake is to provide additional storage to supplement the flood control, and in conjunction with local protection works of the city, it also provides flood protection.

During the great flood of 1993, heavy rains throughout June and early July caused the Des Moines and Racoon Rivers to rise above flood stage levels. The Des Moines Water Works was submerged by flood waters during the early morning of July 11, 1993, leaving an estimated 250,000 people without running water for 12 days and drinking water for 20 days. With fire hydrants unavailable, the fire department relied on semi-tanker trucks strategically assigned at fire stations to respond to structure fires with fire apparatus to establish a water supply. In 2008, the city of Des Moines again suffered major flooding. In the 1993 and 2008 flooding events, flood waters overtopped the Saylorville Lake reservoir contributing to major flooding downstream in the city.

Saylorville Spillway

Due to the topography of Des Moines, it is not uncommon to experience flash flooding events in the city. On June 30, 2018, following a series of thunderstorms, the city of Des Moines experienced a flash flood that resulted in people being trapped in vehicles and homes being inundated with flood water. The majority of water emergencies traditionally occur on the Des Moines River system, but flash floods require swift water rescues and evacuation efforts by the fire department.

While not an official designation, Iowa and the states of Texas, Oklahoma, Kansas, Nebraska, Missouri, and South Dakota are commonly referred to as tornado alley. These states see the most tornado activity nationally. The state of Iowa experiences approximately 48 tornadoes annually. On March 6, 2022, an Enhanced Fujita (EF) 3 tornado struck the City of Winterset, traveling northeast and impacting the far southeast area of Des Moines, causing structural damage and downed power lines. Fire apparatus travel was impacted as some streets were impassable due to debris and downed power lines.

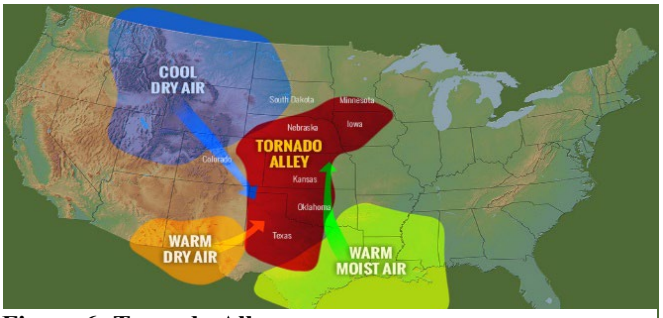


Figure 6: Tornado Alley

The windier part of the year lasts 7.9 months, from September 30 to May 27, with average wind speeds of more than 10.4 miles per hour. The windiest month of the year in Des Moines is March, with an average wind speed of 12.5 miles per hour. The wind is most often from the north for 3.7 months of the year. On August 10, 2020, Des Moines experienced a derecho, a long-lived line of thunderstorms that produced

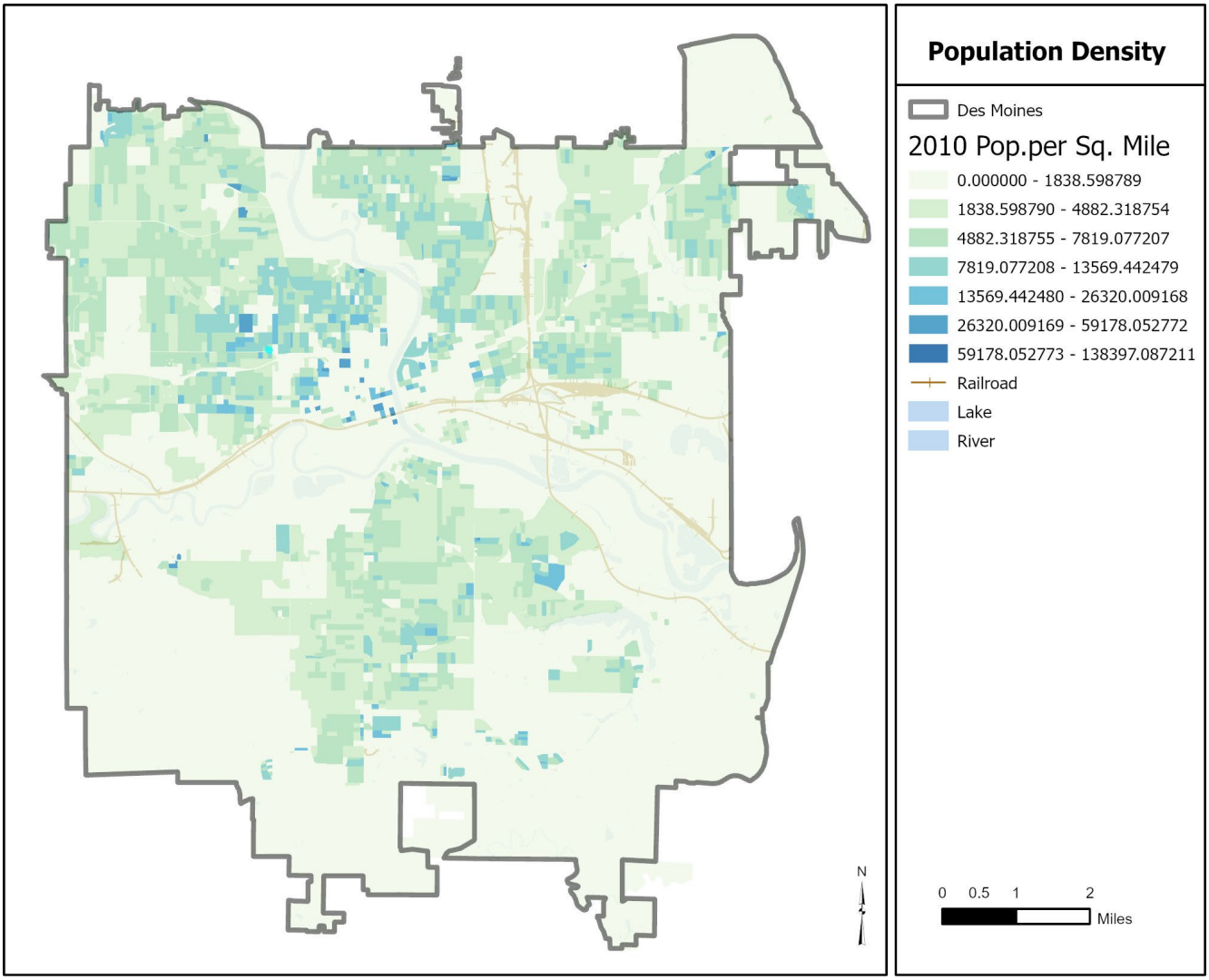
significant wind gusts, causing widespread damage. This weather phenomenon downed trees and power lines and caused power surges and transformers to fail, responses to structure fires and medical emergencies, increasing the calls for service by the fire department. Damaged trees and debris resulted in Public Works hauling away 250,000 cubic yards of debris during the aftermath of this storm.

Community Population/Population Densities

The city of Des Moines' population has shown a 5.5 percent increase from 2010 to 2020, with the most recent data showing 214,133 residents. In accordance with census data definitions, the entirety of the city is considered to be urban population. While several portions of the city would anecdotally be described as rural; for this study, all planning zones within the city have been classified entirely as urban. The city's aggregate population density is about 2,400 people per square mile, which meets the Census Bureau's definition of urban or city. The downtown business district increases the population density during typical business hours. This district is comprised of multiple corporations that employ over 80,000 people in this Des Moines metropolitan area.

Another area of drastic density fluctuation is located on the city's east side, at the Iowa State Fairgrounds. Every August, the Iowa State Fair opens for ten days and has consistently averaged a daily attendance of over 100,000 people since 2002. In 2019, the overall attendance was 1,170,375 - an all-time record.

Map 18: Population Density

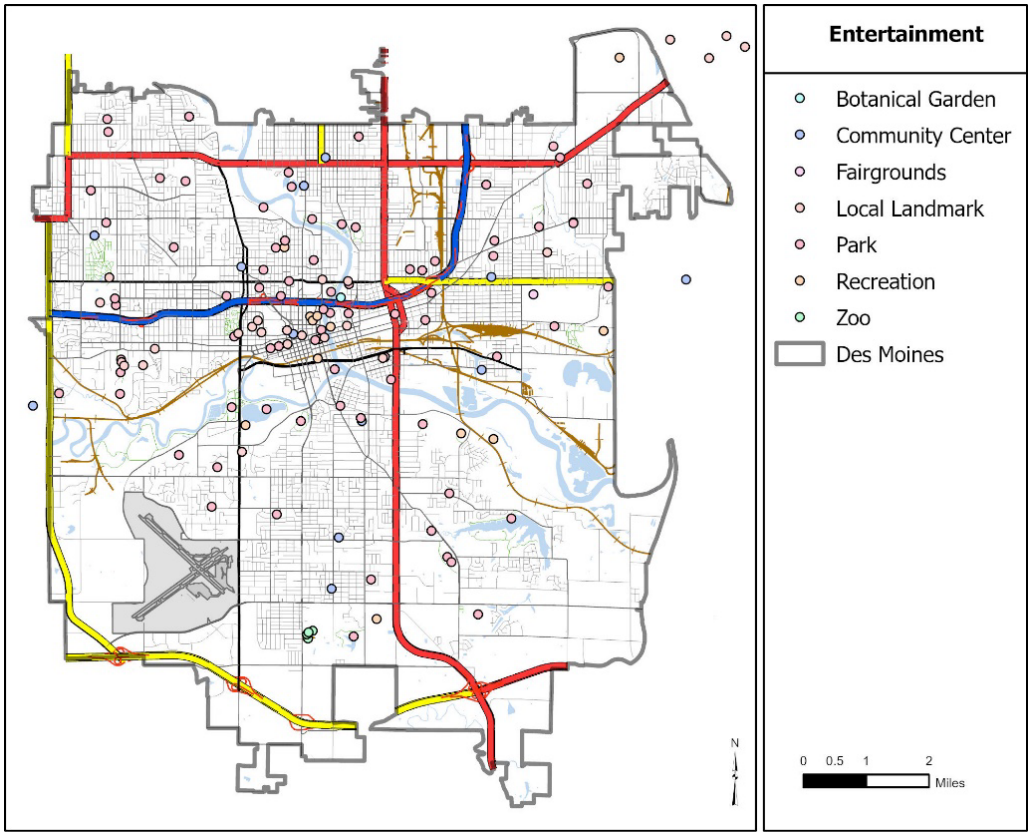


The downtown area hosts numerous festivals, concerts, and the nationally recognized, regional favorite Downtown Farmer's Market, attracting around 25,000 people each Saturday. The outdoor gatherings, such as the Des Moines Art Festival, 80/35 Music Festival, Dew Tour, and Greater Des Moines Partnership's World Food and Music Festival, span a long calendar weekend and can attract anywhere from 90,000 to 200,000 people depending on the event and weather.

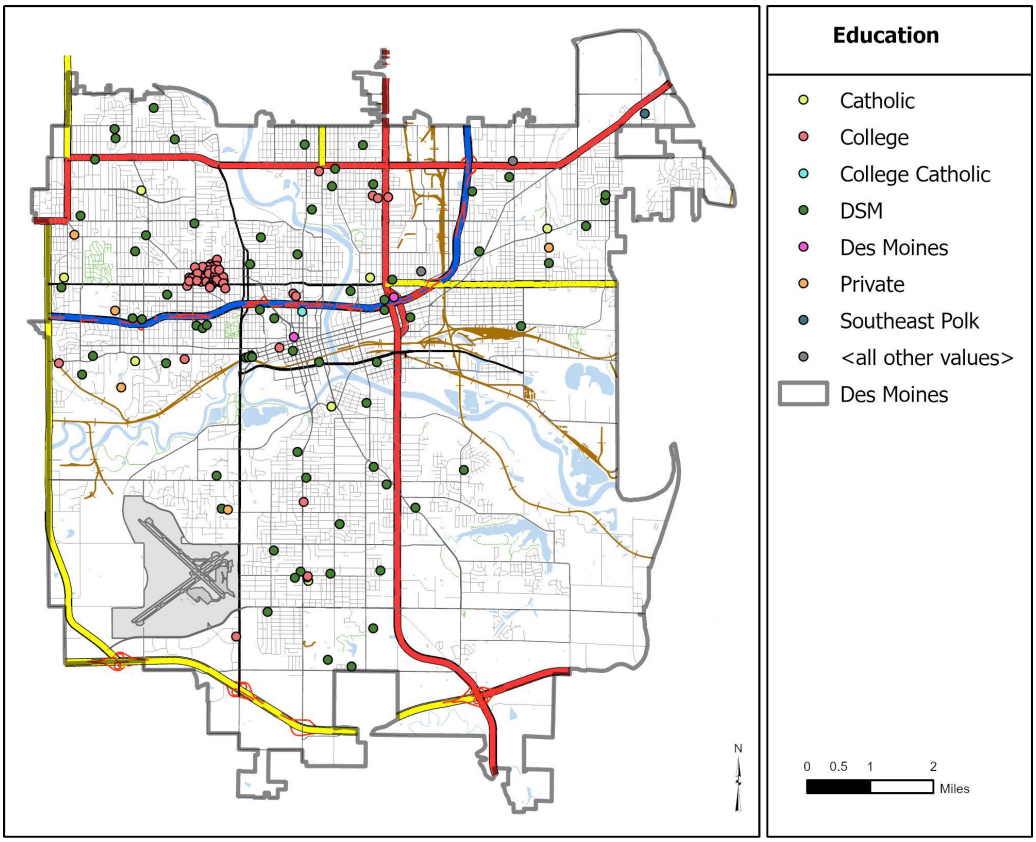
Wells Fargo Arena and Iowa Events Center are also located in the downtown area. These venues hold numerous events and concerts throughout the year, providing space for large occupancy levels of 17,000 and 6,233, respectively. The Lauridsen Skate Park is located adjacent to the Iowa Events Center, and is the largest of its kind in North America. The park, which opened in 2021, hosted the largest Olympic qualifying event (The Dew Tour) immediately after it opened. The public utilizes the park during all hours of the day. It is anticipated that additional large-scale skating competitions will be held within the park.

Additionally, Des Moines is home to many educational institutions hosting events such as Drake Relays and more modest high school sporting and performing arts events. Des Moines has an award-winning parks system that also provides areas to be enjoyed by citizens and visitors. These locations are distributed throughout the city.

Map 19: Entertainment



Map 20: Education



Community Demographic Features

As the capital of the state of Iowa, the city of Des Moines has a population diverse in culture with a strong sense of community. Additionally, in contrast to the State of Iowa, the city's population is above average when comparing African American, Hispanic, and foreign-born residents. The median age of residents is significantly less than that of the state.

Des Moines has a stable tax base, strong local government, and a well-educated population with a strong work ethic. In contrast to Iowa averages, Des Moines has a lower unemployed status percentage.

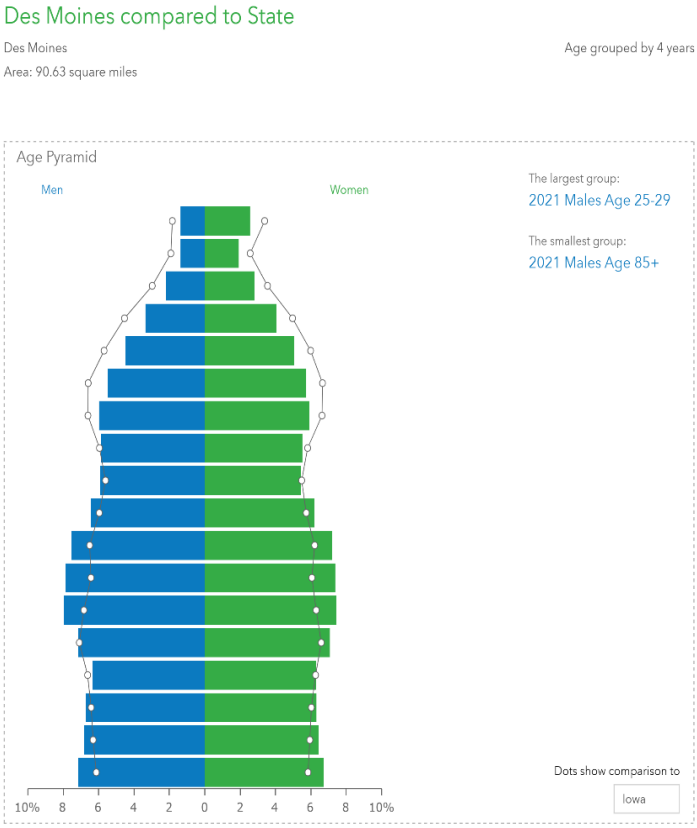
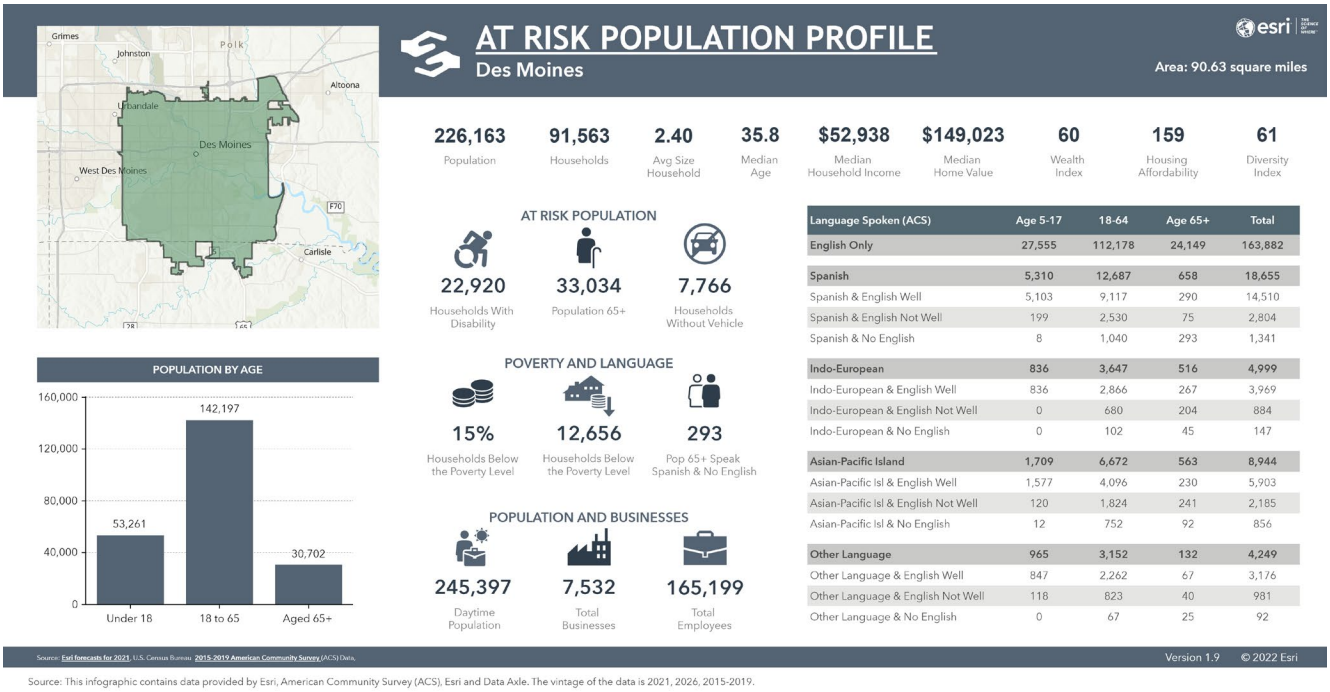


Figure 7: Age Breakdown



Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	27,555	112,178	24,149	163,882
Spanish	5,310	12,687	658	18,655
Spanish & English Well	5,103	9,117	290	14,510
Spanish & English Not Well	199	2,530	75	2,804
Spanish & No English	8	1,040	293	1,341
Indo-European	836	3,647	516	4,999
Indo-European & English Well	836	2,866	267	3,969
Indo-European & English Not Well	0	680	204	884
Indo-European & No English	0	102	45	147
Asian-Pacific Island	1,709	6,672	563	8,944
Asian-Pacific Isl & English Well	1,577	4,096	230	5,903
Asian-Pacific Isl & English Not Well	120	1,824	241	2,185
Asian-Pacific Isl & No English	12	752	92	856
Other Language	965	3,152	132	4,249
Other Language & English Well	847	2,262	67	3,176
Other Language & English Not Well	118	823	40	981
Other Language & No English	0	67	25	92

Source: This infographic contains data provided by Esri, American Community Survey (ACS), Esri and Data Axle. The vintage of the data is 2021, 2026, 2015-2019.

Figure 8: Demographic Details

Regarding diversity, Des Moines has a diversity index of 61. The diversity index summarizes racial and ethnic diversity. The index shows the likelihood that two persons, chosen randomly from the same area, belong to different races or ethnic groups. The index ranges from 0 (no diversity) to 100 (complete diversity). For example, if an area's entire population belongs to one race or ethnic group, then an area has zero diversity. An area's diversity index increases to 100 when the population is evenly divided into two or more race/ethnic groups.

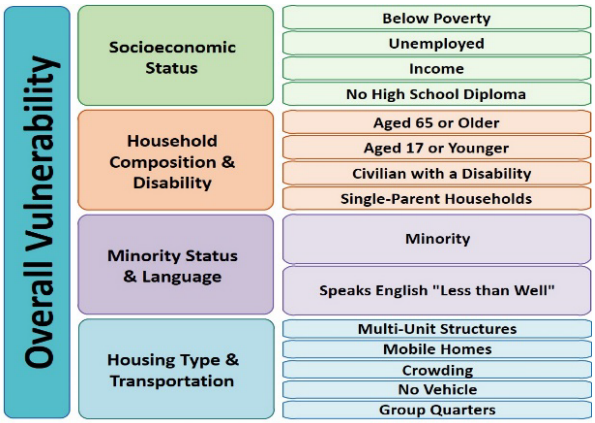
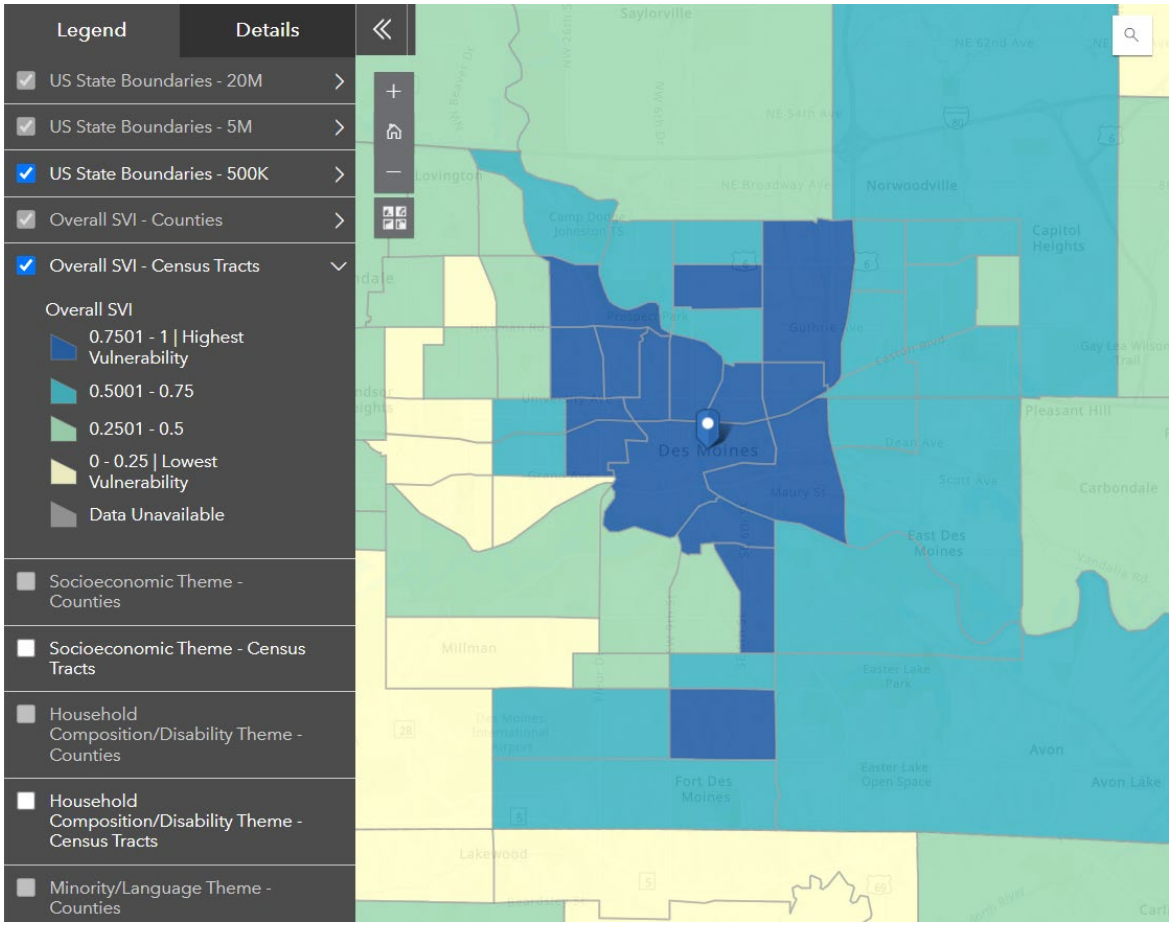


Figure 9: Census Data Elements in SVI

To better understand the community's vulnerabilities and ensure equity in service delivery, the Social Vulnerabilities Index (SVI) established by the Centers for Disease Control Agency for Toxic Substances and Disease Registry (CDC/ATSDR) uses census data elements. The 15 elements included are in the figure above. Further analysis is needed to examine the census tract data related to the city of Des Moines.

The following map shows the general area of the city and the overall social vulnerability at the census tract level. Most of the population within Des Moines falls into the highest vulnerability category.

Map 21: Social Vulnerabilities Index



B. History of the Agency

Major Historical Milestones of the Department

1865-1875

The first fire company in the city of Des Moines was organized in 1865 and was known as the "Hook & Ladder." After the city had purchased an engine, the company was reorganized as the "Hawkeye Hose Company," with Charley Spofford as chief engineer.

In 1867, another company was organized, and the first regular meeting was held on April 1st. This company was tendered to the city and was named the "Rescue Hook & Ladder Company." On April 8th, the city council voted to purchase a hook and ladder, which upon delivery, was placed under the charge of the company, and Charley Spofford was elected chief engineer once again. This company was credited with doing effective service; however, in 1868, after the city purchased a steam fire engine for their use (called "The General Crocker"), the company was once again reorganized into a new company called the "Excelsior Hook & Ladder Company." Shortly after, both organizations constituted one department named "Rescue No. 1," with Spofford as chief. Also, when they were not in use, Spofford allowed the steamer and hook & ladder to be stored in his barn on West 5th Avenue. Eventually, Spofford was succeeded as chief by General N. B. Baker, followed by John Miller, then Wm. P. Dexter.

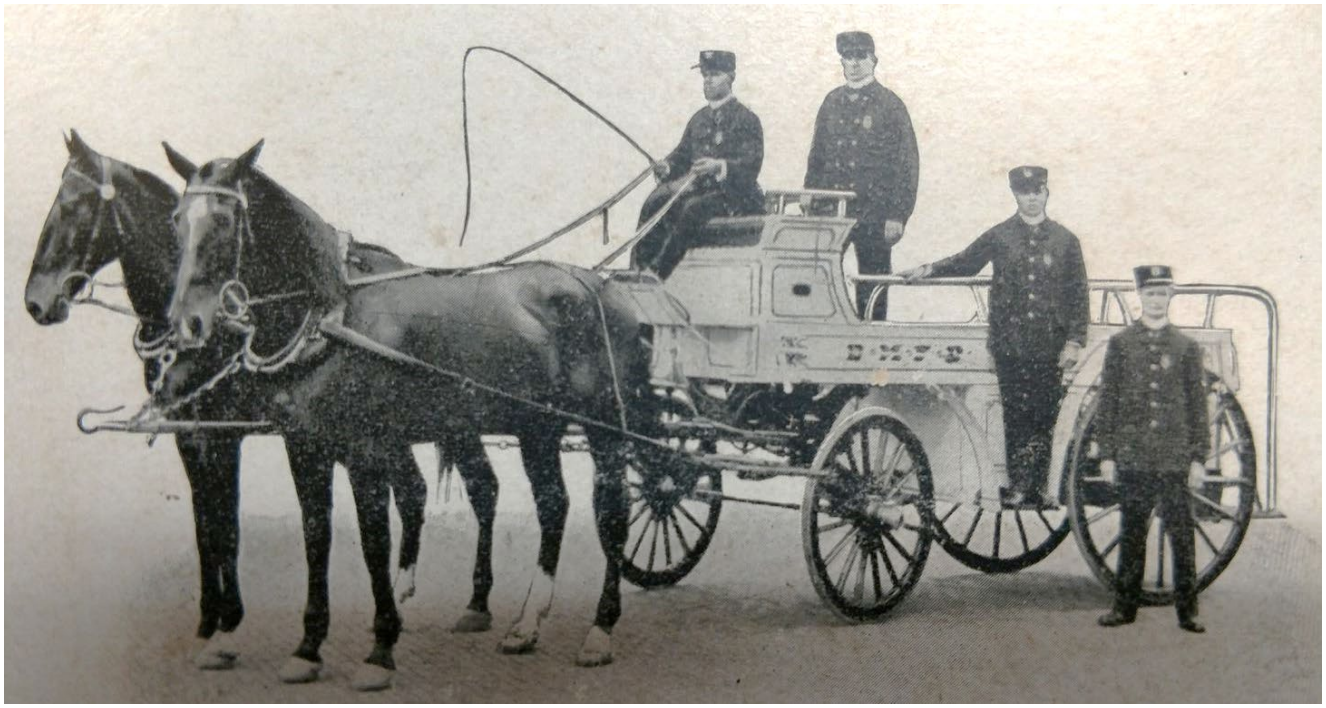
The consolidated organization operated with few changes until the advent of the Water Works in 1870. It was then that a new company, known as "Fellowship Hose Company No. 2," was organized in East Des Moines, followed by the construction of engine houses on West Locust and East Court Avenue between 6th Street and 7th Street on the north side of the road. It was also during this time that Wm. Nafie was elected chief. Also in 1870, three large cisterns were constructed at three strategic locations in the city.

In 1871, the department was a volunteer department with two hose reels on each side of the river. The volunteer fire chief was paid $400 per year, while the 25 volunteer firefighters were each paid $50 per year. The department remained a volunteer department until the eventual great fire in the Clapp Block in the winter of 1882-83 prompted the organization of the first paid department.

On June 6, 1873, a meeting was called by Chief Nafie at which another consolidation was affected under the name of the "Hawkeye Hose and Ladder Company of Des Moines." This consolidation created a new fire department that consisted of two divisions and covered the entire city. It was then that city ordinance authorized Division No. 1 as the "Hawkeye Hose & Ladder Company." Then, on June 16, 1873, the organization of Division No. 2 was completed as the "Fellowship Hose Company."

1875-1885

The fire department seems to have functioned under the previously mentioned two division system until the establishment of the paid fire department in February 1883. Chief Nafie was succeeded in order by Chiefs C.T. Hahnan and Jacob Stroll, Ream C. Johnson in 1876, John McGuire in 1878, W.A. Mosier in 1880, and Ream C. Johnson again in 1882. Ream C. Johnson was chief when the paid department was established and continued in that role until 1892. In 1883, the fire chief was paid $1,000 per year, the assistant chief was paid $900 per year, and 15 firefighters were each paid $50 per month.



Jack and Jack Pulling a Hose Wagon

The paid fire department, as organized in 1883, had seventeen personnel on the payroll, a fire station on the east side of the river, a fire station on the west side of the river, and equipment consisting of two hose carts, a small chemical engine, and a ladder truck. In 1885, the department was increased with ten more personnel, two chemical engines, and two hose carts. 1885 also saw the construction of Station No. 3, located at East 12th Street and Des Moines Street. Twenty years later, Station No. 3 was made a double company station.

1885-1895

Station No. 4 was built at West 8th Street and Laurel Street in 1886. In 1887, seven more firefighters were added, and Station No. 5 was built at West 17th Street and Crocker Street. Station No. 5 was made a double company station ten years later. 1890 saw the construction of Station No. 6 at South Union Street and Edison Avenue. During this time, the fire department was made up of 52 personnel, 29 horses, and six fire stations. The inventory consisted of 9,700 feet of rubber hose and 1,000 feet of cotton hose.

April 14, 1890 brought the then-famous Starch Works fire. The C. Gilbert Starch Works, a starch manufacturing company, was located in the southeast section of the city known as the Chesterfield area. A fire destroyed the entire plant one day after National Starch purchased Gilbert Starch Works. The story is

told that so much starch was blown around the city that the horses thought it was snow and froze to death. Unfortunately, although National Starch covered the costs of the loss and built a new factory, it too was destroyed by a fire in 1901.

In 1892, Martin Melander was appointed chief, succeeding Ream C. Johnson. In 1893, Station No. 7 was built at East 12th Street and Cleveland Avenue. Station No. 7 remained in use until November 17, 1916, when Hose Company No. 7 moved, and Station No. 7 was assigned to a new building at East 13th Street and Hull Avenue. John W. Monarch was appointed chief in 1894, but before his two-year term had expired, he resigned to engage in the sale of fire equipment, and Martin Melander once again assumed the duties of chief.

During the year 1894, the following stations were added: Station No. 8 at SE 6th Street—then known as the "Southeast Flats"; Station No. 9 at East 18th Street and Walnut Street; Station No. 10 at West 6th Street and Clinton Avenue (Highland Park); and Station No. 11 at West 24th Street and North Street. Station No. 11 was made a double company station on November 19, 1938, when the use of Station No. 5 at West 17th Street and Crocker Street and Engine Company No. 11 was discontinued. Station No. 11 was then known as Station No. 5 for the remaining years of its existence at this location.

Fire Station #11 (24th & North Streets)

1895-1905

1896 saw a department that was composed of 61 personnel, 11 stations, 10 hose wagons, three modern (then) chemical engines, two large aerial trucks, one small ladder truck, four combination hose, and chemical wagons, a hose reel cart, and the carriages of the chief and assistant. Also in 1896, Will Burnett was appointed chief after serving as assistant chief since February 22, 1895. Burnett served as chief of the department until his death on March 27, 1937, due to burns he sustained at a fire on March 26th.

In 1900, the firefighters were granted a 24-hour leave every seventh day. From establishing the paid department in 1883 until this point, firefighters were allowed only one night off every seventh day.

Station and Hose Company No. 12 were added to the department in 1901 in a new building located at 535 West 40th Street. In 1903, Hose Company No. 13 was added and housed in a rented building at West 8th Street and Mulberry Street and 716 Mulberry Street until December 16, 1937. Hose Company No. 13 was then moved to the new central fire station at West 9th Street and Mulberry Street, where it continued as Engine Company No. 13 after its name had been changed to an engine company on August 11, 1919. In 1904, Station and Hose Company No. 14 were added to the department in a new building at East 28th Street and Dean Avenue. This was changed to an engine company on January 17, 1939.

1905-1915

In 1907, Station No. 15, Hose Company No. 15, and Truck Company No. 15 were added to the department in a new building at West 7th Street and College Avenue. Hose Company No. 15 was changed to Engine Company No. 15, and Truck Company No. 5 was changed to Truck Company No. 15 in December of 1937, both of which remained in service at Station No. 15. Also in 1907, Station No. 4 was built at 1041 West 8th Street, replacing the one located at 8th Street and Laurel Street.

1907 also brought a bill enacted by the Iowa Legislature that provided for municipal civil service in paid fire departments. Following this statute, on June 13, 1908, the Des Moines City Council passed ordinance number 1531, providing for the establishment of civil service in the fire department, which was carried out.

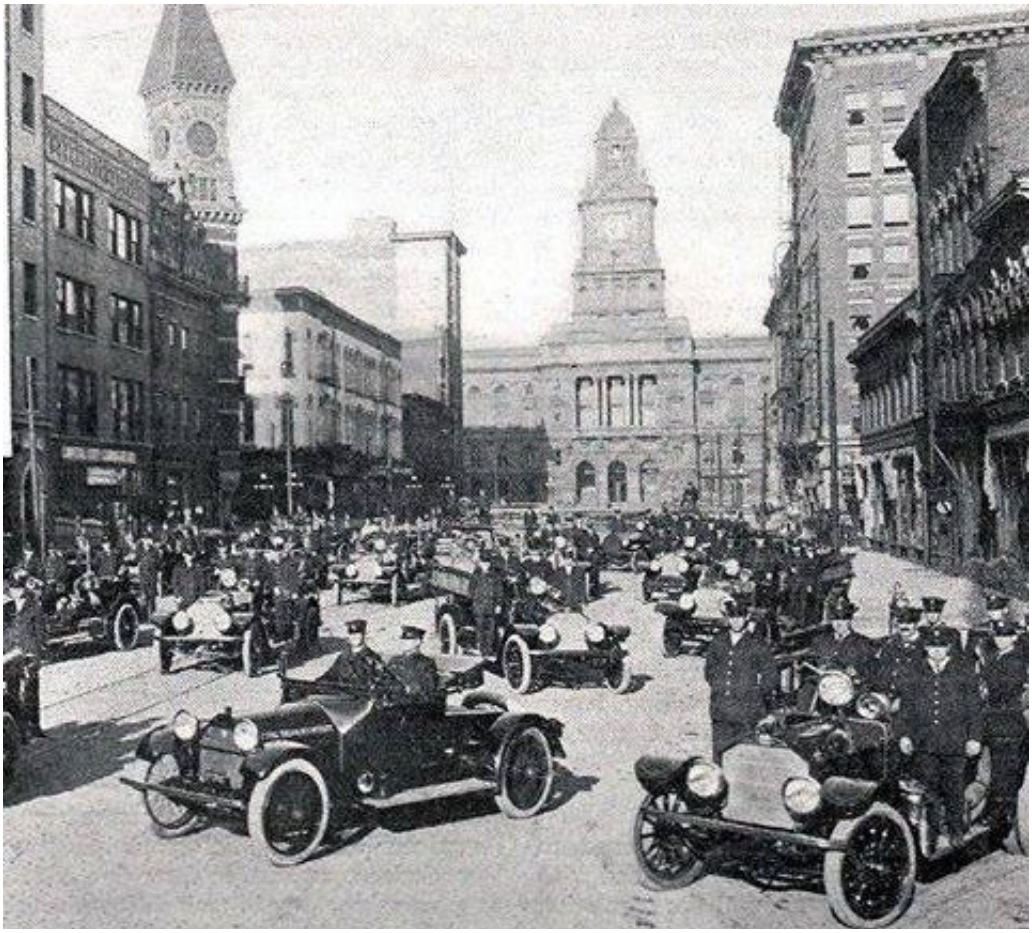
In 1909, the legislature enacted a bill that made the creation of pension funds mandatory for disabled and retired police officers and firefighters. This law, amended from time to time, still applies to all firefighters employed before April 1, 1934. At this time, the legislature, by statute, created a new actuarial retirement system applicable to all civil service police officers and firefighters employed or appointed after that date.

On February 17, 1913, the city council passed ordinance number 2070 providing that after July 1st of that year, "each man employed as a fireman in the City of Des Moines, Iowa shall be entitled to twenty-four (24) hours leave of absence every fourth (4th) day." This superseded the 24-hour leave every seventh-day policy, which had been in effect since 1900.

The first Des Moines Fire Department motor-driven fire apparatus was placed in service in 1913. The apparatus consisted of one American LaFrance four-wheel tractor, received on August 28, 1913, for the aerial ladder truck then in service; one American LaFrance service ladder truck; and two Seagrave hose carts. In 1914, the fire department was further motorized by the purchase of 12 pieces of fire apparatus. The addition of this apparatus completely motorized nine of the 15 fire stations, leaving only six single company stations with horse-drawn apparatus.

1915-1925

The motorization of the fire department was completed by 1919. Also, on May 1, 1919, the two-platoon system was established. This divided the operating personnel into two shifts, or platoons, alternating on duty every 24 hours. The establishment of the two-platoon system resulted in the addition of 56 personnel to the fire department, bringing the total personnel number to 182. By October of that year, staffing had increased to 200.



Motorized Apparatus Fleet circa 1920

On January 21, 1921, an ordinance was passed that made the city fire marshal an officer in the fire department, bringing the total number to 201. 1921 also saw the construction of Station No. 16 at SW 9th Street and Thornton Avenue; however, this station was never used by the fire department. By October 1, 1925, the fire department had increased to 202 members - the greatest number the department had regularly to this date.

1925-1935

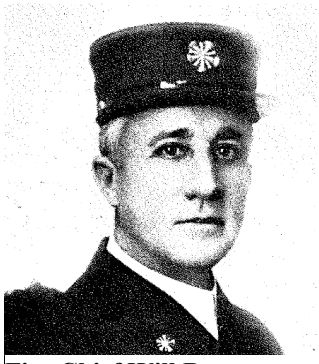
In 1926, the city council ordered a reduction in the manual force of 22 members. This reduction resulted in the honorable discharge of 22 personnel on May 1, 1926, and brought the total number of personnel to 180 members.

On May 28, 1928, by a city council resolution, the position of drill master was created. Firefighter William Mattson was appointed acting lieutenant and was the first to hold the drill master position. Mattson was then sent to Chicago for one month to train at that city's fire school. About this time, a four-story drill tower was erected on the west side of Fire Station No. 2 at 411 E Walnut Street for $2,349.50. Before the construction of the drill tower, a vacant, three-story building located at E 2nd Street and Walnut Street was used as a drill tower.

In the fall of 1928, Station No. 17 and Hose Company No. 17 were added to the department. The addition of the new station and hose company added six members to the department, bringing the total number of personnel to 186. A leased building at Beaver Avenue and Urbandale Avenue housed those assigned to that company.

1935-1945

Following the death of Chief Will Burnett on March 27th, 1937, the city council appointed Captain Charles L. Slade as chief on June 15th, 1937. During the same year, construction was completed on the Headquarters Building and Central Station No. 1. The new construction included the fire department shop and a drill tower, located on the half-block on the west side of West 9th Street, between Mulberry Street and Cherry Street. Construction began prior to the death of Chief Burnett.


Fire Chief Will Burnett

On December 16, 1937, Companies No. 1 from the old central station located on West 2nd Street and Grand Avenue, and Engine Company No. 13 from the leased station located on West 8th Street, moved into the new Central Station No. 1. The consolidation reduced the number of fire stations in use to 15. A new Truck Company No. 1 and Aerial Truck Company No. 1 were established to operate out of the new station. The addition of the new companies resulted in 23 apparatus operating out of those 15 fire stations. Also in 1937, the first radio-receiving equipment, operating through the police department radio station, was installed in the chief's car. The same equipment was added to the assistant chief's car in 1938.

Engine Company No. 11 was discontinued on November 29, 1938. Also, Station No. 5 at West 17th Street and Crocker Street was closed, and Station No. 11 at West 24th Street and University Avenue became the new Station No. 5. The new Station No. 5 housed Engine Company No. 5 and Truck Company No. 5. Also in 1938, the use of 1 ½ inch fire hose was placed on a few of the engine companies as new equipment. By 1939, all engine and hose companies were equipped with 1 ½ inch hose. 1939 also saw fire dispatchers working eight-hour shifts, seven days a week, but by the end of 1939, dispatchers were granted three days off following nine workdays.

On April 15, 1940, an ordinance established the fire department's fire prevention bureau (FPB). Within the bureau, the chief of the department also served as chief of the bureau, the city fire marshal served as chief

inspector, and all others holding the rank of officer served as inspectors. The first inspections were conducted on May 7, 1940.

1945-1955

In 1950, Station No. 18 was built at 2458 Easton Boulevard. It was opened as a double company station on August 17th and housed Engine Company No. 18 and Truck Company No. 18. In 1952, Station No. 17 was built at Beaver Avenue and Hickman Road.

1955-1965

In 1956, Station No. 8 at 511 SE 6th Street was closed, and Engine Company No. 8, with its 750-gallon pumper, was temporarily transferred to the fire station in the Fort Des Moines Housing Area (No. 87, Chaffee Road). The temporary move was to provide fire protection to the newly annexed Bloomfield Township area. In addition to the pumper, a 1,200-gallon tank truck from the Municipal Garage was stationed with Company No. 8 as part of their equipment. Also, in February of 1956, Chief Charles L. Slade retired, and Wayne E. Ulm was promoted to chief on February 14th.

On January 1, 1957, the work week was reduced to 67 hours per week, with every fifth working day off. Then, on January 1, 1959, the 63-hour work week was started with every fourth working day off. Also in 1959, on-the-job sick leave injury was not charged against sick leave credit beginning on November 20th.

Taxpayers approved a bond issue in the November 1958 election that allowed for the construction of two new fire stations in 1959. The total cost of the additional stations was $375,000. A second bond issue was approved for $365,000 to purchase new fire apparatus.

In 1959, Station No. 16 was built at 1241 SW McKinley Avenue, with personnel and equipment taking residence on September 30, 1959. All personnel from Station No. 8, located at No. 87 Chaffee Road in Fort Des Moines, were transferred to this station. It was opened as a double company station and housed Engine Company No. 16, Truck Company No. 16, and Tanker No. 16.

1955-1965

On February 23, 1960, the street alarm boxes went into effect. There were 32 installed in 1960, 50 installed in 1961, and 47 installed in 1962 for 129 total street alarm boxes. A two-place console telephone switchboard was also installed in 1960. 1960 also saw the construction of Station No. 15 at 917 University Avenue. Personnel and equipment from old No. 15 and No. 4 were moved into the new station. Fire Station No. 4 was discontinued and was utilized as storage space for fire apparatus for some time.

In 1961, Station No. 5 was built at 3226 University Avenue, and the old station was sold. Personnel and equipment were moved in on February 15th. Engine No. 5, Truck No. 5, and Rescue Company No. 5 were put into service. In 1961, the fire department work week was lowered to 56 hours a week, with personnel working 24 hours with 48 hours off.

1962 saw the city begin to buy all uniforms and other clothing for fire department personnel. Previously, each member was given a $50.00 uniform allowance each year. Also, in 1962, the National Board of Fire Underwriters surveyed the city. As a result, on January 10, 1963, Mr. Boyd A. Hartley, Assistant Secretary of the National Board of Fire Underwriters, announced the upgrading of the city from a Class 4 to a Class 3.

The longevity program started for all city employees in January 1963. The longevity program allowed for all employees with five or more years of service to be eligible for longevity pay at $2.50 per month for every five years of service. By July 1, 1964, longevity was paid 1% for five years, 2% for ten years, 3% for 15 years, 4% for 20 years, 5% for 25 years, and 6% for 30 or more years of service.

On April 30, 1963, Chief Wayne E. Ulm retired from the fire department on pension. On August 1, 1963, Lee Williams was appointed chief of the department. At this time, Chief Williams had 345 personnel under his supervision.

1965-1975

In 1966, due to the Jacobs reclassification survey of December 26th, the number of captain positions was reduced to 22. The remaining positions were reclassified as lieutenants. The number of fire engineers was reduced to 93, with the remaining positions reclassified as firefighters. The fire department safety committee was also created this year.

On April 3, 1967, the first Civil Service appointments to the fire prevention bureau of fire inspectors and senior fire inspectors were made. On May 20, 1968, the appointment of the first assistant chief under Civil Service was made. District Chief Virgil Quinn was appointed to this position.

Firefighters went on strike at 2300 hours on April 28, 1969 until 0745 hours on May 3rd for parity pay with the police department. Rescue No. 55 was taken out of service on May 16th.

The first diesel engine was put in service at Fire Station No. 14 on June 26, 1970. 1970 also brought the removal of all street alarm boxes. Also in 1970, the Gage-Babcock survey of the Des Moines Fire Department was completed. According to the survey, the total number of positions in the fire department should have been 322 and was classified as follows:

Chief	1	District Chiefs	10
Assistant Chief	1	Captains	22
Fire Marshal	1	Lieutenants	33
Inspectors	8	Senior Rescue Engineers	12
Shop Superintendent	1	Engineers	75
Mechanics	4	Firefighters	150
Dispatchers	4		

No employees were discharged due to the cutback. Instead, as individuals retired or resigned, no new employees were hired to fill their spots.

On January 15, 1971, Stations No. 3 and No. 9 were closed, and the personnel and equipment were transferred to other stations. Engine No. 4, Truck No. 1, and Aerial No. 2 were taken out of service. Rescue No. 3 and all personnel were transferred to Station No. 18. On May 6, Chief Lee was sworn in as city/county civil defense director. On December 31st, nine engineers were promoted to the new classification of senior rescue engineers. Three new attack units were placed in service on February 9, 1972. In September, the training division was moved from Station No. 1 to the Police Regional Academy at 433 SE Army Post Road.

On January 1, 1973, roll call for all firefighting personnel was changed from 0745 to 0700 hours. The 24-hour clock system was also adopted this year. On January 15, 1973, a new high-rise sprinkler ordinance – the first of its type in the nation - was adopted by the city.

In 1974, the city council obtained bids for the construction of three new fire stations. On April 2nd, the fire department took over the emergency ambulance service for the city. A resolution passed by the city council required all patients transported to be charged $25.00 per call. On May 15th, Station No. 18 was renumbered

as Station No. 3, and on August 5th, Rescue Squad No. 4 was placed in service at Station No. 15. Rescue companies were then renamed Fire Medic Squads. Also in 1974, District Chief Patrick Murray was appointed assistant chief to fill the vacancy created by the retirement of Virgil Quinn.

1975-1985

On January 16, 1975, a registered nurse volunteered to assist the medic squads. Other nurses volunteered their services later that year. On April 15th, new Fire Station No. 2 at 1727 East Walnut Street was opened with equipment of Engine No. 2, District Chief's car, and Power Unit. Also on April 15th, Station No. 15 was renumbered Station No. 4, and Station No. 16 was renumbered Station No. 8. New Station No. 7 was constructed on April 22nd at 3500 East 12th Street with equipment of Engine No. 7 and Truck No. 7. Also on April 22nd, old Fire Station No. 2, old Fire Station No. 7, and old Fire Station No. 10 were closed, and personnel and equipment were distributed to various stations.

1975 continued to be a busy year, with the closing of old Fire Station No. 14 and the redistribution of personnel and equipment on June 21st. Just before that, on June 17th, new Fire Station No. 6 was opened on 1919 East 6th Street with equipment of Engine No. 6 and Truck No. 6. In December, old Station No. 6 at No. 2 Edison, old Station No. 7 at 1307 Hull Avenue, old Station No. 10 at 3623 6th Avenue, and old Station No. 14 at 2801 Dean Avenue were sold on bid. Finally, 1975 also saw the first emergency medical technician (EMT) training opportunities for medic squad members and the adoption of a new lime-yellow color for fire department apparatus, replacing the traditional red color.

In 1976, the building program recommended by the 1970 Gage-Babcock was completed. New Station No. 5, located at 711 42nd Street, opened on October 18th. With the opening of this station, old Station No. 5 at 3226 University Avenue and Station No. 12 at 535 40th Street were closed. Attack No. 5 was moved to Station No. 4 and was renamed Attack No. 4. On November 22, new Station No. 9 was opened. Old Station No. 17 at 2217 Beaver Avenue was closed, and equipment was renumbered to No. 9, with Reserve Truck No. 4 going to Station No. 9 as Reserve Truck No. 9.

The building program resulted in nine total fire stations—down from 14—leaving ten engine companies, seven ladder trucks, three attacks (No. 1, 2, and 4), four medic squads, and two stand-by squads (Squad No. 8 and Rescue No. 1). Also included were six reserve engines and two reserve ladder companies. Total personnel went down from 322 to 311. Fire stations were also renumbered to run concurrently from Station 1 to Station 9. Engine No. 13 was renumbered to No. 10 and remained at Station No. 1 along with Rescue Squad No 1. Medic squads were renumbered to correspond with the stations to which they were assigned—Medic Squads 3, 4, 5, 6, and 8.

1976 also saw the Fire Underwriters survey the city. This was the first such survey since 1963. July brought the first contract or agreement between the City of Des Moines and the Des Moines Association of Professional Fire Fighters, IAFF Local No. 4. Also, a new and at-that-time complex radio and alarm system was proposed to the city council at the cost of $400,000 with the bid going to the Motorola Radio Company. Finally, the ranks of fire medic and senior fire medic were also created this year.

In 1977, the terminology for "Engine Companies" and "Truck Companies" was changed to "Pumper Companies" and "Ladder Companies." 1978 saw the completion of the new computer-enhanced radio and alarm system and the introduction of five-inch hose into service, and all frontline pumpers were diesel driven. Old Station No. 4 at 1041 8th Street was added to the Historical Register as a historical landmark in 1979 and was then purchased and restored by Rev. Chester Guinn in July of 1980. In August of 1981, an Arson Task Force was formed. The task force consisted of a senior fire inspector from the fire department

and a police detective from the police department. In November, the old drill tower at Station No. 1 was torn down and was not replaced.

In May 1982, fire medics were required to take additional training to the EMT-1 level, and September saw the creation of the emergency medical services coordinator position. Also in September, the fire department was certified by the State Board of Medical Examiners as an Advanced Life Care Service. November 22, 1982 was truly a first for the Des Moines Fire Department as the first female firefighter, Mary Davis, was hired. In this hiring class, Angelito Barongan became the department's first Pacific Islander firefighter. Robert Stanton was hired in the same class and later became the department's first African American lieutenant (1990) and the first African American captain (1994). December saw the Arson Task Force grow by an additional fire inspector and an additional police detective. At the end of 1982, 313 positions existed in the fire department.

Station Personnel and Apparatus circa 1980

On July 27, 1985, Fire Chief Lee Williams died from cancer. On November 18th of the same year, Robert V. Armstrong was appointed chief of the Des Moines Fire Department.

1985-1995

In the late 1980s and early 1990s, the training academy's curriculum was divided into four major components: fire suppression techniques; fire prevention practices; handling hazardous materials (hazmat); and emergency medical services.

In April 1986, the department's Hazardous Materials Team was created. By October of the same year, Station 1 personnel had completed over 100 hours of training and had already responded to incidents involving acids, poisons, solvents, and fuels, some of which involved multiple victims. Their training subjects, such as chemical detection instruments, rail car and tank leaks, chemical protective clothing, and chemical terminology. The following were the first Station 1 personnel assigned to the Hazardous Materials Team, by division:

1st Division: Lt. R. Wheeler and Firefighters A. Barongan, R. Fite, C. Hulgan, and Dan Moede

2nd Division: Lt. C. Cannon and Firefighters D. Brown, W. Harbert, J. Rivera, and R. Stanton

3rd Division: Lt. J. Quirk, Engineer J. Lafferty, and Firefighters S. Cross, R. Rumley, J. Williams, and T. Wright

1985 saw the total fire prevention bureau staffing reduced from 11 to 10 personnel. Project Detect, a program to ensure smoke alarms in single-family homes were tested for functionality, was implemented in October 1987. Also, in 1987, the transition to computers for record-keeping was made.

In 1987, the department operated ten pumper companies, six ladder companies, two attack units, and five medic squads from nine fire stations. The total authorized number of personnel in 1987 was 300.

The organization was staffed with the following positions:

Fire Chief – 1	Assistant Fire Chief – 1
Fire Marshal – 1	E.M.S. Coordinator – 1
Shop Superintendent – 1	District Chiefs – 7
Senior Inspectors – 3	Fire Inspectors – 6
Mechanics – 4	Dispatchers – 4
Captains – 19	Lieutenants – 30
Engineers – 54	Senior Medics 15
Fire Medics – 15	Firefighters – 135
Clerical – 3	

The total operating costs for the fire department in 1986 was $11,242,495. Based on the estimated population of 191,000, the per capita expenditure was approximately $59.00.

The breakdown of fire suppression and emergency medical service apparatus assignments and locations from which they responded in 1987 were:

Fire Station 1 (900 Mulberry Street) Pumper 1, Pumper 10, Snorkel 1, and District Chief 1

Fire Station 2 (1727 East Walnut Street) Pumper 2, Ladder 2, District Chief 2

Fire Station 3 (2458 Easton Boulevard) Pumper 3, Medic Squad 3

Fire Station 4 (917 University Avenue) Pumper 4, Attack 4, Medic Squad 4

Fire Station 5 (711 42nd Street) Pumper 5, Ladder 5, Medic Squad 5

Fire Station 6 (1919 S.E. 6th Street) Pumper 6, Attack 6, Medic Squad 6

Fire Station 7 (3500 E. 12th Street) Pumper 7, Ladder 7

Fire Station 8 (1241 S.W. McKinley Street) Pumper 8, Ladder 8, Medic Squad 8

Fire Station 9 (4800 Douglas Avenue) Pumper 9, Ladder 9

In 1988, the city entered into an agreement with Polk County whereby the Des Moines Fire Department Hazardous Materials Team was made available to provide service anywhere in Polk County when needed. Shortly after, the city entered into similar agreements with Boone, Story, Marion, Marshall, Warren, Madison, and Dallas counties. Also in 1988, the Rotary Club of Des Moines began its process to recognize the Outstanding Fire Person of The Year. The recipient was Firefighter Don Brown in 1989.

Water Emergency Team (WET) Performs a Rescue

On July 12, 1993, Charles Morgan was officially appointed as chief of the fire department. He had previously retired as a chief officer but would serve in this new capacity until formally retiring again in

October 1996. From May through September of 1993, record flooding occurred across much of the Midwest. As a result, Chief Morgan created the Water Rescue Team in 1994 and directed the purchase of a rescue boat. Shortly after, the department added a second narrow flat bottom boat acquired from the Department of Natural Resources (DNR). Over the next two years, personnel received water rescue training and ice rescue training conducted by the DNR at a lake in northern Iowa.

1995-2005

In 1995, police and fire dispatch were combined within the Des Moines Police Department, and Medic 9 was placed into service. On September 30, 1996, James Hunt was appointed chief of the fire department by City Manager Eric Anderson. Chief Hunt would serve as the department's chief until May 1, 1998.

In late 1996 to early 1997, the training division and hazmat division were combined under the direction of Hazardous Materials Coordinator Matt Woody. Two permanent lieutenants were also assigned to the division at this time. *Firehouse* became the fire records management system in September 1996.

On May 4, 1998, Ronald Wakeham was appointed chief of the fire department by City Manager Eric Anderson. Chief Wakeham would serve as the department's chief until June 6, 2002. Chief Wakeham created the present-day awards and recognition committee, and the department's ceremonial arm, the Honor Guard, in 1999. In 2002, he updated the personnel evaluation process for department employees through the use of a committee that included members of labor, management, and sworn and non-sworn members. During the interim to replace Chief Wakeham, from the summer to fall of 2002, Assistant Chief Doug Rubin served as interim fire chief.

By 1999, residential development and land annexations in the Easter Lake area led to the construction of Fire Station 10. With it, Medic 10 became the department’s newest addition, leaving only Stations 1, 2, and 7 without ambulances.

In 1999, the training and hazmat divisions were again separated, and a district chief was reassigned to the training division. District Chief James Mason was promoted and assigned to lead the training division. Later, District Chief Mason was selected to lead the hazmat division, and District Chief Dale Bunting took over the training division. Also, in 1999, the public outreach program L.A.F.S. for Life (acronym for “life and fire safety”) was formed.

Members of the 85th Training Academy of 2000 were the department’s first to be required to hold EMT-paramedic certifications as a condition of employment. Also in 2000, police and fire dispatchers started using computer-aided dispatch (CAD). The Des Moines Fire Department took delivery of an International/Toyne Technical Rescue apparatus in 2000, which helped lead to the formation of the Technical Rescue Team in 2003.

In 2002, the department changed the job specification of firefighter to include requiring paramedic certification. This required the department to expand and improve how new personnel are trained in the all-hazards nature of fire and EMS responses.

On December 16, 2002, Phillip Vorlander was appointed chief of the fire department by City Manager Eric Anderson. He would serve as the department's chief until his retirement on April 4, 2009. Following Chief Phillip Vorlander's appointment as fire chief in 2002, functional areas of the department, formally divisions, would become sections. Chief Vorlander led the completion of the majority of recommendations included in the 1997 TriData study of the Des Moines Fire Department as well as significant advances in closest unit dispatching and the resourcing of fire prevention efforts.

February 2, 2004, Lieutenant Linda Frangenberg was promoted to the rank of captain. With this promotion, she became the first female member of the department to hold this rank.

2005-2017

In fiscal year 2007, the department created the technical services section. This section was headed by a district chief and staffed by a departmental systems coordinator. The original function of the technical services section was to provide support for the department's requirements in telephone, radio communications, and information management. The departmental systems coordinator was transferred to the city's Information Technology department in September 2008. Also in 2008, the DMFD hired Jonathan Lund as its first fire protection engineer (FPE) and hosted its first FPE intern.

Just 20 years after changing apparatus terminology, when "Engine Companies" and "Truck Companies" were changed to "Pumper Companies" and "Ladder Companies," the department went back to the use of engines and trucks to identify fire apparatus but did so in their physical markings over time and with the purchase or restoration of newer units. The reason for the change was that, while department history included many hooks, ladders, pumps, and various engines and trucks, the use of engine and truck was truest to the department's origins. The change occurred for operations and reporting in 2007. The first pumper's markings were changed to "engine" in 2007. The first ladder's markings were changed to "truck" in 2011. To provide consistent information to the city council, neighborhood associations, or other groups today, documents and presentations all use the terms fire engine, ladder truck, and medic squad or ambulance. These terms have been better understood by audiences, particularly regarding the explanation of a pumper and delineating of three primary apparatus consistently.

On April 6, 2009, John F. TeKippe was appointed chief of the fire department by City Manager Richard A. Clark. Chief TeKippe was the first chief to be appointed from within the department since Chief Armstrong and the first former leader of the local fire union to be appointed chief since Chief Slade in 1937, having served as Local 4 President from 2000-2008, and president of the Iowa Professional Fire Fighters, from 2008-2009. He previously organized and served as the charter president of the West Des Moines Association of Professional Fire Fighters, IAFF Local 3586, from 1994-1996, certifying as a bargaining unit on September 18, 1995. He organized the Dallas County EMS Professionals as Local 4127 of the IAFF, certifying on September 25, 2001, and later organized Urbandale Fire Department firefighters into Local 4, certifying on November 20, 2007.

In 2004 and 2005, following a 13-year separation of fire unions in Iowa, Local 4 and fire unions from across Iowa worked towards a process that would result in the re-unification of each. In 2005, Local 4 voted to re-affiliate with the Iowa Professional Fire Fighters Union. In the following year, 2006, a re-affiliation agreement was entered into that re-unified all fire unions in Iowa. This action also dissolved the Iowa Fire Fighters Group, the affiliation of fire unions created during the State split. Chief TeKippe's last effort as president of the State fire union was ensuring passage of the cancer and infectious disease presumption within the Municipal Fire and Police Retirement System of Iowa during the 2009 session of the Iowa State Legislature. On Friday, May 8, 2009, Iowa Governor Chet Culver signed Senate File 226 into law, providing cancer and infectious disease protections for Iowa's firefighters and police officers.

On June 26, 2009, the city completed the annexation of nearly 6,000 acres. This annexation increased the size of each of the city's four wards, the largest in the southeast portion of the city, included land in both Polk and Warren counties. The additional land would create both a challenge and an opportunity to provide

services for new residents, particularly in the northeast and southeast, with longer response distances in areas seeking future development.

Following a continuous downturn in the national economy, from 2008 to 2012, the department's funded authorized strength decreased from a high of 312 employees to 280 employees. To maintain a council-approved level of service of being able to provide the resources for two structure fires and three medical emergencies simultaneously, the department would weather a series of hiring freezes. It would implement a series of reorganizations within the operating fire stations and the forty-hour support section to manage this change. Throughout this difficult time, firefighters performed admirably, setting records for responses and preparing for and implementing future improvements.

In October 2010, the department adopted and implemented the International Association of Fire Chiefs and the International Association of Fire Fighters Joint Labor-Management Wellness and Fitness Initiative to protect its firefighters. Also, in 2010, retired Captain Timothy Hartman developed an alternate way to rescue victims from the Center Street Low Head Dam using two long ropes attached to a ring buoy. 2010 saw a medication vending machine placed into service. The machine was located at the newly-built Station 1 at 1330 Mulberry, due to its centralized location, and allowed 24-hour access to crews needing to replenish supplies following the transport of patients to local hospitals.

2011 saw the staffing level of the fire prevention bureau increase by one with the addition of the Public Information / Public Education Officer (PIO/PEO) position, filled by a fire inspector or lieutenant. Also, in 2011, the L.A.F.S. program was discontinued and no longer conducted fire safety presentations in conjunction with the fire prevention bureau. However, several L.A.F.S. volunteers and Safe Kids Des Moines continue to participate in such activities as the annual Fire Prevention Week Open House and Delivering Fire Prevention and Pizza.

Administration, Maintenance, and Training Facility circa 2012

In October 2012, the new administration, maintenance, and training building, often referred to as the AMT, was built at 2715 Dean Avenue. Also, in 2012, two senior medic temporary duty positions were added to mitigate the loss of one EMS assistant coordinator position in 2007. These were subsequently converted to lieutenant positions in 2016, following the promotions of Senior Medics Tony Sposeto and Chris Clement to lieutenant. With EMS Assistant Coordinator Jim Fox's retirement in 2017, the rank of EMS assistant coordinator was also retired. This assignment is now filled by a fire captain.

In 2013, the Training Academy re-evaluated its methods and programming. It made changes to better facilitate learning, not just for firefighters as students but as department employees and as members of the public safety response team. Teaming up with Des Moines Area Community College (DMACC) and making better-intended use of the training spaces and facilities available at the new administration, maintenance, and training facility, all academy phases were brought in-house. This allowed the department more oversight from the training section through extended training periods and took advantage of the synergies of the department and DMACC instruction teams and collaborative abilities. The Basic Fire Academy was now developed into four renewed phases: EMT; Suppression; Paramedic; Field Training.

The fire prevention bureau launched a pilot initiative with Brody Middle School in August 2013 entitled "Fire Drills as a Learning Experience." Fire Prevention Week 2013 saw the largest one-day smoke alarm effort in Des Moines' history. On Saturday, October 12, 2013, the department, Red Cross, and numerous other volunteers and organizations saturated the Highland Park neighborhood to install working smoke alarms in every home. By the end of the day, 2,997 homes were visited, and 2,138 new smoke alarms were installed. This project would serve as the model for the Red Cross's "Sound the Alarm – Save a Life" initiative which seeks to replicate this effort in cities throughout the United States.

Station 8 assists with a fire drill at Brody Middle School

Also, in 2013, the department purchased seven automated chest compression devices, meaning that personnel no longer needed to provide continuous manual cardiopulmonary resuscitation (CPR) to patients in cardiac arrest from arrival at the patient's side to arrival at the hospital. Applying the automated chest compression devices would now occur during the initial treatment of the patient, and could continue at the same rate and depth throughout care as controlled by caregivers. With this technology in place, the DMFD's rate of restoring spontaneous pulses to patients in cardiac arrest increased to the top five percent of EMS agencies nationally.

March 29, 2014 was the date of the large Younkers Fire downtown. This fire was assisted by mutual aid provided by the Clive, Urbandale, and West Des Moines fire departments, as well as response requested of the ATF Task Force. Also, in 2014, on December 30, a Fire Station Placement Review and Recommendations for Expansion Study was completed by Public Safety Solutions, Inc. The study assisted the department in strategic planning to improve its capabilities to provide service to the citizens, and in efforts to become accredited. The department responded to 22,053 requests for service in 2014. This number was then surpassed in 2015 with a total of 22,837 requests for service.

In 2015, a training initiative began to increase the number of trained rescue technicians to ensure enough personnel would be on duty to safely and efficiently affect all types of technical rescues. Phase one was

completed in 2015, and in July 2016, the training initiative was completed when 19 personnel completed their training qualifications and became new members of the Technical Rescue Team. Also, in August 2015, the Public Safety Mobile Data Specialist was transferred to the Information Technology department.

On October 2, 2015, Chief TeKippe distributed the first edition of the Chief's Weekly Message to all department employees, and a new edition is distributed every Friday. The message does not address rules or policies, rather, its purpose is to recognize the good works of department members, positive activities, or other items of interest. It is also a means to recognize additions to department families, losses within the department family, and usually includes photos or other means to help convey the message.

On October 12, 2015, a second shift commander was placed into service, assigned to a district chief. The previous loss of these assignments and positions were a part of the cuts that had begun in 2008. This second shift commander, in addition to supervising the officers at five fire stations, directly improves fire ground safety, and provides direct and improved customer service to company officers and station personnel. The promotions related to placing a second shift commander in service were also historic in nature. Captains Steve Brown and Percy Coleman became the department's first African American chief officers with their promotions to the rank of district fire chief.

2016 and 2017 were difficult for the collective public safety families with four City of Des Moines line-of-duty deaths. On March 26, 2016, Des Moines Police Officers Susan Farrell and Carlos Puente-Morales were killed in the line of duty by a drunk driver. On November 7, 2016, Des Moines Police Sgt. Anthony "Tony" Beminio and Urbandale Police Officer Justin Martin were killed in the line of duty by an armed gunman. On February 11, 2017, Des Moines Fire Engineer Douglas McCauley also died in the line of duty.

During August 2016, the department received much needed assistance in the form of two federal grants. A United States Department of Homeland Security Staffing for Adequate Fire and Emergency Response (SAFER) grant of nearly $2.5 million would provide the resources to add 13 firefighter positions for two years. Firefighters supported by these grants were hired in the 94th Training Academy in January 2017. In the same month, the department was awarded an Assistance to Firefighters Grant (AFG) of over $1.1 million to be applied toward replacing self-contained breathing apparatus (SCBA). Current SCBA units, bottles, and related equipment were replaced in 2017 with new units of state-of-the-art technology, including individual thermal imaging capability. With the vast improvements in technology and firefighter safety components, all department members were trained on the new equipment in 2017.

In the fall of 2016, completing work begun under the regional Capital Crossroads initiative, Fire Marshal Jonathan Lund and Johnston City Manager Jim Sanders provided the necessary leadership for the Central Iowa Code Consortium (CICC) to be created and see to fruition its goal of creating a model regional code adoption recommendation. The CICC adjoined Polk County and 17 local communities, along with various staff and industry representatives, together in a single effort. Through nearly 1,500 hours and 87 public meetings, the 49-member committee reviewed over 200 proposed code amendments and found agreement to recommend the adoption of the 2015 International Building, Fire, Residential, Existing Building, Mechanical, and Energy Conservation codes; the 2015 Uniform Plumbing Code; the 2015 National Fuel Gas Code; the 2014 National Electrical Code; and the 2014 Liquified Petroleum Gas Code. With an effective date of March 1, 2017, this became the first consortium of its kind in the Midwest, and the first-time countywide agreements were reached within the code adoption process, with few minor variations between local authorities having jurisdiction.

On May 25, 2017, despite a great effort and several citizens being rescued, a major fire at the Eddy Apartment building at 1120 Polk Boulevard resulted in four fire fatalities. This was the city's most significant fire-related loss of life in over a decade.

On August 17, 2017, history was made again as the department saw the promotion of its first female chief officer, Amy Montgomery, and its first African American assistant chief, Percy Coleman.

In 2017, the department operated nine engine companies, five truck companies, eight permanent medic squads, one temporary medic squad, one technical rescue, two hazardous materials apparatus, one power unit, one mobile command apparatus, and two district chief vehicles from ten fire stations. The total authorized number of personnel in 2017 was 295.

In 2017, the organization was staffed with the following positions:

Fire Chief – 1	Executive Administrative Assistant – 1
Fire Marshal – 1	Fire Protection Engineer – 1
Stores & Inventory Clerk – 1	Senior Fire Inspectors – 2
Fire Inspectors – 3	Superintendent of Technical Services – 1
Superintendent of Maintenance – 1	Mechanics – 5
Assistant Fire Chiefs – 3	District Chiefs – 6
Captains – 31	Lieutenants – 19
Senior Medics 24	Fire Medics – 24
Engineers – 42	Firefighters – 129

The operating budget for the fire department in the 2017-2018 fiscal year was $38,722,112.00. Based on the 2016 estimated population of 215,472, the per capita expenditure was approximately $179.71. In 2016, the department responded to 24,170 requests for service. In 2017, the department responded to 25,327 requests for service.

The following lists the fire suppression and emergency medical service apparatus assignments and locations from which they responded in 2017:

Fire Station 1 (1330 Mulberry St.) Engine 1, Truck 1, Medic 1, HazMat 1, Westside Shift Commander (DC 1)

Fire Station 2 (1727 East Walnut St.) Engine 2, Truck 2, Water Emergency Team, Eastside Shift Commander (DC 2)

Fire Station 3 (2458 Easton Blvd.) Engine 3, Truck 3, HazMat 3, Medic 3

Fire Station 4 (917 University Ave.) Engine 4, Medic 4, Technical Rescue Team

Fire Station 5 (711 42nd St.) Engine 5, Truck 5, Medic 5

Fire Station 6 (1919 S.E. 6th St.) Engine 6, Medic 6, Water Emergency Team

Fire Station 7 (3500 E. 12th St.) Engine 7, Medic 7, Technical Rescue Team

Fire Station 8 (1241 S.W. McKinley St.) Engine 8, Truck 8, Medic 8

Fire Station 9 (4800 Douglas Ave.) Engine 9, Truck 9, Medic 9

Fire Station 10 (5900 Indianola Ave.) Truck 10, Medic 10

On November 20, 2017, Alex Shubert, National Processing Center Manager of Insurance Services Office, Inc. (ISO), wrote to City of Des Moines Mayor T.M. Franklin Cownie and Chief TeKippe, informing each that the most recent Public Protection Classification (PPC) survey resulted in an improved ISO rating, from a 3 to a 2. This is the first improvement or change in the fire protection rating since moving from a 4 to a 3 on January 10, 1963. The improved rating is a positive and accurate reflection of the dedication, hard work, and excellence shown by every member of the Des Moines Fire Department and the members of the other city departments who are partners every day! The new rating became effective on March 1, 2018, the 135th

anniversary of the Des Moines Fire Department. What a fitting and timely first step into the next chapter of the future of the Des Moines Fire Department!

2017 saw an increased focus on department-wide active threat mitigation training. This focus also resulted in the introduction of multi-threat suits to the Hazardous Materials Team's cache of personal protective equipment. In most situations, the new suits replaced the need for traditional Level A plastic suits.

As the city has grown, so has the need for fire/EMS services at an ever-growing number of special events. During 2017, the Des Moines Fire Department provided special event services—including suppression, EMS, and first aid—for 42 events.

2017 was also a pivotal year for the department's fire prevention bureau. The multiple fatality fire at the "Eddy" led to conversations with the owner about the repair and rebuild. During these conversations, FPE Patrick Phelan worked extensively with the owner to encourage the installation of fire sprinklers. Fire sprinklers were installed, leading to two fire sprinkler life saves in the years since the fatal fire. In 2017, the FPB also investigated the Plaza Lanes fire (2701 Douglas Avenue) with the ATF National Response team. The cause was determined to be accidental.

Plaza Lanes Fire (2701 Douglas Avenue) December 2017

2018-2022

2018 was an important year for the department's EMS and technical services sections as the department transitioned from *Firehouse* reports and written documents to an electronic patient care reporting (ePCR) system. Time and money have been saved since the implementation of the ePCR System. The department was also awarded an AFG Grant in 2018. As a result, Stryker Power Load Systems were installed in all department ambulances, hopefully saving the backs of responders loading patients into the ambulance for years to come. Additionally, Pit Crew CPR was implemented in 2018. This systematic approach to providing CPR is research-based and allows the department to provide an even higher level of care when it comes to cardiac arrests. Finally, in 2018, the FPB reviewed, inspected, and approved the first mass timber-constructed building in Des Moines (111 E. Grand Avenue).

The department and, more specifically, the technical services section, were busy in 2019 with implementing a new radio system. The P25 700/800 Simulcast Cell is now part of the Iowa Statewide Interoperative Communication System (ISICS). According to the Iowa Department of Public Safety, the ISICS is a "statewide radio platform that provides…radio communication to public safety agencies and others, border to border in the State of Iowa, to improve public safety across the state." Communication between different agencies was greatly improved to more effectively respond to larger scale disasters or incidences requiring interagency responses. 2019 also saw all department reserve ambulances become standardized and in a ready reserve status.

Multiple notable initiatives occurred in 2019 within the fire prevention bureau. Not only did the FPB add a second fire protection engineer to its staff, but it was also in 2019 that the department began a partnership with the Firefighter Cancer Cohort Study, facilitated by the University of Miami and the University of Arizona. The DMFD became a participant agency for the fire investigation expansion study and the female firefighter expansion study. In June, the FPB held its first downtown open house at Station 1. The open house included a junior firefighter obstacle course, the Blank Children's Hospital Fire Safety House, live-fire fire extinguisher training, and more. Over 400 people visited the downtown fire station during this event.

2020 proved to be one of the most challenging and unique years for the department and the rest of the world. While some places were shutting down, things didn't stop for those on the frontline of the COVID-19 pandemic. Responders increased their personal protective gear levels to include TYVEK suits, and many temporary policies and procedures were implemented. In an additional effort to prevent the spread of the virus and to keep members safe, the DMFD hazardous materials crews took on the responsibility of decontaminating DMFD ambulances after suspected COVID-related calls. The ability to be creative, nimble, and flexible as an organization was vital to the department's success during this challenging time.

Those in the fire service are masters at evolving with the times, and the FPB was no different during the challenging period of 2020. The FPB transitioned to virtual inspections to accommodate businesses and to help slow the viral spread. Even after the return to work, the FPB has positively leveraged these capabilities to improve the department's service delivery. Some of the virtual offerings that have remained include virtual story time, video fire prevention vignettes, and an expanded social media presence. Finally, in 2020, Ground Emergency Medical Transport funding became a revenue source for supplemental payments that cover the difference between a provider's actual costs and the Medicaid base payment, mileage, and other sources of reimbursement.

2021 was another exciting year for the DMFD as it saw the opening of Fire Station 11 at 4150 E. 42nd Street. Engine 11, Medic 11, and Tender 11 are housed in the state-of-the-art fire station. Engine 11 was formally known as Engine 3 and was originally located at Station 3. Medic 11 became the department's 10th frontline ambulance. Cancer prevention in the fire service is more important than ever. Station 11 was built with many features to help department members avoid and reduce carcinogen exposure and remain safe for years. Another department first in 2021 was the addition of Dr. Amy Groen as the department's first pediatric medical director.

Station 11 Grand Opening November 2021

Training for 2021 included preparing crews for responses to the Lauridsen Skate Park—the city's first skatepark and the largest open skatepark in the nation. Also, the fire prevention bureau and the training division conducted multi-company high-rise training evolutions with pressure-regulating standpipes in the 5th Avenue parking garage. Finally, to prepare for the event of a structural collapse, the DMFD Technical Rescue Team enjoyed training with their new cache of structural support equipment (EFCO Struts) to complement the older technology.

2022 has yielded more changes and new challenges for the Des Moines Fire Department. During 2022, HazMat 1 and 3 co-located at Fire Station 1, and the DMFD Water Emergency Team (WET) established a relationship with a K9 recovery group to assist in subsurface water recovery, leading to collaborative training opportunities. Technical Services has focused on interoperability between emergency communication centers (CAD-to-CAD), and the FPB has conducted fire department connection (FDC), elevator, and Fire Command Center training for every department member.

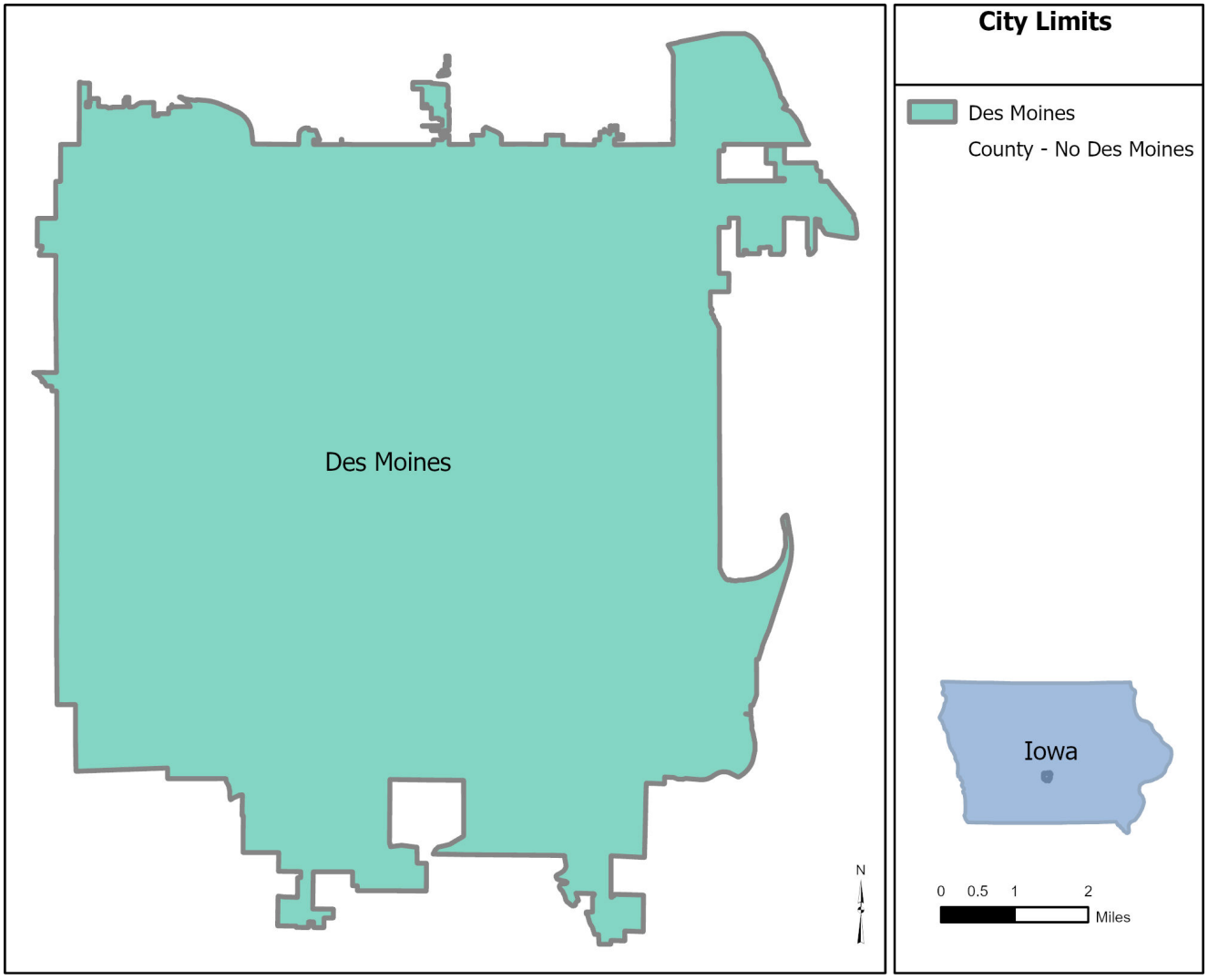
Additionally, as of 2022, the demand for the DMFD's services at special events continues to grow—so much so that a medical cart has been added to the fleet for special event services and responses on the ever-expanding trail systems within the city. An additional response cart is being procured for the future. Notable special events the DMFD has provided services to in recent years include the NCAA Basketball Tournament, IRONMAN Des Moines, the Iowa State Fair, the Dew Tour (skateboarding event), the Red Bull Soap Box Derby, the Principal Charity Classic, and USA Gymnastics dignitary visits. The department provided services at 110 events in 2022 alone.

From 2017 to 2022, the Des Moines Fire Department has overcome many challenges that those in 2016 could not have imagined. From improved communications to new stations, from an evolving fire prevention bureau to an ever-increasing demand for special events, and from pandemics to everyday operations, the members of the DMFD continue to perform at the highest level. Every year in the department's history better prepares it for every year in its future.

Current Legal Boundary of Service Area

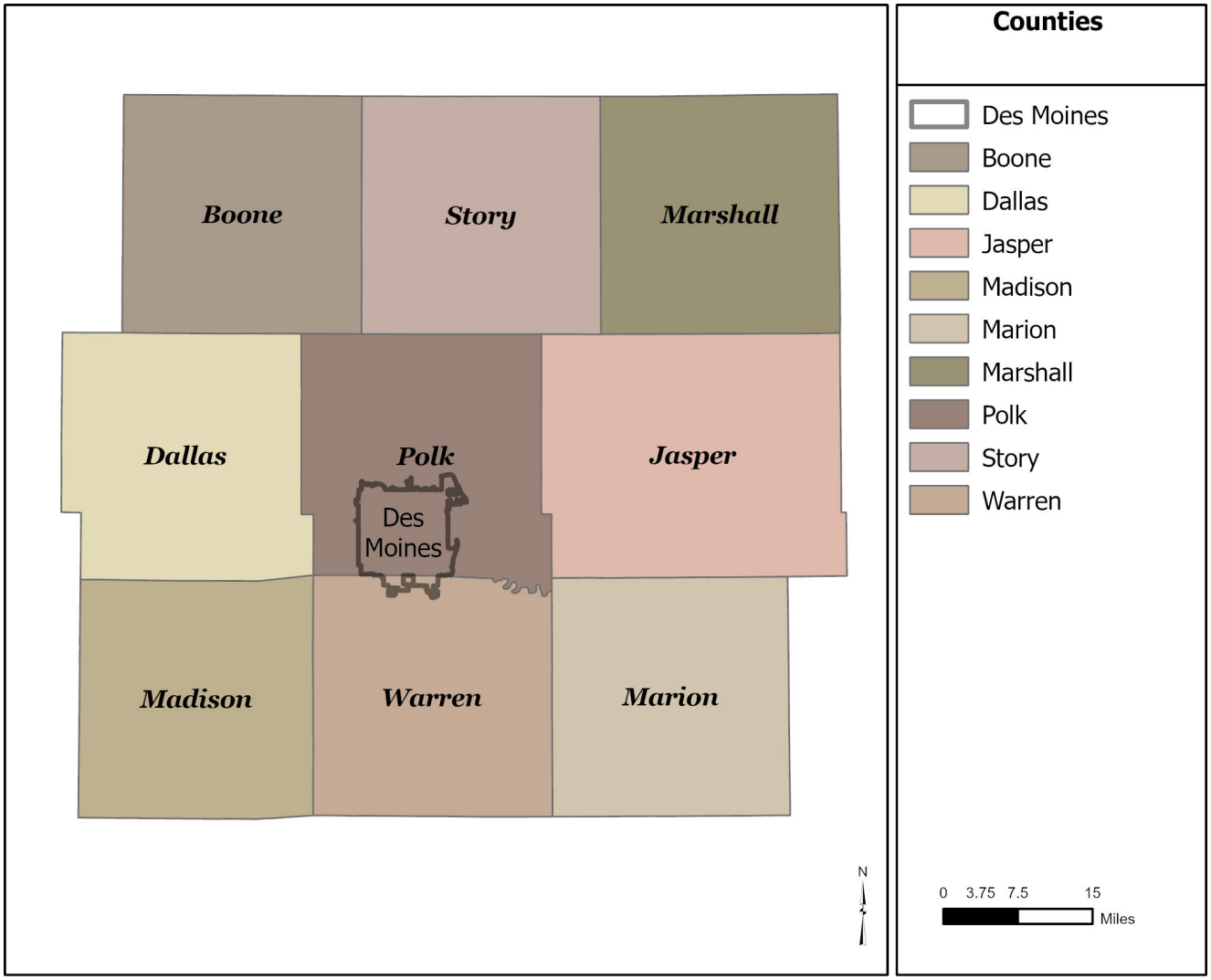
The legal boundary of the Des Moines Fire Department's service area is the corporate limits of the city of Des Moines. This represents 91 square miles of area.

Map 22: City Limits



The Des Moines Fire Department is part of a 28E agreement to provide mutual aid for fire and/or EMS needs in Polk County and/or the adjoining counties of Boone, Dallas, Story, and Warren, as well as Jasper, Madison, Marion, and Marshall. The full agreements are available here: M508206 (iowa.gov) and M509806 (iowa.gov)

Map 23: Des Moines in Relation to Surrounding Counties



Since January 2018, the cities of Des Moines and Altoona have shared an operational agreement, executed by the fire departments, to ensure the best possible fire and EMS response to northeast Des Moines and the City of Altoona.

Current Organization, Divisions, Programs and Services

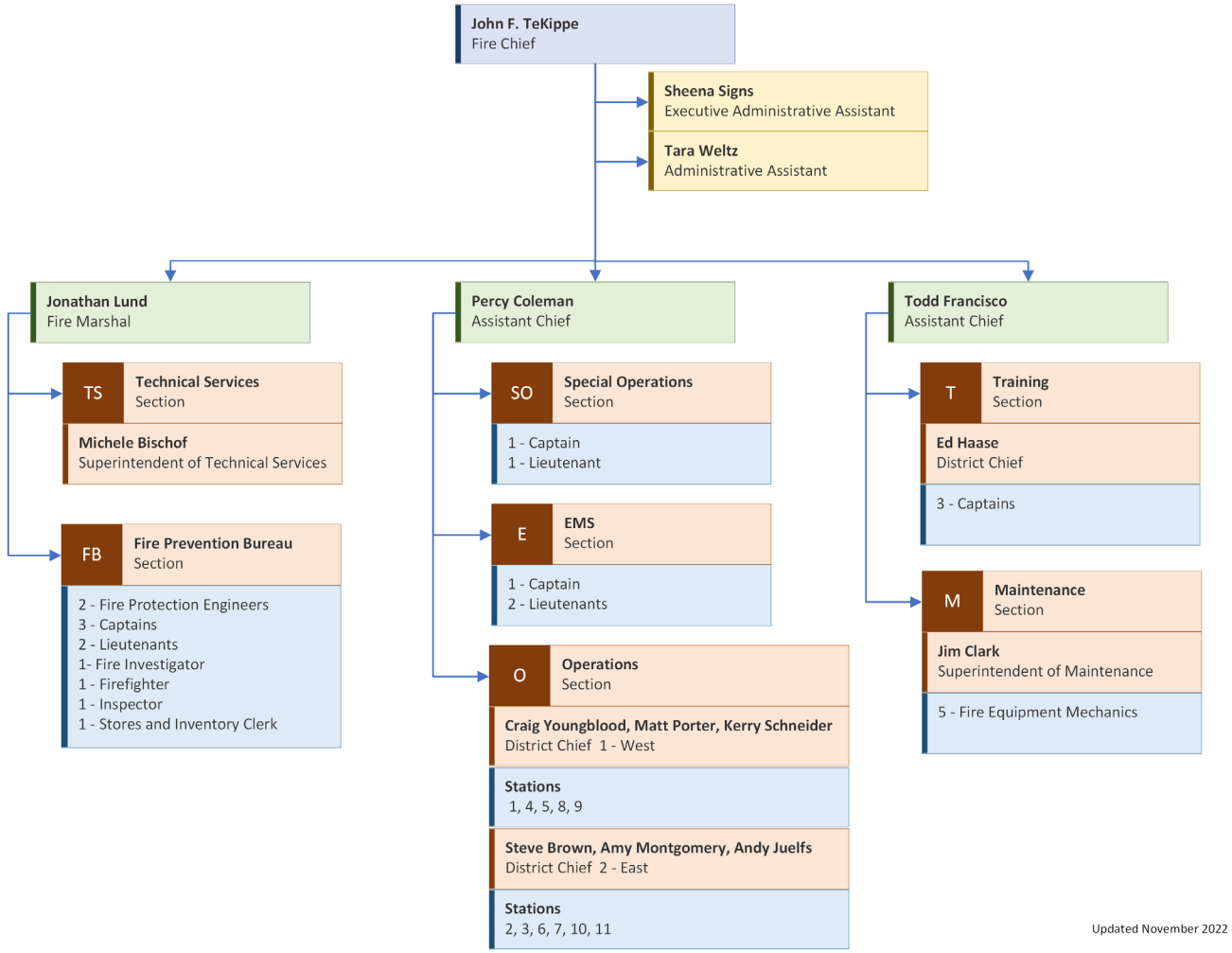


Figure 10: Organizational Chart

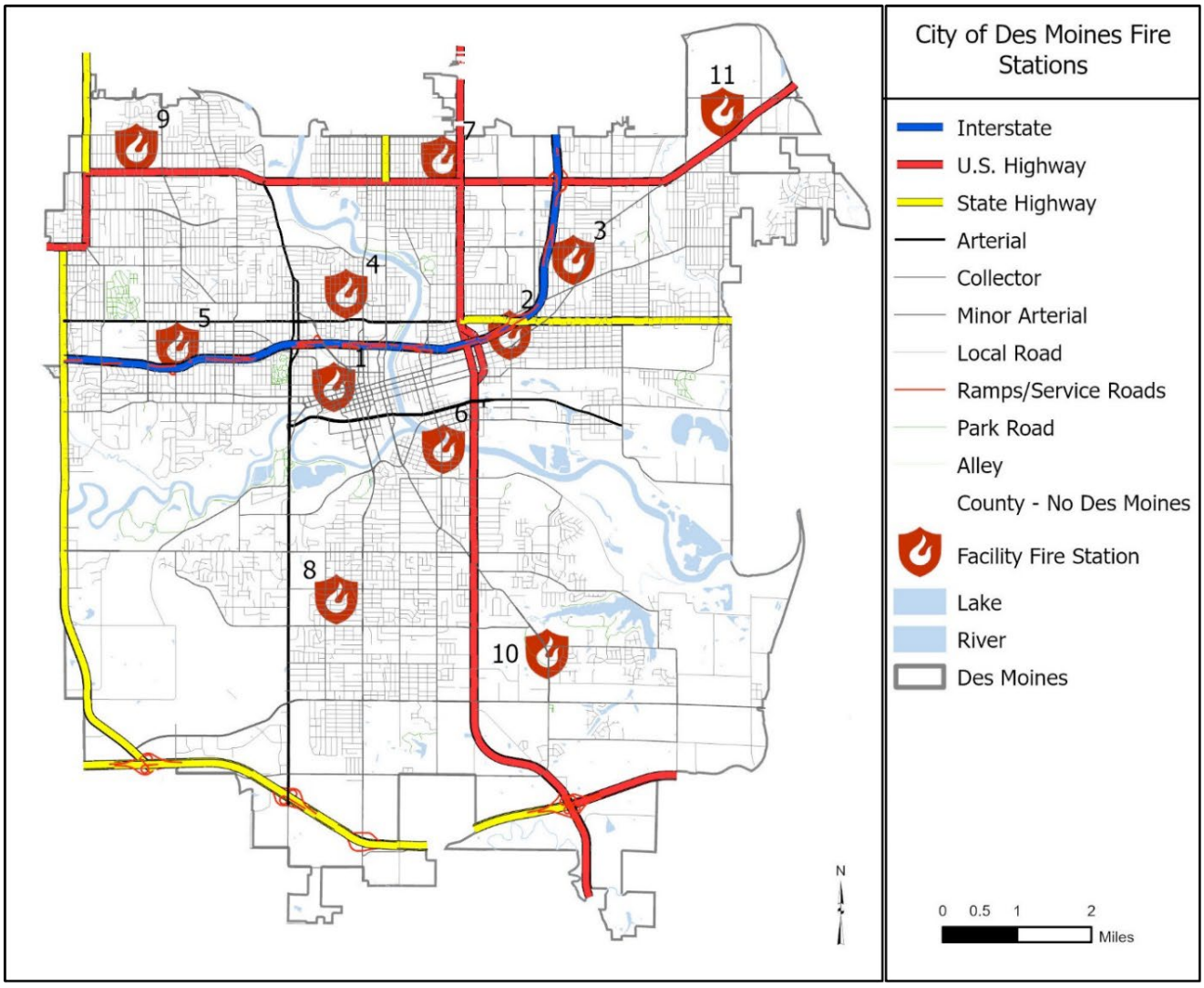
The fire department primarily consists of the following sections: administration, operations (EMS, special operations), training, fire prevention, technical services, and maintenance shop. The fire chief has overall direction for the department and the administration. The operations section is led by an assistant chief, and day-to-day operations are led by two shift commanders (district chiefs) for each of the three divisions, one responsible for the east side and the other for the west side of the city. The fire department provides emergency services through 11 stations located throughout the city. Within these stations, the operations section minimally staffs seven engine companies, five truck (ladder) companies, nine advanced life support (ALS) ambulances (the 10th ALS ambulance went in-service at Station 11 on July 1, 2022), and two shift commanders. Suppression apparatus are led by a company officer (captain or lieutenant) and are minimally staffed with an engineer (driver) and firefighter. The ambulances are staffed with two personnel (senior fire medic and fire medic). The training section is led by an assistant chief who also oversees the maintenance shop, which is led by the maintenance superintendent. Fire prevention is led by the fire marshal, who also oversees the superintendent of technical services.

Fire Stations, Training Facilities, Apparatus, Equipment, and Staffing

The Des Moines Fire Department serves a resident population of approximately 215,000 people across 91 square miles, utilizing 11 fire stations and one administrative, maintenance, and training facility. In addition to front-line suppression and EMS units, the department cross-staffs two hazardous materials response teams, two water tenders, a water emergency team, and a technical rescue team. For special events and long-duration incidents, the department utilizes a mobile command post, reserve engines, trucks, ambulances, and other specific function vehicles to respond to and handle a multitude of events and incidents.

The following lists the DMFD fire stations, their locations, and assigned response apparatus:

Map 24: Fire Stations



C. Current Descriptions of Levels of Service with Delivery Programs

Fire Suppression

Table 3: Station Apparatus and Minimum Personnel

Station	Address	Apparatus	Staffing
1	1330 Mulberry Street	District Chief 1 Engine 1 Truck 1 Medic 1 HazMat 1 HazMat 3 Utility 1	District Chief 1 (1) Engine 1 (3) Truck 1 (3) Medic 1 (2) **Total (9)**
2	1727 E. Walnut Street	District Chief 2 Engine 2 WET 2	District Chief 2 (1) Engine 2 (3) **Total (4)**
3	2458 Easton Blvd.	Truck 3 Medic 3	Truck 3 (3) Medic 3 (2) **Total (5)**
4	917 University Avenue	Engine 4 Medic 4 Power Unit	Engine 4 (3) Medic 4 (2) **Total (5)**
5	917 42nd Street	Engine 5 Medic 5 Command Unit	Engine 5 (3) Medic 5 (2) **Total (5)**
6	1919 SE 6th Street	Truck 6 Medic 6 WET 6	Truck 6 (3) Medic 6 (2) **Total (5)**
7	3500 E 12th Street	Engine 7 Medic 7 Tech. Rescue 7	Engine 7 (3) Medic 7 (2) **Total (5)**
8	1249 McKinley Avenue	Engine 8 Truck 8 Medic 8 Brush Truck 8 Utility 8	Truck 8 (3) Medic 8 (2) **Total (5)**
9	4800 Douglas Avenue	Engine 9 Truck 9 Medic 9	Truck 9 (3) Medic 9 (2) **Total (5)**
10	5900 E. Indianola Avenue	Engine 10 Medic 10 Tender 10	Engine 10 (3) Medic 10 (2) **Total (5)**
11	4150 E. 42nd Street	Engine 11 Medic 11* Tender 11	Engine 11 (3) **Total (3)**

**Medic 11 went in-service as of July 1, 2022.*

The department currently operates 11 fire stations strategically located to cover all areas of the city. Fire suppression services are dispatched through a computer-aided dispatch system designed to select the closest and proper type of available apparatus to the given emergency. Fire stations are staffed 24/7 with an all full-time, city-employed staff of 274 (FY22) sworn personnel trained to a minimum of a Firefighter II

level, based on the NFPA 1001 *Firefighter Professional Qualifications Standard*. Firefighters work a 24/48 schedule, which divides the personnel evenly into three separate working divisions. Fire suppression activities are supported annually with job performance requirements that exceed the minimum training standards outlined in Section 661, Chapter 251 of the Iowa Administrative Code. As staffing allows, daily services are provided using two district chief/shift commanders, seven engines (1,500 gpm or greater capacities), one 100-foot tower ladder/quint, four 75-foot trucks (ladders)/quints, and nine ALS ambulances (Medic Squads) as frontline apparatus. Seven suppression support apparatus are available but only staffed as needed.

Approximately 35 percent of the incident responses annually performed by the Des Moines Fire Department are for fire suppression or other hazard-related duties. The majority of the suppression activities serve the city's urban areas with only small sporadic areas of green space consisting of field grass, which doesn't meet the definition of a wildland area. Like most urban areas, the suppression services provide coverage to a mixture of low, medium, and high-hazard occupancies. With the city being rich in residential living neighborhoods and small retail businesses, most of the structures fit into the low to medium-hazard occupancy categories with the highest frequency of service needs. High-hazard occupancies with lower frequency of service needs include structures in the thriving downtown community consisting of multiple high-rise mixed-use occupancy structures, the State of Iowa Capital complex, five hospitals, and large industrial production/warehouse facilities in various locations throughout the community. Fire suppression services are provided occasionally to the suburban areas of the Des Moines Metro Area through the DMFD's participation in intergovernmental agreements, Iowa 28E Agreement, developed by the Polk County Fire Chiefs Association. In addition to these agreements, the DMFD has service agreements to share emergency response services with the City of Altoona (NE Suburb) and the City of Johnston (NW Suburb) to provide companies for first-out assignments in various defined areas in all three cities.

Fire suppression activities are driven by the philosophies of the National Incident Management System (NIMS). The DMFD's fire suppression standard operating guidelines are designed to maintain a consistent set of procedures and policies for all hazard occupancy types to ensure a coordinated response by all companies functioning in the city.

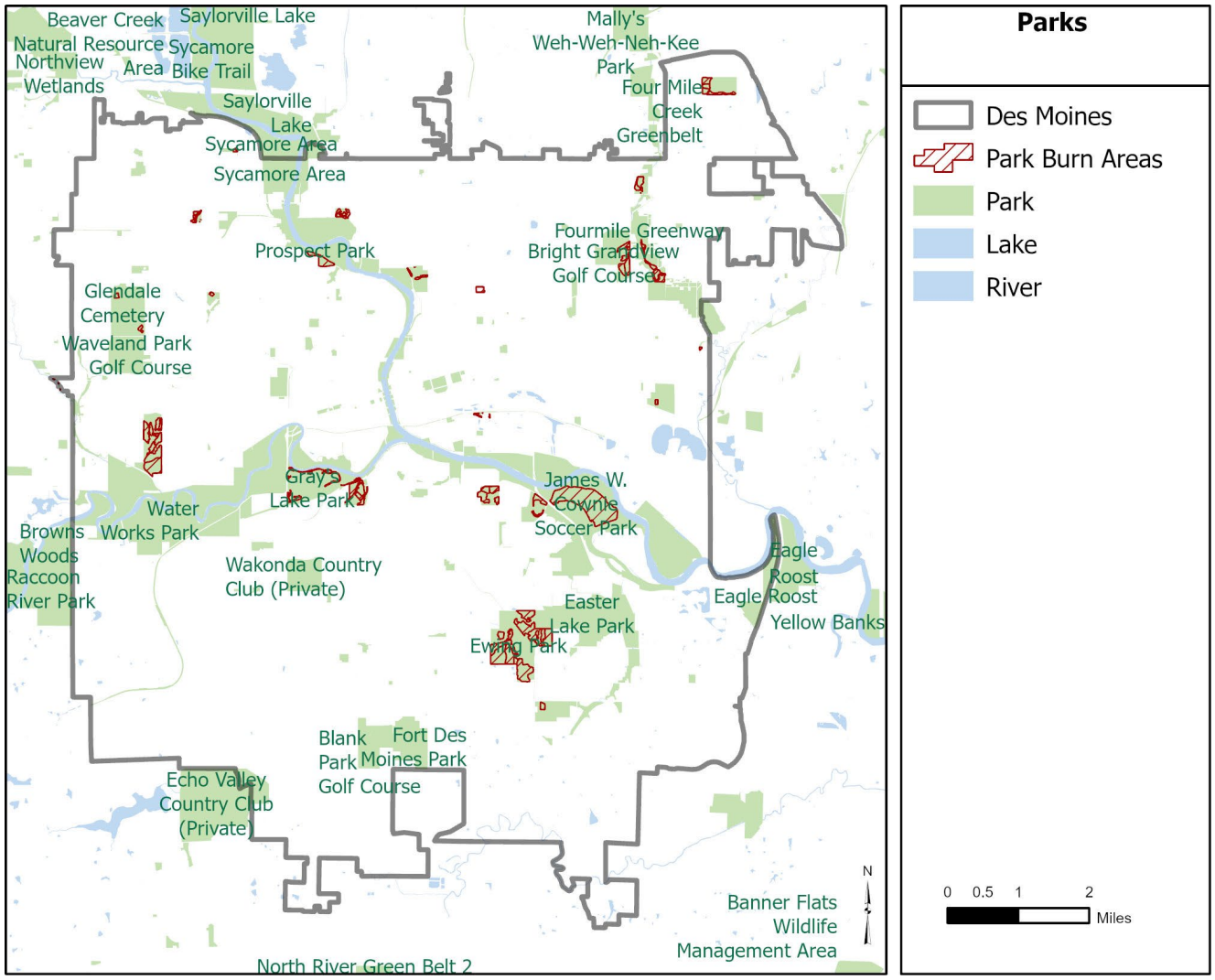
Fire at 3709 5th Avenue in 2020

Des Moines is surrounded by unincorporated or incorporated undeveloped land, primarily on the south, southeast, and northeast side. The undeveloped land is a mix of wooded timber and cash crop acres, primarily corn and beans. Some areas within the city, such as parks, railroad tracks, or houseless encampments, have proven difficult to access without a specialty brush unit. Station 8, southwest, houses Brush Truck 8 and Utility 8. Both have four-wheel drive, limited water, and small pumps. These units are cross staffed with personnel from Station 8 that move from any available apparatus in the station to cover the specialty assignment.

There are also locations with limited or no water infrastructure that initiate the need for a water tender assignment. The fire department has labeled these areas as emergency safety zones, or ESZs. Available tender resources are located at Stations 10 and 11, southeast and northeast, respectively. Their assignment

is located close to ESZs. These units are also conveniently located as a mutual aid company to the eastern fire department neighbors. Altoona Fire Department has a predetermined assignment for rural structure fires utilizing one of the DMFD's tenders. Again, these units are staffed by station personnel that move from a frontline apparatus to the tender without splitting their crew.

Map 25: Parks



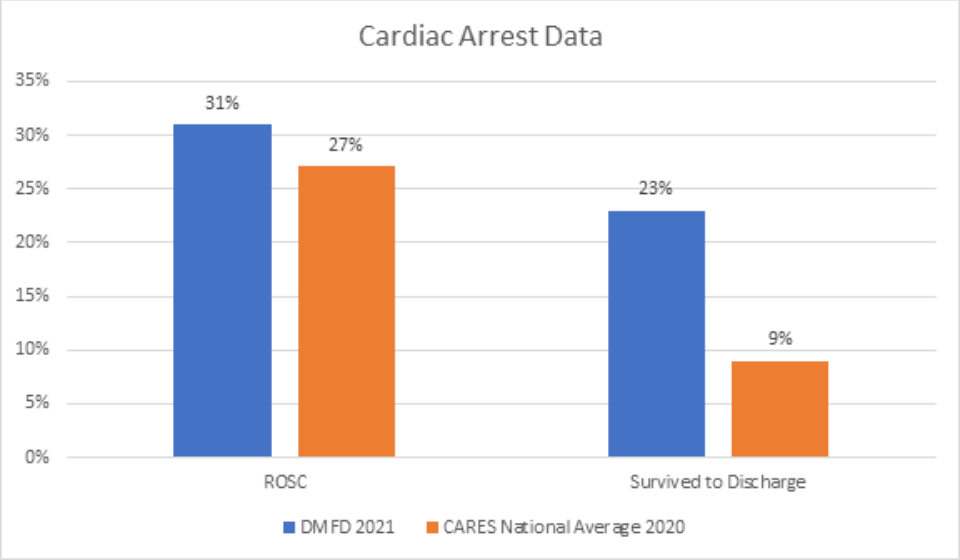
Emergency Medical Services

Emergency medical services via basic ambulances in Des Moines started in 1974 but did not allow for much patient care pre-hospital due to EMS in the United States being in its infancy stage. EMS providers at that time were known as the 'Band-Aid Squad,' and their main goal was to get the patient to the nearest hospital as fast as their wheels could carry them. As time progressed, important changes took place in EMS, making equipment more sophisticated, and medics were receiving more training in providing pre-hospital care. In 1981, the first group of firefighters began training as paramedics. City leaders, realizing the benefit these services would provide its citizens, applied for and received permission from the State Board of Medical Examiners to become an ALS-level service in 1982.

The department provides emergency medical services as a municipal fire-based service responding to incidents involving illness or injury. The focus of EMS is emergency medical care and stabilization of the patient(s) while transporting them to the next level of care. As of 2021, the department has 268 EMS providers. Of the 262 providers, 200 are certified at the paramedic level, 61 at the Emergency Medical Technician (EMT) level, and 7 at the Advanced EMT (AEMT) level. Beginning in 2002, all personnel hired with the Des Moines Fire Department were required to be certified at the paramedic level and maintain that level of certification as a condition of employment throughout their career. Paramedics utilize advanced-level skills based on criteria from the National Registry of EMTs and the Iowa Department of Public Health Bureau of Emergency and Trauma Services to provide medical care to residents and guests of the community. The department values diversity and is working towards a goal of being reflective of the community served.

Medic 4 in front of Station 4 circa 2020

Advanced practices, equipment, and training have developed the department into one of the leaders in cardiac arrest management. In 2021 the department responded to 260 cardiac arrest incidents. The average return of spontaneous circulation (ROSC) in that patient population was 31%, and 23% could walk out of the hospital neurologically intact. These percentages are appreciably better than the 2021 National Cardiac Arrest Registry to Enhance Survival (CARES) data which was reported to be 27.1% and 9%, respectively.



2020 CARES Annual Report (mycares.net)

Figure 11: Cardiac Arrest Data

The Des Moines Fire Department utilizes a layered response (referred to as a tiered response) system providing a continuum of care for people needing emergency medical services. The continuum begins with access to medical care through 9-1-1. The 9-1-1 number allows all telephone calls to be immediately connected to a dispatcher. Once a call has been received, dispatchers use specific dispatch triage guidelines called Emergency Medical Dispatch (EMD) protocols to determine the resources needed to respond appropriately and provide medical instructions to the caller.

The department has 17 ambulances, and 9 of these are dedicated to response 24/7. The additional eight ambulances are used to provide coverage for special events and as reserve units when frontline ambulances need maintenance. Four suppression apparatus are strategically placed in the four quadrants of the city that maintain an ALS level. All other frontline suppression apparatus are also maintained at the basic life support (BLS) level. Ambulances are always staffed with two paramedic-level providers.

Since approximately 2010, the Des Moines Fire Department began providing EMS for various special events within the city of Des Moines. The number of special events has grown yearly, and in 2021 Des Moines Fire Department provided coverage for 113 events. These events vary from a couple of hours to multi-day large-scale events. Beginning in 2013, the department has created Event Action Plans (EAPs) for every event to provide communication, organization, and coordination between all partners. The fire department operates specialized all-terrain vehicles to navigate through large crowds or unique environments where ambulances cannot reach the patients.

The Des Moines Fire Department EMS system operates under the licenses of two medical director physicians, one specializing in pediatric medicine and the other specializing in adult and geriatric medicine. A specific set of guidelines developed and approved by the medical directors provides standing orders that EMS providers work from when treating patients.

Technical Rescue

The DMFD responds to low, medium, and high-risk technical rescue emergencies through its Technical Rescue Team. The department maintains one technical rescue response apparatus deployed from Station 7. The team is comprised of 32 members trained to NFPA 1006 and cross-staffed from Station 4 and Station 7 apparatus. Team members are trained to the technician level in rope rescue, confined space, and trench

rescue. In addition to the technical rescue apparatus at Station 7, Engine 4 is equipped with appropriate personal protective equipment (PPE), life safety ropes, and a small cache of rigging equipment. Members assigned to these stations are trained using an in-house program mirroring the FEMA-approved and NFPA 1006 compliant city of Phoenix Fire Department Technical Rescue program. Job performance requirements (JPR) are used to assess and document this training. In addition, the DMFD hosts IAFF 40-hour confined space rescue classes periodically. A training trench is dug annually with hydraulic speed shores used for access. The DMFD has limited structural collapse capabilities but does carry a small cache of shoring equipment intended for emergent stabilization only. The State Urban Search and Rescue (US&R) Team provides all other structural collapse duties. Technical rescue calls have been historically low but have included corn bin, trench, and confined space incidents.

Hazardous Materials

The DMFD operates a FEMA Type 1 Hazardous Materials Team, and through 28E agreements, provides technician-level response to the surrounding seven counties, including the metro area. This response area consists of 4,040 square miles and a population of approximately 838,591 people. The department maintains two hazardous materials response apparatus deployed from Station 1. The team is comprised of 45 members trained to the NFPA 470 technician level cross staffed from Station 1 apparatus. Team members receive a minimum of 80 hours of initial training. Hands-on, competency-based training documented by JPR in conjunction with formal classroom hours serve as refresher training and provide operational readiness. In addition, the team completes training with various private industry, railroad partners, and local pipeline agencies and annual site visits of key target hazards. On-going participation as a Local Emergency Planning Commission (LEPC) member ensures preparedness regarding specific local hazardous materials.

DMFD Hazardous Materials Team at a Tanker Rollover on I80 (2015)

The DMFD serves as one of three fire-based State WMD Teams. This agreement with State Homeland Security provides grant funding for equipment and joint training. In return, team members may be requested to respond within the state to aid in operations such as advanced detection and product sampling. During the 2015 Avian Influenza outbreak, team members were deployed to several Iowa farms to provide decontamination guidance and practices utilized as a current industry standard. Members have also participated in Joint Hazard Assessment Teams (JHAT) at large-profile events with law enforcement and the 71st Civil Support Team.

The department responds to hundreds of hazardous materials related responses per year. A vast majority of these alarms have been natural gas releases. Due to this large number, the dispatch of resources has been modified to exclude the Hazardous Materials Team on the initial response to those events occurring outdoors or in a single-family dwelling. All suppression apparatus are equipped with a four-gas meter, plugging putty, and a 25-gallon catch basin, and all sworn personnel are trained to the operations level.

Aviation Rescue and Firefighting Services

The Des Moines Fire Department does have one major airport and two medical aircraft deployment locations within the primary response area. Despite the presence of these aviation services within the response area, Aircraft Rescue and Fire Fighting (ARFF) is not a service that is provided by the department.

The emergency response services at the Des Moines International Airport are divided into two primary areas of responsibility. The areas of responsibility include the airfield and the supporting structures of the airport. The Des Moines International Airport Authority utilizes ARFF services through a contracted agreement with Pro-Tec Fire Services within the airfield's perimeter. Pro-Tec Fire Services is a privately operated emergency response agency that staffs three ARFF apparatus and one support vehicle at the Des Moines location from a single station located within the airport's airfield. The Des Moines Fire Department has primary responsibility for structural fire and EMS transport service at the airport's main terminal, service buildings, air force base, and privately operated aviation services located on the grounds of the airport complex. The department also serves as a backup to the ARFF services with fuselage entry teams and EMS responsibilities in the event of an aviation incident. The DMFD provides services to the airport from apparatus located at off-site fire station locations based on the closest available unit response system.

A partnership between Pro-Tec Fire Services and the Des Moines Fire Department is supported by the 28E mutual aid agreement that accompanies each agency's active participation as a member of the Polk County Fire Chiefs Association. The Polk County Fire Chiefs Association establishes standard operating guidelines that ensure agency interoperability, tactical coordination, and the timely distribution of resources during emergency situations. The terms associated with the Polk County 28E agreement allow for Pro-Tec Fire Services' ARFF resources to extend beyond the airport's perimeter (for aircraft fire) and the department's services to support the ARFF services when emergencies occur on the airfield. Annual joint training exercises are conducted to ensure the best quality of service and functionality of the standard operating guidelines.

Beyond the perimeter of the Des Moines International Airport, there are four designated air medical transport helicopter landing zones. The aircraft landing zones are located at MercyONE Medical Center (1111 6th Avenue), Iowa Methodist Medical Center (1200 Pleasant Street), Iowa Lutheran Hospital (700 E. University), and Broadlawns Medical Center (1801 Hickman Road). ARFF services for these locations consist of on-site stationary foam-producing suppression systems with limitations to the proximity of the incident to the discharge nozzles of the system. The fire department has primary responsibility for the occurrence of incidents outside of the boundaries of the airport and relies upon Pro-Tec Fire Services to share ARFF support apparatus.

Specialized Services – Water Rescue

The DMFD provides a Water Emergency Team (WET) trained in surface, swiftwater, and ice rescue at the technician level. The department maintains two water emergency response apparatus deployed from Stations 2 and 6. The team is comprised of 27 members trained to the NFPA 1006 technician level cross staffed from Station 2 and 6 apparatus. The two stations combine to form one team with assets housed at Station 2 and Station 6. These assets include two 15-foot flatbottom and two rigid inflatable boats on double-decker trailers pulled by sport utility vehicles (SUVs). Resources are allocated due to their proximity and access to boat ramps. The DMFD WET responds through mutual aid agreements to surrounding partners.

The Raccoon and Des Moines Rivers come together just south of downtown. This confluence is between two low-head dams, one at Center Street and one under the bridge at Scott Avenue. The Center Street Dam provides the greatest hazard as it stretches approximately 400 feet across and, depending on water levels, can create a massive hydraulic effect. Only emergency services are allowed to operate in the water between these two hazards and access from a secure boat ramp at the confluence.

Ice rescue training happens during ice-in and ice-out times, attempting to capture realistic conditions. This can be fluid as weather patterns remain inconsistent. Team members are required to perform a go rescue in protective clothing annually.

The team responds to all types of water emergencies. Seasonal and flash flooding incidents significantly impact the number of responses annually.

Community Safety and Remediation Programs

The fire prevention bureau conducts fire inspections in commercial buildings for city and state licenses, certificate of occupancy permits, general fire safety inspections, hazardous operations permits, acceptance testing of fire protection systems, installation and removal of underground and above-ground storage tanks, mobile food vendors, as well as high-piled storage inspections.

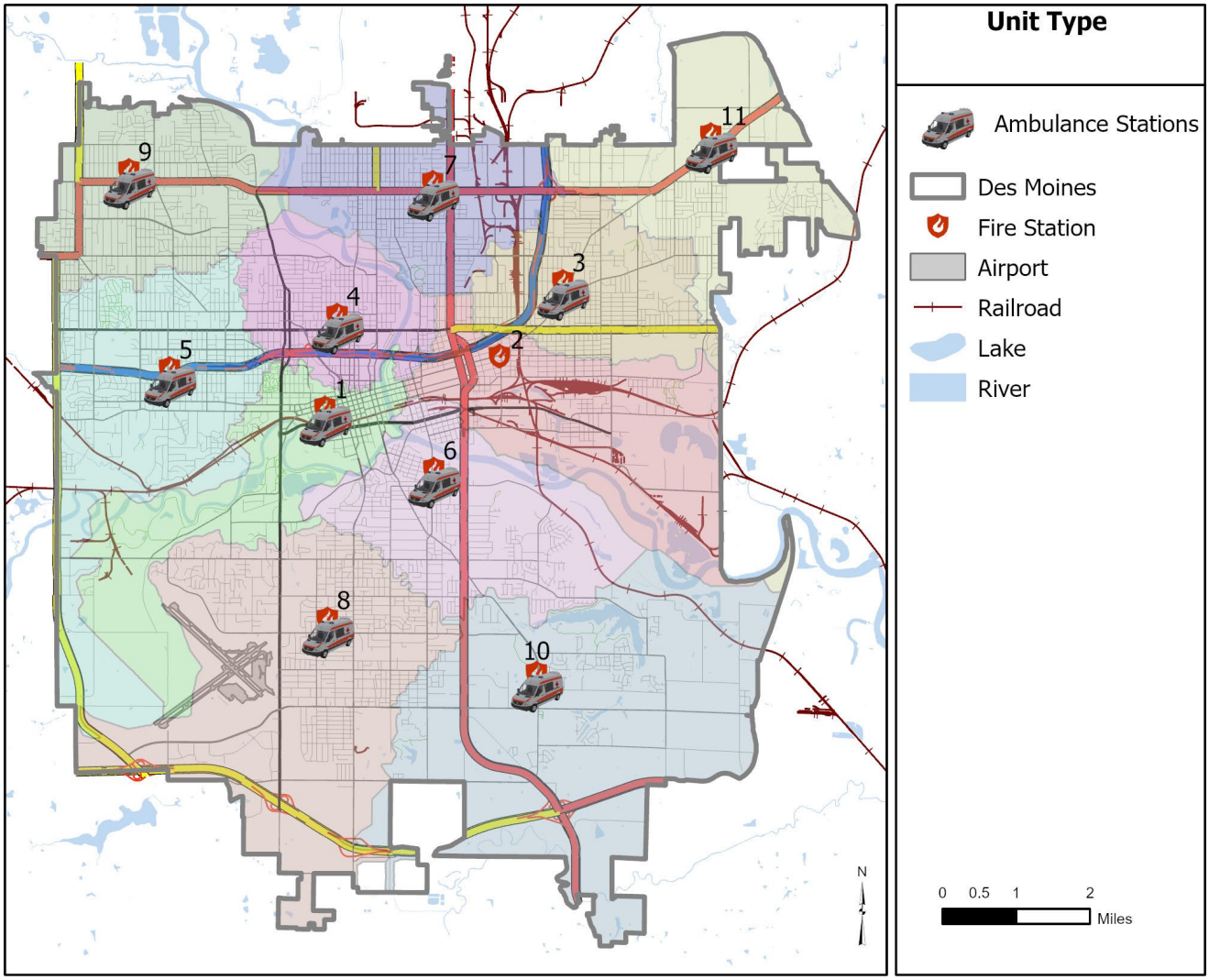
Captain Gary Ramquist Reading to Students (2016)

Other duties include the handling of both citizen and fire department reported complaints, plan review for compliance with the International Fire Code (2018 edition), coordination of lockbox installations, fire protection engineering guidance with other city departments, in-service training for company officers, issuance of false alarm (as defined by city ordinance) citations, in-service training for the business community, general fire safety presentations, fire drill programs, and public education presentations. Along with these tasks, the fire prevention bureau also investigates the cause and origin of fires, ensures compliance with open-burning regulations, and actively patriciates in the juvenile fire setter interventionist program.

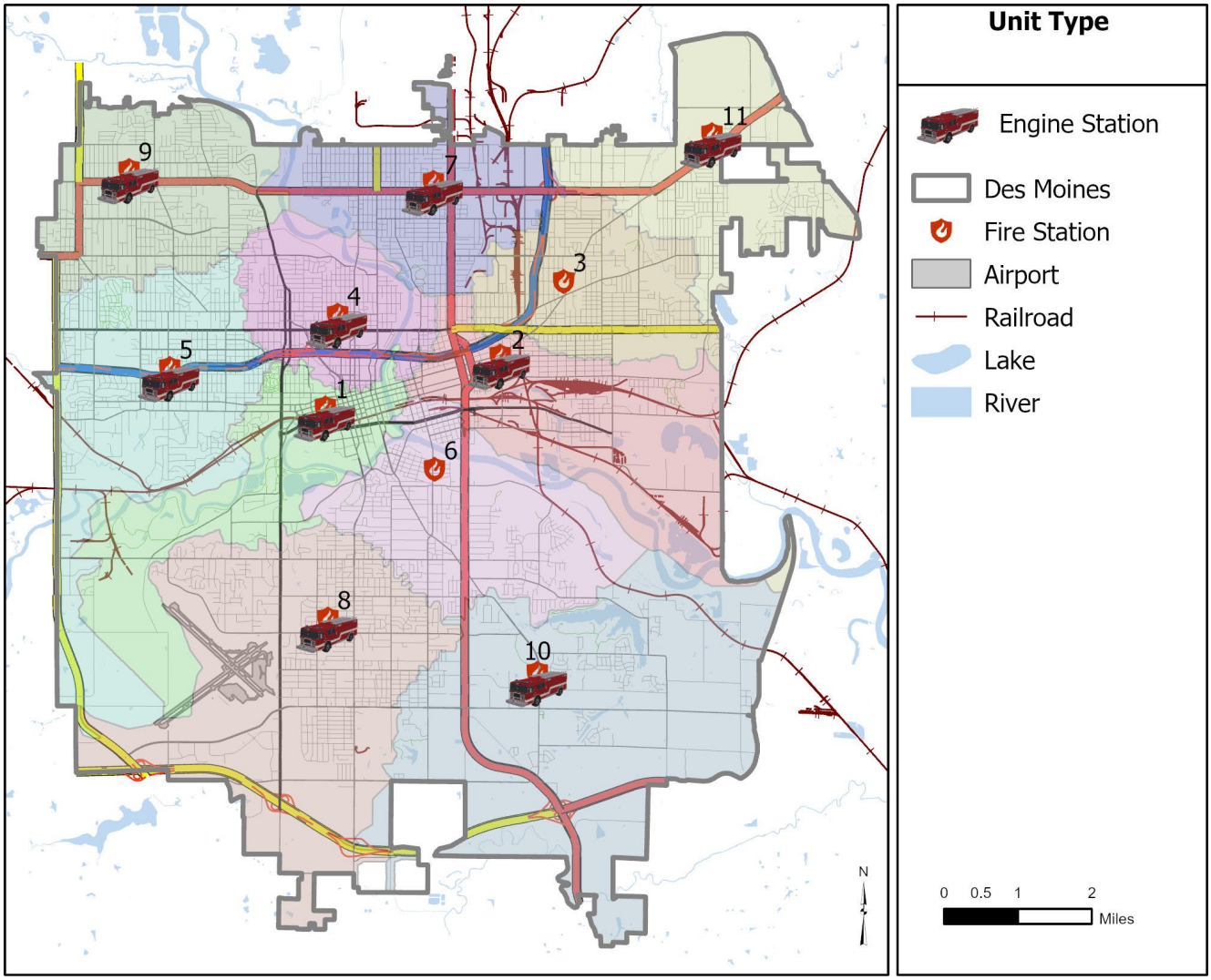
D. Current Deployment and Coverage Areas

Points of Service Delivery

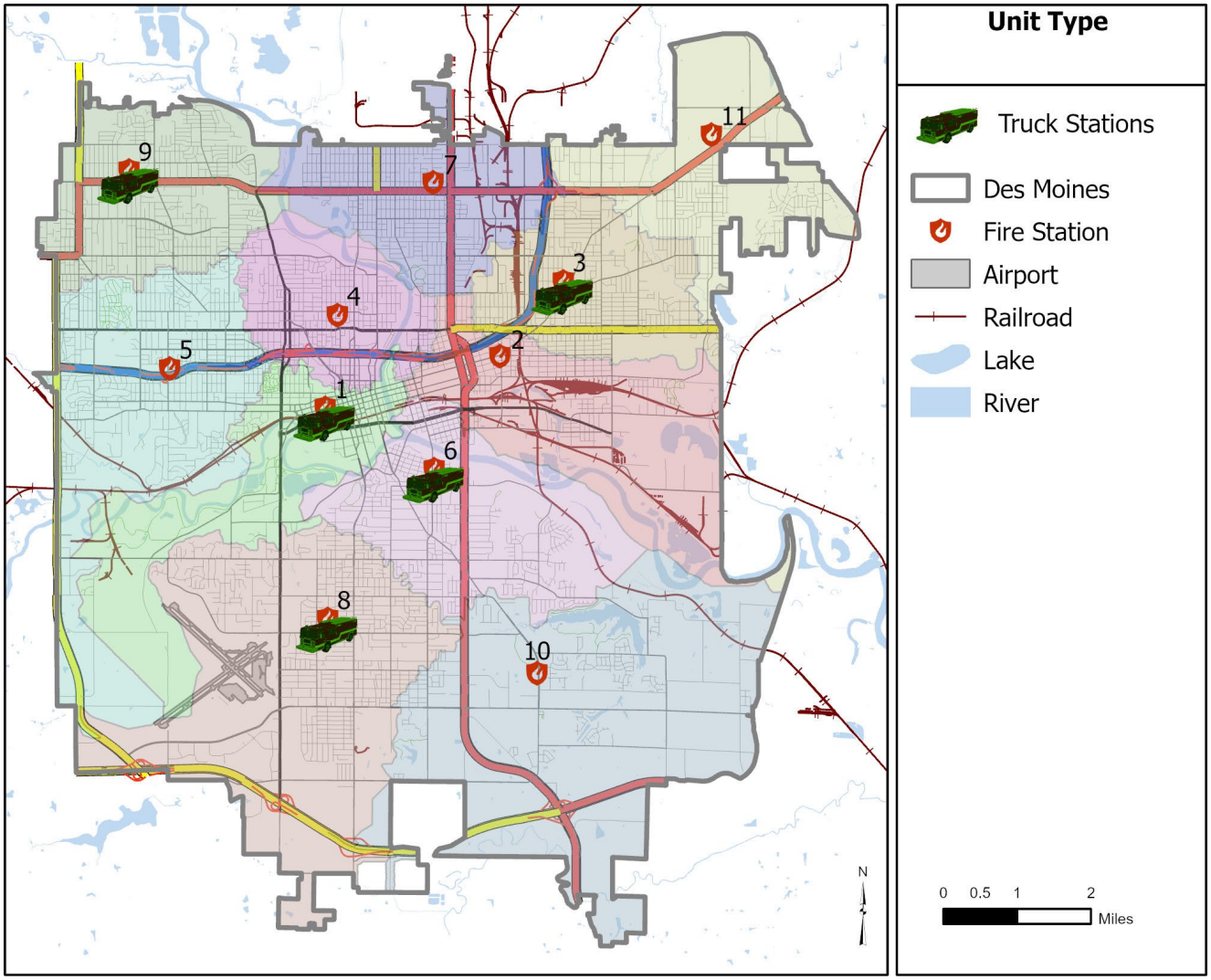
Map 26: Unit Type – Ambulance Stations



Map 27: Unit Type - Engine Stations



Map 28: Unit Type - Truck Stations



E. Summary of Community Response History

The Des Moines Fire Department has experienced, on average, a three percent increase in call volume over the last 19 years. Most of the calls responded to are EMS related (64 percent).

Table 4: Response Summary (2019-2021)

Year	Fire	EMS	Tech Rescue	HazMat	WET	Other	Total Incidents
2019	5,319	21,516	140	395	49	106	27,525
2020	5,914	21,872	86	422	16	48	28,358
2021	6,178	23,799	170	382	20	196	30,745

The "Other" classification has been used to capture the responses, including special events, mutual aid requests, and events that were miss-coded in the CAD by dispatch (i.e., police call types were used).

F. Community Priorities, Expectations, and Performance Goals

Mission Statement

The fire department's mission is to assist the public in the protection of life and property by minimizing the impact of fire, medical emergencies, and potential disasters or events that affect the community and environment.

Community Service Priorities

In April 2022, the Des Moines Fire Department hosted community stakeholder engagement sessions facilitated by the Center for Public Safety Excellence®. During these sessions, stakeholders representing various community groups, neighborhoods, and employers were provided a brief overview of the department and then asked for feedback (structured and unstructured) through a standardized instrument to assess community priorities.

The structured feedback instrument asked the stakeholders to prioritize department programs and yielded the following program and service priorities as indicated by the stakeholders.

Table 5: Community Service Priorities

Programs	Ranking	Score
Emergency Medical Services	1	326
Fire Suppression	2	308
Hazardous Materials Mitigation	3	205
Technical Rescue	4	181
Water Rescue (Water Emergency Team)	5	168
Emergency Preparedness and Management	6	165
Fire Prevention	7	146
Fire Investigation, Origin, and Cause	8	118
Public Education	9	75

Community Service Expectations

The second portion of the stakeholder participation aimed to determine the community service expectations utilizing the unstructured feedback instrument. The unstructured feedback instrument sought the stakeholders' expectations and concerns via free narrative response questions regarding strengths, weaknesses, changes, and other general remarks. The most common themes regarding expectations that occurred in the unstructured feedback were:

1. Quick response times
2. Employee knowledge and training (seen as a positive and a priority)
3. Customer service
4. Availability of resources
5. Community education and outreach
6. Fire prevention/code enforcement
7. Regional resource partners
8. Firefighter safety

The most common themes regarding concerns that occurred in the unstructured feedback were:

1. Adequate staffing and diversity
2. Response and coverage
3. Funding
4. EMS concerns
5. Equipment and technology
6. Personnel safety

Detailed accounts of all stakeholder comments can be found in Appendix C.

Historical Performance Goals

The department has assessed performance in a multitude of ways in recent history. One of the primary purposes of conducting the community risk assessment and formulating these standards of cover document is to create a consistent methodology for analyzing performance over time. Past performance has been measured by outside agencies (station study), internal committees (performance measures committee), and elected officials (City of Des Moines Strategic Plan). Historical performance goals have been benchmarked in three documents in recent history:

2014 Station Study, including:

- Adopted objective that all apparatus responding to a fire alarm or a serious medical emergency arrive within eight minutes of being en route, 90% of the time.
- The fire department operates in a manner to be able to respond to two regular alarms (structure fires – not classified by risk) and three medic calls simultaneously.
- Total of 20 personnel assigned to initial/regular alarm fire.

2016-2021 Strategic Plan, including the following principles:

- Principle 1: Financially Sound City, including commitment to support for community asset protection and risk management, Fire/EMS Service Delivery, and Fire Services and Staffing.
- Principle 4: High Performing City Organization.

2020 Performance Measures Committee:

<u>Emergent Service Delivery</u>

- Response Time: 90% of all emergent calls have first arriving unit travel time of 4 minutes (240 seconds) or less.
- EMS Responses: ROSC in cardiac arrest patients, equal to or better than available national average statistics for ROSC.
- Structure fire responses: Contain fires to room of origin in 80% of all structure fire incidents.

<u>Internal Service Delivery</u>

- Completion of EMS training curriculum: complete 90% of Iowa Bureau of Trauma and Emergency Services training requirements by certification on an annual basis.
- Completion of fire training curriculum: complete >80% of ISO training hours criteria on an annual basis (80% is reflective of the overall ISO rating of 2).

<u>Community Risk Reduction Service Delivery</u>

- Public information/education contact with Des Moines residents: contact with 10% of the city population annually.
- Delivery of services to community businesses: 90% of plan reviews completed within ten business days (14 calendar days); re-submittals within five business days (seven calendar days).

G. Community Risk Assessment and Risk Levels

Risk Assessment Methodology

The Des Moines Fire Department (DMFD) has evaluated the risks within the community and the surrounding contractual areas. Hazard potential arises from incidents the department responds to involving fires, medical emergencies, incidents where individuals require rescue (including extrication, removal from water hazards, and other entrapments), hazardous materials releases, and dangerous situations. For the ongoing assessment, the DMFD defines an incident as an event requiring a response involving department resources to investigate and mitigate the problem to preserve life and minimize potential impacts to the community.

When examining risk, the department considers three distinct factors that assess the relative magnitude and severity of the risk on a scale of 2 to 10. The risk factors evaluated are frequency, community consequence, and operational impact. Frequency and operational impact were direct measures, while community consequence used a rubric to assess. All three elements determine the risk score.

Frequency: the department reviewed the various event types the department responded to for the previous three years to determine the frequency at which the call type occurred. Based on the table below, the frequency equates to a risk score. The frequency of an event happening correlates to the risk it places on the community. Risk increases as frequency increases. The more often an event type occurs, the greater the impact on available units. More events result in fewer available units, thus increasing the risk to the community.

Table 6: Frequency

Risk Element	Description	Min Value	Risk
Frequency	less than 1 per year	0	2
	1 per month	0.03288	4
	1 per week	0.14247	6
	1 per day	1	8
	multiple per day	2	10

Community Consequence: the department assessed the impact a given call type would have on the community. In examining this factor, the department considered the financial implications of damage/loss, the severity of injury/number of deaths, and the corresponding emotional impact on the community. Fire and hazardous materials incidents consider all areas of community consequences. In contrast, EMS, technical rescue, and Water Emergency Team (WET) do not consider financial loss. The community consequence scoring is in the table below.

Table 7: Community Consequence

Risk Element	Description	Value	Risk
Consequence-Financial	$100's	100	2
	$ 1,000's	1000	4
	$ 10,000's	10000	6
	$ 100,000's	100000	8
	$1,000,000's	1000000	10
Consequence-Life	Minor Injuries	2	2
	Significant Injuries	4	4
	Critical Injuries	6	6
	Single Fatality	8	8
	Multiple Fatalities	10	10
Consequence-Magnitude	Single Person	2	2
	Family	4	4
	Multi Family/Small Business	6	6
	Neighborhood/Medium Business	8	8
	City/Major Employer	10	10

Organizational Impact: the department examined the operational impact, the number of personnel, and the resources needed to mitigate the incident effectively. This concept is known as the effective response force (ERF). ERF was compared to the available daily staffing to determine an impact score. The table below describes the impact on the risk score.

Table 8: Organizational Impact

Risk Element	Description	Value	Risk
Organizational	ERF 1 1% of Ops	0.01	2
	ERF 6 10% of Ops	0.1	4
	ERF 18 29% of Ops	0.29	6
	ERF 24 39% of Ops	0.39	8
	ERF 30 48% of Ops	0.48	10

Utilizing the three-axis model, the department assessed nearly 150 call types determining a risk score for each. DMFD used Heron's Formula modified for tetrahedrons to calculate the risk score $Risk\ Score = \sqrt{\frac{(PC)^2}{2} + \frac{(CI)^2}{2} + \frac{(IP)^2}{2}}$ where P = Probability, C = Community Consequence, I = Impact to Operations, the variables are assessed from each risk value assigned for frequency, community consequence, and organizational impact factors. The factor scores are on a 2-10 scale, where 2 represents a minor risk, and 10 represents the maximum risk.

The call type risk scores (the result of Heron's Formula modified for tetrahedrons) were then compared using a histogram to establish the classification into low, medium, high, and maximum risk categories. The mean, median, and mode of the data set were considered to validate the histogram's bin breaks to ensure they were reasonable. The tables below show the statical summary of the risk data collection and the bin breaks used for the risk categories.

Table 9: Statistics of Risk Scores

Statistics of Risk Scores	
Max	73.848
Min	4.899
Average	21.243
Median	19.799
Mode	19.799
Standard Deviation	14.005
Skewness	1.9

Table 10: Risk Category

Risk Category	
Level	*Min Score*
Low	4
Medium	12
High	20
Maximum	28

The DMFD used Doane's formula to determine breakpoints between risk categories. Additional details are available in Appendix D.

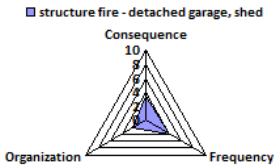
Critical Task Analysis and Risk Scoring

The department analyzed every call type utilized within the current computer-aided dispatch software to determine the effective response force (ERF) needed for each type of incident. This analysis established the required ERF for each incident type. The department divided tasks into two categories: initial and subsequent, to accurately assess the number of personnel necessary to mitigate the emergency effectively. Initial tasks established the number of people needed to complete the critical task; subsequent tasks were utilized where secondary tasks could be achieved by people already assigned to the initial tasks. The DMFD did not consider the number of people assigned to subsequent tasks unless the personnel necessary for subsequent tasks exceeded the ERF determined by the initial tasks. The ERF would be the larger of the two totals for these call types. It is worth noting that although a larger ERF is typically associated with greater risk, this is not always the case because risk also considers frequency and community consequence. The ERF size is not always the factor driving overall risk. A complete list of event types with a task analysis is available in Appendix F. All event-type risk scores are available in Appendix G.

Fire Suppression Services

Low Risk Fire Incidents

Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category
Fire	structure fire - detached garage, shed	4	2	3.33	11.954	Low

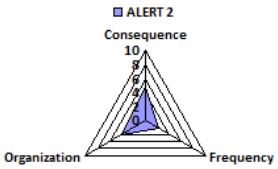


Low-risk fire-related incidents are typically not associated with an occupied structure and generally include fires that would have a minimal impact on the community. The response to a low-risk fire incident is typically a single unit. Examples of these call types include but are not limited to, trash fires, illegal burns, and detached shed/garage fires. If the situation warrants, these incidents can be upgraded to a more significant incident type. If this were to occur, additional units would be dispatched, and the corresponding risk would increase appropriately. The department has identified the following critical tasks as typical for low-risk fire incidents:

Call Type	Task	Inital Task (ERF)	Subsequent
structure fire - detached garage, shed		**6**	**6**
1	Command	1	
2	Safety		1
3	Fire Attack - Primary	2	
4	Pump Operator	1	
5	Water Supply - Hydrant		1
6	Forcible Entry/Ventilation	2	
7	Overhaul		2
8	Utility Control		2

Medium Risk Fire Incidents

Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category
Fire	ALERT 2	2	4	4.67	15.814	Medium



Medium risk fire-related incidents are typically associated with incidents not in the primary response district (specialized response based on the need of a requesting agency) or incidents that have not yet occurred. These incidents generally involve response by multiple units. Examples of these call types include but are not limited to, Alert 2 responses to the airport (aircraft in distress) or mutual aid responses. If the situation warrants, these incidents can be upgraded to a more significant incident type. If this were to occur, additional units would be dispatched, and the corresponding risk would increase appropriately. The department has identified the following critical tasks as typical for medium-risk fire incidents:

Call Type		Task	Inital Task (ERF)	Subsequent
ALERT 2			**17**	
	1	Command	1	
	2	Safety	1	
	3	Support Operations*	15	

*Support operations include pre-staging resources for an aircraft in distress. The department does not provide ARFF response but does support the Des Moines Airport Fire Department response. This Alert 2 is an example of that support.

High-Risk Fire Incidents

Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category
Fire	PRIVATE ALARM (FIRE)	10	2	2	20.199	High

High-risk fire-related incidents generally involve frequent incidents (requiring the commitment of resources daily or more). They are typically associated with occupied structures with significant potential for life loss. If the situation warrants, these incidents can be upgraded to a more significant incident type. If this were to occur, additional units would be dispatched, and the corresponding risk would increase appropriately. Examples of these call types include but are not limited to, private alarm responses. The department has identified the following critical tasks as typical for high-risk fire incidents:

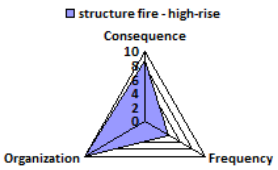
Recommendation 1

For future data analysis, call types (examples: private alarm) should be broken out into sub-call types (waterflow, emergency pendent activation, and general fire alarm) in order to accurately assess the frequency of these types of incidents.

Call Type	Task	Inital Task (ERF)	Subsequent
PRIVATE ALARM (FIRE)		**3**	**2**
1	Command	1	
2	Safety		1
3	Initial Investigation	2	
4	Fire Prot. Systems Control		1

Maximum Risk Fire Incidents

Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category
Fire	structure fire - high-rise	4	10	8.67	71.832	Maximun



Maximum-risk fire-related incidents are generally categorized as confirmed fire incidents in occupied structures. The initial response to these involves a response by a significant number of units, currently referred to as a 'regular alarm.' A regular alarm currently consists of three engines, two trucks, two medic squads, and two district chiefs. Should it be necessary, additional units can be dispatched in the form of subsequent (2nd, 3rd) alarms to mitigate the expanding incident. Examples of these call types include but are not limited to, residential structure fires, commercial structure fires, mid-rise structure fires, and high-rise structure fire assignments. The department has identified the following critical tasks as typical for maximum-risk fire incidents:

Recommendation 2

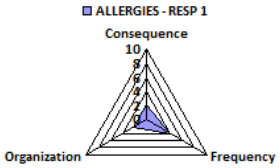
All response plans should be updated in the CAD system to accurately dispatch the number and type of units by risk in lieu of all structure fires being dispatched as a regular alarm.

Call Type / Task	Inital Task (ERF)	Subsequent
structure fire - high-rise	**41**	**5**
1 Command	1	
2 Safety	1	
3 Fire Attack - Primary	5	
4 Inside Truck Work (FE/UT/Search)	2	
5 Search & Rescue	4	
6 Pump Operator	1	
6.1 Water Supply		1
7 Operations Section Chief	1	
8 EMS - FD Quick Response Force (QRF)	2	
9 Rapid Intervention - Full Team	4	
10 EMS - Rehab	2	
11 Fire Attack - Back-Up Line	5	
12 Aerial Operator	1	
13 Elevator Control	1	
14 Lobby Control	1	
15 EMS - Civilians	2	
16 Fire Prot. Systems Control	2	
17 Fire Attack - 2nd Line	5	
18 Accountability	1	
19 Overhaul		4

Emergency Medical Services

Low-Risk Medical Incidents

Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category
EMS	ALLERGIES - RESP 1	4	2	2	8.485	Low

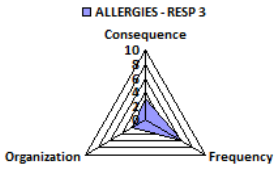


Low-risk medical-related incidents are typically categorized as infrequent incidents involving minor injuries or illness to a single person. Examples of these call types include but are not limited to, sick person calls, headaches, and unknown problems. These incidents generally are mitigated with a single-unit response. If the situation warrants, these incidents can be upgraded to a more significant incident type. If this were to occur, additional units would be dispatched, and the corresponding risk would increase appropriately. The department has identified the following critical tasks as typical for low-risk medical incidents:

Call Type	Task	Inital Task (ERF)	Subsequent
ALLERGIES - RESP 1		**2**	**4**
	1 Patient Care - BLS	2	
	2 Documentation		1
	3 Patient Transport		3

Medium Risk Medical Incidents

Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category
EMS	ALLERGIES - RESP 3	6	2	3	15.875	Medium

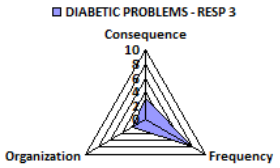


Medium-risk medical-related incidents are typically categorized as incidents that happen frequently, involve a life-threatening emergency to one (or more) people, and may impact more than one person if unmitigated. Mitigation efforts for these incidents generally involve one to three units in the response. Examples of these call types include but are not limited to, allergy, overdose, and hot/cold exposure emergencies. If the situation warrants, these incidents can be upgraded to a more significant incident type. If this were to occur, additional units would be dispatched, and the corresponding risk would increase appropriately. The department has identified the following critical tasks as typical for medium-risk medical incidents:

Call Type	Task	Inital Task (ERF)	Subsequent
ALLERGIES - RESP 3		**3**	**3**
1	Patient Care - ALS	2	
2	Documentation	1	
3	Patient Transport		3

High-Risk Medical Incidents

Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category
EMS	DIABETIC PROBLEMS - RESP 3	8	2	3	20.833	High

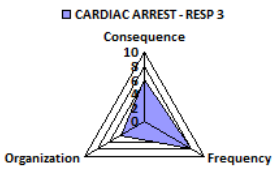


High-risk medical-related incidents are typically characterized as incidents that occur with significant frequency, involve one to multiple patients, and pose a significant risk to the community if unmitigated. These incidents generally involve multi-unit responses appropriate for the call type. Examples of these call types include but are not limited to, diabetic problems, breathing problems, and traumatic injuries. If the situation warrants, these incidents can be upgraded to a more significant incident type. If this were to occur, additional units would be dispatched, and the corresponding risk would increase appropriately. The department has identified the following critical tasks as typical for high-risk medical incidents:

Call Type	Task	Inital Task (ERF)	Subsequent
DIABETIC PROBLEMS - RESP 3		**3**	**3**
1	Patient Care - ALS	2	
2	Documentation	1	
3	Patient Transport		3

Maximum Risk Medical Incidents

Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category
EMS	CARDIAC ARREST - RESP 3	8	4	6	44.181	Maximun



Maximum-risk medical-related incidents happen frequently and/or involve multiple patients with significant injuries or illnesses threatening the local community. These incidents generally involve a multi-unit response appropriate for the given call type. Examples of these call types include but are not limited to, mass-casualty incidents, cardiac arrest situations, or incidents where CPR is in progress. Other units would be dispatched if this were to occur, and the corresponding risk would increase appropriately. Additional resources can be requested to help mitigate an expanding incident if the situation warrants. The department has identified the following critical tasks as typical for maximum-risk medical incidents:

Call Type		Task	Inital Task (ERF)	Subsequent
CARDIAC ARREST - RESP 3			**8**	**4**
	1	Code Commander	1	
	2	Chest Compressions 1	1	
	3	Chest Compressions 2	1	
	4	Airway	1	
	5	Heart Monitor	1	
	6	IV/IO Access/Medications	1	
	7	Documentation	1	
	8	Family Liaison	1	
	9	Patient Transport		4

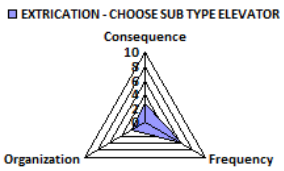
Technical Rescue Services

Low-Risk Technical Rescue Incidents

The department has not identified any low-risk technical rescue incidents.

Medium Risk Technical Rescue Incidents

Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category
Tech Rescue	EXTRICATION - CHOOSE SUB TYPE ELEVATOR	6	2	2.67	14.648	Medium

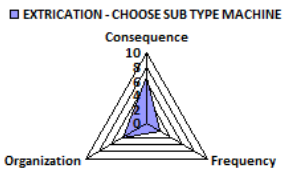


Medium-risk technical rescue-related incidents are typically categorized as incidents that occur with some frequency and impact one person. The techniques required to mitigate these incidents are generally classified as less complex and usually involve one to three units in response to achieving the needed ERF. Examples of these call types include but are not limited to, elevator extrication and low-angle rescue. If the situation warrants, these incidents can be upgraded to a more significant incident type. If this were to occur, additional units would be dispatched, and the corresponding risk would increase appropriately. The department has identified the following critical tasks as typical for medium-risk technical rescue incidents:

Call Type	Task	Inital Task (ERF)	Subsequent
EXTRICATION - CHOOSE SUB TYPE ELEVATOR		**4**	**2**
1	Command	1	
2	Safety		1
3	Utility Control	1	
4	Initial Investigation		1
5	Extrication - Simple	2	

High-Risk Technical Rescue Incidents

Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category
Tech Rescue	EXTRICATION - CHOOSE SUB TYPE MACHINE	2	4	6.67	21.838	High

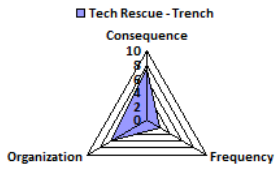


High-risk technical rescue-related incidents happen with significant frequency and/or impact multiple people, potentially posing a significant risk to the community. These incidents generally involve a multi-unit response. Examples of these call types include but are not limited to, vehicle and machine extraction assignments. If the situation warrants, these incidents can be upgraded to a more significant incident type. If this were to occur, additional units would be dispatched, and the corresponding risk would increase appropriately. The department has identified the following critical tasks as typical for high-risk technical rescue incidents:

Call Type		Task	Inital Task (ERF)	Subsequent
EXTRICATION - CHOOSE SUB TYPE MACHINE			**12**	**2**
	1	Command	1	
	2	Safety	1	
	3	Utility Control		1
	4	Initial Investigation		1
	5	Extrication - Advanced	4	
	6	Rescue Group Supervisor	1	
	7	Support Operations	3	
	8	EMS - Civilians	2	

Maximum Risk Technical Rescue Incidents

Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category
Tech Rescue	Tech Rescue - Trench	2	6	7.33	33.861	Maximun



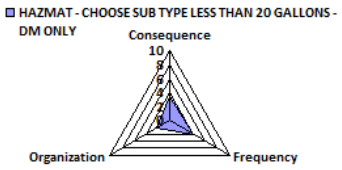
Maximum-risk technical rescue-related incidents are infrequent but typically involve one to multiple patients and pose a significant community risk. These incidents involve a multi-unit response that includes the technical rescue team. Examples of these call types include but are not limited to, confined space or trench rescue. Additional resources can be requested to help mitigate an expanding incident if the situation warrants. Other units would be dispatched if this were to occur, and the corresponding risk would increase appropriately. The department has identified the following critical tasks as typical for maximum-risk technical rescue incidents:

Call Type		Task	Inital Task (ERF)	Subsequent
Tech Rescue - Trench			**22**	**4**
	1	Command	1	
	2	Safety	1	
	3	Rescue Group Supervisor	1	
	4	Rescue Team	2	
	5	Back-up Team	2	
	6	Support Operations	1	
	7	Support Operations	6	
	8	Rigging	3	
	9	Support Operations		2
	10	EMS - Civilians	2	
	11	EMS - Rehab	2	
	12	Accountability		1
	13	Atmospheric Monitoring	1	
	14	Utility Control		1

Hazardous Materials Services

Low-Risk Hazardous Materials Incidents

Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category
HazMat	HAZMAT - CHOOSE SUB TYPE LESS THAN 20 GALLONS - DM ONLY	4	2	3.33	11.954	Low

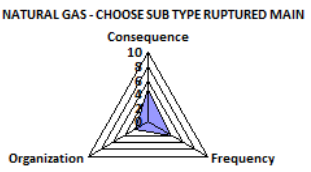


Low-risk hazardous materials-related incidents are relatively infrequent, do not involve people in distress, and do not pose a significant risk to the community. Examples of these call types include but are not limited to, small fuel spills and complaints of natural gas odors. These incidents generally involve a single-unit response. If the situation warrants, these incidents can be upgraded to a more significant incident type. If this were to occur, additional units would be dispatched, and the corresponding risk would increase appropriately. The department has identified the following critical tasks as typical for low-risk hazardous materials incidents:

Call Type	Task	Inital Task (ERF)	Subsequent
HAZMAT - CHOOSE SUB TYPE LESS THAN 20 GALLO		**3**	**1**
1	Command	1	
2	Safety		1
3	Entry Team	2	

Medium Risk Hazardous Materials Incidents

Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category
HazMat	NATURAL GAS - CHOOSE SUB TYPE RUPTURED MAIN	4	2	4.67	15.814	Medium

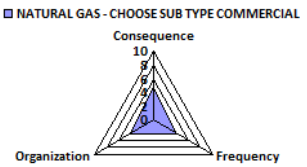


Medium-risk hazardous materials-related incidents frequently happen, involve one to multiple people, and pose a risk to the local community. Examples of these call types include but are not limited to, larger fuel spills, chemical odor complaints, residential natural gas leaks, and carbon monoxide incidents. These incidents generally involve one to three units in the response. If the situation warrants, these incidents can be upgraded to a more significant incident type. If this were to occur, additional units would be dispatched, and the corresponding risk would increase appropriately. The department has identified the following critical tasks as typical for medium-risk hazardous materials incidents:

Call Type	Task	Inital Task (ERF)	Subsequent
NATURAL GAS - CHOOSE SUB TYPE RUPTURED MA		**3**	**1**
1	Command	1	
2	Safety		1
3	Entry Team	2	

High Risk Hazardous Materials Incidents

Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category
HazMat	NATURAL GAS - CHOOSE SUB TYPE COMMERCIAL	4	4	4.67	21.839	High

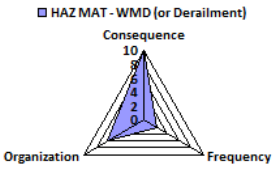


High risk hazardous materials-related incidents typically involve the potential for multiple people to be impacted. If unmitigated, they pose a significant risk to the community and generally occur in occupied buildings. These types of incidents involve a multi-unit response. Examples of these call types include but are not limited to, commercial natural gas leaks. These incidents can be upgraded to a more significant incident type if the situation warrants. If this were to occur, additional units would be dispatched, and the corresponding risk would increase appropriately. The department has identified the following critical tasks as typical for high-risk hazardous materials incidents:

Call Type	Task	Inital Task (ERF)	Subsequent
NATURAL GAS - CHOOSE SUB TYPE COMMERCIAL		**15**	**3**
1	Command	1	
2	Safety	1	
3	Entry Team	2	
4	Back-up Team	2	
5	Documentation	1	
6	HazMat Group Suervisor	1	
7	Decon		3
8	EMS - Rehab	2	
9	EMS - Civilians	2	
10	HazMat Operation	3	

Maximum Risk Hazardous Materials Incidents

Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category
HazMat	HAZ MAT - WMD (or Derailment)	2	6	10	45.519	Maximun



Maximum risk hazardous materials-related incidents pose an extreme threat to the community (both fiscally and emotionally) and have the potential/likelihood to impact many people. These incidents involve a multi-unit response that includes the hazardous materials team. Examples of these call types include but are not limited to, WMD response or train derailment. Additional resources can be requested to help mitigate an expanding incident if the situation warrants. Other units would be dispatched if this were to occur, and the corresponding risk would increase appropriately. The department has identified the following critical tasks as typical for maximum-risk hazardous materials incidents:

Call Type	Task	Inital Task (ERF)	Subsequent
HAZ MAT - WMD (or Derailment)		**22**	**3**
1	Command	1	
2	Safety	1	
3	Liaison	1	
4	Entry Team	2	
5	Back-up Team	2	
6	Documentation	1	
7	Special Ops Supervisor	1	
8	Support Operations	4	
9	Decon		3
10	EMS - Rehab	2	
11	EMS - Civilians	2	
12	Fire Attack - Primary	2	
13	Pump Operator	1	
14	Support Operations	2	

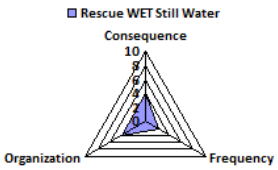
Water Emergency Team Services

Low-Risk WET Incidents

The department has not identified any low-risk WET incidents.

Medium Risk WET Incidents

Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category
WET	Rescue WET Still Water	2	4	4	13.856	Medium



Medium-risk WET-related incidents are typically categorized as one or more people in distress in a still body of water. These incidents occur infrequently but are a significant risk to the individuals involved, both responders and victims. Response to these incidents generally involves one to three units. Examples of these call types include but are not limited to, still-water rescue incidents. These incidents can be upgraded to a more significant incident type if the situation warrants. If this were to occur, additional units would be dispatched, and the corresponding risk would increase appropriately. The department has identified the following critical tasks as typical for medium-risk WET incidents:

Call Type		Task	Inital Task (ERF)	Subsequent
Rescue WET Still Water			**11**	**7**
	1	Command	1	
	2	Safety		1
	3	Rescue Group Supervisor	1	
	4	Boat Operations	4	
	5	Shoreline Operations	3	
	6	Support Operations		3
	7	EMS - Civilians	2	
	8	EMS - Rehab		2
	9	Accountability		1

High-Risk WET Incidents

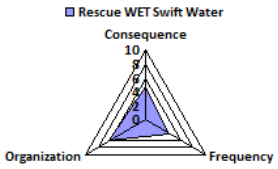
Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category
WET	MUTUAL AID - DM ONLY WET TEAM	2	6	5.33	25.302	High

High-risk WET-related incidents are typically categorized as mutual aid assignments for still water or ice rescue. These incidents are infrequent and involve one or more victims. Mitigation of these incidents generally involves a multi-unit response. Examples of these call types include but are not limited to, mutual aid WET assignments. If the situation warrants, these incidents can be upgraded to a more significant incident type. If this were to occur, additional units would be dispatched, and the corresponding risk would increase appropriately. The department has identified the following critical tasks as typical for high-risk WET incidents:

Call Type		Task	Inital Task (ERF)	Subsequent
MUTUAL AID - DM ONLY WET TEAM			**19**	**3**
	1	Command	1	
	2	Safety	1	
	3	Rescue Group Supervisor	1	
	4	Boat Operations	8	
	5	Shoreline Operations	3	
	6	Support Operations	3	
	7	EMS - Civilians	2	
	8	EMS - Rehab		2
	9	Accountability		1

Maximum Risk WET Incidents

Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category
WET	Rescue WET Swift Water	4	6	4.67	29.241	Maximun



Maximum-risk WET-related incidents are the most dangerous and have the most significant impact on the community. These incidents involve one or more victims in the most hazardous water conditions (moving water). These incidents require a multi-unit response that includes the WET team. Examples of these call types include but are not limited to, swiftwater WET assignments, flood responses, and WET assignments involving a low-head dam. Additional resources can be requested to help mitigate an expanding incident if the situation warrants. Other units would be dispatched if this were to occur, and the corresponding risk would increase appropriately. The department has identified the following critical tasks as typical for maximum-risk WET incidents:

Call Type	Task	Inital Task (ERF)	Subsequent
Rescue WET Swift Water		**19**	**3**
1	Command	1	
2	Safety	1	
3	Rescue Group Supervisor	1	
4	Boat Operations	8	
5	Shoreline Operations	3	
6	Support Operations	3	
7	EMS - Civilians	2	
8	EMS - Rehab		2
9	Accountability		1

Risk Classification and Categories

The five risk classifications (EMS, fire, technical rescue, hazardous materials, and WET rescue) have been analyzed for frequency, organizational impact, and community consequence to determine their total risk score. The table below summarizes the results of that analysis.

Table 11: Risk Score by Classification and Category

Fire				
Low	Frequency	Organization	Consequence	Total Risk Score
ARSON FIRE INVESTIGATION	2	2	3.33	7.236
STILL ALARM - CHOOSE SUB TYPE ALL OTHER	4	2	2.67	10.163
structure fire - detached garage, shed	4	2	3.33	11.954
INVESTIGATION SMOKE ODOR	4	2	3.33	11.954
Medium	Frequency	Organization	Consequence	Total Risk Score
STILL ALARM - CHOOSE SUB-TYPE TRASH FIRE - DM ONLY	6	2	2.67	14.648
SPRINKLER ALARM	6	2	2.67	14.648
ALERT 2	2	4	4.67	15.814
STILL ALARM - CHOOSE SUB-TYPE ILLEGAL BURN	8	2	2	16.248
INVESTIGATION	6	2	3.33	17.140
STILL ALARM - CHOOSE SUB TYPE VEHICLE FIRE	6	2	4	19.799
STILL ALARM - CHOOSE SUB-TYPE GRASS FIRE - DM ONLY	6	2	4	19.799
INVESTIGATION SMOKE IN THE AREA	6	2	4	19.799
WIRES DOWN ARCING OR SPARKING	6	2	4	19.799
MUTUAL AID - DM-ONLY FIRE ASSIGNMENT	2	4	6	19.799
High	Frequency	Organization	Consequence	Total Risk Score
PRIVATE ALARM (FIRE)	10	2	2	20.199
PUBLIC ASSISTANCE (FIRE)	10	2	2	20.199
Maximum	Frequency	Organization	Consequence	Total Risk Score
structure fire - residential	6	6	5.33	40.874
Structure Fire - Duplex/Jumbo	6	8	6.67	58.107
structure fire - high-rise	4	10	8.67	71.832
ALERT 3	2	10	10	73.485
structure fire - commercial	6	10	7.33	73.848
structure fire - mid-rise	6	10	7.33	73.848

EMS				
Low	Frequency	Organization	Consequence	Total Risk Score
MEDICAL ALARM	2	2	2	4.899
ASSIST OFFICER/AGENCY	2	2	2	4.899
BURNS - RESP 1	2	2	2	4.899
EYE PROBLEM - RESP 3	2	2	2	4.899
ASSAULT	2	2	3	6.633
CARDIAC - RESP 1	2	2	3	6.633
TRANSPORT	2	2	3	6.633
MUTUAL AID - DM-ONLY MEDICAL ASSIGNMENT	2	2	4	8.485
CARBON MONOXIDE - RESP 1	2	2	4	8.485
ELECTROCUTION - RESP 3	2	2	4	8.485
ALLERGIES - RESP 1	4	2	2	8.485
ANIMAL BITES - RESP 1	4	2	2	8.485
STABBING - RESP 1	2	2	4	8.485
TRANSFER - RESP 3	2	2	4	8.485
HEADACHE - RESP 1	4	2	2	8.485
DROWNING - RESP 3	2	2	4	8.485
HEAT / COLD - RESP 1	4	2	2	8.485
EYE PROBLEM - RESP 1	4	2	2	8.485
GUNSHOT - RESP 1	2	2	5	10.392
CHOKING - RESP 1	4	2	3	11.045
BREATHING PROBLEMS - RESP 1	4	2	3	11.045
BURNS - RESP 3	4	2	3	11.045
PREGNANCY - RESP 1	4	2	3	11.045
HEART PROBLEM - RESP 1	4	2	3	11.045
ANIMAL BITES - RESP 3	4	2	3	11.045
Medium	Frequency	Organization	Consequence	Total Risk Score
PSYCHIATRIC - RESP 1	6	2	2	12.329
DIABETIC PROBLEMS - RESP 1	6	2	2	12.329
HEMORRHAGE - RESP 1	6	2	2	12.329
ABDOMINAL PAIN - RESP 3	6	2	2	12.329
BACK PAIN - RESP 3	6	2	2	12.329
ASSAULT - RESP 1	6	2	2	12.329
ABDOMINAL PAIN - RESP 1	6	2	2	12.329
BACK PAIN - RESP 1	6	2	2	12.329
PENETRATING TRAUMA - RESP 3	2	2	6	12.329
TRAFFIC ACCIDENT - RESP 1	6	2	2	12.329
ALLERGIES - RESP 3	6	2	3	15.875
CONVULSIONS - RESP 1	6	2	3	15.875
HEADACHE - RESP 3	6	2	3	15.875
TRAUMATIC INJURIES - RESP 1	6	2	3	15.875
FALLS - RESP 1	8	2	2	16.248
CARBON MONOXIDE - RESP 3	4	2	5	16.793
TRAUMATIC INJURIES - CPR	2	4	6	19.799
CONVULSIONS - CPR	2	4	6	19.799

CHOKING - RESP 3	6	2	4	19.799
CARBON MONOXIDE - CPR	2	4	6	19.799
FALLS - CPR	2	4	6	19.799
OVERDOSE - RESP 1	6	2	4	19.799
OVERDOSE - CPR	2	4	6	19.799
HEAT / COLD - RESP 3	6	2	4	19.799
High	Frequency	Organization	Consequence	Total Risk Score
SICK PERSON - RESP 1	10	2	2	20.199
SICK PERSON - RESP 3	10	2	2	20.199
ASSAULT - RESP 3	8	2	3	20.833
DIABETIC PROBLEMS - RESP 3	8	2	3	20.833
DROWNING - CPR	2	4	7	22.847
PENETRATING TRAUMA - CPR	2	4	7	22.847
TRAFFIC ACCIDENT - CPR	2	4	7	22.847
STABBING - CPR	2	4	7	22.847
TRAUMATIC INJURIES - RESP 3	6	2	5	23.917
UNCONSCIOUS - RESP 1	6	2	5	23.917
PREGNANCY - RESP 3	6	2	5	23.917
BREATHING PROBLEMS - RESP 3	10	2	3	25.846
PSYCHIATRIC - RESP 3	8	2	4	25.923
GUNSHOT - CPR	2	4	8	25.923
HEMORRHAGE - RESP 3	8	2	4	25.923
UNCONSCIOUS - CPR	4	4	6	26.533
Maximum	Frequency	Organization	Consequence	Total Risk Score
STABBING - RESP 3	6	2	6	28.142
HEART PROBLEM - RESP 3	8	2	5	31.273
STROKE - RESP 3	8	2	5	31.273
CONVULSIONS - RESP 3	10	2	4	32.125
CHEST PAIN - RESP 3	10	2	4	32.125
CARDIAC ARREST - RESP 1	6	4	6	34.986
GUNSHOT - RESP 3	6	2	8	36.770
OVERDOSE - RESP 3	10	2	5	38.730
UNKNOWN PROBLEM - RESP 3	10	2	5	38.730
UNCONSCIOUS - RESP 3	10	2	5	38.730
FALLS - RESP 3	10	2	5	38.730
TRAFFIC ACCIDENT - RESP 3	10	2	5	38.730
CARDIAC ARREST - RESP 3	8	4	6	44.181
mass-casualty active threat	2	6	10	45.519
mass-casualty vehicle crash	2	10	9	66.423

Tech Rescue				
Medium	Frequency	Organization	Consequence	Total Risk Score
EXTRICATION - CHOOSE SUB TYPE ELEVATOR	6	2	2.67	14.648
Rescue ROPE Low Angle	2	4	5.33	17.779
High	Frequency	Organization	Consequence	Total Risk Score
EXTRICATION - CHOOSE SUB TYPE MACHINE	2	4	6.67	21.838
EXTRICATION - CHOOSE SUB TYPE VEHICLE - Large/multiple	2	4	6.67	21.838
RESCUE - CHOOSE SUB-TYPE ROPE - DM ONLY	2	6	4.67	22.543
EXTRICATION - CHOOSE SUB TYPE VEHICLE	4	4	6	26.533
Maximum	Frequency	Organization	Consequence	Total Risk Score
MUTUAL AID - DM-ONLY TECH RESCUE	2	6	6	28.142
RESCUE - CHOOSE SUB-TYPE CONFINED SPACE - DM ONLY	2	6	6	28.142
Tech Rescue - Trench	2	6	7.33	33.861

Hazardous Materials				
Low	Frequency	Organization	Consequence	Total Risk Score
HAZMAT - CHOOSE SUB-TYPE DRUG LAB REMNANTS - DM ONLY	2	2	3.33	7.236
NATURAL GAS - CHOOSE SUB-TYPE ODOR OUTSIDE	4	2	3.33	11.954
HAZMAT - CHOOSE SUB TYPE LESS THAN 20 GALLONS - DM ONLY	4	2	3.33	11.954
Medium	Frequency	Organization	Consequence	Total Risk Score
HAZMAT - CHOOSE SUB-TYPE CHEMICAL UNKNOWN - DM ONLY	2	4	4	13.856
HAZMAT - CHOOSE SUB-TYPE CHEMICAL ODOR - DM ONLY	4	2	4	13.856
HAZMAT - CHOOSE SUB TYPE WORKING LAB - DM ONLY	2	4	4	13.856
HAZMAT - CHOOSE SUB TYPE GREATER THAN 20 GALLONS - DM ONLY	2	4	4	13.856
NATURAL GAS - CHOOSE SUB TYPE SINGLE FAMILY	6	2	2.67	14.648
NATURAL GAS - CHOOSE SUB TYPE RUPTURED MAIN	4	2	4.67	15.814
INVESTIGATION CARBON MONOXIDE - 3RD PARTY CALL	6	2	3.33	17.140
High	Frequency	Organization	Consequence	Total Risk Score
NATURAL GAS - CHOOSE SUB TYPE COMMERCIAL	4	4	4.67	21.839
HAZMAT - CHOOSE SUB-TYPE BIOHAZARD DETECTION SYSTEM - DM ONLY	2	4	7.33	23.860
Maximum	Frequency	Organization	Consequence	Total Risk Score
HAZ MAT - WMD (or Derailment)	2	6	10	45.519

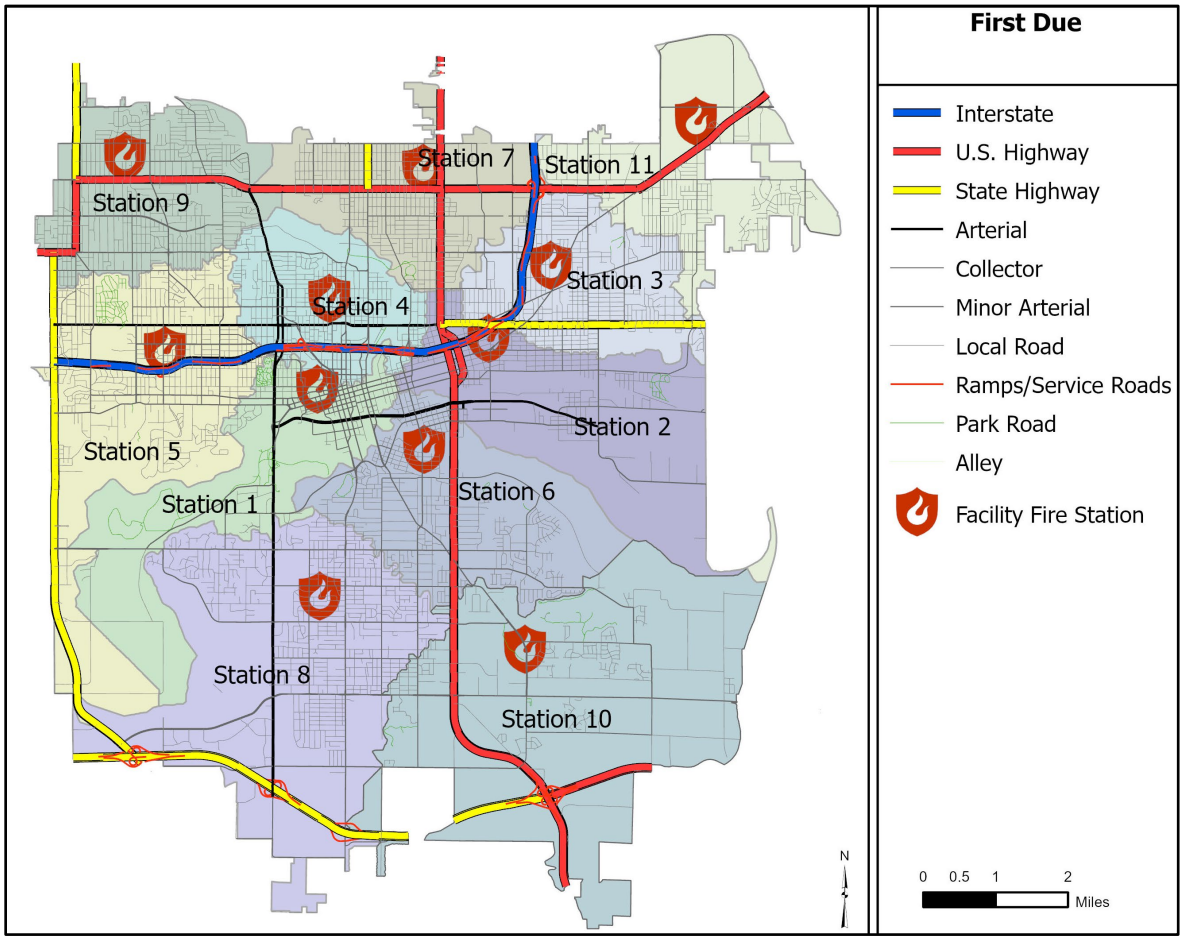
WET				
Medium	Frequency	Organization	Consequence	Total Risk Score
Rescue WET Still Water	2	4	4	13.856
RESCUE - CHOOSE SUB-TYPE SINKING VEHICLE - DM ONLY	2	4	5.33	17.779

High	Frequency	Organization Consequence		Total Risk Score
MUTUAL AID - DM ONLY WET TEAM	2	6	5.33	25.302
Maximum	Frequency	Organization Consequence		Total Risk Score
Rescue WET Swift Water	4	6	4.67	29.241
Rescue WET Dam/Strainer/Night	2	6	7.33	33.861
Rescue WET Flood	2	6	9.33	42.579

Geographical Planning Areas/Zones

The Des Moines Fire Department has established 11 planning zones that geographically divide the 91 square miles that make up the department's primary response area, the city limits of Des Moines. The department utilizes these 11 zones that coincide with the geographical first-due areas for each of the 11 fire stations. In addition to this macro analysis, the department uses 1/4-mile hexagons to examine performance at the micro level when necessary. As station locations change (Relocation of Station 4 planning has begun for a 2025 move), this will impact first-due areas and planning zones. The department intends to analyze impacts at the micro level in the hexagons along planning zone borders when these changes occur to determine the extent of the relocation impacts.

Map 29: First Due



H. Historical Perspective and Summary of System Performance

Distribution Factors

Distribution examines the department's ability to respond to calls for service from a fixed location (fire station) within the established benchmark response time goals. The Des Moines Fire Department (DMFD) provides service to the community through 11 strategically located fixed facilities (fire stations). In November 2021, the 11th station was added to address response time delays in the northeastern portion of the city. As of publishing, the department is actively working on relocating Station #4 to address a similar gap in service in the northwestern part of the city (in-between stations 4, 5, and 9). Staffing all frontline apparatus requires 64 personnel. However, Engines 8 and 9 are frequently out of service due to a lack of available personnel and reducing daily staffing to 58 personnel. Other than short-duration personnel absences (e.g., meetings, appointments, etc.), the department does not go below this threshold. Resources are distributed strategically throughout the city to reduce response times and ensure equitable service (see the city map showing planning zones and stations). Specific station resource allocations include:

Map 30: Station First Due Areas

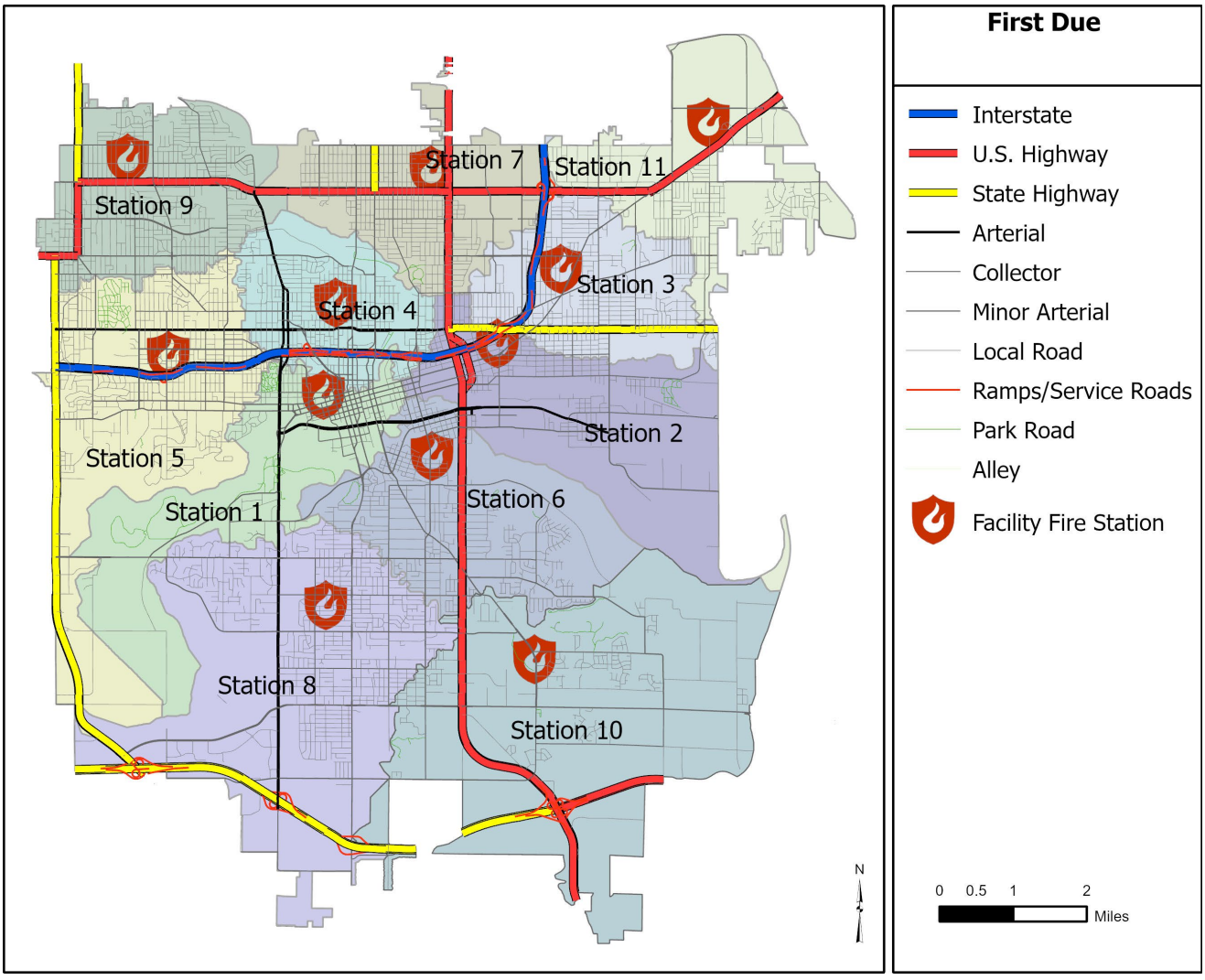
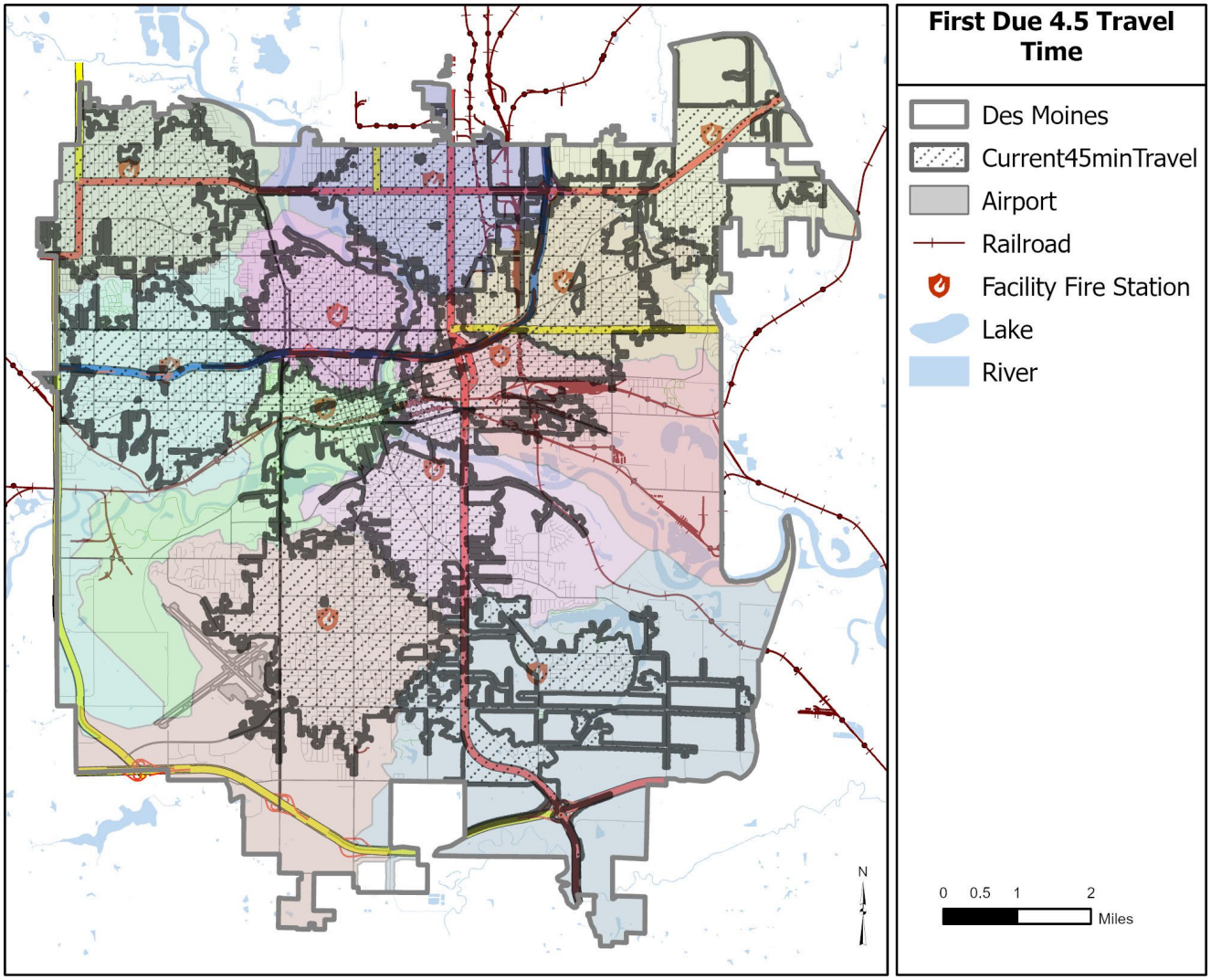


Table 12: Stations, Apparatus, and Minimum Personnel

Station	Address	Apparatus	Minimum Personnel
1	1330 Mulberry Street	District Chief 1 Engine 1 Truck 1 Medic 1 HazMat 1 HazMat 3 Utility 1	District Chief 1 (1) Engine 1 (3) Truck 1 (3) Medic 1 (2) **Total (9)**
2	1727 E. Walnut Street	District Chief 2 Engine 2 WET 2	District Chief 2 (1) Engine 2 (3) **Total (4)**
3	2458 Easton Blvd.	Truck 3 Medic 3	Truck 3 (3) Medic 3 (2) **Total (5)**
4	917 University Avenue	Engine 4 Medic 4 Power Unit	Engine 4 (3) Medic 4 (2) **Total (5)**
5	917 42nd Street	Engine 5 Medic 5 Command Unit	Engine 5 (3) Medic 5 (2) **Total (5)**
6	1919 SE 6th Street	Truck 6 Medic 6 WET 6	Truck 6 (3) Medic 6 (2) **Total (5)**
7	3500 E 12th Street	Engine 7 Medic 7 Tech. Rescue 7	Engine 7 (3) Medic 7 (2) **Total (5)**
8	1249 McKinley Avenue	Engine 8 Truck 8 Medic 8 Brush Truck 8 Utility 8	Truck 8 (3) Medic 8 (2) **Total (5)**
9	4800 Douglas Avenue	Engine 9 Truck 9 Medic 9	Truck 9 (3) Medic 9 (2) **Total (5)**
10	5900 E. Indianola Avenue	Engine 10 Medic 10 Tender 10	Engine 10 (3) Medic 10 (2) **Total (5)**
11	4150 E. 42nd Street	Engine 11 Medic 11 Tender 11	Engine 11 (3) Medic 11 (2) **Total (5)**

Fire station locations are historical, and future/relocated station locations are determined through travel time mapping and call volume to ensure appropriate fixed facility locations. The goal of facility placement is to provide a fire station within 4.5 minutes of travel time to all built-out areas within the city limits. In addition to maximizing the efficacy of fixed locations, the department employs an automatic vehicle location (AVL) system to dispatch the closest appropriate unit, regardless of station location or planning zone, to each emergency. The following map shows each fixed area's distribution capabilities using the 4.5-minute (shaded areas) travel time.

Map 31: First Due 4.5-Minute Travel Time



Distribution is assessed in a number of different ways. One of the primary measures is call volume by planning zone and by each individual unit. The following two tables display these measures for the calendar year 2021. The first table examines calls by planning zone and is further broken down by type of call. The second table further breaks down these calls for service by each individual unit.

Table 13: Planning Zone Incidents (2021)

First Due Station	Fire	EMS	Tech Rescue	HazMat	WET	Other	Total
Outside of City	14	105	2	2		9	132
1	586	2820	72	21	3	25	3,527
2	447	1,100	8	24		15	1,594
3	512	1,890	9	36		43	2,490
4	695	3,249	19	35	9	70	4,077
5	626	2,146	6	53		3	2,834
6	608	1,961	18	40	3	15	2,645
7	563	1,994	6	30	3	3	2,599
8	724	3,106	7	51		10	3,898
9	688	2,368	9	46	1	1	3,113
10	362	1,619	10	20	1	1	2,013
11	353	1,441	4	24		1	1,823
	6,178	23,799	170	382	20	196	30,745

Table 14: Station Unit Response Totals (2021)

Station	Unit	Fire	EMS	Tech Rescue	HazMat	WET	Other	Total
01	DC01	654	118	32	58	21	2	885
	E01	1,159	2,277	78	42	5	4	3,565
	HAZ01	2		2	66		1	71
	MCC01						1	1
	MS01	200	3,350	12	8	3	1	3,574
	ST01						7	7
	T01	1,198	508	20	55	12	3	1,796
	U01	1	3				21	25
	8	3,214	6,256	144	229	41	40	9,924
02	DC02	664	81	24	31	18	7	825
	E02	908	1,116	34	53	2	4	2,117
	MS02	1	13					14
	3	1,573	1,210	58	84	20	11	2,956
03	E03	383	918	10	20		6	1,337
	HAZ03		1		19		3	23
	MS03	169	3,179	9	11	2	24	3,394
	T03	909	1,689	13	68	5	5	2,689
	4	1,461	5,787	32	118	7	38	7,443
04	E04	1,108	2,324	31	52	10	4	3,529
	MS04	245	3,520	15	7	5	6	3,798
	PU4	16						16
	3	1,369	5,844	46	59	15	10	7,343
05	E05	845	1,600	18	74			2,537

Station	Unit	Fire	EMS	Tech Rescue	HazMat	WET	Other	Total
	MS05	177	2,168	6	19		4	2,374
	2	1,022	3,768	24	93		4	4,911
06	MS06	194	2,570	15	13	16	8	2,816
	T06	1,198	1,600	22	94	1	3	2,918
	2	1,392	4,170	37	107	17	11	5,734
07	E07	810	1,647	18	49	3	5	2,532
	MS07	191	2,619	10	11	8	7	2,846
	TN07	2						2
	TR07		1	6			1	8
	4	1,003	4,267	34	60	11	13	5,388
08	BR08	10	1					11
	E08	263	667	2	10			942
	MS08	130	2,790	9	9		1	2,939
	T08	752	1,945	10	59		1	2,767
	U08	3					16	19
	5	1,158	5,403	21	78		18	6,678
09	E09	159	335	2	9	1		506
	MS09	125	2,251	10	10	1		2,397
	T09	849	1,644	13	68	2		2,576
	3	1,133	4,230	25	87	4		5,479
10	E10	662	1,548	15	48	1	1	2,275
	MS10	104	1,873	5	6	1	3	1,992
	TN10	4						4
	3	770	3,421	20	54	2	4	4,271
11 (in service Nov. as staffing allowed)	E11	82	237	2	6			327
	MS11		17				2	19
	2	82	254	2	6		2	346
Fire Admin	F100	1	1					2
	F101	3			1			4
	F102	3					1	4
	F103	1						1
	F104	3						3
	F30						1	1
	F33						1	1
	F41				2		1	3
	F43			1				1
	F60	1						1
	F61	48	1					49
	F62	45	1					46
	F63	1					1	2
	F64	1						1
	F65	2						2

Station	Unit	Fire	EMS	Tech Rescue	HazMat	WET	Other	Total
	F70	57	2			1		60
	F71	35						35
	F80				1		1	2
	F81				18	2	4	24
	19	201	5	1	22	3	10	242
Special Event	E20						13	13
	E21						1	1
	MS20		1				53	54
	MS21						91	91
	MS22		6				41	47
	MS23						18	18
	MS24						1	1
	MS25		1				1	2
	T20		3					3
	9		11				219	230
WET	WT2		1			10	1	12
	WT6		1			10		11
	2		2			20	1	23
Grand Total	70	14,354	44,654	444	997	140	381	61,027

Concentration Factors

Concentration examines the department's ability to assemble an ERF within the established benchmark response time goals. Concentration generally assesses the need for multiple resources in the same fixed location to meet these goals due to geographic isolation or frequency of simultaneous calls within the first-due area. The ERF analysis is displayed in detail at the end of this section. Analysis of calls for service within each planning zone and by unit help to guide departmental decisions about resource allocation. Historically, the department has added and reallocated resources to meet the changing demands of the service area. Examples of changes include opening Station11 (relocating an engine from Station 3 to Station 11 in November 2021 and the addition of a medic (ambulance) in July 2022), adding Medic 1 on April 2, 2012, and swapping Truck 10 with Engine 6 to create Truck 6 and Engine 10 on January 7, 2020.

Reliability Factors

Reliability looks at whether a unit responded to an incident within the benchmark set by the department. There are three ways the department measures reliability.

- By area – how often does the first arriving unit meet the benchmark for an incident in the planning zone?
- By unit expected – how often does the unit assigned to the planning zone meet the benchmark? (First due unit reliability column in the following table).
- By other units in the system – how often does the other-than-expected unit meet the benchmark? (Other than first due unit reliability in the following table).

Of these three measures, the best evaluation of the system as a whole is the planning zone reliability. This assesses the performance of the system regardless of which unit was dispatched. The department reviews other reliability measures (the first due unit to the planning zone and other units to the planning zone) to further analyze how the system is performing. The DMFD utilizes closest unit response, meaning dispatch will assign the unit physically closest to the call. Using this model ensures the customer gets the help they need as quickly as possible. This model can skew the unit data from what is expected but is intended to provide a better, more efficient service to the public. This further highlights the importance of the planning zone's reliability. A planning zone should have a reliability of 90% or greater.

The following tables are broken down by unit type, showing reliability measures by ambulance or suppression units. The suppression apparatus table indicates the performance within a planning zone for all suppression apparatus and does not differentiate between engines and trucks. The data are presented this way as most responses need an engine or a truck. The CAD will send whichever is closest. A breakdown of workload and reliability for engines and trucks specifically can be found in Appendix E.

Three factors impact reliability. Those are emergent workload, unit utilization, and unit out-of-service time. The emergent workload is a count of emergent incidents. This is measured by planning zone, first due unit, other units, and the unit assigned in the planning zone. The use of nearest unit dispatch directly impacts first due and other units. Another unit may be assigned to a call because they are closer, as previously described.

With an emergent workload, two measures need to be considered. The number of calls in a given planning zone and the total runs assigned to a given unit. The number of calls in a planning zone begins to address where calls occur. Where the calls are located may be a factor in the department's ability to get to the location in a timely fashion. This is dependent on the street network in the area and the volume of calls. The second factor to consider is the number of calls a unit responds to in total. The tables earlier in this section show all calls a unit responded to, whereas the following tables show only emergent (lights and siren) calls.

Recommendation 3

For future data analysis, it is recommended that the department analyze reliability in terms of the number of calls in the planning zone where the unit assigned to that planning zone is available (regardless of whether or not that unit was dispatched).

What is not considered here is the fatigue factor for the crew assigned to a unit. This may be directly impacted by the number and types of calls the unit responds to in a given period. More study and analysis is needed to understand the impact of risk and quantity of runs on the crew. In the absence of this additional analysis, a color scale gradient has not been assigned to the total number of responses. Furthermore, thresholds for total call volume have not been established.

Recommendation 4

For continued analysis, it is recommended that the department analyze unit utilization thresholds to ensure these values are appropriate for the expected workload and desired reliability within the system.

Table 15: Emergent Workload and Reliability - Medic Squads

2021		Emergent Workload				Reliability		
Unit	Planning Zone	Planning Zone	1st Due Unit to Planning Zone	Other Units to Planning Zone	Unit Total runs	Planning Zone Reliability	1st-Due Unit Reliability	Other than 1st-Due Unit Reliability
Notes		*Canceled responses are excluded.*				*The response goal (turnout + travel) 5:20*		
MS01	1	**1061**	896	165	**1214**	**87.2%**	91.5%	63.1%
MS02*	2	**315**	1	314	**3**	**68.2%**	100.0%	68.1%
MS03	3	**859**	763	96	**1456**	**79.3%**	83.2%	47.3%
MS04	4	**1348**	1034	314	**1263**	**81.6%**	86.6%	64.8%
MS05	5	**1029**	841	188	**977**	**75.7%**	80.5%	53.8%
MS06	6	**1013**	861	152	**1121**	**63.0%**	66.7%	41.7%
MS07	7	**963**	868	95	**1141**	**79.8%**	85.6%	25.8%
MS08	8	**1389**	1176	213	**1351**	**68.1%**	76.0%	24.6%
MS09	9	**1083**	972	111	**1075**	**75.6%**	81.3%	23.6%
MS10	10	**801**	679	122	**880**	**56.2%**	62.0%	23.3%
MS11*	11	**574**	8	566	**10**	**39.2%**	100.0%	38.3%

* Units put in-service only when staffing is allowed.

Table 16: Emergent Workload and Reliability - Suppression Apparatus

2021		Emergent Workload				Reliability		
Unit	Planning Zone	Planning Zone	1st Due Unit to Planning Zone	Other Units to Planning Zone	Unit Total runs	Planning Zone Reliability	1st-Due Unit Reliability	Other than 1st-Due Unit Reliability
Notes		*Canceled responses are excluded.*				*The response goal (turnout + travel) 5:20*		
Suppression	1	**1060**	970	90	**1270**	**86.1%**	89.8%	46.6%
Suppression	2	**645**	529	116	**735**	**72.7%**	74.9%	62.3%
Suppression	3	**804**	642	162	**1179**	**72.1%**	78.6%	46.2%
Suppression	4	**1316**	1037	279	**1209**	**79.3%**	83.7%	62.8%
Suppression	5	**798**	632	166	**691**	**71.2%**	75.5%	54.6%
Suppression	6	**625**	481	144	**593**	**59.8%**	62.6%	50.0%
Suppression	7	**698**	596	102	**716**	**69.9%**	77.1%	27.7%
Suppression	8	**1157**	1000	157	**1144**	**64.0%**	69.3%	29.6%
Suppression	9	**944**	856	88	**937**	**70.2%**	74.6%	24.7%
Suppression	10	**582**	493	89	**648**	**50.9%**	55.4%	25.8%
Suppression	11	**642**	158	484	**183**	**42.0%**	81.5%	29.1%

Unit utilization (or commitment time) is the second factor impacting reliability. Commitment time is measured by dividing the amount of time a particular unit is assigned to a call (measured from the time of dispatch to the time the unit becomes available) divided by the amount of time during the year a unit is in-service.

Unit Utilization = (total time on calls) / (total time in service)

Unit utilization directly impacts reliability because if a unit is committed to a call, it is unavailable for a simultaneous request for service, meaning another unit must respond to the simultaneous request for service. Thresholds for unit utilization vary amongst many organizations and national agencies. For the purposes of evaluating the impact of commitment factors and call volume in 2021 in Des Moines, the department recognizes the following thresholds:

Table 17: Unit Utilization Value

	Unit Utilization Value
Expected Range	5%-24.9%
Evaluation Range	25%-29.9%
Action Range	>30%

Unit utilization percentages are shown in the table below and demonstrate the measured percentage of time the unit was assigned to a call based on 2021 data. It is important to note that unit utilization does not consider non-response workloads such as training, inspections, physical fitness, and public relations events.

Table 18: Commitment Factors (UU) for Medic Squads, Engines, and Trucks

2021		Commit
Unit	**Planning Zone**	**Unit Utilization**
		time on call / time inservice
MS01	1	21.7%
MS02	2	
MS03	3	23.5%
MS04	4	21.9%
MS05	5	15.4%
MS06	6	19.4%
MS07	7	17.6%
MS08	8	23.6%
MS09	9	17.1%
MS10	10	16.0%
MS11	11	

2021		Commit
Unit	**Planning Zone**	**Unit Utilization**
		time on call / time inservice
E01	1	11.2%
E02	2	7.6%
E03	3	7.8%
E04	4	11.6%
E05	5	9.4%
	6	
E07	7	8.7%
E08	8	11.7%
E09	9	7.1%
E10	10	7.8%
E11	11	6.5%

2021		Commit
Unit	**Planning Zone**	**Unit Utilization**
		time on call / time inservice
T01	1	5.5%
	2	
T03	3	9.2%
	4	
	5	
T06	6	9.9%
	7	
T08	8	10.7%
T09	9	8.6%
T10	10	
	11	

Detail performance measures by Planning Zone can be found in Appendix H.

The final factor which impacts reliability is out-of-service time. Units may be out of service for several reasons (i.e., staffing, training, apparatus maintenance). Frontline units should be in-service a minimum of 95% of the time; when in-service time goes below the 95% level, the unit is unreliable.

Table 19: Out-of-Service Percentages for Medic Squads, Engines, and Trucks

Units Out of Service Frontline Units 1/1/2019 thru 12/31/2021 Percent of Time Frontline Units are out of service by year.				
Unit	**2019**	**2020**	**2021**	**Notes**
E01	5.2%	5.6%	3.9%	
E02	2.3%	2.0%	1.5%	
E03	31.5%	48.2%	40.6%	Removed from service Nov 2021
E04	1.7%	1.2%	1.0%	
E05	0.7%	0.8%	0.6%	
E06	4.3%	0.0%		Removed from service Jan 2020
E07	2.9%	1.3%	1.4%	
E08	22.0%	11.9%	70.5%	
E09	57.1%	61.1%	76.5%	
E10		1.0%	0.8%	In-service Jan 2020
E11			0.2%	In-service Nov 2021
MS01	2.4%	4.0%	2.5%	
MS02		27.3%		Pilot project when staffing allowed
MS03	2.5%	3.3%	2.8%	
MS04	3.9%	5.8%	4.0%	
MS05	2.2%	4.5%	3.4%	
MS06	2.6%	3.9%	3.4%	
MS07	3.7%	5.2%	2.9%	
MS08	2.1%	4.1%	3.3%	
MS09	3.2%	3.1%	2.5%	
MS10	4.3%	5.8%	4.8%	
MS11			18.6%	In-service as staffing allowed
T01	2.7%	3.6%	1.6%	
T03	1.7%	1.7%	1.7%	
T06		2.0%	1.3%	In-service Jan 2020
T08	32.6%	44.6%	11.6%	
T09	1.7%	1.9%	1.1%	
T10	1.0%	0.5%		Removed from service Jan 2020

Dataset Qualification

It is necessary to qualify the data to provide meaningful and representative data analysis. Qualified data is determined by evaluating the entire response dataset to establish quartiles, data outside of the third quartile is considered an outlier. Once this was established, the data was reviewed for real-world practicality of the outlier definitions to validate the outcome. The clarification process eliminates data that falls outside the definition of normal.

Outlier Definitions:

Call Processing must be between 0 and 2:30
Turnout Time must be between 0 and 3:45
Travel Time must be between 0 and 21:00
Unit was not Canceled at any point during the incident.

The department calculation of the 90th percentile aligns with the Commission on Fire Accreditation International®'s *Quality Improvement for the Fire and Emergency Services* 10th Edition Definition Three in Appendix I, based on linear interpolation. The calculated 90th percentile from the dataset is utilized, and there may or may not be a data point with this value.

Years individually and aggregated for the entire three-year analysis period calculations were performed. Response times were calculated at the 90th percentile for the past three years by risk classification and category. The time definitions are as follows:

Recommendation 5

Presently, the department is only able to track times from when the call is transferred to fire dispatch. It is recommended to validate the total response time, that the alarm handling time accurately reflect the time when the call is answered by a call taker until the responding units are notified.

- Alarm Handling–the elapsed time beginning when the fire dispatcher receives a 911 call into the CAD and ends when responding units are notified.
- Turnout Time–the elapsed time beginning when notification is received by the responding units and ending when the first arriving unit goes en route.
- Travel Time–the elapsed time beginning when the first arriving unit goes en route and ends when the first unit arrives on the scene.
    - Travel Time ERF – the elapsed time beginning when the unit to meet the ERF goes en route and ends when that unit arrives on the scene.
- Total Response Time–the time between the Fire Dispatcher receiving a 911 call into the CAD and when the first unit arrives on the scene.
    - Total Response Time ERF - the time between the Fire Dispatcher receiving a 911 call into the CAD and when the unit to meet ERF arrives on the scene.

Risk classifications and categories with fewer than ten incidents in a reporting period (three years from 2019-2021) were included for visualization and documentation. However, these should not be considered statistically relevant. Caution should be exercised when analyzing these incidents due to the small sample size.

Baseline Performance Tables

Baseline performance tables are shown on the next page. These tables assess emergent calls for service in each risk classification and category.

Category	90th Percentile Times	2021	2020	2019	2019-2021	Benchmark
Fire						
Low	Alarm Handling	00:36	00:25	00:26	00:29	01:04
	Turnout 1st SUPPRESSION	02:25	02:23	02:33	02:29	01:20
	Travel Time 1st SUPPRESSION - Distribution	04:31	05:00	06:08	05:06	04:00
	Travel Time ERF - Concentration	06:08	05:38	06:36	06:14	08:00
	Total Response Time 1st SUPPRESSION	**07:13**	**06:55**	**07:58**	**07:18**	**06:24**
	Incident Count 1st SUPPRESSION	57	45	29	131	
	Total Response Time ERF	**08:16**	**07:31**	**08:07**	**08:11**	**10:24**
	Incident Count ERF	37	33	18	88	
Medium	Alarm Handling	00:28	00:33	00:33	00:32	01:04
	Turnout 1st SUPPRESSION	02:29	02:32	02:26	02:29	01:20
	Travel Time 1st SUPPRESSION - Distribution	06:34	06:53	07:00	06:49	04:00
	Travel Time ERF - Concentration	08:51	08:38	08:29	08:44	08:00
	Total Response Time 1st SUPPRESSION	**08:51**	**08:40**	**09:12**	**08:58**	**06:24**
	Incident Count 1st SUPPRESSION	587	576	442	1,605	
	Total Response Time ERF	**10:59**	**11:01**	**10:36**	**10:52**	**10:24**
	Incident Count ERF	191	188	181	560	
High	Alarm Handling	00:28	00:29	00:38	00:30	01:04
	Turnout 1st SUPPRESSION	02:32	02:35	02:36	02:35	01:20
	Travel Time 1st SUPPRESSION - Distribution	07:25	07:55	08:26	07:46	04:00
	Travel Time ERF - Concentration	07:21	07:55	08:26	07:39	08:00
	Total Response Time 1st SUPPRESSION	**09:18**	**09:56**	**10:19**	**09:48**	**06:24**
	Incident Count 1st SUPPRESSION	272	245	143	660	
	Total Response Time ERF	**09:13**	**09:56**	**10:19**	**09:42**	**10:24**
	Incident Count ERF	270	241	143	654	
Maximum	Alarm Handling	00:27	00:31	00:37	00:33	01:04
	Turnout 1st SUPPRESSION	02:14	02:17	02:15	02:16	01:20
	Travel Time 1st SUPPRESSION - Distribution	04:42	04:45	04:56	04:48	04:00
	Travel Time ERF - Concentration	11:49	11:46	11:07	11:42	08:00
	Total Response Time 1st SUPPRESSION	**06:40**	**06:49**	**06:56**	**06:48**	**06:24**
	Incident Count 1st SUPPRESSION	573	558	505	1,636	
	Total Response Time ERF	**13:20**	**13:51**	**13:29**	**13:44**	**10:24**
	Incident Count ERF	91	95	86	272	

Category	90th Percentile Times	2021	2020	2019	2019-2021	Benchmark
EMS						
Low	Alarm Handling	00:23	00:34	00:32	00:29	01:04
	Turnout Time 1st Unit	02:08	02:20	02:13	02:15	01:00
	Travel Time 1st Unit - Distribution	05:49	06:50	06:45	06:27	04:00
	Travel Time ERF - Concentration	05:59	06:44	06:41	06:24	08:00
	Total Response Time 1st Unit	**07:34**	**09:02**	**08:31**	**08:10**	**06:04**
	Incident Count 1st Unit - Distribution	91	64	84	239	
	Total Response Time ERF	**07:29**	**08:26**	**08:24**	**08:09**	**10:04**
	Incident Count ERF	83	59	80	222	
Medium	Alarm Handling	00:32	00:33	00:37	00:34	01:04
	Turnout Time 1st Unit	02:13	02:13	02:11	02:12	01:00
	Travel Time 1st Unit - Distribution	06:11	06:17	06:17	06:16	04:00
	Travel Time ERF - Concentration	06:23	06:37	06:18	06:23	08:00
	Total Response Time 1st Unit	**07:58**	**08:08**	**08:04**	**08:03**	**06:04**
	Incident Count 1st Unit - Distribution	977	924	1,181	3,082	
	Total Response Time ERF	**08:12**	**08:31**	**08:08**	**08:14**	**10:04**
	Incident Count ERF	895	831	1,115	2,841	
High	Alarm Handling	00:30	00:33	00:34	00:32	01:04
	Turnout Time 1st Unit	02:09	02:12	02:12	02:11	01:00
	Travel Time 1st Unit - Distribution	05:17	05:25	05:28	05:23	04:00
	Travel Time ERF - Concentration	05:35	05:44	05:44	05:40	08:00
	Total Response Time 1st Unit	**07:06**	**07:17**	**07:20**	**07:13**	**06:04**
	Incident Count 1st Unit - Distribution	6,816	6,268	5,604	18,688	
	Total Response Time ERF	**07:31**	**07:42**	**07:42**	**07:38**	**10:04**
	Incident Count ERF	6,506	5,984	5,399	17,889	
Maximum	Alarm Handling	00:30	00:32	00:37	00:33	01:04
	Turnout Time 1st Unit	02:06	02:08	02:09	02:07	01:00
	Travel Time 1st Unit - Distribution	05:02	05:03	05:10	05:05	04:00
	Travel Time ERF - Concentration	05:38	05:37	05:53	05:42	08:00
	Total Response Time 1st Unit	**06:46**	**06:51**	**06:59**	**06:52**	**06:04**
	Incident Count 1st Unit - Distribution	9,743	8,976	9,523	28,242	
	Total Response Time ERF	**07:31**	**07:32**	**07:50**	**07:38**	**10:04**
	Incident Count ERF	9,055	8,334	8,967	26,356	

Category	90th Percentile Times	2021	2020	2019	2019-2021	Benchmark
Technical Rescue						
Medium	Alarm Handling	00:40	00:32	00:51	00:44	01:04
	Turnout 1st SUPPRESSION	01:43	02:14	01:53	01:54	01:20
	Travel Time 1st SUPPRESSION - Distribution	05:42	05:40	07:38	06:12	04:00
	Travel Time ERF - Concentration					08:00
	Total Response Time 1st SUPPRESSION	**07:18**	**07:17**	**09:35**	**07:58**	**06:24**
	Incident Count 1st SUPPRESSION	8	4	8	20	
	Total Response Time ERF					**10:24**
	Incident Count ERF					
High	Alarm Handling	00:44	00:51	00:53	00:47	01:04
	Turnout 1st SUPPRESSION	02:19	02:16	02:28	02:24	01:20
	Travel Time 1st SUPPRESSION - Distribution	05:31	03:19	06:10	05:31	04:00
	Travel Time ERF - Concentration	08:49	05:25	08:46	08:45	08:00
	Total Response Time 1st SUPPRESSION	**08:16**	**05:37**	**08:44**	**07:44**	**06:24**
	Incident Count 1st SUPPRESSION	49	24	24	97	
	Total Response Time ERF	**11:30**	**08:08**	**11:06**	**11:14**	**10:24**
	Incident Count ERF	22	7	13	42	
Maximum	Alarm Handling	00:40		01:06	01:03	01:04
	Turnout 1st SUPPRESSION	01:38		00:08	01:29	01:20
	Travel Time 1st SUPPRESSION - Distribution	03:24		01:10	03:11	04:00
	Travel Time ERF - Concentration	12:14			12:14	08:00
	Total Response Time 1st SUPPRESSION	**05:42**		**02:24**	**05:22**	**06:24**
	Incident Count 1st SUPPRESSION	1		1	2	
	Total Response Time ERF	**14:05**			**14:05**	**10:24**
	Incident Count ERF	1			1	

Category	90th Percentile Times	2021	2020	2019	2019-2021	Benchmark
Hazardous Materials						
Low	Alarm Handling	00:28	01:00	00:17	00:31	01:04
	Turnout 1st SUPPRESSION	02:46	02:29	02:50	02:36	01:20
	Travel Time 1st SUPPRESSION - Distribution	05:24	05:16	05:31	05:24	04:00
	Travel Time ERF - Concentration	05:24	05:16	05:31	05:24	08:00
	Total Response Time 1st SUPPRESSION	**07:57**	**07:26**	**08:34**	**08:01**	**06:24**
	Incident Count 1st SUPPRESSION	15	19	8	42	
	Total Response Time ERF	**07:57**	**07:26**	**08:34**	**08:01**	**10:24**
	Incident Count ERF	15	18	7	40	
Medium	Alarm Handling	01:08	01:10	01:13	01:12	01:04
	Turnout 1st SUPPRESSION	02:23	02:48	02:34	02:35	01:20
	Travel Time 1st SUPPRESSION - Distribution	06:09	05:48	06:49	06:25	04:00
	Travel Time ERF - Concentration	06:16	05:43	06:26	06:15	08:00
	Total Response Time 1st SUPPRESSION	**08:11**	**08:59**	**09:13**	**09:02**	**06:24**
	Incident Count 1st SUPPRESSION	80	83	80	243	
	Total Response Time ERF	**08:14**	**08:23**	**09:11**	**08:40**	**10:24**
	Incident Count ERF	67	74	73	214	
High	Alarm Handling	01:13	01:20	01:40	01:27	01:04
	Turnout 1st SUPPRESSION	02:53	02:34	02:53	02:49	01:20
	Travel Time 1st SUPPRESSION - Distribution	04:46	06:17	06:48	06:00	04:00
	Travel Time ERF - Concentration	07:37	06:55	04:00	07:18	08:00
	Total Response Time 1st SUPPRESSION	**07:16**	**08:55**	**09:36**	**08:50**	**06:24**
	Incident Count 1st SUPPRESSION	31	32	33	96	
	Total Response Time ERF	**09:40**	**10:35**	**05:40**	**10:39**	**10:24**
	Incident Count ERF	4	4	1	9	

Category	90th Percentile Times	2021	2020	2019	2019-2021	Benchmark
WET						
Medium	Alarm Handling	01:19	00:34	01:53	01:53	01:04
	Turnout Time 1st Unit	01:19	01:24	01:30	01:30	01:20
	Travel Time 1st Unit - Distribution	06:51	05:02	05:58	06:00	04:00
	Travel Time ERF - Concentration	07:11	05:47	06:18	07:00	08:00
	Total Response Time 1st Unit	**06:59**	**07:00**	**07:51**	**07:51**	**06:24**
	Incident Count 1st Unit - Distribution	4	3	5	12	
	Total Response Time ERF	**08:37**	**08:57**	**08:11**	**09:12**	**10:24**
	Incident Count ERF	4	1	2	7	
Maximum	Alarm Handling	01:08	01:17	01:31	01:13	01:04
	Turnout Time 1st Unit	01:49	01:42	01:38	01:45	01:20
	Travel Time 1st Unit - Distribution	04:22	04:19	08:27	06:26	04:00
	Travel Time ERF - Concentration	09:04	18:41	12:20	12:20	08:00
	Total Response Time 1st Unit	**05:40**	**05:48**	**09:20**	**07:24**	**06:24**
	Incident Count 1st Unit - Distribution	15	13	23	51	
	Total Response Time ERF	**12:19**	**20:14**	**13:47**	**13:47**	**10:24**

I. Evaluation of Service Delivery

Performance Objectives – Benchmarks

For each incident type, the Des Moines Fire Department responds to, an effective response force (ERF) has been determined based on the tasks necessary to mitigate the call. All assignments are completed in accordance with the department's standard operating guidelines, all while providing for the safety of the responders and the public. While all tasks are essential, they do not occur simultaneously. Some happen in sequence, and others are as needed; it depends on what actions are required to resolve the incident. In addition to establishing an ERF through task analysis, each event type is categorized (fire, EMS, technical rescue, hazardous materials, or WET) and classified for risk (low, medium, high, or maximum). Therefore, each category and classification have a range of ERF depending on the exact call type.

This section will describe the initial resources needed to respond and quantify the department's performance for each category and classification. For each category and classification, the ERF needed is described, along with an overview of the tasks the responders may need to complete. Then, this section assesses how well the department performs compared to NFPA 1710 (*Standard for Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*) 2020 edition. As in the baseline performance tables, the department used only qualified, emergent data for benchmarking as recorded in the Fire records management system (Firehouse).

Fire Suppression Services Program

For 90% of all fire suppression incidents, a suppression unit with at least 3 personnel should arrive within 6 minutes and 24 seconds total response time. This first arriving suppression unit can provide; 300 gallons of water, a pumping capacity of at least 1,500 gallons per minute (gpm), incident command, a scene size-up report, an uninterrupted water supply, an initial fire attack, and rescuing victims in imminent danger.

For all fire risk categories (low, medium, high, and maximum), at least 3 personnel will make up the ERF, except maximum, which requires at least 19 personnel and should arrive within 10 minutes and 24 seconds. The additional personnel (beyond the first arriving suppression unit) will provide forcible entry and/or ventilation, deploy a backup line, comply with the Occupational Safety & Health Administration (OSHA) requirements of two-in and two-out, perform a primary search of the structure, control utilities, and perform salvage/overhaul operations as the incident requires.

The table below shows the range of ERF needed to mitigate the call types within each fire risk category.

Table 20: ERF - Fire

Category	ERF Range Event Type Dependent
Low	3-6
Medium	3-17
High	2-3
Maximum	19-50

Emergency Medical Services Program

For 90% of all EMS responses, the first arriving unit, staffed with a minimum of 2 personnel, should arrive within 6 minutes and 4 seconds total response time. The first arriving unit can assess the scene, establish command, assess the patient, provide basic life support, and prepare the patient for transport.

For all EMS risk categories (low, medium, high, and maximum), the ERF should arrive within 10 minutes and 4 seconds. For medium and high risk, at least two personnel will arrive, and maximum, at least three personnel. These additional personnel will assist with patient treatment, transport, and advanced life support interventions. Staffing required to meet ERF for each classification is in the table below.

The table below shows the range of ERF needed to mitigate the call types within each EMS risk category.

Table 21: ERF - EMS

Category	ERF Range Event Type Dependent
Low	2-3
Medium	2-8
High	2-8
Maximum	3-8

Technical Rescue Services Program

For 90% of all technical rescue responses, the first arriving suppression unit, with a minimum of 3 personnel, should arrive within 6 minutes and 24 seconds total response time. This first arriving suppression unit can initiate; incident command, a scene size-up report, and rescue of victims in imminent danger.

For all technical rescue risk categories (low, medium, high, and maximum), the ERF should arrive within 10 minutes and 24 seconds. Medium risk will include at least 4 personnel, high risk at least 11 personnel, and maximum risk at least 22 personnel. The additional personnel will provide; a safety officer, rescue group supervisor, rescue and backup teams, control utilities, investigation/reconnaissance, advanced rescue efforts, support operations, atmospheric monitoring, rehab operations, and providing advanced life support interventions as the incident requires.

The table below shows the range of ERF needed to mitigate the call types within each technical rescue risk category.

Table 22: ERF - Technical Rescue

Category	ERF Range Event Type Dependent
Low	-
Medium	4
High	11-18
Maximum	22

Hazardous Materials Services Program

For 90% of all hazardous materials responses, the first arriving suppression unit, with a minimum of 3 personnel, should arrive within 6 minutes and 24 seconds total response time. The first arriving suppression unit can initiate incident command, a scene size-up report, mitigate small fuel spills, and rescue victims in imminent danger.

For all hazardous materials risk categories (low, medium, high, and maximum), the ERF should arrive within 10 minutes and 24 seconds. Medium risk will include at least 3 personnel, high risk 15 personnel, and maximum risk 22 personnel. The additional personnel will provide; a safety officer, a hazardous materials group supervisor, entry and backup teams, incident documentation, decontamination, rehab operations, support operations, and advanced life support interventions as the incident requires.

The table below shows the range of ERF needed to mitigate the call types within each hazardous material risk category.

Table 23: ERF - Hazardous Materials

Category	ERF Range Event Type Dependent
Low	3
Medium	3-15
High	15
Maximum	22

Water Emergency Team Services Program

For 90% of all WET responses, the first arriving unit, a minimum of 2 personnel, should arrive within 6 minutes and 24 seconds total response time. This first arriving unit can initiate incident command, a scene size-up report, identify the victim's location, establish communication with the victim (if possible), and commence shore-based rescue operations.

For all WET risk categories (low, medium, high, and maximum), the ERF should arrive within 10 minutes and 24 seconds. Medium risk will include at least 11 personnel, while maximum risk will include at least 19 personnel. The additional personnel will provide; a safety officer, a rescue group supervisor, primary and secondary boat rescue teams, shoreline operations, rehab operations, support operations, and advanced life support interventions as the incident requires.

The table below shows the range of ERF needed to mitigate the call types within each WET risk category.

Table 24: ERF - WET

Category	ERF Range Event Type Dependent
Low	-
Medium	11-13
High	-
Maximum	19-21

Performance Objectives – Baselines

The department's baseline performance information below reflects the department's actual performance for the three years between 2019 and 2021. The department may rely upon mutual aid from neighboring fire departments to provide its effective response force complement of personnel.

Fire Suppression Program

Low Risk – Fire Suppression

	Category	90th Percentile Times	Baseline 2019-2021	Benchmark	Gap 2019-2021
Fire	Low	Alarm Handling	00:29	01:04	00:35
		Turnout 1st SUPPRESSION	02:29	01:20	01:09
		Travel Time 1st SUPPRESSION - Distribution	05:06	04:00	01:06
		Travel Time ERF - Concentration	06:14	08:00	01:46
		Total Response Time 1st SUPPRESSION	**07:18**	**06:24**	00:54
		Incident Count 1st SUPPRESSION	131		
		Total Response Time ERF	**08:11**	**10:24**	02:13
		Incident Count ERF	88		

Low-risk fire incidents are outside or shed/garage fires typically handled by a one or two-unit response. This first arriving suppression unit provided 300 gallons of water, a pumping capacity of at least 1,500 gpm, incident command, scene size-up report, an uninterrupted water supply, initial fire attack, and rescue to victims in imminent danger.

For 90% of all low-risk fire suppression incidents, the total response time for the first arriving suppression unit, a minimum of 3 personnel, is 7 minutes and 18 seconds.

For 90% of all low-risk fire suppression incidents, the total response time for the ERF, a minimum of 3-6 personnel (depending on call type), is 8 minutes and 11 seconds.

Medium Risk – Fire Suppression

	Category	90th Percentile Times	Baseline 2019-2021	Benchmark	Gap 2019-2021
Fire	Medium	Alarm Handling	00:32	01:04	00:32
		Turnout 1st SUPPRESSION	02:29	01:20	01:09
		Travel Time 1st SUPPRESSION - Distribution	06:49	04:00	02:49
		Travel Time ERF - Concentration	08:44	08:00	00:44
		Total Response Time 1st SUPPRESSION	**08:58**	**06:24**	02:34
		Incident Count 1st SUPPRESSION	1,605		
		Total Response Time ERF	**10:52**	**10:24**	00:28
		Incident Count ERF	560		

Medium risk fire incidents are investigations, sprinkler alarms, outdoor fires (grass, vehicles, trash, wires), and Alert 2 for potential aircraft issues at the airport. One or two units respond to most of these calls except for Alert 2, where eight units respond. The first arriving suppression unit can provide 300 gallons of water, a pumping capacity of at least 1,500 gpm, initiate incident command, give a scene size-up report, secure an uninterrupted water supply, initiate a fire attack, and rescue victims in imminent danger.

For 90% of all medium risk fire suppression incidents, the total response time for the first arriving suppression unit, a minimum of 3 personnel, is 8 minutes and 58 seconds.

For 90% of all medium risk fire suppression incidents, the total response time for the ERF of 3-17 personnel (depending on call type) is 10 minutes and 52 seconds. The ERF provided all the tasks listed previously and any additional tasks needed to resolve the incident.

High Risk– Fire Suppression

	Category	90th Percentile Times	Baseline 2019-2021	Benchmark	Gap 2019-2021
Fire	High	Alarm Handling	00:30	01:04	00:34
		Turnout 1st SUPPRESSION	02:35	01:20	01:15
		Travel Time 1st SUPPRESSION - Distribution	07:46	04:00	03:46
		Travel Time ERF - Concentration	07:39	08:00	00:21
		Total Response Time 1st SUPPRESSION	**09:48**	**06:24**	**03:24**
		Incident Count 1st SUPPRESSION	660		
		Total Response Time ERF	**09:42**	**10:24**	**00:42**
		Incident Count ERF	654		

High-risk fire incidents are private fire alarms and public assistance calls responded to by a single unit. The first arriving suppression unit assessed the alarm panel, assisted as needed, provided 300 gallons of water, a capacity of at least 1,500 gpm, initiated incident command, gave a scene size-up report, secured an uninterrupted water supply, and initiated a fire attack and rescue victims in imminent danger.

For 90% of all high-risk fire suppression incidents, the total response time for the first arriving unit, which also represents the ERF, a minimum of 3 personnel, is 9 minutes 48 seconds.

For 90% of all high-risk fire suppression incidents, the total response time for the ERF of 2-3 personnel (depending on call type) is 9 minutes and 42 seconds. The ERF provided all previously listed tasks and any additional tasks needed to resolve the incident.

Maximum Risk – Fire Suppression

	Category	90th Percentile Times	Baseline 2019-2021	Benchmark	Gap 2019-2021
Fire	Maximum	Alarm Handling	00:33	01:04	00:31
		Turnout 1st SUPPRESSION	02:16	01:20	00:56
		Travel Time 1st SUPPRESSION - Distribution	04:48	04:00	00:48
		Travel Time ERF - Concentration	11:42	08:00	03:42
		Total Response Time 1st SUPPRESSION	**06:48**	**06:24**	00:24
		Incident Count 1st SUPPRESSION	1,636		
		Total Response Time ERF	**13:44**	**10:24**	03:20
		Incident Count ERF	272		

Maximum-risk fire incidents are structure fires in single-family residences, multi-family residences, commercial buildings, and high-rises. At least nine units will respond to all structure fires. The first arriving suppression unit provided 300 gallons of water, a pumping capacity of at least 1,500 gpm, initiated the incident command system, gave a scene size-up report, secured an uninterrupted water supply, initiated a fire attack, and rescued victims in imminent danger.

For 90% of all maximum risk fire suppression incidents, the total response time for the first arriving suppression unit, a minimum of 3 personnel, is 6 minutes and 48 seconds.

For 90% of all other than high-rise maximum risk fire suppression incidents, the total response time for the ERF of 19-50 personnel (depending on call type) is 13 minutes and 44 seconds. The ERF is capable of providing all the tasks listed to follow, as well as forcible entry and/or ventilation, a second attack line and backup line (if needed), complying with the OSHA requirements of two-in and two-out, a primary and secondary search of the structure, control utilities, and salvage/overhaul operations.

Emergency Medical Services Program

Low Risk - EMS

	Category	90th Percentile Times	Baseline 2019-2021	Benchmark	Gap 2019-2021
EMS	Low	Alarm Handling	00:29	01:04	00:35
		Turnout Time 1st Unit	02:15	01:00	01:15
		Travel Time 1st Unit - Distribution	06:27	04:00	02:27
		Travel Time ERF - Concentration	06:24	08:00	01:36
		Total Response Time 1st Unit	**08:10**	**06:04**	02:06
		Incident Count 1st Unit - Distribution	239		
		Total Response Time ERF	**08:09**	**10:04**	01:55
		Incident Count ERF	222		

Low-risk EMS incidents are generally low acuity, meaning they are not life-threatening. A single unit can mitigate most of these calls. The first arriving unit assessed the scene, established command, assessed the patient, provided basic life support, and prepared the patient for transport.

For 90% of all low-risk EMS responses, the total response time for the first arriving unit, a minimum of 2 personnel, is 8 minutes and 10 seconds.

For 90% of all low-risk EMS responses, the ERF of 2-3 personnel (depending on call type) arrived within 8 minutes and 9 seconds total response time. The ERF provided all previously listed tasks and assisted with patient treatment, transport, and advanced life support interventions.

Medium Risk - EMS

	Category	90th Percentile Times	Baseline 2019-2021	Benchmark	Gap 2019-2021
EMS	Medium	Alarm Handling	00:34	01:04	00:30
		Turnout Time 1st Unit	02:12	01:00	01:12
		Travel Time 1st Unit - Distribution	06:16	04:00	02:16
		Travel Time ERF - Concentration	06:23	08:00	01:37
		Total Response Time 1st Unit	**08:03**	**06:04**	**01:59**
		Incident Count 1st Unit - Distribution	3,082		
		Total Response Time ERF	**08:14**	**10:04**	**01:50**
		Incident Count ERF	2,841		

Medium-risk EMS incidents are seemingly low-acuity calls that may lead to something more significant upon evaluation. An example may be where a fall or headache is the reason for the call when the patient may be having a stroke. These call types require one to three units to be assigned. The first arriving unit, with a minimum of 2 people, assessed the scene, established command, assessed the patient, provided basic life support, and prepared the patient for transport.

For 90% of all medium-risk EMS responses, the total response time for the first arriving unit, a minimum of 2 personnel, is 8 minutes and 3 seconds.

The ERF provided all previously listed tasks and assisted with patient treatment, transport, and advanced life support interventions. For 90% of all medium EMS responses, the total response time for the ERF of 2-8 personnel (depending on call type) is 8 minutes 14 seconds.

High Risk - EMS

	Category	90th Percentile Times	Baseline 2019-2021	Benchmark	Gap 2019-2021
EMS	High	Alarm Handling	00:32	01:04	00:32
		Turnout Time 1st Unit	02:11	01:00	01:11
		Travel Time 1st Unit - Distribution	05:23	04:00	01:23
		Travel Time ERF - Concentration	05:40	08:00	02:20
		Total Response Time 1st Unit	**07:13**	**06:04**	**01:09**
		Incident Count 1st Unit - Distribution	18,688		
		Total Response Time ERF	**07:38**	**10:04**	**02:26**
		Incident Count ERF	17,889		

High-risk EMS calls are where there is a threat to the patient's life, or the volume of the call type impacts the EMS system (sick person). Three units are assigned for life-threatening events; one unit is sent to sick person calls. This first arriving unit assessed the scene, established command, assessed the patient,

provided basic life support, and prepared the patient for transport. These operations align with department EMS guidelines and standard operating guidelines while providing for the safety of the responders and the public.

For 90% of all high-risk EMS responses, the total response time for the first arriving unit, a minimum of 2 personnel, is 7 minutes 13 seconds.

The ERF provided all previously listed tasks and assisted with patient treatment, transport, and advanced life support interventions. For 90% of all high risk EMS responses, the total response time for the ERF of 2-8 personnel (depending on call type) is 7 minutes and 38 seconds.

Maximum Risk - EMS

	Category	90th Percentile Times	Baseline 2019-2021	Benchmark	Gap 2019-2021
EMS	Maximum	Alarm Handling	00:33	01:04	00:31
		Turnout Time 1st Unit	02:07	01:00	01:07
		Travel Time 1st Unit - Distribution	05:05	04:00	01:05
		Travel Time ERF - Concentration	05:42	08:00	02:18
		Total Response Time 1st Unit	**06:52**	**06:04**	00:48
		Incident Count 1st Unit - Distribution	28,242		
		Total Response Time ERF	**07:38**	**10:04**	02:26
		Incident Count ERF	26,356		

Maximum risk EMS calls are where there is a threat to the patient's life, and the volume of the call type impacts the EMS system (heart-related calls). The first arriving unit assessed the scene, established command, assessed the patient, provided basic life support, and prepared the patient for transport. Two or three units are assigned for life-threatening calls.

For 90% of all maximum risk EMS responses, the total response time for the first arriving unit, a minimum of 2 personnel, is 6 minutes and 52 seconds.

The ERF provided all previously listed tasks and assisted with patient treatment, transport, and advanced life support interventions. For 90% of all maximum-risk EMS responses, the total response time for the ERF of 3-8 personnel (based on call type) is 7 minutes and 38 seconds.

Technical Rescue Services Program

Low Risk - Technical Rescue

The department does not have any call types that meet the definition of low risk for the technical rescue category.

Medium Risk- Technical Rescue

	Category	90th Percentile Times	Baseline 2019-2021	Benchmark	Gap 2019-2021
Technical Rescue	Medium	Alarm Handling	00:44	01:04	00:20
		Turnout 1st SUPPRESSION	01:54	01:20	00:34
		Travel Time 1st SUPPRESSION - Distribution	06:12	04:00	02:12
		Travel Time ERF - Concentration		08:00	08:00
		Total Response Time 1st SUPPRESSION	**07:58**	**06:24**	01:34
		Incident Count 1st SUPPRESSION	20		
		Total Response Time ERF		**10:24**	10:24
		Incident Count ERF	0		

Medium risk technical rescue incidents are elevator entrapments. A single unit typically mitigates these calls. This first arriving unit initiated the incident command system, provided a scene size-up report, initiated rescue efforts, and rescued victims in imminent danger.

For 90% of all medium risk technical rescue responses, the total response time for the first arriving unit, a minimum of 3 personnel, is 7 minutes and 58 seconds.

During the three years examined, the department had zero medium-risk technical rescue responses where the ERF arrived.

High Risk - Technical Rescue

	Category	90th Percentile Times	Baseline 2019-2021	Benchmark	Gap 2019-2021
Technical Rescue	High	Alarm Handling	00:47	01:04	00:17
		Turnout 1st SUPPRESSION	02:24	01:20	01:04
		Travel Time 1st SUPPRESSION - Distribution	05:31	04:00	01:31
		Travel Time ERF - Concentration	08:45	08:00	00:45
		Total Response Time 1st SUPPRESSION	**07:44**	**06:24**	01:20
		Incident Count 1st SUPPRESSION	97		
		Total Response Time ERF	**11:14**	**10:24**	00:50
		Incident Count ERF	42		

High risk technical responses are vehicle extractions or rope rescues. Depending on the specific event type, the department assigns five to eight units for these calls. The first arriving unit initiated the incident command system, provided a scene size-up report, initiated rescue efforts, and rescued victims in imminent danger.

For 90% of all high-risk technical rescue responses, the total response time for the first arriving suppression unit, a minimum of 3 personnel, is 7 minutes and 44 seconds.

For 90% of all high risk technical rescue responses, the total response time for the ERF, a minimum of 12 personnel, is 11 minutes and 14 seconds. The ERF provided all the tasks previously listed and established a safety officer, a rescue group supervisor, control utilities, investigation/reconnaissance, advanced rescue efforts, support operations, and advanced life support interventions.

Maximum Risk - Technical Rescue

	Category	90th Percentile Times	Baseline 2019-2021	Benchmark	Gap 2019-2021
Technical Rescue	Maximum	Alarm Handling	01:03	01:04	00:01
		Turnout 1st SUPPRESSION	01:29	01:20	00:09
		Travel Time 1st SUPPRESSION - Distribution	03:11	04:00	00:49
		Travel Time ERF - Concentration	12:14	08:00	04:14
		Total Response Time 1st SUPPRESSION	**05:22**	**06:24**	01:02
		Incident Count 1st SUPPRESSION	2		
		Total Response Time ERF	**14:05**	**10:24**	03:41
		Incident Count ERF	1		

Maximum risk technical rescue responses are confined space rescues. Nine units respond to these calls. The first arriving unit initiated the incident command system, provided a scene size-up report, initiated rescue efforts, and rescued victims in imminent danger.

For 90% of all maximum risk technical rescue responses, the total response time for the first arriving suppression unit, a minimum of 3 personnel, is 5 minutes and 22 seconds. There were only two of these incidents in the three years analyzed for this report.

For 90% of all maximum risk technical rescue responses, the total response time for the ERF of 22 personnel is 14 minutes and 5 seconds. There was only one incident where the ERF arrived for this category and classification. The ERF provided all the tasks previously listed and established a safety officer, a rescue group supervisor, rescue and backup teams, control utilities, investigation/reconnaissance, advanced rescue efforts, support operations, atmospheric monitoring, rehab operations, and advanced life support interventions.

Hazardous Materials Services Program

Low Risk – Hazardous Materials

	Category	90th Percentile Times	Baseline 2019-2021	Benchmark	Gap 2019-2021
Hazardous Materials	Low	Alarm Handling	00:31	01:04	00:33
		Turnout 1st SUPPRESSION	02:36	01:20	01:16
		Travel Time 1st SUPPRESSION - Distribution	05:24	04:00	01:24
		Travel Time ERF - Concentration	05:24	08:00	02:36
		Total Response Time 1st SUPPRESSION	**08:01**	**06:24**	01:37
		Incident Count 1st SUPPRESSION	42		
		Total Response Time ERF	**08:01**	**10:24**	02:23
		Incident Count ERF	40		

Low risk hazardous materials events are small-quantity spills or outdoor natural gas odor investigations handled by a single unit. The first arriving suppression unit initiated the incident command system, provided a scene size-up report, mitigated small fuel spills, and rescued victims in imminent danger.

For 90% of all low risk hazardous materials responses, the total response time for the first arriving suppression unit, a minimum of 3 personnel, is 8 minutes and 1 second.

For 90% of all low risk hazardous materials responses, the ERF of 3 personnel arrived within 8 minutes and 1 second total response time.

Medium Risk – Hazardous Materials

	Category	90th Percentile Times	Baseline 2019-2021	Benchmark	Gap 2019-2021
Hazardous Materials	Medium	Alarm Handling	01:12	01:04	00:08
		Turnout 1st SUPPRESSION	02:35	01:20	01:15
		Travel Time 1st SUPPRESSION - Distribution	06:25	04:00	02:25
		Travel Time ERF - Concentration	06:15	08:00	01:45
		Total Response Time 1st SUPPRESSION	**09:02**	**06:24**	02:38
		Incident Count 1st SUPPRESSION	243		
		Total Response Time ERF	**08:40**	**10:24**	01:44
		Incident Count ERF	214		

Medium risk hazardous materials incidents include carbon monoxide, unknown chemicals or odors, gas main ruptures, and large spills. One to five units respond to these event types. The first suppression arriving unit initiated the incident command system, provided a scene size-up report, mitigated small fuel spills, and rescued victims in imminent danger.

For 90% of all medium risk hazardous materials responses, the total response time for the first arriving suppression unit, a minimum of 3 personnel, is 9 minutes and 2 seconds.

For 90% of all medium risk hazardous materials responses, the total response time for the ERF of 2-15 personnel (depending on call type) is 8 minutes and 40 seconds.

High Risk – Hazardous Materials

	Category	90th Percentile Times	Baseline 2019-2021	Benchmark	Gap 2019-2021
Hazardous Materials	High	Alarm Handling	01:27	01:04	**00:23**
		Turnout 1st SUPPRESSION	02:49	01:20	**01:29**
		Travel Time 1st SUPPRESSION - Distribution	06:00	04:00	**02:00**
		Travel Time ERF - Concentration	07:18	08:00	**00:42**
		Total Response Time 1st SUPPRESSION	**08:50**	**06:24**	**02:26**
		Incident Count 1st SUPPRESSION	96		
		Total Response Time ERF	**10:39**	**10:24**	**00:15**
		Incident Count ERF	9		

High risk hazardous materials events are natural gas leaks in a commercial setting and biohazard detection activations at the post office. The first arriving unit initiated the incident command system, provided a scene size-up report, mitigated small fuel spills, and rescued victims in imminent danger. Five units respond to these types of calls.

For 90% of all high risk hazardous materials responses, the total response time for the first arriving suppression unit, with a minimum of 3 personnel, is 8 minutes and 50 seconds.

The ERF provided all the tasks previously listed for the first arriving unit and established a safety officer, a hazardous materials group supervisor, entry and backup teams, incident documentation, decontamination operations, rehab operations, support operations, and advanced life support interventions. For 90% of all high-risk hazardous materials responses, the total response time for the ERF of 15 personnel is 10 minutes and 39 seconds. The sample size for high-risk hazardous materials events meeting ERF is statistically insignificant; only 9 out of the 96 high-risk hazardous materials calls yielded on ERF response arriving on-scene.

Maximum Risk – Hazardous Materials

The department had zero maximum risk hazardous materials responses during the three years examined.

Water Emergency Team (WET) Services Program

Low Risk - WET

During the three years examined, the department had zero low-risk WET responses.

Medium Risk - WET

	Category	90th Percentile Times	Baseline 2019-2021	Benchmark	Gap 2019-2021
WET	Medium	Alarm Handling	01:53	01:04	**00:49**
		Turnout Time 1st Unit	01:30	01:20	**00:10**
		Travel Time 1st Unit - Distribution	06:00	04:00	**02:00**
		Travel Time ERF - Concentration	07:00	08:00	**01:00**
		Total Response Time 1st Unit	**07:51**	**06:24**	**01:27**
		Incident Count 1st Unit - Distribution	12		
		Total Response Time ERF	**09:12**	**10:24**	**01:12**
		Incident Count ERF	7		

Medium-risk WET incidents are rescues in still water or a sinking vehicle. At least eight units are needed to respond. The first arriving unit initiated the incident command system, provided a scene size-up report, identified the victim's location, established communication with the victim (if possible), and initiated low-risk shore-based rescue operations.

For 90% of all medium risk WET responses, the total response time for the first arriving unit, a minimum of 2 personnel, is 7 minutes and 51 seconds.

For 90% of all medium-risk WET responses, the total response time for the ERF of 11-13 personnel is 9 minutes and 12 seconds. The ERF provided all the tasks previously listed and established a safety officer, a rescue group supervisor, primary and secondary boat rescue teams, shoreline operations, rehab operations, support operations, and advanced life support interventions.

High Risk – WET

During the three years examined, the department had zero high-risk WET responses.

Maximum Risk - WET

	Category	90th Percentile Times	Baseline 2019-2021	Benchmark	Gap 2019-2021
WET	Maximum	Alarm Handling	01:13	01:04	**00:09**
		Turnout Time 1st Unit	01:45	01:20	**00:25**
		Travel Time 1st Unit - Distribution	06:26	04:00	**02:26**
		Travel Time ERF - Concentration	12:20	08:00	**04:20**
		Total Response Time 1st Unit	**07:24**	**06:24**	**01:00**
		Incident Count 1st Unit - Distribution	51		
		Total Response Time ERF	**13:47**	**10:24**	**03:23**
		Incident Count ERF	10		

Maximum risk WET incidents are in swift water, flood conditions, or at night. At least nine units are needed to respond. The first arriving unit initiated the incident command system, provided a scene size-up report, identified the victim's location, established communication with the victim (if possible), and began rescue operations.

For 90% of all maximum risk WET responses, the total response time for the first arriving unit, a minimum of 2 personnel, is 7 minutes and 24 seconds.

For 90% of all maximum risk WET responses, the total response time for the ERF of 19 -21 personnel (depending on call type) is 13 minutes and 47 seconds. The ERF provided all the tasks previously listed and established a safety officer, rescue group supervisor, primary and secondary boat rescue teams, shoreline operations, rehab operations, support operations, and advanced life support interventions.

Performance Gaps – Baseline to Benchmark Time Gap

	Category	90th Percentile Times	Baseline 2019-2021	Benchmark	Gap 2019-2021
Fire	Low	Alarm Handling	00:29	01:04	00:35
		Turnout 1st SUPPRESSION	02:29	01:20	01:09
		Travel Time 1st SUPPRESSION - Distribution	05:06	04:00	01:06
		Travel Time ERF - Concentration	06:14	08:00	01:46
		Total Response Time 1st SUPPRESSION	**07:18**	**06:24**	00:54
		Incident Count 1st SUPPRESSION	131		
		Total Response Time ERF	**08:11**	**10:24**	02:13
		Incident Count ERF	88		
	Medium	Alarm Handling	00:32	01:04	00:32
		Turnout 1st SUPPRESSION	02:29	01:20	01:09
		Travel Time 1st SUPPRESSION - Distribution	06:49	04:00	02:49
		Travel Time ERF - Concentration	08:44	08:00	00:44
		Total Response Time 1st SUPPRESSION	**08:58**	**06:24**	02:34
		Incident Count 1st SUPPRESSION	1,605		
		Total Response Time ERF	**10:52**	**10:24**	00:28
		Incident Count ERF	560		
	High	Alarm Handling	00:30	01:04	00:34
		Turnout 1st SUPPRESSION	02:35	01:20	01:15
		Travel Time 1st SUPPRESSION - Distribution	07:46	04:00	03:46
		Travel Time ERF - Concentration	07:39	08:00	00:21
		Total Response Time 1st SUPPRESSION	**09:48**	**06:24**	03:24
		Incident Count 1st SUPPRESSION	660		
		Total Response Time ERF	**09:42**	**10:24**	00:42
		Incident Count ERF	654		
	Maximum	Alarm Handling	00:33	01:04	00:31
		Turnout 1st SUPPRESSION	02:16	01:20	00:56
		Travel Time 1st SUPPRESSION - Distribution	04:48	04:00	00:48
		Travel Time ERF - Concentration	11:42	08:00	03:42
		Total Response Time 1st SUPPRESSION	**06:48**	**06:24**	00:24
		Incident Count 1st SUPPRESSION	1,636		
		Total Response Time ERF	**13:44**	**10:24**	03:20
		Incident Count ERF	272		

	Category	90th Percentile Times	Baseline 2019-2021	Benchmark	Gap 2019-2021
EMS	Low	Alarm Handling	00:29	01:04	00:35
		Turnout Time 1st Unit	02:15	01:00	01:15
		Travel Time 1st Unit - Distribution	06:27	04:00	02:27
		Travel Time ERF - Concentration	06:24	08:00	01:36
		Total Response Time 1st Unit	**08:10**	**06:04**	02:06
		Incident Count 1st Unit - Distribution	239		
		Total Response Time ERF	**08:09**	**10:04**	01:55
		Incident Count ERF	222		
	Medium	Alarm Handling	00:34	01:04	00:30
		Turnout Time 1st Unit	02:12	01:00	01:12
		Travel Time 1st Unit - Distribution	06:16	04:00	02:16
		Travel Time ERF - Concentration	06:23	08:00	01:37
		Total Response Time 1st Unit	**08:03**	**06:04**	01:59
		Incident Count 1st Unit - Distribution	3,082		
		Total Response Time ERF	**08:14**	**10:04**	01:50
		Incident Count ERF	2841		
	High	Alarm Handling	00:32	01:04	00:32
		Turnout Time 1st Unit	02:11	01:00	01:11
		Travel Time 1st Unit - Distribution	05:23	04:00	01:23
		Travel Time ERF - Concentration	05:40	08:00	02:20
		Total Response Time 1st Unit	**07:13**	**06:04**	01:09
		Incident Count 1st Unit - Distribution	18,688		
		Total Response Time ERF	**07:38**	**10:04**	02:26
		Incident Count ERF	17,889		
	Maximum	Alarm Handling	00:33	01:04	00:31
		Turnout Time 1st Unit	02:07	01:00	01:07
		Travel Time 1st Unit - Distribution	05:05	04:00	01:05
		Travel Time ERF - Concentration	05:42	08:00	02:18
		Total Response Time 1st Unit	**06:52**	**06:04**	00:48
		Incident Count 1st Unit - Distribution	28,242		
		Total Response Time ERF	**07:38**	**10:04**	02:26
		Incident Count ERF	26,356		

	Category	90th Percentile Times	Baseline 2019-2021	Benchmark	Gap 2019-2021
Technical Rescue	Medium	Alarm Handling	00:44	01:04	00:20
		Turnout 1st SUPPRESSION	01:54	01:20	00:34
		Travel Time 1st SUPPRESSION - Distribution	06:12	04:00	02:12
		Travel Time ERF - Concentration		08:00	08:00
		Total Response Time 1st SUPPRESSION	**07:58**	**06:24**	01:34
		Incident Count 1st SUPPRESSION	20		
		Total Response Time ERF		**10:24**	10:24
		Incident Count ERF	0		
	High	Alarm Handling	00:47	01:04	00:17
		Turnout 1st SUPPRESSION	02:24	01:20	01:04
		Travel Time 1st SUPPRESSION - Distribution	05:31	04:00	01:31
		Travel Time ERF - Concentration	08:45	08:00	00:45
		Total Response Time 1st SUPPRESSION	**07:44**	**06:24**	01:20
		Incident Count 1st SUPPRESSION	97		
		Total Response Time ERF	**11:14**	**10:24**	00:50
		Incident Count ERF	42		
	Maximum	Alarm Handling	01:03	01:04	00:01
		Turnout 1st SUPPRESSION	01:29	01:20	00:09
		Travel Time 1st SUPPRESSION - Distribution	03:11	04:00	00:49
		Travel Time ERF - Concentration	12:14	08:00	04:14
		Total Response Time 1st SUPPRESSION	**05:22**	**06:24**	01:02
		Incident Count 1st SUPPRESSION	2		
		Total Response Time ERF	**14:05**	**10:24**	03:41
		Incident Count ERF	1		

	Category	90th Percentile Times	Baseline 2019-2021	Benchmark	Gap 2019-2021
Hazardous Materials	Low	Alarm Handling	00:31	01:04	00:33
		Turnout 1st SUPPRESSION	02:36	01:20	01:16
		Travel Time 1st SUPPRESSION - Distribution	05:24	04:00	01:24
		Travel Time ERF - Concentration	05:24	08:00	02:36
		Total Response Time 1st SUPPRESSION	**08:01**	**06:24**	01:37
		Incident Count 1st SUPPRESSION	42		
		Total Response Time ERF	**08:01**	**10:24**	02:23
		Incident Count ERF	40		
	Medium	Alarm Handling	01:12	01:04	00:08
		Turnout 1st SUPPRESSION	02:35	01:20	01:15
		Travel Time 1st SUPPRESSION - Distribution	06:25	04:00	02:25
		Travel Time ERF - Concentration	06:15	08:00	01:45
		Total Response Time 1st SUPPRESSION	**09:02**	**06:24**	02:38
		Incident Count 1st SUPPRESSION	243		
		Total Response Time ERF	**08:40**	**10:24**	01:44
		Incident Count ERF	214		
	High	Alarm Handling	01:27	01:04	00:23
		Turnout 1st SUPPRESSION	02:49	01:20	01:29
		Travel Time 1st SUPPRESSION - Distribution	06:00	04:00	02:00
		Travel Time ERF - Concentration	07:18	08:00	00:42
		Total Response Time 1st SUPPRESSION	**08:50**	**06:24**	02:26
		Incident Count 1st SUPPRESSION	96		
		Total Response Time ERF	**10:39**	**10:24**	00:15
		Incident Count ERF	9		

	Category	90th Percentile Times	Baseline 2019-2021	Benchmark	Gap 2019-2021
WET	Medium	Alarm Handling	01:53	01:04	**00:49**
		Turnout Time 1st Unit	01:30	01:20	**00:10**
		Travel Time 1st Unit - Distribution	06:00	04:00	**02:00**
		Travel Time ERF - Concentration	07:00	08:00	**01:00**
		Total Response Time 1st Unit	**07:51**	**06:24**	**01:27**
		Incident Count 1st Unit - Distribution	12		
		Total Response Time ERF	**09:12**	**10:24**	**01:12**
		Incident Count ERF	7		
	Maximum	Alarm Handling	01:13	01:04	**00:09**
		Turnout Time 1st Unit	01:45	01:20	**00:25**
		Travel Time 1st Unit - Distribution	06:26	04:00	**02:26**
		Travel Time ERF - Concentration	12:20	08:00	**04:20**
		Total Response Time 1st Unit	**07:24**	**06:24**	**01:00**
		Incident Count 1st Unit - Distribution	51		
		Total Response Time ERF	**13:47**	**10:24**	**03:23**
		Incident Count ERF	10		

Community Areas for Program Delivery and Coverage Improvement

The department has analyzed performance data for all risk classifications and categories at the 90th percentile for 2019-2021. The analysis has provided a review of both distribution and concentration throughout the system. The department has not previously established quantitative benchmark performance objectives; therefore, the department compared its data against the standards recommended by NFPA 1710 for this study. The department utilized the performance goals in NFPA 1710 as the benchmark values for this analysis. These benchmark performance objectives provide a challenging standard to meet. Still, these national standard performance objectives are the most appropriate for the Des Moines Fire Department.

The department has identified the need to improve turnout performance, travel time (distribution), and ERF travel time (concentration) throughout the categories and classifications. The red text in the previous tables indicates where there are performance gaps and the significance of the disparity. Specifically, turnout and first due unit travel times (distribution) do not meet the benchmark objective in any category or classification with a statically significant number of runs. When looking at travel time for the ERF (concentration) is fulfilled in some categories and classifications but is frequently not met when many units (more than three) are required to respond.

The department uses analytic tools, including geographic mapping, to assess performance at the micro level. Specifically, to evaluate performance geospatially focused within each planning zone. The previous tables provide a mathematical representation of the department's performance. This information is valuable when looking at the system performance at the macro level but does not provide specific details for each planning zone.

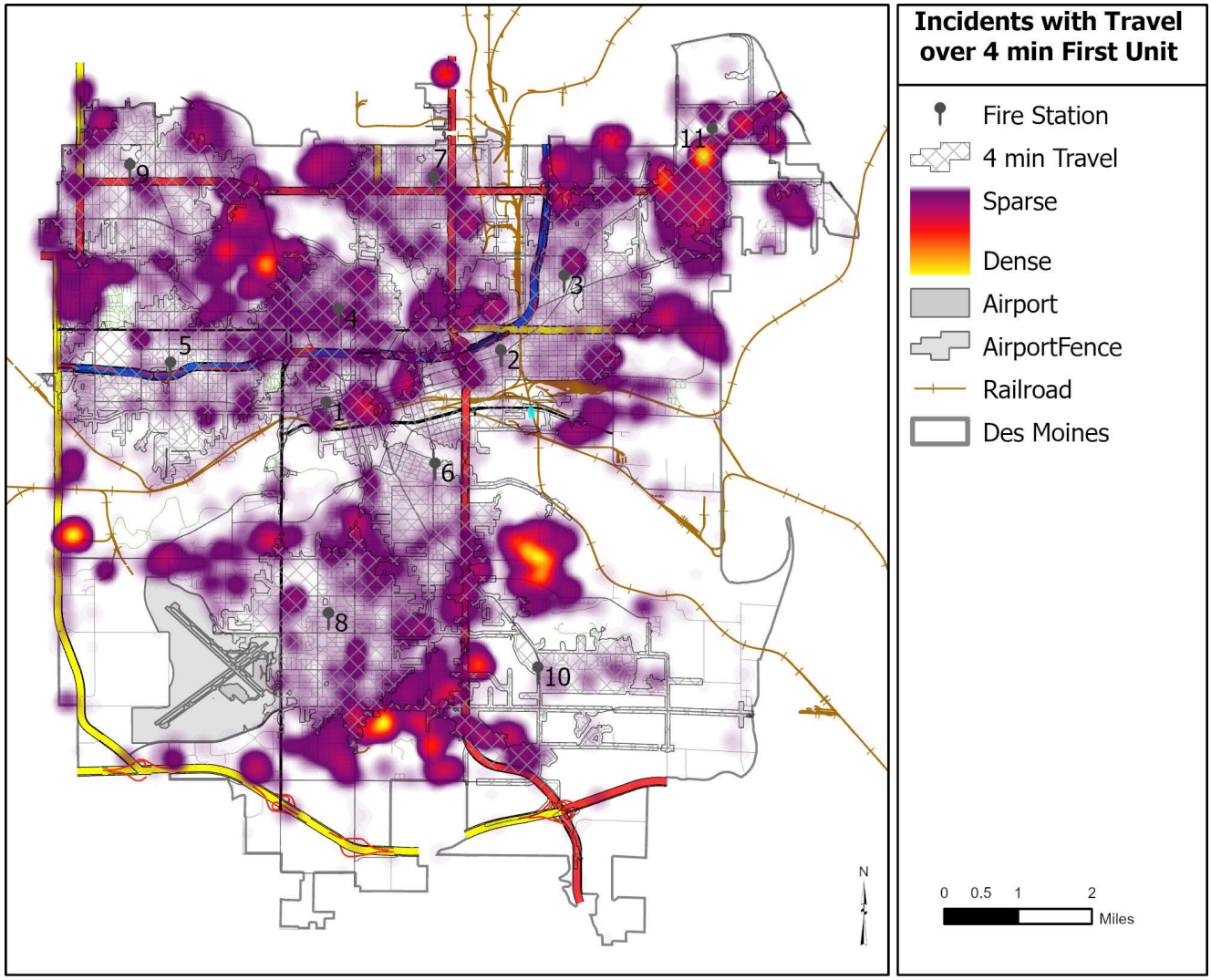
The following map represents incidents throughout the city where the travel time for the first unit to arrive exceeds four minutes. The map provides valuable information in two forms: it highlights where incidents occur that are more than 4 minutes away from a fire station, and it shows where high-demand areas are,

meaning that though it is within 4 minutes of a fire station, a unit was unable to arrive within the benchmark. Longer travel times can occur when the first-due or expected unit is unavailable; thus, another unit (from a different station) must respond, and the travel time likely exceeds four minutes. Additional personnel resources, stations, and/or apparatus are needed to resolve this gap. The following map analyzes over 57,000 qualified emergent incidents (years 2019-2021) and shows the nearly 15,000 incidents where the travel time for the first arriving unit exceeded 4 minutes.

The map identifies areas where multiple calls (bright yellow) occurred where the first arriving unit travel time exceeded 4 minutes to regions with very few calls (purple haze) exceeded 4 minutes travel time. From this map, the department can ascertain the following:

- The northeastern portion of Des Moines (planning zone 11) has numerous calls where the first arriving unit travel time exceeds 4 minutes.
    - Attributable to the period analyzed – Station 11 did not go into service until November 1, 2021. In the future, it will be critical to explore the impact of adding Station 11 (Engine in November 2021 and Medic in July 2022) on service delivery in this area.
- Northwestern Des Moines (between planning zones 4, 5, & 9) experienced numerous calls where the first arriving unit travel time exceeded 4 minutes.
    - Attributable to the area being over 4 minutes away from any fire station.
- Southeastern Des Moines (areas on the eastern edge of planning zone 6) experienced numerous calls where the first arriving unit travel time exceeded 4 minutes.
    - Attributable to the limited street network in the area and travel time to a fire station.
- The southern portion of Des Moines (southern edge of planning zones 8 and 10) has numerous calls where the first arriving unit travel time exceeded 4 minutes.
    - Most of this density is attributable to the physical location of stations 8 and 10, and the travel time is over 4 minutes to this area.
- Areas in the western portion of Des Moines (western edge of planning zone 5) have numerous calls where the first arriving unit travel time exceeds 4 minutes.
    - Attributable to the limited street network in the area and travel time to a fire station.
- Scattered areas throughout the central portion of Des Moines (locations throughout planning zones 1, 2, 3, 4, 6, and 7) have a moderate number of calls where the first arriving unit travel time exceeds 4 minutes.
    - Attributable to the density of calls in this area of Des Moines. Further analysis regarding call density is available in the discussion of reliability and the planning zone analysis later in this report.

Map 32: Incidents with >4-Minute Travel First Unit



Recommendations for Improved Effectiveness in Deployment and Coverage

The department has reviewed workload and performance in various formats and frequencies. This document and process represent a consistent and repeatable analysis methodology (recommendations to improve this analysis and methodology are in Appendix J). Through this analysis, the department has determined the need to address the gaps/shortcomings in performance in the following ways: reconfiguration/ redeployment of resources, adding additional resources and capabilities to the current system, and consideration/ implementation of alternative methods to address risks within the city of Des Moines:

- The addition of Station 11 in November 2021 is an example of redeployment and adding resources to the system. The station opened in November 2021 with a single redeployed engine company, and in July 2022, the city added a new medic squad (ambulance). Anecdotally, this has positively affected response times in the northeastern portion of Des Moines and reduced the workload on units and personnel at Stations 3 and 7. Reducing the workload should also make them more available to respond to calls in their first-due area. The department will not completely know the impact of these changes until data from 2022 can be analyzed.
- The relocation of Station 4 (planned for mid-2025) is an example of how the department can reconfigure the response system to address the risk and call volume within the city. Station 4's new location will specifically address an area (between stations 4, 5, and 9) of the city that is outside of the 4-minute travel time from the current configuration of fixed assets. Once this station and the resources deployed from the station move, the department will need to examine the impact of this change, especially along the eastern and southern borders of planning zone 4 of today.
- Areas of the city that experience first arriving unit travel time exceeding 4 minutes (categorized generally as the areas on the eastern edge of planning zone 6 and the western edge of planning zone 5) is primarily attributable to the limited street network in the area and travel time to a fire station. One potential solution that warrants further investigation is the concept of traffic preemption. The ability to manipulate traffic signals is one option that may contribute to reducing response travel times throughout the city and may help alleviate excessive travel times to these isolated areas.
- Areas in the southern portion of Des Moines (categorized generally as the area south of the Raccoon and Des Moines Rivers) with a substantial number of calls where the first arriving unit travel time exceeded 4 minutes require a more significant study of potential station locations. Stations 8 and 10 will need replacement eventually (next ten years). Adding another station will be necessary to meet the benchmark performance objectives in the city's southern region. There will need to be careful consideration as to the timing and location of these new facilities to ensure these changes do not negatively impact the system's performance.
    - In addition to the potential movement of fixed assets in the southern portion of the city, alternative measures such as retroactive installation of fire protection systems, intensified fire prevention education efforts, and increased neighborhood outreach should all be considered to reduce the risk and severity of incidents occurring within these areas known to be outside of 4 minutes travel time from fixed assets.
- The density and timing of calls within the central portion of the city will require further investigation to determine the most appropriate improvements needed to address these demands. Possible solutions include consistent staffing of Engines 8 and 9 to reduce calls for Engines 1 and 4 beyond their planning

zone, peak-time resources to address the density of calls during certain hours of the day and day of the week, as well as pursuing diversion and alternative response programs (e.g., CARE team responses) to reduce the demand for resources in these areas.

- The department will seek to increase efficiency in turnout times system-wide using a multipronged approach.
  - Short term, the department can provide increased awareness of turnout times by:
    - Seek funding to add modern, effective station alerting and turnout timing equipment into existing stations.
    - Publish reports outlining turnout times by station, division, and classification to all personnel,
    - ensuring data quality through personnel education,
    - quality assurance review, and
    - the use of outlier data qualification practices.
  - In the long term, the department will improve station design for all new builds and station remodels. The department is acutely aware of distances and impediments impacting turnout times. Station architecture concerning turnout was a priority in the design and construction of Station 11 and is part of the design discussion for Station 4.

J. Performance Maintenance and Improvement Plans

Compliance Team/Responsibility

The department upholds its mission to protect life and property by minimizing the impact of fire, medical emergencies, and potential disasters or events by maintaining this study. The Des Moines Fire Department leadership team is responsible for reviewing and continuously improving the information and data presented in the Community Risk Assessment and Standards of Cover document. Being data-informed will provide valuable information to the leadership team to ensure the most effective and efficient distribution of resources. There are many responsible for the data presented in the report:

- The communication center captures caller information to determine event types and dispatches the appropriate units to respond.
- Responding personnel document event milestones with timestamps, who responded, and the actions needed to mitigate the incident.
- Company officers ensure appropriate and complete documentation occurs promptly within the department's records management software.
- The district chiefs assigned to each division are responsible for reviewing and confirming all incident documentation is complete and accurate.
- The superintendent of technical services and the accreditation manager are responsible for compiling, analyzing, and presenting this study's data portions. Data is prepared for analysis using the outlier guidelines (documented earlier in this document) to ensure the dataset is valid.
- The leadership team regularly reviews the baseline performance tables and performance gaps taking or making plans for corrective actions as indicated by the data or changes to the city that will impact service delivery.

The department must monitor performance regularly to ensure the department meets or is working toward established benchmarks. The superintendent of technical services and the accreditation manager will review performance and gap tables every quarter. The review shall include a summary of the results of the performance objectives, a comparison of current results to previous results, and calculations of the difference in outcomes between periods. At least annually, the leadership team will review the performance and gap tables and report the results to the authority having jurisdiction (AHJ).

Performance Evaluation and Compliance Strategy

In addition to reviewing overall baseline performance objectives, the leadership team will review the response demands within each planning zone. The Standards of Cover project team will meet annually to determine if there have been any significant changes within the planning zones, changes to service demands, or changes in standards or operations that impact the performance objectives or the Standards of Cover document.

Compliance Verification Reporting

After the data reports are prepared, the superintendent of technical services and the accreditation manager will present the quarterly performance data review results at the first full leadership team meeting. This review will be cumbersome for the foreseeable future as staff must translate event types to match the call types represented in this document (e.g., structure fire broken down to garage/shed, residential, commercial, mid-rise, and high-rise). This process cannot become automated until these new event types can be added to the computer aided dispatch software with the corresponding response plans. Once this update is complete, obtaining the performance data will become more streamlined, affording monthly and on-demand reviews in time.

Continuous Improvement Strategy

The superintendent of technical services and the accreditation manager will assemble all required information and assist the leadership team in the interpretation of data. In addition, they will provide considerations for improvement toward achieving benchmarks. Minimally, the final report summarizing the previous year's data will be presented by the fire chief to the city manager's office and elected officials annually within the first quarter of the following year.

K. Appendices

Appendix A: Strategic Plan

Des Moines City Council and City Staff rely on strategic plans to clearly communicate the priorities established by Des Moines residents and community members. These plans set the standards for planning, development, and operations throughout our City government.

PlanDSM.dsm.city

PlanDSM | Creating Our Tomorrow is the City of Des Moines' comprehensive plan for how it will grow into the future. PlanDSM was formed following a 19-month process involving extensive public outreach to all areas of Des Moines.

The plan consists of a vision statement of values The City considers important for the future; goals and policies for eight different Plan elements; a separate element addressing social equity; an implementation chapter describing how the Plan can be realized; and a Future Land Use Map.

GuideDSM.dsm.city

The Des Moines Strategic Plan 2016-2021-2031, or GuideDSM, clearly communicates Mayor and City Council priorities to Des Moines' residents and businesses.

GuideDSM stays on task with the vision established by PlanDSM as planning continues to address future needs. GuideDSM informs the development of annual City budgets and capital improvement planning for the next five fiscal years.

DSM.city/MoveDSM

MoveDSM is Des Moines' first citywide transportation master plan.

The 25-year plan clearly identifies how multi-modal transportation supports The City's goals outlined in PlanDSM for safety, quality of life, and economic development and ensures that The City is best positioned to provide transportation options for all residents in every stage of life.

DSM.city/LiveDSM

LiveDSM is a comprehensive plan for Des Moines' parks and recreation.

The long-range plan enables multi-year planning for capital investments and updated levels of service standards while integrating Des Moines' pursuit of parks, recreation, the arts, and environmental education and furthers the goals and priorities established in GuideDSM.

Appendix B: Transportation Additional Information

Topic	Link
DART - public transit	https://www.ridedart.com/sites/default/files/System%20route%20map%20DART%20On%20Demand%20zoneArtboard%201-80.jpg
DSM Int'l Airport	News & Statistics | Des Moines International Airport (flydsm.com)
Rail Transfer Station	Des Moines Industrial Transloading Facility (dsm.city)
Skywalks Link	Skywalks (dsm.city)
Traffic Counts	https://iowadot.gov/about/traffic
Trails & Trail Use	Des Moines Trails (dsm.city)

Appendix C: Stakeholder Comments

Community Service Priorities, Expectations, Concerns and Perceived Strengths

Des Moines Fire Department, Iowa

On April 27th, 2022, forty-six community stakeholders attended a meeting held at the East Side Library in Des Moines, Iowa. The meeting was facilitated by a representative from the Center for Public Safety Excellence. Feedback was provided through instruments utilized in the meeting where stakeholders voted to prioritize fire department programs and services, identified what the fire department should change and not change, prioritized community expectations and concerns in their own words, and indicated perceived strengths. Input themes along with weighted ranking and values received from that meeting are presented on the following pages.

Program and Service Priorities as Identified by the Community Stakeholders

Programs	Ranking	Score
Emergency Medical Services	1	326
Fire Suppression	2	308
Hazardous Materials Mitigation	3	205
Technical Rescue	4	181
Water Rescue (Water Emergency Team)	5	168
Emergency Preparedness and Management	6	165
Fire Prevention	7	146
Fire Investigation, Origin, and Cause	8	118
Public Education	9	75

Community Written Feedback from the Community Stakeholders

The following material is written feedback regarding a variety of topics. The attending community stakeholders were asked to:

- Identify one thing that the fire department should change,
- Identify one thing that the fire department should not change,
- To list, in priority order, the expectations they have of their fire department,
- To list, in priority order, the concerns they have about or for their fire department,
- To list, in no order, perceived positives/strengths about their fire department, and
- To provide any general remarks that they would like to share with the department.

Community Input Regarding One Thing that the Des Moines Fire Department Should Change

- Recruitment – different aspect maybe for more variety, people.
- Training on compassionate care for all.
- Increase women/minority presence in the department.
- Questioned the needs of injured party – whether they required Emergency Room intervention.
- Image of only being about fire.
- More communication of services provided through mailings.
- More community education.
- Diversify the culture.
- More outreach - and pursue a diverse workforce.
- Need more internship/mentorship programs.
- How assets are placed.
- Remember that you are always representing the DMFD with your interactions.
- If a call comes in, inform the caller they'll be responsible to repair the damage when inspecting for a fire.
- Having a hazard assessment of the city.
- More firefighters.
- Continue to expand referrals for Familiar Faces.
- Add mental health support for firefighters and EMS.
- Do they need another station?
- I do not think changes should be made.
- Staffing – seems like the department at times is understaffed during responses slowing down response times.
- Conduct table-top with large/major events.
- Telling their story and good news better.
- Increase community interaction outside of fire related incidents.
- Hiring process and understaffing issues.
- Sending an engine out to respond to paramedic unit.
- Ongoing communication with ancillary departments.
- Equal treatment regardless of mental health, substance abuse or homelessness.
- Visit more sites with hazardous materials.

Community Input Regarding One Thing that the Des Moines Fire Department Should Not Change

- The expertise of fire department members is great.
- Their focus on service.
- No reductions in staffing levels.
- A very compassionate staff.
- Leadership.
- Its expedited service.
- Very responsive to emergencies.
- Delivery of services.
- Their light spirit.
- Willingness to help and support the community and being visible at community events.
- Being a part of community events.
- The selection process and standard set.
- Response time.
- Growing knowledge from the older team members and valuing the historical lessons learned.
- Diversity.
- Full time fire department personnel.
- Doing a great job.
- Timely permit and approval process.
- Speed of service.
- Ability to assess and care.
- Love working with them.
- Great communication.
- Community relations.
- The department should not change the engagement in the pre-application process. Early feedback is critical to building design.
- Keep as is.
- Quality of service.
- The care and kindness they show to the community and individuals as we need their services.
- Community first focus.
- Response time.
- Community outreach and availability.
- Customer focused service.
- Continue community involvement.
- Leadership in their officer corps – they address critical issues.
- Response time to our neighborhood.
- Training.
- Timeliness of response.

Community Expectations of the Des Moines Fire Department (Themes in priority order)

1. **Quick Response Times**: Response time. Timeliness. Quick response. Timely medical response. Rapid transport of medical emergencies. Fast response times. Be quick. NFPA compliant response to meet best practices. Respond in a timely manner. Fast response times. Punctuality. Response time.

Responsive. Timeliness - getting to property or individuals as quickly as possible. Fast response. Fire alarm response. Prompt response. Fast response times. Quick response times. Speedy service. Timely response to emergencies. Quick response time within national standards or better. Rapid, yet safe, response to fires. Prompt arrival to calls. Be prompt as possible. To respond to emergencies quickly. Respond to emergencies in a timely manner. Treat every response as an emergency. Respond quickly to emergencies. Expedited responses. Prompt responses to emergencies. Arrive at emergencies fast. Timely response. Emergent response to address emergencies. Prompt service. Exceed industry standards for response times 24/7/365. Prompt response. (104)

2. **Employee Knowledge and Training**: Well trained staff. Competent staff. Knowledge of chemicals on-site. Knowledge of industry. Capable firefighters. NFPA compliant training to meet best practices. Highly trained EMS to support advanced care. Knowledgeable of duties. Solving problems to the best of their ability. Adequately trained. Knowledge of facilities. Knowledge of standards and codes. Ready and capable to suppress fire at any time. Competency. Adequate training to provide response/care. Be knowledgeable about the job at hand. Keep up regular training to include new methods. Well trained and have the tools to do their job. Competency. Knowledgeable. (45)

3. **Customer Service**: Professional approach. Bedside manner. Great customer service. Provide exceptional care and practices. Non-biased respect and consideration for all living people and animals in the household or community. On-site protocol. Thorough completion of incident resolution. Professionalism. Professional. Be nice. Show concern and empathy. Provide referrals for mental health. Professionalism. Compassionate. Represent as an asset to the community. Friendly customer service. Be professional in approach. Maintain a professional work environment for DMFD team members. Compassionate department staff. Care - good customer service. Professionalism. Respectful service. Highest level of ethics and professionalism. Treat all patients the same. Employ staff that desire to serve others. Caring attitude. Servant approach. Friendly to the public. (42)

4. **Availability of Resources**: Adequate facilities and staffing. Availability of resources. Upgrade of equipment. Working equipment. Proper equipment to deal with Haz-Mat, rescue and fire situations. Have everything that you need. Properly equipped. Have state of the art equipment and technology. Adequate staffing and equipment. Hire firefighters that represent the community. Diversity of employees and firefighters. Have enough staff to not have to wait for a rig/crew from across town causing a delay in emergency incident mitigation. Continue to improve equipment and personnel to meet 21st century needs. Maintain high standards for employee prospects. Staff and equipment to meet the needs in our growing areas. Have enough resources for emergencies. (28)

5. **Community Education and Outreach**: Outreach - education of safety and health mission. Ability to interact on-site with businesses to prepare them in the case of emergencies. Community relations. Connection with all schools within the Des Moines Public School District. Reach out to schools to evaluate evacuation plan efficiency and re-routes if necessary. Help educate and participate in the neighborhoods' fire safety and security. Be members of the community they serve. Be supportive of the community. Proper follow-up of calls if needed. Have an open-door policy for the community. Educate the community on fire safety. Providing education on fire safety. Community safety. Community involvement and education. Proactive education for the community. (18)

6. **Fire Prevention/Code Enforcement**: Solid preparedness and code enforcement programs for all demographics (youth, adults, business, senior citizens). Reduce loss and improve safety for the community. Active partner in the review/design of future buildings/developments. Support of business owners, developers, and contractors for cost effective solutions with fire protection needs. Technical

expertise on development/redevelopment fire code requirements. Proactive fire prevention. Resources for modifications/improvement. (12)

7. **Regional Resource Partners**: Dispatch integrated with mutual aid partners. Requesting additional help if they can't do it all. Willing to partner with outside agencies. (6)
8. **Firefighter Safety**: Provide support and protection to fire stations in the community they exist in. Stay safe/alive. (5)

Areas of Community Concern about or for the Des Moines Fire Department (Themes in priority order)

1. **Adequate Staffing and Diversity**: Staffing shortages. Quantity of staff members (enough?). Can they find adequate staff? Staffing (needs and current challenges with finding staff). Under-staffed. Workforce - all segments of work seem to be impacted by worker shortage. Not enough staff. Staffing challenges that require taking apparatus out of service. Staffing resources may be spread too thin. Adequate personnel. Adequate staffing and funding. Workforce to meet the needs of the community. Recruitment and retention of staff. Enough personnel to cover shifts and for education of the community. The ability to replace personnel with up-coming retirements - loss of institutional knowledge. Equity for women and minorities in the profession. Would like more diversity in hiring. Staff doesn't look/seem diversified. Are first-responders bilingual? Diversity within the department, especially firemen/women. Lack of diversity in the department. Hiring practices that prevent diversity. More female representation. More ethnic diversity. Members of the community served. Staffing of the new departments (stations). Creating a diverse workforce. Need more staffing for best coverage. Learn more about youth recruitment events. City of residence for firefighters? (72)
2. **Response and Coverage**: Being able to respond quickly. All areas of the community getting the best response times and coverage. Growing city and infrastructure (fire houses and staffing) to serve into the future. Train crossings. Not close enough. . How some fire stations are used to meet calls. Response times in the downtown area. Road closures. The difference in response time according to area or zip code. Emergency response is necessary, but using caution, and monitoring speed in densely populated areas is appreciated. Will the local firehouse be prepared for multiple issues happening at once? Having space to pull fire trucks with on-street parking. Adequate station facilities. The availability to hook up to fire hydrants with cars parked. Using other city fire departments (not a concern, but it happened to us). The requirement to have both an ambulance and fire on calls no matter the situation. Traffic not paying attention or allowing right-of-way slowing response times and causing further danger in the community. Access to medical rescue from new departments (stations). Sometimes the number of calls out-weigh the capacity to serve. If one of these sites were to be on fire (East Side Library), or bigger than the Barton fire, are there enough resources to handle the crisis? (42)
3. **Funding**: Proper budget. Adequate budget. Adequate funding resources. Future funding levels - lots of competing priorities. Budget - all budgets seem to be impacted by rising costs. Are they properly funded? Adequate equipment. Funding. (17)
4. **EMS Concerns**: Paramedics unwilling to work with other medical providers. Poor attitudes of paramedics regarding patients. Through my own experience the staff that day attempted to deter injured party from going to the Emergency Room at that moment and suggested a next day follow-up - stairs prevented the injured party from leaving the house. Some EMS are set in their ways and can be very negative towards new initiatives. Liability with medical transport. How everyone is treated based

upon socio-economic status or condition. When a scene needs/wants to be secure before entering, valuable time is lost. (16)

5. **Equipment and Technology**: They are not given funds for equipment to do their job. Equipment and supplies. Adaptability with new technology and fuel sources. Not having access to the newest modern life saving equipment. Not having correct equipment. Equipment resources may be spread too thin. Properly equipped. Please continue to equip the department with the resources they need. (16)
6. **Personnel Safety**: Care of personnel (mental/physical health) with peer support. Safety of the fire department - both on scene and elsewhere. Are they prepared for increases in violence, mental health issues and drug issues? Pandemics. Being safe in their response. (10)
7. **Training**: Not having correct training. Adequate training. Being trained for all calls. Training timetable. Please continue to train the department with the education needed. They are not given funds to get updated training each year that they need to do their job. (9)
8. **Community Engagement**: Image of the fire department is of fire - I imagine the reality is more about emergency medical. More information needed for the community. Would like to see more community interaction and education resources. There are no community events, meetings with school at risk kids. I don't see as much community engagement. Continue to participate in community functions as active participants to neighbors creating a positive presence. (9)
9. **Fire Code/Prevention Services**: Potential lack of support for policies/prevention methods by elected officials and the development community. Consistency between team members in the enforcement/approval process is not always the case. Forward looking to continued growth and development. Adoption of International Fire Code High Pile Permit without considering effect on previously permitted facilities. (9)
10. **Community Changes**: Changing demographics in the community. The ability to evolve with the pace of social change in the community. Increase in population and businesses. (4)
11. **Collaboration with Law Enforcement**: Are they prepared for mass casualty events to work well in collaboration with law enforcement? Work with other entities such as PD on topics such as active shooter when defining Fire Code at the national level. (3)
12. **Politics**: That they can't do their job to the best of their ability due to politics in our state, city, country. (3)
13. **Emergency Communications**: Not limited to DMFD - consider allowing emergency communication improvements to take place if an ADA plan is outlined for down the road so safety improves at least for the majority until funds are approved. (3)
14. **Older Home Fire Risk**: Older homes: more issues that could cause fires - vacant - no visible addresses - in disrepair - materials that burn faster. (3)
15. **Fire Victim Fund**: No fund to help fire victims recover, especially when the threat of fire was negative. (3)
16. **Customer Service Focus**: Continued focus on customer service with citizens. (3)
17. **Hospital Communications**: Recommended addition of *Pulsara* for communicating with metro hospitals. (3)
18. **Conflict Concern**: Conflict of interests. (3)

19. **Community Response Concern**: Conversion of one-way streets to two-way streets. (2)
20. **Regional Fit**: Finding a regional fit with the suburban department growth. (1)
21. **Homeless**: Houseless neighbors - use fire to keep warm in wooded areas - is there access to them, could they be helped? (1)

Positive Community Comments about the Des Moines Fire Department (verbatim, in no particular order)

- When the crew comes on-site for tours and gets familiar with the site.
- Positive attitudes.
- Help businesses prepare for crisis.
- Open to feedback. The department has always been open to feedback and growth.
- Making data informed decisions.
- Knowledge within the industry. Well trained.
- DMFD are held in high regard in the EMS community. Highly trained, professional, and accountable.
- Great leadership.
- Great training.
- Show of force in community support.
- Training.
- Equipment.
- Strong leadership.
- Personal protection equipment for firefighters.
- Well maintained vehicle fleet.
- Friendly.
- Communicate effectively.
- Team oriented.
- Creating a diverse workforce to match the community – the last graduating class was the most diverse yet. Congratulations!
- I have seen them at community events.
- All interactions that I have had with the fire department from firefighter to fire chief have been professional and positive.
- They work hard and quickly to provide the best care possible in the outer neighborhoods of the community.
- As a neighborhood organizer, I appreciate how easy it is to have department representatives speak about safety and answer questions.
- We see the department out at every call helping other emergency services, and working hard.
- Good rapport with the community.
- Thoroughly thought-out action plans.
- Good image and public relations.
- Responsiveness.

- Community first focus.
- Great leadership (internally and externally).
- How quickly they get to the emergency.
- How kind and caring the men and women are as soon as they get on-scene.
- How involved they are in our community personally.
- Their knowledge of their job.
- They are well trained.
- They always have open dialogue.
- They are responsive to assist and share operational plans to meet the needs of the events they oversee.
- Quick response to calls/alarms.
- Quick response for system malfunctions.
- Great to work with.
- Always professional.
- Appreciate on-site tours to help during emergencies.
- I find members of the DMFD who work on development review to be creative problem solvers.
- They are well respected in the community.
- They show up in the community.
- They try to hire (and do) from the community.
- The leadership has always been very willing to work with the community provided to try to reduce calls for services that are non-emergency.
- Caring and empathetic.
- Appreciate all the work that they do for our community.
- Courteous, kind, and extremely responsive to need and calls.
- A positive part of my neighborhood. Fire Station 7 is excellent.
- The fire department (station) in my neighborhood is a great asset to the community.
- Code support and knowledge.
- Overall enforcement of codes, rules, and regulations.
- Courage, dedication, and commitment.
- Leadership.
- Professionalism.
- Full-time firefighting staff.
- Great chief – does significant community outreach.
- Always demonstrating community support and resources.
- Knowledge depth in the forefront of the team in all areas.
- Being close to the stations.
- Being staffed for safety and response.
- Responding when called without being intrusive.

- Quality of personnel.
- Equipment.
- EMT personnel.
- The firefighters that I've encountered have usually been devoted and good hearted people.
- Courageous, putting their lives on the line for people every day.
- DMFD is present and very visible throughout the community and community events.
- DMFD firemen always seem to have a pleasant demeanor and helpful attitude.
- DMFD seems prepared and ready for any emergency.
- They come when we call!
- Response time.
- Minorities in positions.
- Station 10 was very responsive to a medical emergency for my husband.
- They were very good on calming me and putting my mind at ease.
- Very efficient at responding to calls/emergencies.
- Very visible.
- Great locations in the metro.
- Professional.
- Personable.
- Well trained.
- Fire department leadership in Chief TeKippe. So knowledgeable, caring, and responsible.
- They are sensitive to the needs of the elderly. Must make a lot of stops at senior living centers but they are professional and courteous to them.
- The fire department led the way during the pandemic and were on top of constantly changing developments.
- Strong leadership.
- Responsiveness.
- Professional.
- Kind.
- Work well as a group.
- They were thoughtful and caring, even to my pets when they came. Awesome service.
- When they come to our community events they are always great with the community and kids.
- Great to work with our company on false alarms and help needed calls.
- Easy to work with – professional and prompt.
- I appreciate the skillsets and abilities that firefighters possess – it is sometimes a thankless job.
- Fire departments are some of the most caring and dedicated members of the community, and the more opportunities we can have to do events with them, the better.
- Friendly and helpful.
- Feeling of safety.

Other Community Comments about the Des Moines Fire Department (verbatim, in no particular order)

- In my opinion the fire department does a great job.
- Create skills challenges for Des Moines youth.
- High school career days.
- Thank you!
- I feel very blessed to have as many firefighters that we do who risk their lives everyday in Des Moines. Thank you!
- I like having a sub-station near me.
- Use opportunities to train and allow new staff to become familiar with major public venues i.e., Iowa Event Center.
- Thank you for your work and for your efforts to improve.
- When we had a fire, there was another major fire at the same time, so they sent fire departments from other cities.
- Jason Mason is awesome. Wish we could clone him.

Appendix D: Doane's Formula

Calculating the width of bins for total risk score. Four bins were used (low, medium, high, and maximum). The data is skewed right (more low and medium events than high and maximum). This needed to be considered when determining the bin width.

Doane's formula is a modification of Sturges rule, which attempts to improve its performance when dealing with non-normal data by also considering the shape of the data.

$$k = 1 + log_2(n) + log_2(1 + \frac{s}{\sigma_s})$$

Where – estimated skewness of the variable distribution and:

$$\sigma_s = \sqrt{\frac{6(n-2)}{(n+1)(n+3)}}$$

Appendix E: Workload and Reliability (Engines and Trucks)

Emergent Workload and Reliability Engines

2021		Emergent Workload				Reliability		
Unit	Planning Zone	Planning Zone	1st Due Unit to Planning Zone	Other Units to Planning Zone	Unit Total runs	1st-Due Area Reliability	1st-Due Unit Reliability	Other than 1st-Due Unit Reliability
Notes		*Canceled responses are excluded.*				*The response goal (turnout + travel) 5:20*		
E01	1	862	807	55	1035	86.9%	89.0%	54.7%
E02	2	582	529	53	735	75.0%	74.9%	75.5%
E03*	3	357	201	156	417	66.2%	80.7%	47.4%
E04	4	1240	1037	203	1209	80.6%	83.7%	64.5%
E05	5	743	632	111	691	73.7%	75.5%	63.6%
	6	120	0	120	0	53.0%		53.0%
E07	7	667	596	71	716	71.6%	77.1%	25.4%
E08	8	306	202	104	239	57.2%	71.6%	29.4%
E09	9	213	128	85	144	57.6%	79.5%	21.8%
E10	10	515	493	22	648	54.8%	55.4%	40.9%
E11‡	11	381	158	223	183	52.5%	81.5%	32.0%

* E03 was removed from service Nov 2021

‡ E11 was put in service In-service Nov 2021

Emergent Workload and Reliability Trucks

2021		Emergent Workload				Reliability		
Unit	Planning Zone	Planning Zone	1st Due Unit to Planning Zone	Other Units to Planning Zone	Unit Total runs	1st-Due Area Reliability	1st-Due Unit Reliability	Other than 1st-Due Unit Reliability
Notes		*Canceled responses are excluded.*				*The response goal (turnout + travel) 5:20*		
T01	1	198	163	35	235	82.7%	94.0%	34.3%
	2	63	0	63	0	50.8%		50.8%
T03	3	447	441	6	762	76.8%	77.6%	16.7%
	4	76	0	76	0	58.1%		58.1%
	5	55	0	55	0	35.8%		35.8%
T06	6	505	481	24	593	61.4%	62.6%	34.8%
	7	31	0	31	0	33.3%		33.3%
T08	8	851	798	53	905	66.4%	68.7%	30.0%
T09	9	731	728	3	793	73.8%	73.7%	100.0%
	10	67	0	67	0	20.9%		20.9%
	11	261	0	261	0	26.6%		26.6%

Appendix F: Task Analysis

Double-click to open the entire document.

Task Analysis and Effective Response Force Detail

Classification	Call Type	Task	Inital Task (ERF)	Subsequent
Fire				
Medium	**ALERT 2**		**17**	
		1 Command	1	
		2 Safety	1	
		3 Support Operations	15	
Maximum	**ALERT 3**		**50**	
		1 Command	1	
		2 Safety	1	
		3 Fire Attack - Primary	5	
		4 Search & Rescue	4	
		5 Pump Operator	1	
		6 Operations Section Chief	1	
		7 Rapid Intervention - Full Team	4	
		8 EMS - Rehab	2	
		9 Fire Attack - 2nd Line	5	
		10 Accountability	1	
		11 EMS - Civilians	10	
		12 Aerial Operator	1	
		13 Transport Officer	1	
		14 Treatment Officer	1	
		15 Triage	4	
		16 Triage Officer	1	
		17 Water Supply - Hydrant	1	
		18 Support Operations	4	
		20 Documentation	1	
		21 Rescue Group Supervisor	1	
Low	**ARSON FIRE INVESTIGATION**		**1**	
		1 Initial Investigation	1	
Medium	**INVESTIGATION**		**3**	
		1 Pump Operator	1	
		2 Initial Investigation	2	
Medium	**INVESTIGATION SMOKE IN THE AREA**		**3**	
		1 Pump Operator	1	
		2 Initial Investigation	2	
Low	**INVESTIGATION SMOKE ODOR**		**3**	
		1 Pump Operator	1	

Friday, June 16, 2023 Page 1 of 25

Task Analysis and Effective Response Force Detail

Classification	Call Type	Task	Inital Task (ERF)	Subsequent
Fire				
Medium	**ALERT 2**		**17**	
		1 Command	1	
		2 Safety	1	
		3 Support Operations	15	
Maximum	**ALERT 3**		**50**	
		1 Command	1	
		2 Safety	1	
		3 Fire Attack - Primary	5	
		4 Search & Rescue	4	
		5 Pump Operator	1	
		6 Operations Section Chief	1	
		7 Rapid Intervention - Full Team	4	
		8 EMS - Rehab	2	
		9 Fire Attack - 2nd Line	5	
		10 Accountability	1	
		11 EMS - Civilians	10	
		12 Aerial Operator	1	
		13 Transport Officer	1	
		14 Treatment Officer	1	
		15 Triage	4	
		16 Triage Officer	1	
		17 Water Supply - Hydrant	1	
		18 Support Operations	4	
		20 Documentation	1	
		21 Rescue Group Supervisor	1	
Low	**ARSON FIRE INVESTIGATION**		**1**	
		1 Initial Investigation	1	
Medium	**INVESTIGATION**		**3**	
		1 Pump Operator	1	
		2 Initial Investigation	2	
Medium	**INVESTIGATION SMOKE IN THE AREA**		**3**	
		1 Pump Operator	1	
		2 Initial Investigation	2	
Low	**INVESTIGATION SMOKE ODOR**		**3**	
		1 Pump Operator	1	

Classification	Call Type	Task	Inital Task (ERF)	Subsequent
Fire				
		2 Initial Investigation	2	
Medium	**MUTUAL AID - DM ONLY FIRE ASSIGNMENT**		**9**	**1**
		1 Command	1	
		2 Safety		1
		3 Fire Attack - Primary	2	
		4 Pump Operator	1	
		5 Inside Truck Work (FE/UT/Search)	2	
		6 Aerial Operator	1	
		7 EMS - Rehab	2	
High	**PRIVATE ALARM (FIRE)**		**3**	**2**
		1 Command	1	
		2 Safety		1
		3 Initial Investigation	2	
		4 Fire Prot. Systems Control		1
High	**PUBLIC ASSISTANCE (FIRE)**		**2**	
		1 Provide Assistance	2	
Medium	**SPRINKLER ALARM**		**6**	**1**
		1 Command	1	
		2 Initial Investigation	2	
		3 Fire Prot. Systems Control	2	
		4 Safety		1
		5 Pump Operator	1	
Low	**STILL ALARM - CHOOSE SUB TYPE ALL OTHER**		**4**	**1**
		1 Command	1	
		2 Safety		1
		3 Fire Attack - Primary	2	
		4 Pump Operator	1	
Medium	**STILL ALARM - CHOOSE SUB TYPE GRASS FIRE - D**		**4**	**1**
		1 Command	1	
		2 Safety		1
		3 Fire Attack - Primary	2	
		4 Pump Operator	1	
Medium	**STILL ALARM - CHOOSE SUB TYPE ILLEGAL BURN**		**4**	**1**
		1 Command	1	
		2 Safety		1
		3 Fire Attack - Primary	2	

Classification	Call Type	Task	Inital Task (ERF)	Subsequent
Fire				
		4 Pump Operator	1	
Medium	**STILL ALARM - CHOOSE SUB TYPE TRASH FIRE - D**		**4**	**1**
		1 Command	1	
		2 Safety		1
		3 Fire Attack - Primary	2	
		4 Pump Operator	1	
Medium	**STILL ALARM - CHOOSE SUB TYPE VEHICLE FIRE**		**4**	**3**
		1 Command	1	
		2 Safety		1
		3 Fire Attack - Primary	2	
		4 Pump Operator	1	
		5 Water Supply - Hydrant		1
		6 Forcible Entry/Ventilation		1
Maximum	**structure fire - commercial**		**35**	**3**
		1 Command	1	
		2 Safety	1	
		3 Fire Attack - Primary	3	
		4 Fire Attack - Back-Up Line	2	
		5 Pump Operator	2	
		5.1 Water Supply		1
		6 Fire Attack - 2nd Line	3	
		7 Inside Truck Work (FE/UT/Search)	4	
		8 Outside Truck Work (UT/2nd Eg/Vent/VEIS)	4	
		9 Aerial Operator	2	
		10 Rapid Intervention - Full Team	4	
		11 EMS - Civilians	2	
		12 EMS - Rehab	2	
		13 Accountability	1	
		14 Operations Section Chief	1	
		15 Water Supply - Hydrant		2
		16 Overhaul	3	
Low	**structure fire - detached garage, shed**		**6**	**6**
		1 Command	1	
		2 Safety		1
		3 Fire Attack - Primary	2	
		4 Pump Operator	1	
		5 Water Supply - Hydrant		1

Classification	Call Type	Task	Inital Task (ERF)	Subsequent
Fire				
		6 Forcible Entry/Ventilation	2	
		7 Overhaul		2
		8 Utility Control		2
Maximum	**Structure Fire - Duplex/Jumbo**		**28**	**2**
		1 Command	1	
		2 Safety	1	
		3 Fire Attack - Primary	3	
		4 Fire Attack - Back-Up Line	2	
		5 Water Supply - Hydrant		1
		6 Aerial Operator	1	
		7 Pump Operator	1	
		8 Inside Truck Work (FE/UT/Search)	4	
		9 Outside Truck Work (UT/2nd Eg/Vent/VEIS)	4	
		10 Overhaul	3	
		11 Rapid Intervention - Full Team	4	
		12 EMS - Civilians	2	
		13 EMS - Rehab	2	
		14 Accountability		1
Maximum	**structure fire - high-rise**		**41**	**5**
		1 Command	1	
		2 Safety	1	
		3 Fire Attack - Primary	5	
		4 Inside Truck Work (FE/UT/Search)	2	
		5 Search & Rescue	4	
		6 Pump Operator	1	
		6.1 Water Supply		1
		7 Operations Section Chief	1	
		8 EMS - FD Quick Response Force (QRF)	2	
		9 Rapid Intervention - Full Team	4	
		10 EMS - Rehab	2	
		11 Fire Attack - Back-Up Line	5	
		12 Aerial Operator	1	
		13 Elevator Control	1	
		14 Lobby Control	1	
		15 EMS - Civilians	2	
		16 Fire Prot. Systems Control	2	
		17 Fire Attack - 2nd Line	5	

Classification	Call Type	Task	Inital Task (ERF)	Subsequent
Fire				
	18	Accountability	1	
	19	Overhaul		4
Maximum	**structure fire - mid-rise**		**35**	**3**
	1	Command	1	
	2	Safety	1	
	3	Fire Attack - Primary	3	
	4	Fire Attack - Back-Up Line	2	
	5	Pump Operator	2	
	5.1	Water Supply		1
	6	Fire Attack - 2nd Line	3	
	7	Inside Truck Work (FE/UT/Search)	4	
	8	Outside Truck Work (UT/2nd Eg/Vent/VEIS)	4	
	9	Aerial Operator	2	
	10	Rapid Intervention - Full Team	4	
	11	EMS - Civilians	2	
	12	EMS - Rehab	2	
	13	Accountability	1	
	14	Operations Section Chief	1	
	15	Water Supply - Hydrant		2
	16	Overhaul	3	
Maximum	**structure fire - residential**		**19**	**5**
	1	Command	1	
	2	Safety	1	
	3	Fire Attack - Primary	3	
	4	Pump Operator	1	
	5	Water Supply - Hydrant		1
	6	Forcible Entry/Ventilation	2	
	7	Utility Control		2
	8	Fire Attack - Back-Up Line	2	
	9	Search & Rescue	2	
	10	Rapid Intervention - Initial	3	
	11	Accountability	1	
	12	EMS - Rehab	1	
	13	EMS - Civilians	2	
	14	Overhaul		2
Medium	**WIRES DOWN ARCING OR SPARKING**		**3**	**2**
	1	Pump Operator	1	

Classification	Call Type	Task	Inital Task (ERF)	Subsequent
Fire				
		2 Initial Investigation	2	
		3 Fire Attack - Primary		2
EMS				
Medium	**ABDOMINAL PAIN - RESP 1**		**2**	**3**
		1 Patient Care - BLS	2	
		2 Documentation		1
		3 Patient Transport		2
Medium	**ABDOMINAL PAIN - RESP 3**		**2**	**3**
		1 Patient Care - BLS	1	
		2 Patient Care - ALS	1	
		3 Documentation		1
		4 Patient Transport		2
Low	**ALLERGIES - RESP 1**		**2**	**4**
		1 Patient Care - BLS	2	
		2 Documentation		1
		3 Patient Transport		3
Medium	**ALLERGIES - RESP 3**		**3**	**3**
		1 Patient Care - ALS	2	
		2 Documentation	1	
		3 Patient Transport		3
Low	**ANIMAL BITES - RESP 1**		**2**	**4**
		1 Patient Care - BLS	2	
		2 Documentation		1
		3 Patient Transport		3
Low	**ANIMAL BITES - RESP 3**		**2**	**3**
		1 Patient Care - BLS	1	
		2 Patient Care - ALS	1	
		3 Documentation		1
		4 Patient Transport		2
Low	**ASSAULT**		**2**	**3**
		1 Patient Care - BLS	2	
		2 Documentation		1
		3 Patient Transport		2
Medium	**ASSAULT - RESP 1**		**2**	**4**
		1 Patient Care - BLS	2	

Classification	Call Type	Task	Inital Task (ERF)	Subsequent
EMS				
		2 Documentation		1
		3 Patient Transport		3
High	**ASSAULT - RESP 3**		**3**	**4**
		1 Patient Care - BLS	1	
		2 Patient Care - ALS	2	
		3 Documentation		1
		4 Patient Transport		3
Low	**ASSIST OFFICER/AGENCY**		**1**	**1**
		1 Patient Care - BLS	1	
		2 Documentation		1
Medium	**BACK PAIN - RESP 1**		**2**	**4**
		1 Patient Care - BLS	2	
		2 Documentation		1
		3 Patient Transport		3
Medium	**BACK PAIN - RESP 3**		**3**	**4**
		1 Patient Care - BLS	1	
		2 Patient Care - ALS	2	
		3 Documentation		1
		4 Patient Transport		3
Low	**BREATHING PROBLEMS - RESP 1**		**2**	**3**
		1 Patient Care - BLS	2	
		2 Documentation		1
		3 Patient Transport		2
High	**BREATHING PROBLEMS - RESP 3**		**3**	**4**
		1 Patient Care - BLS	1	
		2 Patient Care - ALS	2	
		3 Documentation		1
		4 Patient Transport		3
Low	**BURNS - RESP 1**		**2**	**3**
		1 Patient Care - BLS	2	
		2 Documentation		1
		3 Patient Transport		2
Low	**BURNS - RESP 3**		**3**	**4**
		1 Patient Care - BLS	1	
		2 Patient Care - ALS	2	

Classification	Call Type	Task	Inital Task (ERF)	Subsequent
EMS				
		3 Documentation		1
		4 Patient Transport		3
Medium	**CARBON MONOXIDE - CPR**		**8**	**4**
		1 Code Commander	1	
		2 Chest Compressions 1	1	
		3 Chest Compressions 2	1	
		4 Airway	1	
		5 Heart Monitor	1	
		6 IV/IO Access/Medications	1	
		7 Documentation	1	
		8 Family Liaison	1	
		9 Patient Transport		4
Low	**CARBON MONOXIDE - RESP 1**		**2**	**3**
		1 Patient Care - BLS	2	
		2 Documentation		1
		3 Patient Transport		2
Medium	**CARBON MONOXIDE - RESP 3**		**3**	**3**
		1 Patient Care - ALS	2	
		2 Documentation	1	
		3 Patient Transport		3
Low	**CARDIAC - RESP 1**		**3**	**4**
		1 Patient Care - BLS	1	
		2 Patient Care - ALS	2	
		3 Documentation		1
		4 Patient Transport		3
Maximum	**CARDIAC ARREST - RESP 1**		**8**	**4**
		1 Code Commander	1	
		2 Chest Compressions 1	1	
		3 Chest Compressions 2	1	
		4 Airway	1	
		5 Heart Monitor	1	
		6 IV/IO Access/Medications	1	
		7 Documentation	1	
		8 Family Liaison	1	
		9 Patient Transport		4
Maximum	**CARDIAC ARREST - RESP 3**		**8**	**4**

Classification	Call Type	Task	Inital Task (ERF)	Subsequent
EMS				
		1 Code Commander	1	
		2 Chest Compressions 1	1	
		3 Chest Compressions 2	1	
		4 Airway	1	
		5 Heart Monitor	1	
		6 IV/IO Access/Medications	1	
		7 Documentation	1	
		8 Family Liaison	1	
		9 Patient Transport		4
Maximum	**CHEST PAIN - RESP 3**		**3**	**3**
		1 Patient Care - ALS	2	
		2 Documentation	1	
		3 Patient Transport		3
Low	**CHOKING - RESP 1**		**2**	**3**
		1 Patient Care - BLS	2	
		2 Documentation		1
		3 Patient Transport		2
Medium	**CHOKING - RESP 3**		**3**	**4**
		1 Patient Care - BLS	1	
		2 Patient Care - ALS	2	
		3 Documentation		1
		4 Patient Transport		3
Medium	**CONVULSIONS - CPR**		**8**	**4**
		1 Code Commander	1	
		2 Chest Compressions 1	1	
		3 Chest Compressions 2	1	
		4 Airway	1	
		5 Heart Monitor	1	
		6 IV/IO Access/Medications	1	
		7 Documentation	1	
		8 Family Liaison	1	
		9 Patient Transport		4
Medium	**CONVULSIONS - RESP 1**		**3**	**3**
		1 Patient Care - ALS	2	
		2 Documentation	1	
		3 Patient Transport		3

Classification	Call Type	Task	Inital Task (ERF)	Subsequent
EMS				
Maximum	**CONVULSIONS - RESP 3**		**3**	**3**
		1 Patient Care - ALS	2	
		2 Documentation	1	
		3 Patient Transport		3
Medium	**DIABETIC PROBLEMS - RESP 1**		**3**	**3**
		1 Patient Care - ALS	2	
		2 Documentation	1	
		3 Patient Transport		3
High	**DIABETIC PROBLEMS - RESP 3**		**3**	**3**
		1 Patient Care - ALS	2	
		2 Documentation	1	
		3 Patient Transport		3
High	**DROWNING - CPR**		**8**	**4**
		1 Code Commander	1	
		2 Chest Compressions 1	1	
		3 Chest Compressions 2	1	
		4 Airway	1	
		5 Heart Monitor	1	
		6 IV/IO Access/Medications	1	
		7 Documentation	1	
		8 Family Liaison	1	
		9 Patient Transport		4
Low	**DROWNING - RESP 3**		**3**	**4**
		1 Patient Care - BLS	1	
		2 Patient Care - ALS	2	
		3 Documentation		1
		4 Patient Transport		3
Low	**ELECTROCUTION - RESP 3**		**3**	**4**
		1 Patient Care - BLS	1	
		2 Patient Care - ALS	2	
		3 Documentation		1
		4 Patient Transport		3
Low	**EYE PROBLEM - RESP 1**		**2**	**3**
		1 Patient Care - BLS	2	
		2 Documentation		1
		3 Patient Transport		2

Classification	Call Type	Task	Inital Task (ERF)	Subsequent
EMS				
Low	**EYE PROBLEM - RESP 3**		**2**	**3**
		1 Patient Care - BLS	2	
		2 Documentation		1
		3 Patient Transport		2
Medium	**FALLS - CPR**		**8**	**4**
		1 Code Commander	1	
		2 Chest Compressions 1	1	
		3 Chest Compressions 2	1	
		4 Airway	1	
		5 Heart Monitor	1	
		6 IV/IO Access/Medications	1	
		7 Documentation	1	
		8 Family Liaison	1	
		9 Patient Transport		4
Medium	**FALLS - RESP 1**		**2**	**3**
		1 Patient Care - BLS	2	
		2 Documentation		1
		3 Patient Transport		2
Maximum	**FALLS - RESP 3**		**3**	**4**
		1 Patient Care - BLS	1	
		2 Patient Care - ALS	2	
		3 Documentation		1
		4 Patient Transport		3
High	**GUNSHOT - CPR**		**8**	**4**
		1 Code Commander	1	
		2 Chest Compressions 1	1	
		3 Chest Compressions 2	1	
		4 Airway	1	
		5 Heart Monitor	1	
		6 IV/IO Access/Medications	1	
		7 Documentation	1	
		8 Family Liaison	1	
		9 Patient Transport		4
Low	**GUNSHOT - RESP 1**		**3**	**3**
		1 Patient Care - ALS	2	
		2 Documentation	1	

Classification	Call Type	Task	Inital Task (ERF)	Subsequent
EMS				
		3 Patient Transport		3
Maximum	**GUNSHOT - RESP 3**		**3**	**4**
		1 Patient Care - BLS	1	
		2 Patient Care - ALS	2	
		3 Documentation		1
		4 Patient Transport		3
Low	**HEADACHE - RESP 1**		**2**	**3**
		1 Patient Care - BLS	2	
		2 Documentation		1
		3 Patient Transport		2
Medium	**HEADACHE - RESP 3**		**3**	**3**
		1 Patient Care - ALS	2	
		2 Documentation	1	
		3 Patient Transport		3
Low	**HEART PROBLEM - RESP 1**		**3**	**3**
		1 Patient Care - ALS	2	
		2 Documentation	1	
		3 Patient Transport		3
Maximum	**HEART PROBLEM - RESP 3**		**3**	**4**
		1 Patient Care - BLS	1	
		2 Patient Care - ALS	2	
		3 Documentation		1
		4 Patient Transport		3
Low	**HEAT / COLD - RESP 1**		**2**	**3**
		1 Patient Care - BLS	2	
		2 Documentation		1
		3 Patient Transport		2
Medium	**HEAT / COLD - RESP 3**		**3**	**3**
		1 Patient Care - ALS	2	
		2 Documentation	1	
		3 Patient Transport		3
Medium	**HEMORRHAGE - RESP 1**		**2**	**3**
		1 Patient Care - BLS	2	
		2 Documentation		1
		3 Patient Transport		2

Classification	Call Type	Task	Inital Task (ERF)	Subsequent
EMS				
High	**HEMORRHAGE - RESP 3**		**3**	**4**
		1 Patient Care - BLS	1	
		2 Patient Care - ALS	2	
		3 Documentation		1
		4 Patient Transport		3
Maximum	**mass-casualty active threat**		**18**	**3**
		1 Command	1	
		2 Safety		1
		3 Rescue Group Supervisor	1	
		6 Support Operations	6	
		7 EMS - Civilians	10	
		8 EMS - Rehab		2
Maximum	**mass-casualty vehicle crash**		**30**	**6**
		1 Code Commander	1	
		2 Chest Compressions 1	1	
		3 Chest Compressions 2	1	
		4 Airway	1	
		5 Heart Monitor	1	
		6 IV/IO Access/Medications	1	
		7 Documentation	1	
		8 Family Liaison	1	
		9 Patient Transport		4
		10 Command	1	
		11 Safety		1
		12 Fire Attack - Primary	1	
		13 Pump Operator	1	
		14 Extrication - Advanced	4	
		15 EMS - Civilians	10	
		16 Support Operations	2	
		17 EMS - Rehab	2	
		18 Accountability		1
		19 Rescue Group Supervisor	1	
Low	**MEDICAL ALARM**		**2**	**3**
		1 Patient Care - BLS	2	
		2 Documentation		1
		3 Patient Transport		2
Low	**MUTUAL AID - DM ONLY MEDICAL ASSIGNMENT**		**3**	**3**

Classification	Call Type	Task	Inital Task (ERF)	Subsequent
EMS				
		1 Patient Care - ALS	2	
		2 Documentation	1	
		3 Patient Transport		3
Medium	**OVERDOSE - CPR**		**8**	**4**
		1 Code Commander	1	
		2 Chest Compressions 1	1	
		3 Chest Compressions 2	1	
		4 Airway	1	
		5 Heart Monitor	1	
		6 IV/IO Access/Medications	1	
		7 Documentation	1	
		8 Family Liaison	1	
		9 Patient Transport		4
Medium	**OVERDOSE - RESP 1**		**3**	**3**
		1 Patient Care - ALS	2	
		2 Documentation	1	
		3 Patient Transport		3
Maximum	**OVERDOSE - RESP 3**		**3**	**4**
		1 Patient Care - BLS	1	
		2 Patient Care - ALS	2	
		3 Documentation		1
		4 Patient Transport		3
High	**PENETRATING TRAUMA - CPR**		**8**	**4**
		1 Code Commander	1	
		2 Chest Compressions 1	1	
		3 Chest Compressions 2	1	
		4 Airway	1	
		5 Heart Monitor	1	
		6 IV/IO Access/Medications	1	
		7 Documentation	1	
		8 Family Liaison	1	
		9 Patient Transport		4
Medium	**PENETRATING TRAUMA - RESP 3**		**3**	**4**
		1 Patient Care - BLS	1	
		2 Patient Care - ALS	2	
		3 Documentation		1
		4 Patient Transport		3

Classification	Call Type	Task	Inital Task (ERF)	Subsequent
EMS				
Low	**PREGNANCY - RESP 1**		**2**	**3**
		1 Patient Care - BLS	2	
		2 Documentation		1
		3 Patient Transport		2
High	**PREGNANCY - RESP 3**		**3**	**4**
		1 Patient Care - BLS	1	
		2 Patient Care - ALS	2	
		3 Documentation		1
		4 Patient Transport		3
Medium	**PSYCHIATRIC - RESP 1**		**2**	**3**
		1 Patient Care - BLS	2	
		2 Documentation		1
		3 Patient Transport		2
High	**PSYCHIATRIC - RESP 3**		**3**	**3**
		1 Patient Care - ALS	2	
		2 Documentation	1	
		3 Patient Transport		3
High	**SICK PERSON - RESP 1**		**2**	**3**
		1 Patient Care - BLS	2	
		2 Documentation		1
		3 Patient Transport		2
High	**SICK PERSON - RESP 3**		**2**	**3**
		1 Patient Care - BLS	2	
		2 Documentation		1
		3 Patient Transport		2
High	**STABBING - CPR**		**8**	**4**
		1 Code Commander	1	
		2 Chest Compressions 1	1	
		3 Chest Compressions 2	1	
		4 Airway	1	
		5 Heart Monitor	1	
		6 IV/IO Access/Medications	1	
		7 Documentation	1	
		8 Family Liaison	1	
		9 Patient Transport		4

Classification	Call Type	Task	Inital Task (ERF)	Subsequent
EMS				
Low	**STABBING - RESP 1**		**3**	**3**
		1 Patient Care - ALS	2	
		2 Documentation	1	
		3 Patient Transport		3
Maximum	**STABBING - RESP 3**		**3**	**4**
		1 Patient Care - BLS	1	
		2 Patient Care - ALS	2	
		3 Documentation		1
		4 Patient Transport		3
Maximum	**STROKE - RESP 3**		**3**	**4**
		1 Patient Care - BLS	1	
		2 Patient Care - ALS	2	
		3 Documentation		1
		4 Patient Transport		3
High	**TRAFFIC ACCIDENT - CPR**		**8**	**4**
		1 Code Commander	1	
		2 Chest Compressions 1	1	
		3 Chest Compressions 2	1	
		4 Airway	1	
		5 Heart Monitor	1	
		6 IV/IO Access/Medications	1	
		7 Documentation	1	
		8 Family Liaison	1	
		9 Patient Transport		4
Medium	**TRAFFIC ACCIDENT - RESP 1**		**2**	**3**
		1 Patient Care - BLS	2	
		2 Documentation		1
		3 Patient Transport		2
Maximum	**TRAFFIC ACCIDENT - RESP 3**		**5**	**4**
		1 Command	1	
		2 Safety		1
		3 EMS - Civilians	2	
		4 Patient Transport		3
		4 Support Operations	2	
Low	**TRANSFER - RESP 3**		**3**	**4**
		1 Patient Care - BLS	1	

Classification	Call Type	Task	Inital Task (ERF)	Subsequent
EMS				
		2 Patient Care - ALS	2	
		3 Documentation		1
		4 Patient Transport		3
Low	**TRANSPORT**		**2**	**3**
		1 Patient Care - BLS	2	
		2 Documentation		1
		3 Patient Transport		2
Medium	**TRAUMATIC INJURIES - CPR**		**8**	**4**
		1 Code Commander	1	
		2 Chest Compressions 1	1	
		3 Chest Compressions 2	1	
		4 Airway	1	
		5 Heart Monitor	1	
		6 IV/IO Access/Medications	1	
		7 Documentation	1	
		8 Family Liaison	1	
		9 Patient Transport		4
Medium	**TRAUMATIC INJURIES - RESP 1**		**2**	**3**
		1 Patient Care - BLS	2	
		2 Documentation		1
		3 Patient Transport		2
High	**TRAUMATIC INJURIES - RESP 3**		**3**	**4**
		1 Patient Care - BLS	1	
		2 Patient Care - ALS	2	
		3 Documentation		1
		4 Patient Transport		3
High	**UNCONSCIOUS - CPR**		**8**	**4**
		1 Code Commander	1	
		2 Chest Compressions 1	1	
		3 Chest Compressions 2	1	
		4 Airway	1	
		5 Heart Monitor	1	
		6 IV/IO Access/Medications	1	
		7 Documentation	1	
		8 Family Liaison	1	
		9 Patient Transport		4

Classification	Call Type	Task	Inital Task (ERF)	Subsequent
EMS				
High	**UNCONSCIOUS - RESP 1**		**3**	**4**
		1 Patient Care - BLS	1	
		2 Patient Care - ALS	2	
		3 Documentation		1
		4 Patient Transport		3
Maximum	**UNCONSCIOUS - RESP 3**		**3**	**4**
		1 Patient Care - BLS	1	
		2 Patient Care - ALS	2	
		3 Documentation		1
		4 Patient Transport		3
Maximum	**UNKNOWN PROBLEM - RESP 3**		**3**	**4**
		1 Patient Care - BLS	1	
		2 Patient Care - ALS	2	
		3 Documentation		1
		4 Patient Transport		3
Tech Rescue				
Medium	**EXTRICATION - CHOOSE SUB TYPE ELEVATOR**		**4**	**2**
		1 Command	1	
		2 Safety		1
		3 Utility Control	1	
		4 Initial Investigation		1
		5 Extrication - Simple	2	
High	**EXTRICATION - CHOOSE SUB TYPE MACHINE**		**12**	**2**
		1 Command	1	
		2 Safety	1	
		3 Utility Control		1
		4 Initial Investigation		1
		5 Extrication - Advanced	4	
		6 Rescue Group Supervisor	1	
		7 Support Operations	3	
		8 EMS - Civilians	2	
High	**EXTRICATION - CHOOSE SUB TYPE VEHICLE**		**11**	**1**
		1 Command	1	
		2 Safety		1
		3 Fire Attack - Primary	1	
		4 Pump Operator	1	

Classification	Call Type	Task	Inital Task (ERF)	Subsequent
Tech Rescue				
		5 Extrication - Simple	2	
		6 EMS - Civilians	2	
		7 Support Operations	4	
High	**EXTRICATION - CHOOSE SUB TYPE VEHICLE -Large**		**14**	**2**
		1 Command	1	
		2 Safety		1
		3 Fire Attack - Primary	1	
		4 Pump Operator	1	
		5 Extrication - Advanced	4	
		6 EMS - Civilians	2	
		7 Support Operations	2	
		8 EMS - Rehab	2	
		9 Accountability		1
		10 Rescue Group Supervisor	1	
Medium	**EXTRICATION - CHOOSE SUB TYPE VEHICLE -single**		**11**	**1**
		1 Command	1	
		2 Safety		1
		3 Fire Attack - Primary	1	
		4 Pump Operator	1	
		5 Extrication - Simple	2	
		6 EMS - Civilians	2	
		7 Support Operations	4	
Maximum	**MUTUAL AID - DM ONLY TECH RESCUE**		**22**	**4**
		1 Command	1	
		2 Safety	1	
		3 Rescue Group Supervisor	1	
		4 Rescue Team	2	
		5 Back-up Team	2	
		6 Support Operations	1	
		7 Support Operations	6	
		8 Rigging	3	
		9 Support Operations		2
		10 EMS - Civilians	2	
		11 EMS - Rehab	2	
		12 Accountability		1
		13 Atmospheric Monitoring	1	
		14 Utility Control		1

Classification	Call Type	Task	Inital Task (ERF)	Subsequent
Tech Rescue				
Maximum	**RESCUE - CHOOSE SUB TYPE CONFINED SPACE - D**		**22**	**5**
		1 Command	1	
		2 Safety	1	
		3 Rescue Group Supervisor	1	
		4 Rescue Team	2	
		5 Back-up Team	2	
		6 Support Operations	2	
		7 Atmospheric Monitoring	2	
		8 Support Operations	3	
		9 Rigging	3	
		10 Support Operations		2
		11 EMS - Civilians	2	
		12 EMS - Rehab	2	
		13 Accountability		1
		14 Documentation	1	
		15 Decon		2
High	**RESCUE - CHOOSE SUB TYPE ROPE - DM ONLY**		**18**	**3**
		1 Command	1	
		2 Safety	1	
		3 Rescue Group Supervisor	1	
		4 Rescue Team	2	
		5 Back-up Team	2	
		6 Support Operations	1	
		7 Support Operations	3	
		8 Rigging	3	
		9 Support Operations		2
		10 EMS - Civilians	2	
		11 EMS - Rehab	2	
		12 Accountability		1
Medium	**Rescue ROPE Low Angle**		**12**	**3**
		1 Command	1	
		2 Safety		1
		3 Rescue Group Supervisor	1	
		4 Rescue Team	2	
		5 Support Operations	1	
		6 Support Operations	3	
		7 Rigging	2	
		8 Support Operations		1

Classification	Call Type	Task	Inital Task (ERF)	Subsequent
Tech Rescue				
	9	EMS - Civilians	2	
	10	Accountability		1
Maximum	**Tech Rescue - Trench**		**22**	**4**
	1	Command	1	
	2	Safety	1	
	3	Rescue Group Supervisor	1	
	4	Rescue Team	2	
	5	Back-up Team	2	
	6	Support Operations	1	
	7	Support Operations	6	
	8	Rigging	3	
	9	Support Operations		2
	10	EMS - Civilians	2	
	11	EMS - Rehab	2	
	12	Accountability		1
	13	Atmospheric Monitoring	1	
	14	Utility Control		1
HazMat				
Maximum	**HAZ MAT - WMD (or Derailment)**		**22**	**3**
	1	Command	1	
	2	Safety	1	
	3	Liaison	1	
	4	Entry Team	2	
	5	Back-up Team	2	
	6	Documentation	1	
	7	Special Ops Supervisor	1	
	8	Support Operations	4	
	9	Decon		3
	10	EMS - Rehab	2	
	11	EMS - Civilians	2	
	12	Fire Attack - Primary	2	
	13	Pump Operator	1	
	14	Support Operations	2	
High	**HAZMAT - CHOOSE SUB TYPE BIOHAZARD DETECT**		**15**	**3**
	1	Command	1	
	2	Safety	1	
	3	Entry Team	2	
	4	Back-up Team	2	

Classification	Call Type	Task	Inital Task (ERF)	Subsequent
HazMat				
		5 Documentation	1	
		6 HazMat Group Suervisor	1	
		7 Decon		3
		8 EMS - Rehab	2	
		9 EMS - Civilians	2	
		10 HazMat Operation	3	
Medium	**HAZMAT - CHOOSE SUB TYPE CHEMICAL ODOR -**		**3**	**1**
		1 Command	1	
		2 Safety		1
		3 Entry Team	2	
Medium	**HAZMAT - CHOOSE SUB TYPE CHEMICAL UNKNO**		**15**	**3**
		1 Command	1	
		2 Safety	1	
		3 Entry Team	2	
		4 Back-up Team	2	
		5 Documentation	1	
		6 Special Ops Supervisor	1	
		7 Decon		3
		8 EMS - Rehab	2	
		9 EMS - Civilians	2	
		10 Fire Attack - Primary	2	
		11 Pump Operator	1	
Low	**HAZMAT - CHOOSE SUB TYPE DRUG LAB REMNAN**		**3**	**1**
		1 Command	1	
		2 Safety		1
		3 Entry Team	2	
Medium	**HAZMAT - CHOOSE SUB TYPE GREATER THAN 20**		**12**	**4**
		1 Command	1	
		2 Safety		1
		3 Entry Team	2	
		4 Back-up Team	2	
		5 Documentation	1	
		6 Special Ops Supervisor	1	
		7 Decon		3
		8 EMS - Rehab	2	
		9 Fire Attack - Primary	2	
		10 Pump Operator	1	

Classification	Call Type	Task	Inital Task (ERF)	Subsequent
HazMat				
Low	**HAZMAT - CHOOSE SUB TYPE LESS THAN 20 GALL**		**3**	**1**
		1 Command	1	
		2 Safety		1
		3 Entry Team	2	
Medium	**HAZMAT - CHOOSE SUB TYPE WORKING LAB - DM**		**15**	**3**
		1 Command	1	
		2 Safety	1	
		3 Entry Team	2	
		4 Back-up Team	2	
		5 Documentation	1	
		6 HazMat Group Suervisor	1	
		7 Decon		3
		8 EMS - Rehab	2	
		9 EMS - Civilians	2	
		10 HazMat Operation	3	
Medium	**INVESTIGATION CARBON MONOXIDE - 3RD PART**		**2**	**3**
		1 Patient Care - BLS	2	
		2 Documentation		1
		3 Patient Transport		2
High	**NATURAL GAS - CHOOSE SUB TYPE COMMERCIAL**		**15**	**3**
		1 Command	1	
		2 Safety	1	
		3 Entry Team	2	
		4 Back-up Team	2	
		5 Documentation	1	
		6 HazMat Group Suervisor	1	
		7 Decon		3
		8 EMS - Rehab	2	
		9 EMS - Civilians	2	
		10 HazMat Operation	3	
Low	**NATURAL GAS - CHOOSE SUB TYPE ODOR OUTSID**		**3**	**1**
		1 Command	1	
		2 Safety		1
		3 Entry Team	2	
Medium	**NATURAL GAS - CHOOSE SUB TYPE RUPTURED M**		**3**	**1**
		1 Command	1	

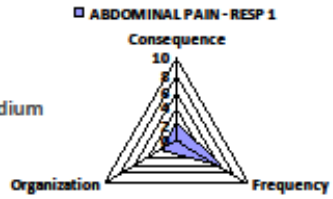
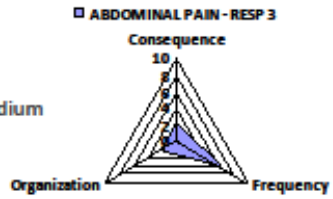
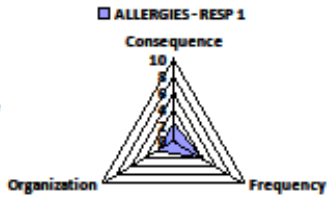
Classification	Call Type	Task	Inital Task (ERF)	Subsequent
HazMat				
		2 Safety		1
		3 Entry Team	2	
Medium	**NATURAL GAS - CHOOSE SUB TYPE SINGLE FAMIL**		**3**	**1**
		1 Command	1	
		2 Safety		1
		3 Entry Team	2	
WET				
High	**MUTUAL AID - DM ONLY WET TEAM**		**19**	**3**
		1 Command	1	
		2 Safety	1	
		3 Rescue Group Supervisor	1	
		4 Boat Operations	8	
		5 Shoreline Operations	3	
		6 Support Operations	3	
		7 EMS - Civilians	2	
		8 EMS - Rehab		2
		9 Accountability		1
Medium	**RESCUE - CHOOSE SUB TYPE SINKING VEHICLE - D**		**13**	**3**
		1 Command	1	
		2 Safety		1
		3 WET Group Supervisor	1	
		4 Boat - Primary	2	
		5 Boat -Secondary	2	
		6 Shore based crew		2
		7 EMS - Civilians	2	
		8 EMS - Rehab	2	
		9 Boat Operations	3	
Maximum	**Rescue WET Dam/Strainer/Night**		**20**	**1**
		1 Command	1	
		2 Safety	1	
		3 Rescue Group Supervisor	1	
		4 Boat Operations	4	
		5 Shoreline Operations	6	
		6 Support Operations	3	
		7 EMS - Civilians	2	
		8 EMS - Rehab	2	
		9 Accountability		1

Classification	Call Type	Task	Inital Task (ERF)	Subsequent
WET				
Maximum	**Rescue WET Flood**		**21**	**7**
		1 Command	1	
		2 Safety	1	
		3 Rescue Group Supervisor	1	
		4 Boat Operations	8	
		5 Shoreline Operations	6	
		6 Support Operations		6
		7 EMS - Civilians	2	
		8 EMS - Rehab	2	
		9 Accountability		1
Medium	**Rescue WET Still Water**		**11**	**7**
		1 Command	1	
		2 Safety		1
		3 Rescue Group Supervisor	1	
		4 Boat Operations	4	
		5 Shoreline Operations	3	
		6 Support Operations		3
		7 EMS - Civilians	2	
		8 EMS - Rehab		2
		9 Accountability		1
Maximum	**Rescue WET Swift Water**		**19**	**3**
		1 Command	1	
		2 Safety	1	
		3 Rescue Group Supervisor	1	
		4 Boat Operations	8	
		5 Shoreline Operations	3	
		6 Support Operations	3	
		7 EMS - Civilians	2	
		8 EMS - Rehab		2
		9 Accountability		1

Appendix G: Risk Analysis

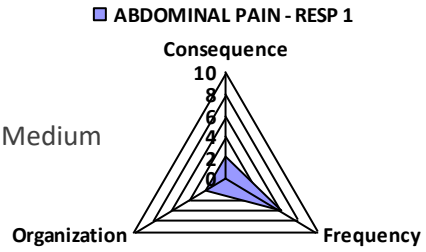
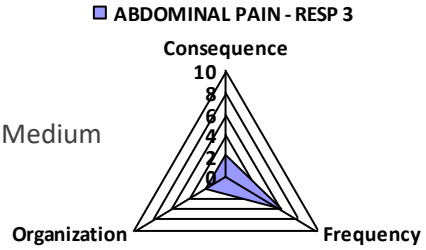
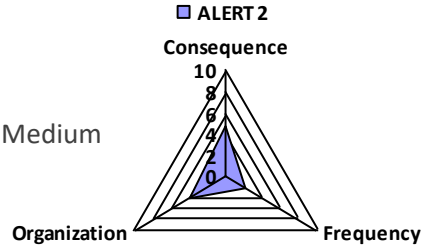
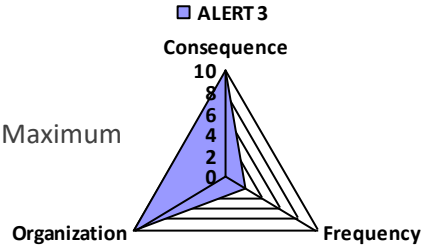
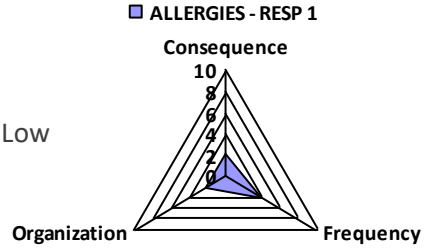
Double-click to open the entire document.

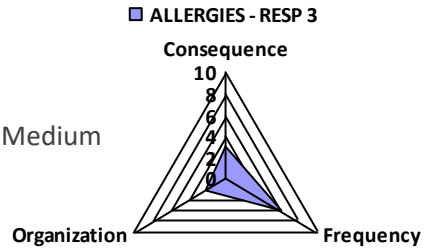
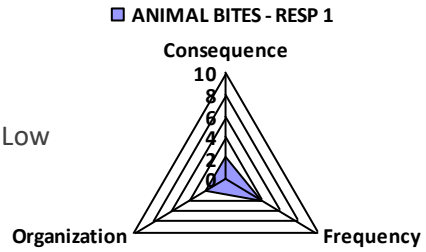
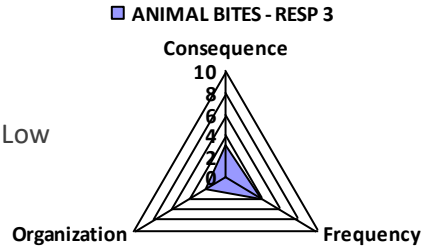
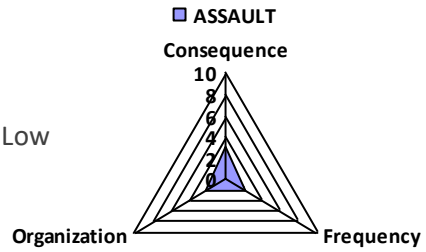
Risk by Classifications and Category

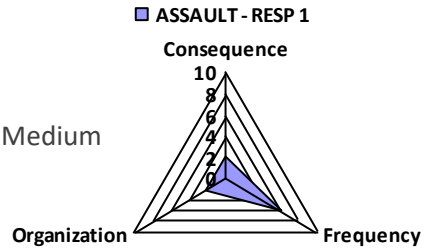
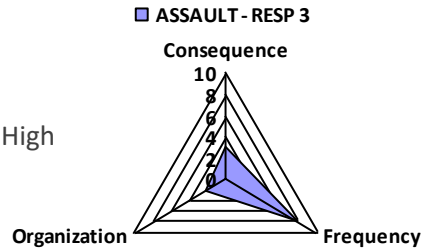
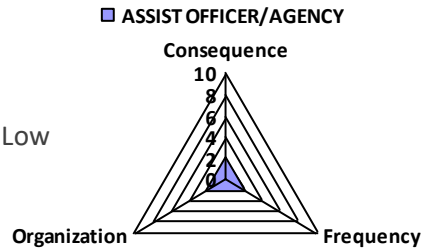
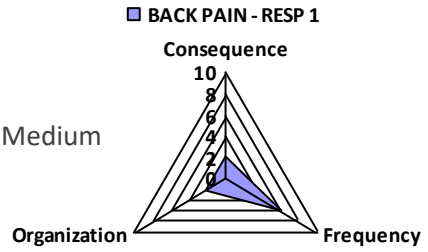
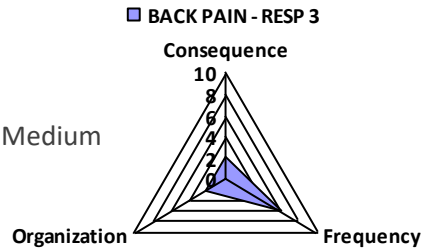
Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category	
EMS	ABDOMINAL PAIN - RESP 1	6	2	2	12.329	Medium	
EMS	ABDOMINAL PAIN - RESP 3	6	2	2	12.329	Medium	
Fire	ALERT 2	2	4	4.67	15.814	Medium	
Fire	ALERT 3	2	10	10	73.485	Maximum	
EMS	ALLERGIES - RESP 1	4	2	2	8.485	Low	

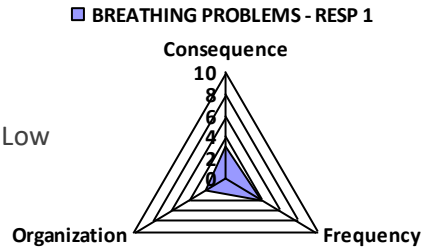
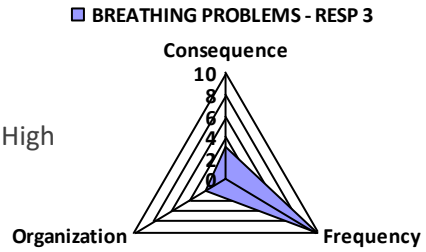
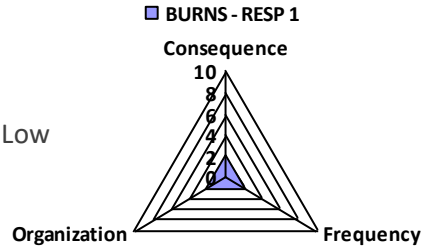
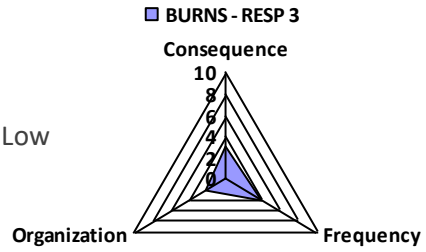
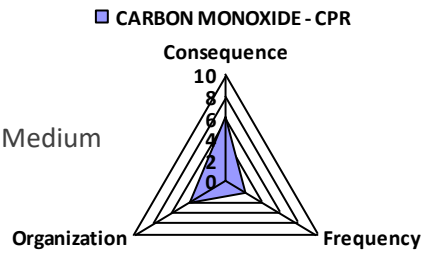
Friday, June 16, 2023 Page 1 of 27

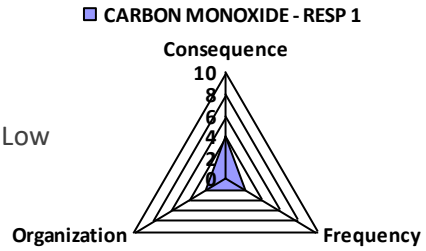
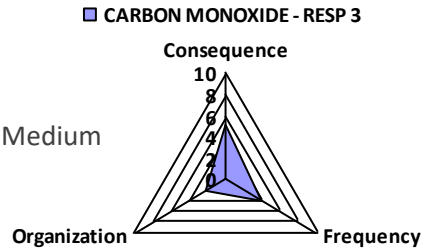
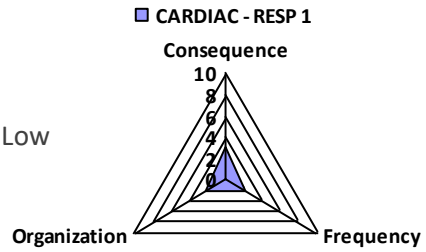
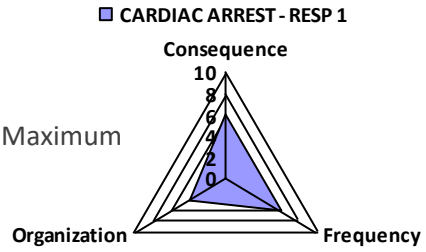
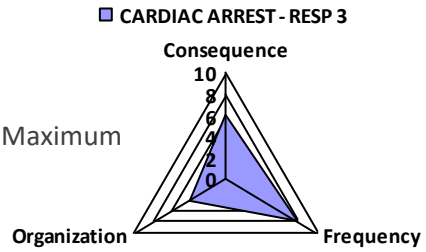
Risk by Classifications and Category

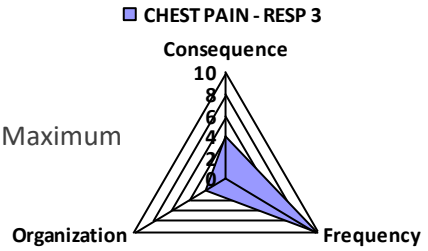
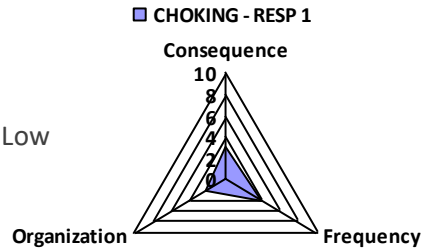
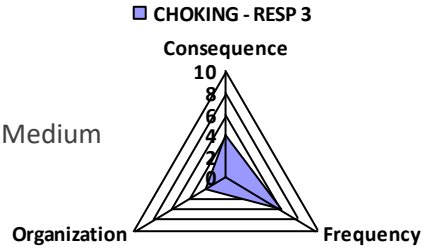
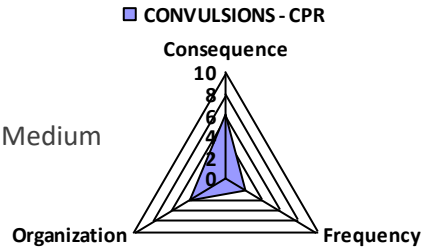
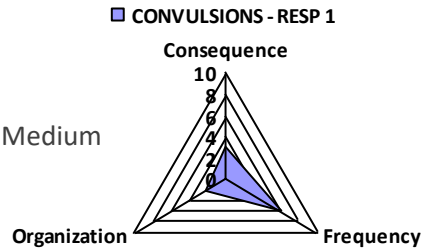
Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category	
EMS	ABDOMINAL PAIN - RESP 1	6	2	2	12.329	Medium	
EMS	ABDOMINAL PAIN - RESP 3	6	2	2	12.329	Medium	
Fire	ALERT 2	2	4	4.67	15.814	Medium	
Fire	ALERT 3	2	10	10	73.485	Maximum	
EMS	ALLERGIES - RESP 1	4	2	2	8.485	Low	

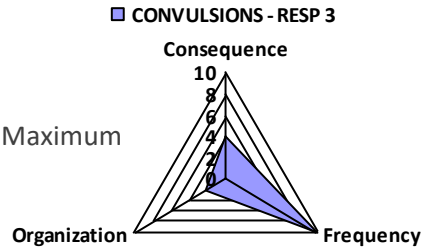
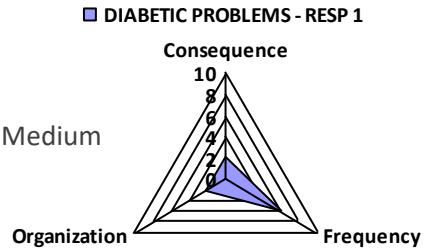
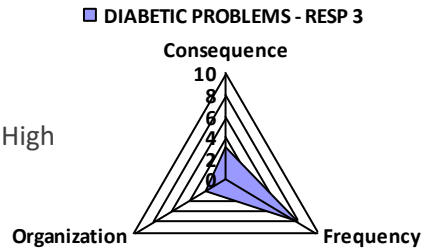
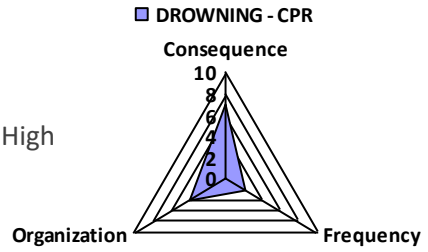
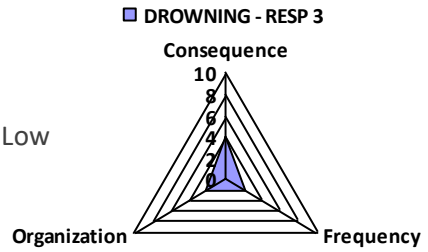
Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category	
EMS	ALLERGIES - RESP 3	6	2	3	15.875	Medium	
EMS	ANIMAL BITES - RESP 1	4	2	2	8.485	Low	
EMS	ANIMAL BITES - RESP 3	4	2	3	11.045	Low	
Fire	ARSON FIRE INVESTIGATION	2	2	3.33	7.236	Low	
EMS	ASSAULT	2	2	3	6.633	Low	

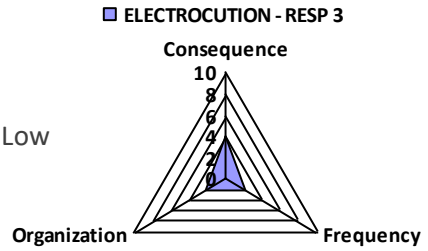
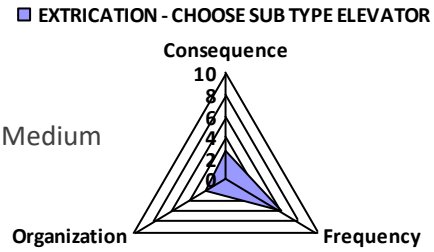
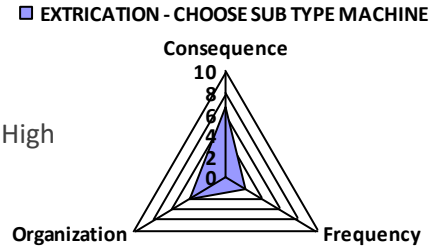
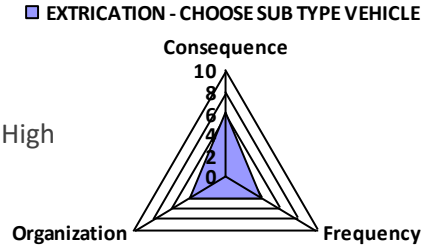
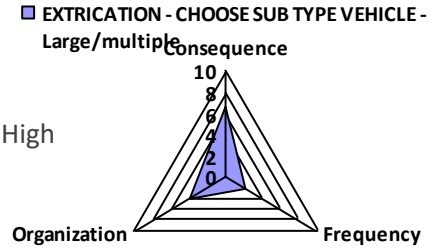
Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category	
EMS	ASSAULT - RESP 1	6	2	2	12.329	Medium	
EMS	ASSAULT - RESP 3	8	2	3	20.833	High	
EMS	ASSIST OFFICER/AGENCY	2	2	2	4.899	Low	
EMS	BACK PAIN - RESP 1	6	2	2	12.329	Medium	
EMS	BACK PAIN - RESP 3	6	2	2	12.329	Medium	

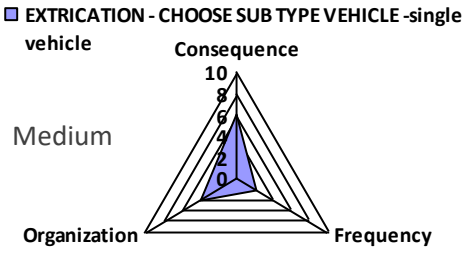
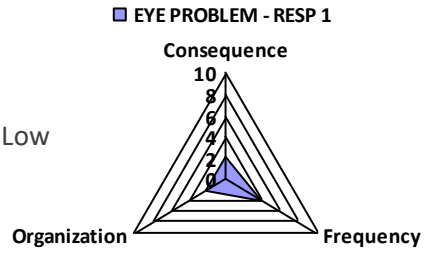
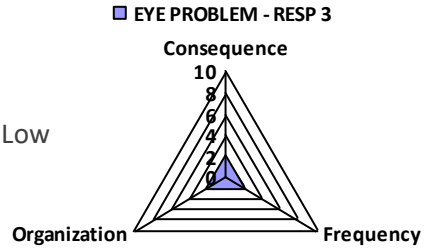
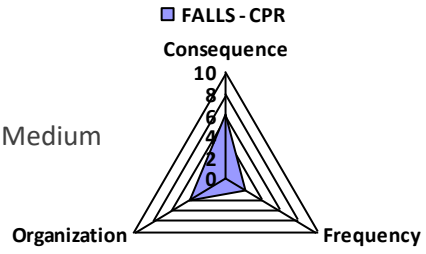
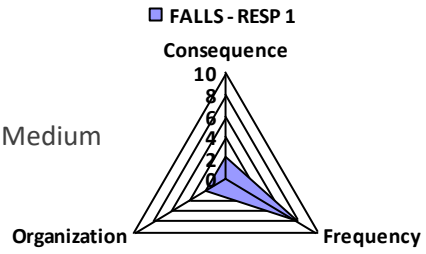
Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category	
EMS	BREATHING PROBLEMS - RESP 1	4	2	3	11.045	Low	
EMS	BREATHING PROBLEMS - RESP 3	10	2	3	25.846	High	
EMS	BURNS - RESP 1	2	2	2	4.899	Low	
EMS	BURNS - RESP 3	4	2	3	11.045	Low	
EMS	CARBON MONOXIDE - CPR	2	4	6	19.799	Medium	

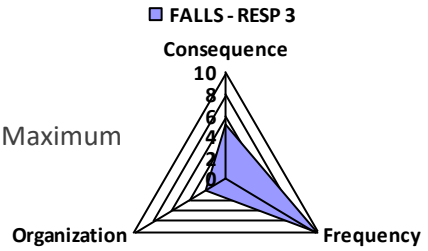
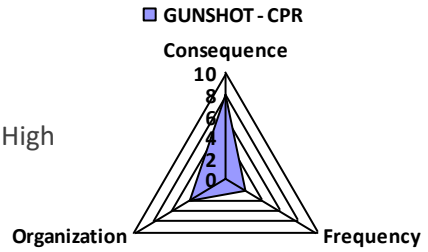
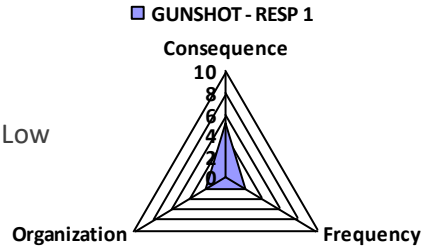
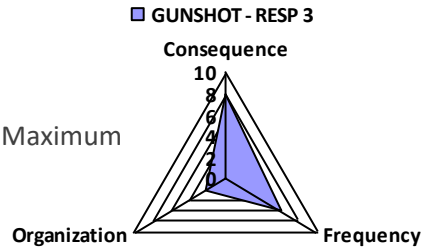
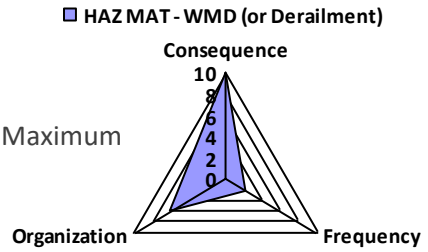
Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category	
EMS	CARBON MONOXIDE - RESP 1	2	2	4	8.485	Low	
EMS	CARBON MONOXIDE - RESP 3	4	2	5	16.793	Medium	
EMS	CARDIAC - RESP 1	2	2	3	6.633	Low	
EMS	CARDIAC ARREST - RESP 1	6	4	6	34.986	Maximum	
EMS	CARDIAC ARREST - RESP 3	8	4	6	44.181	Maximum	

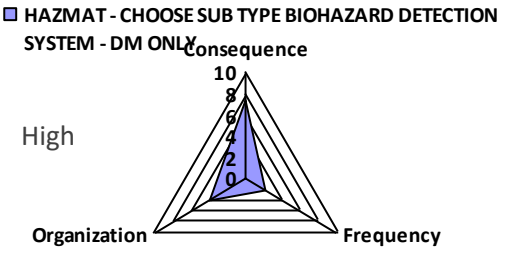
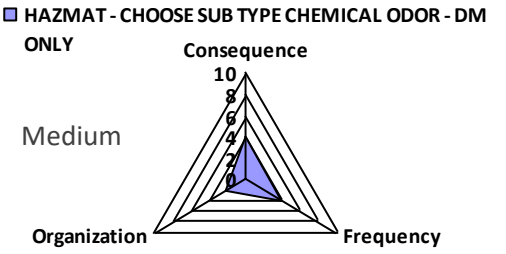
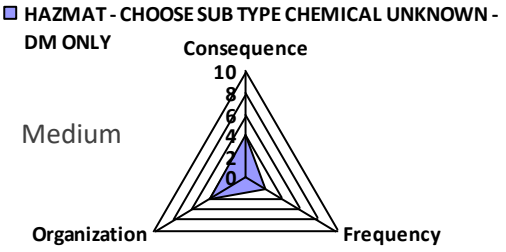
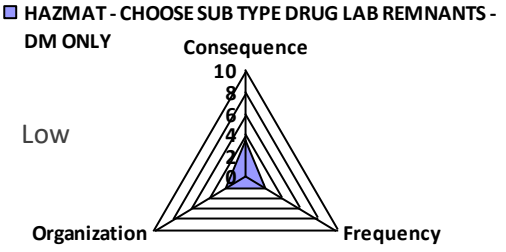
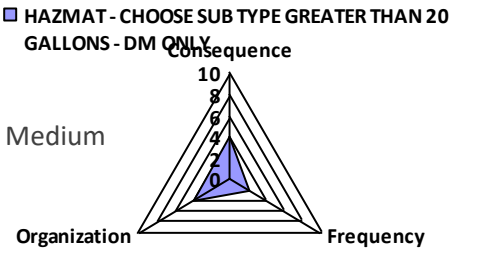
Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category	
EMS	CHEST PAIN - RESP 3	10	2	4	32.125	Maximum	
EMS	CHOKING - RESP 1	4	2	3	11.045	Low	
EMS	CHOKING - RESP 3	6	2	4	19.799	Medium	
EMS	CONVULSIONS - CPR	2	4	6	19.799	Medium	
EMS	CONVULSIONS - RESP 1	6	2	3	15.875	Medium	

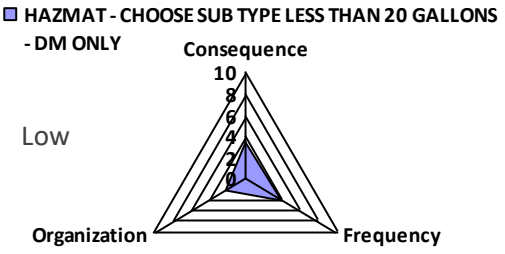
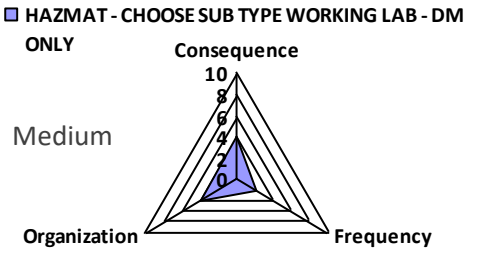
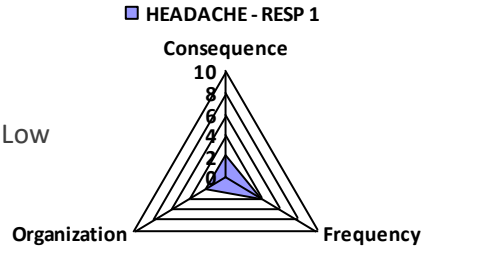
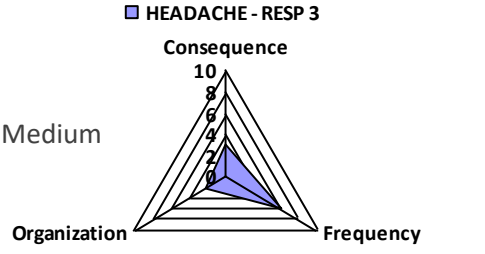
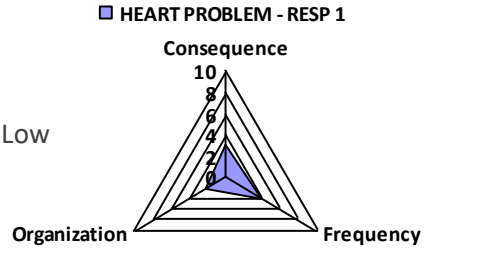
Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category	
EMS	CONVULSIONS - RESP 3	10	2	4	32.125	Maximum	
EMS	DIABETIC PROBLEMS - RESP 1	6	2	2	12.329	Medium	
EMS	DIABETIC PROBLEMS - RESP 3	8	2	3	20.833	High	
EMS	DROWNING - CPR	2	4	7	22.847	High	
EMS	DROWNING - RESP 3	2	2	4	8.485	Low	

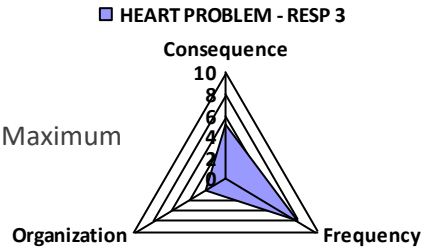
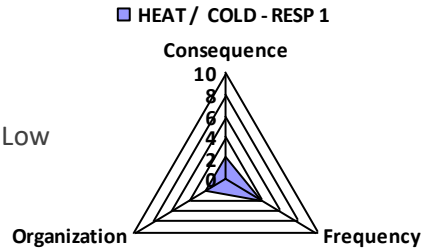
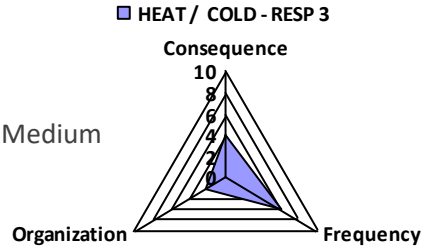
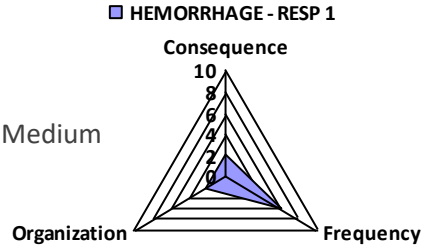
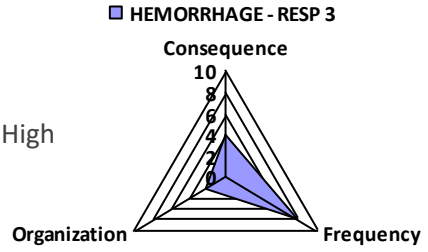
Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category	
EMS	ELECTROCUTION - RESP 3	2	2	4	8.485	Low	
Tech Rescue	EXTRICATION - CHOOSE SUB TYPE ELEVATOR	6	2	2.67	14.648	Medium	
Tech Rescue	EXTRICATION - CHOOSE SUB TYPE MACHINE	2	4	6.67	21.838	High	
Tech Rescue	EXTRICATION - CHOOSE SUB TYPE VEHICLE	4	4	6	26.533	High	
Tech Rescue	EXTRICATION - CHOOSE SUB TYPE VEHICLE - Large/multiple	2	4	6.67	21.838	High	

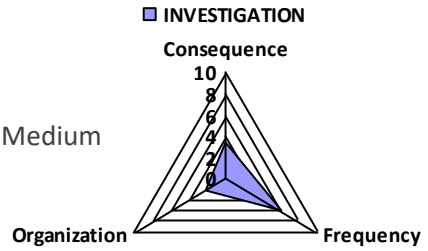
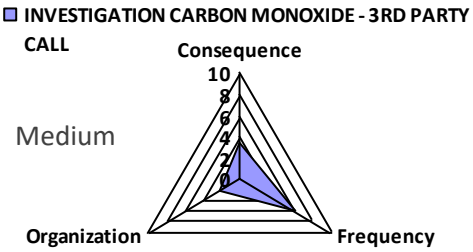
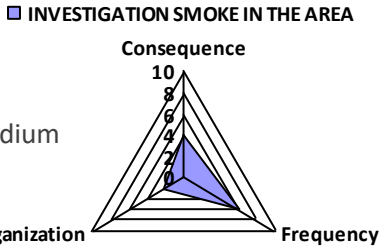
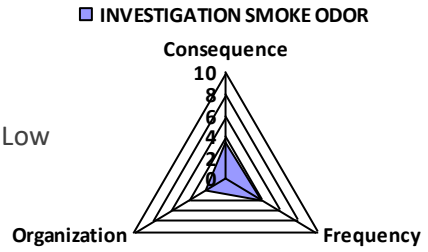
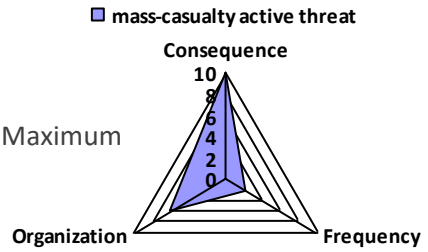
Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category	
Tech Rescue	EXTRICATION - CHOOSE SUB TYPE VEHICLE -single vehicle	2	4	6	19.799	Medium	
EMS	EYE PROBLEM - RESP 1	4	2	2	8.485	Low	
EMS	EYE PROBLEM - RESP 3	2	2	2	4.899	Low	
EMS	FALLS - CPR	2	4	6	19.799	Medium	
EMS	FALLS - RESP 1	8	2	2	16.248	Medium	

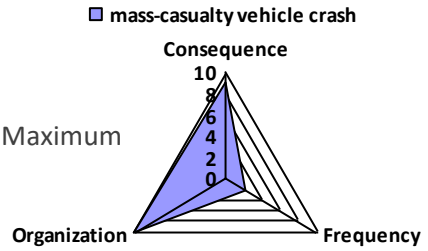
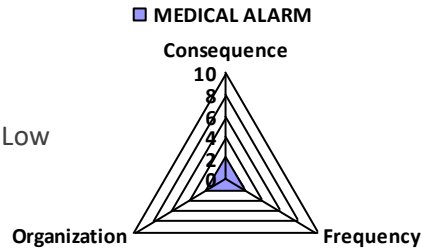
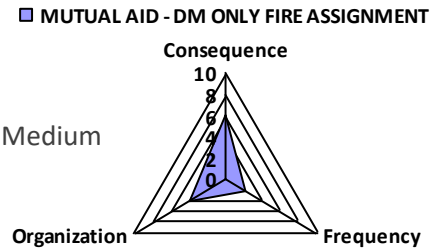
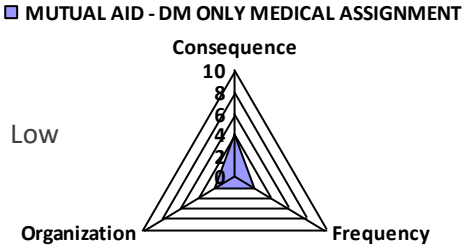
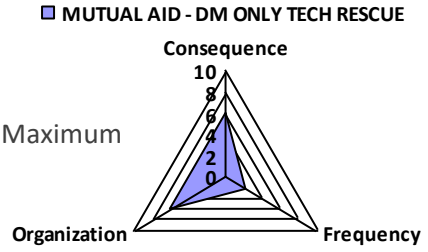
Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category	
EMS	FALLS - RESP 3	10	2	5	38.730	Maximum	
EMS	GUNSHOT - CPR	2	4	8	25.923	High	
EMS	GUNSHOT - RESP 1	2	2	5	10.392	Low	
EMS	GUNSHOT - RESP 3	6	2	8	36.770	Maximum	
HazMat	HAZ MAT - WMD (or Derailment)	2	6	10	45.519	Maximum	

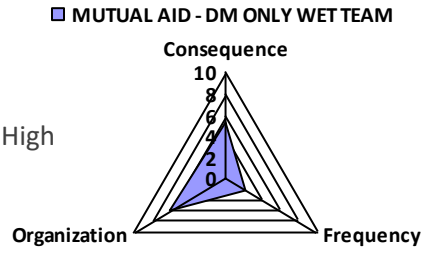
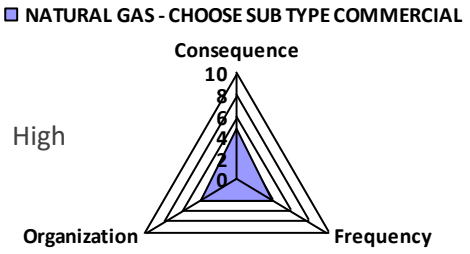
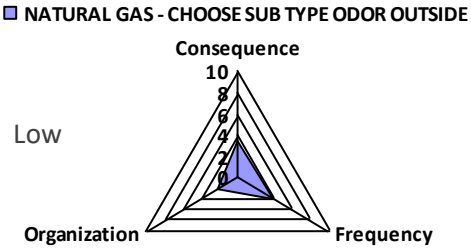
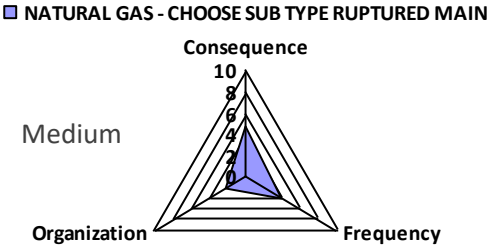
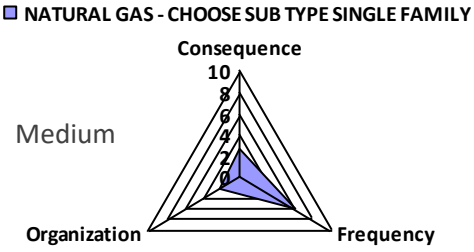
Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category	
HazMat	HAZMAT - CHOOSE SUB TYPE BIOHAZARD DETECTION SYSTEM - DM ONLY	2	4	7.33	23.860	High	
HazMat	HAZMAT - CHOOSE SUB TYPE CHEMICAL ODOR - DM ONLY	4	2	4	13.856	Medium	
HazMat	HAZMAT - CHOOSE SUB TYPE CHEMICAL UNKNOWN - DM ONLY	2	4	4	13.856	Medium	
HazMat	HAZMAT - CHOOSE SUB TYPE DRUG LAB REMNANTS - DM ONLY	2	2	3.33	7.236	Low	
HazMat	HAZMAT - CHOOSE SUB TYPE GREATER THAN 20 GALLONS - DM ONLY	2	4	4	13.856	Medium	

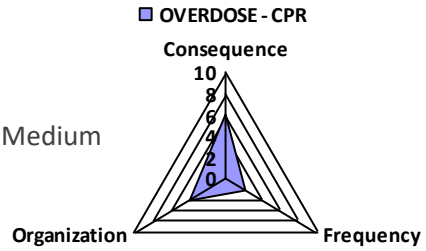
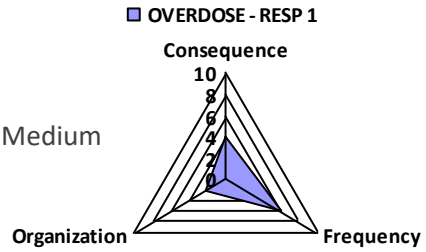
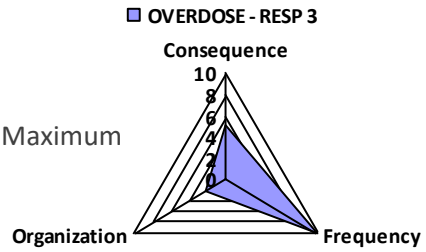
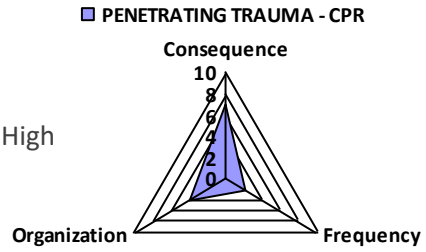
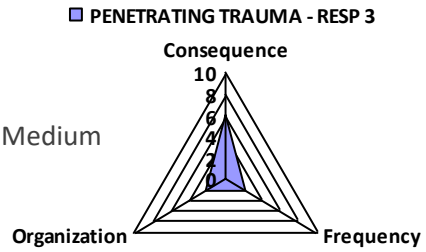
Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category	
HazMat	HAZMAT - CHOOSE SUB TYPE LESS THAN 20 GALLONS - DM ONLY	4	2	3.33	11.954	Low	
HazMat	HAZMAT - CHOOSE SUB TYPE WORKING LAB - DM ONLY	2	4	4	13.856	Medium	
EMS	HEADACHE - RESP 1	4	2	2	8.485	Low	
EMS	HEADACHE - RESP 3	6	2	3	15.875	Medium	
EMS	HEART PROBLEM - RESP 1	4	2	3	11.045	Low	

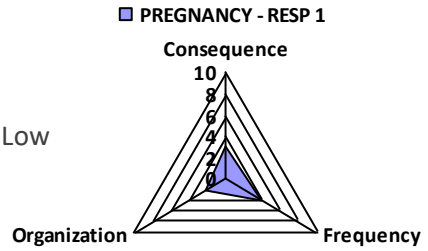
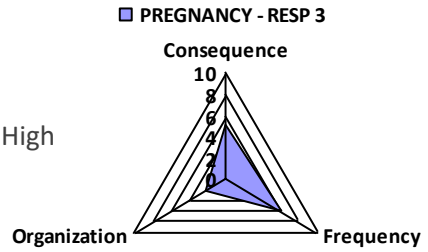
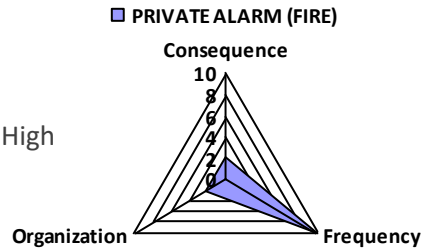
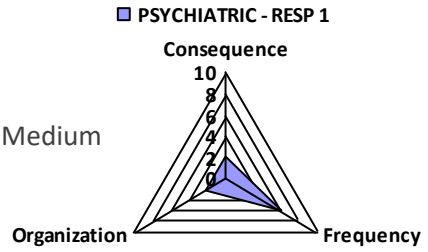
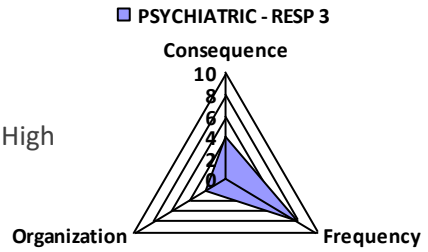
Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category	
EMS	HEART PROBLEM - RESP 3	8	2	5	31.273	Maximum	
EMS	HEAT / COLD - RESP 1	4	2	2	8.485	Low	
EMS	HEAT / COLD - RESP 3	6	2	4	19.799	Medium	
EMS	HEMORRHAGE - RESP 1	6	2	2	12.329	Medium	
EMS	HEMORRHAGE - RESP 3	8	2	4	25.923	High	

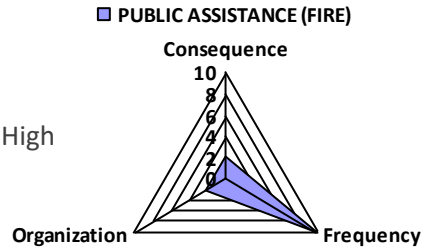
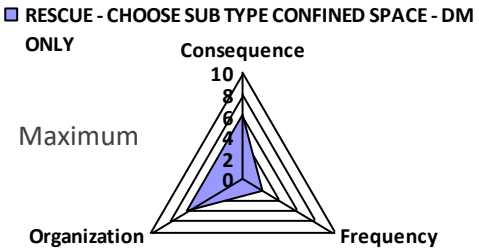
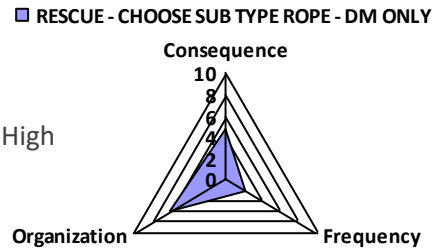
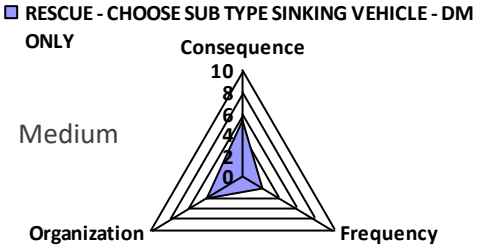
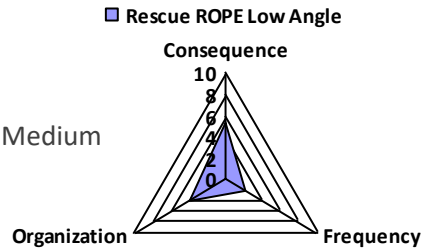
Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category	
Fire	INVESTIGATION	6	2	3.33	17.140	Medium	
HazMat	INVESTIGATION CARBON MONOXIDE - 3RD PARTY CALL	6	2	3.33	17.140	Medium	
Fire	INVESTIGATION SMOKE IN THE AREA	6	2	4	19.799	Medium	
Fire	INVESTIGATION SMOKE ODOR	4	2	3.33	11.954	Low	
EMS	mass-casualty active threat	2	6	10	45.519	Maximum	

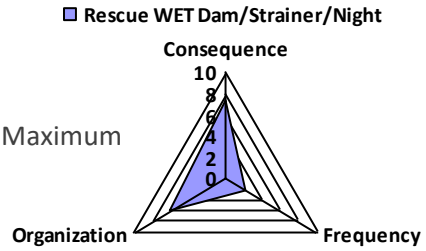
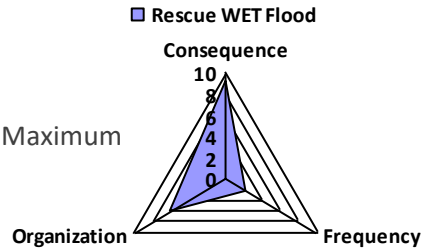
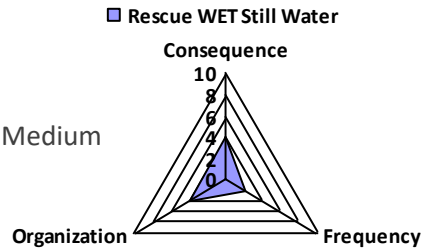
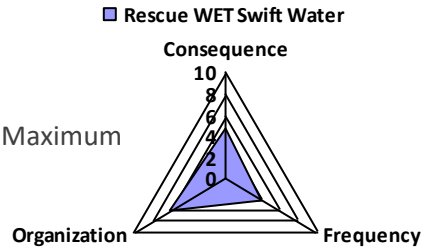
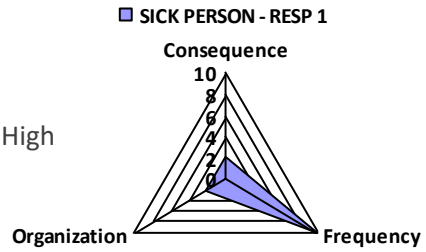
Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category	
EMS	mass-casualty vehicle crash	2	10	9	66.423	Maximum	
EMS	MEDICAL ALARM	2	2	2	4.899	Low	
Fire	MUTUAL AID - DM ONLY FIRE ASSIGNMENT	2	4	6	19.799	Medium	
EMS	MUTUAL AID - DM ONLY MEDICAL ASSIGNMENT	2	2	4	8.485	Low	
Tech Rescue	MUTUAL AID - DM ONLY TECH RESCUE	2	6	6	28.142	Maximum	

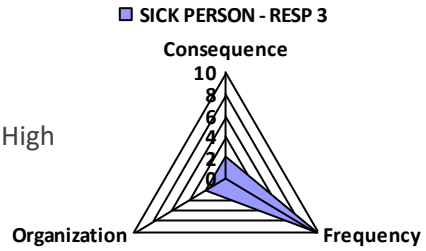
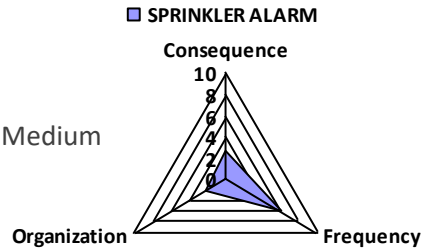
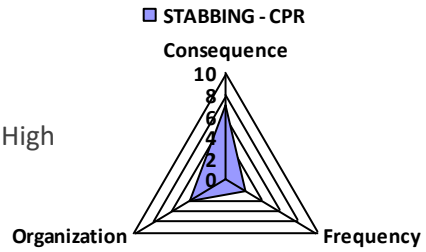
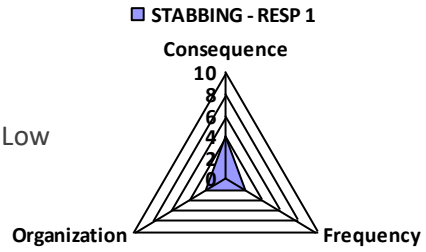
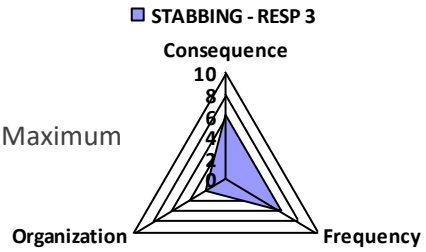
Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category	
WET	MUTUAL AID - DM ONLY WET TEAM	2	6	5.33	25.302	High	
HazMat	NATURAL GAS - CHOOSE SUB TYPE COMMERCIAL	4	4	4.67	21.839	High	
HazMat	NATURAL GAS - CHOOSE SUB TYPE ODOR OUTSIDE	4	2	3.33	11.954	Low	
HazMat	NATURAL GAS - CHOOSE SUB TYPE RUPTURED MAIN	4	2	4.67	15.814	Medium	
HazMat	NATURAL GAS - CHOOSE SUB TYPE SINGLE FAMILY	6	2	2.67	14.648	Medium	

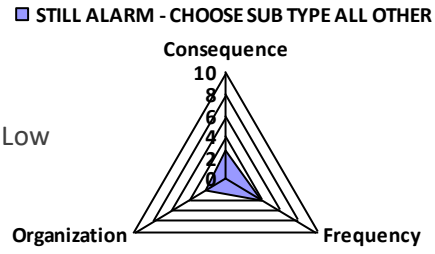
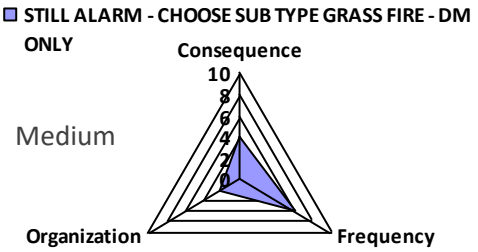
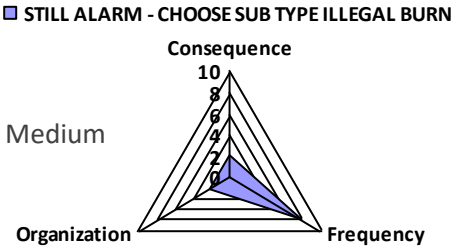
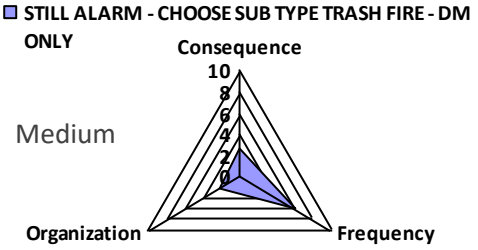
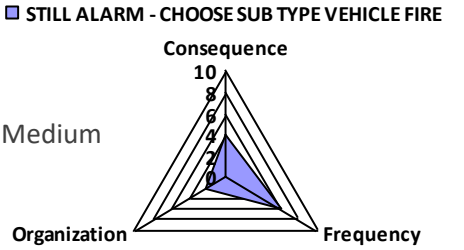
Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category	
EMS	OVERDOSE - CPR	2	4	6	19.799	Medium	
EMS	OVERDOSE - RESP 1	6	2	4	19.799	Medium	
EMS	OVERDOSE - RESP 3	10	2	5	38.730	Maximum	
EMS	PENETRATING TRAUMA - CPR	2	4	7	22.847	High	
EMS	PENETRATING TRAUMA - RESP 3	2	2	6	12.329	Medium	

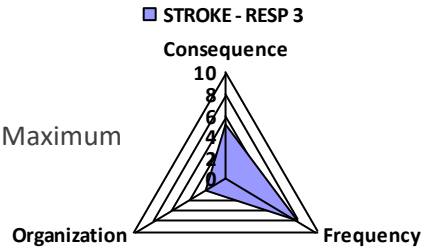
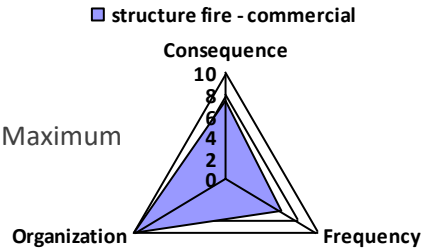
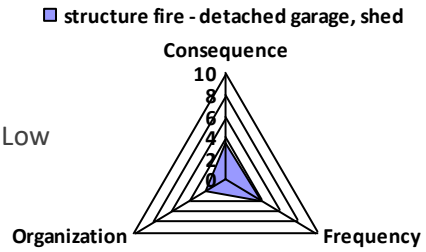
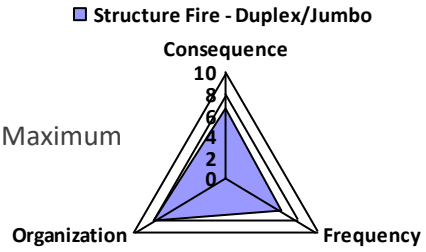
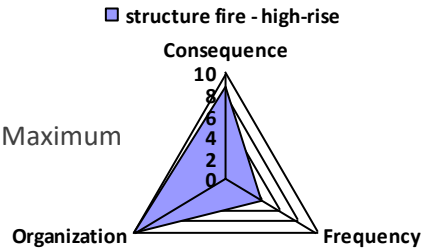
Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category	
EMS	PREGNANCY - RESP 1	4	2	3	11.045	Low	
EMS	PREGNANCY - RESP 3	6	2	5	23.917	High	
Fire	PRIVATE ALARM (FIRE)	10	2	2	20.199	High	
EMS	PSYCHIATRIC - RESP 1	6	2	2	12.329	Medium	
EMS	PSYCHIATRIC - RESP 3	8	2	4	25.923	High	

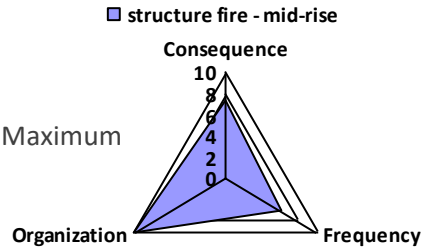
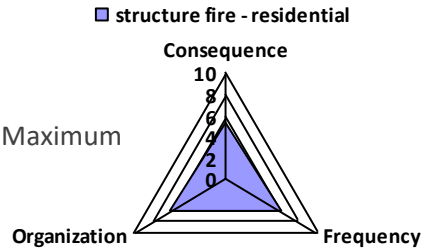
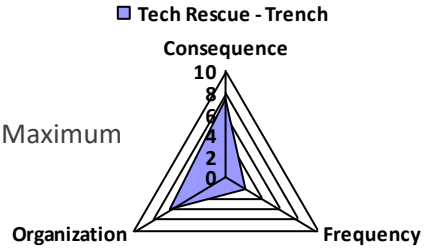
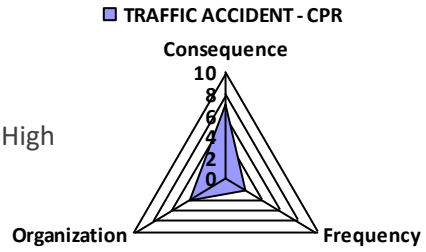
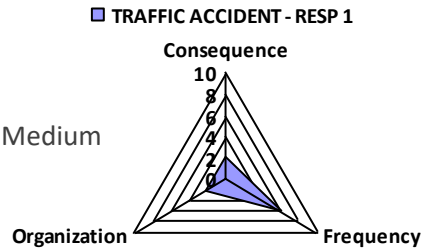
Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category	
Fire	PUBLIC ASSISTANCE (FIRE)	10	2	2	20.199	High	
Tech Rescue	RESCUE - CHOOSE SUB TYPE CONFINED SPACE - DM ONLY	2	6	6	28.142	Maximum	
Tech Rescue	RESCUE - CHOOSE SUB TYPE ROPE - DM ONLY	2	6	4.67	22.543	High	
WET	RESCUE - CHOOSE SUB TYPE SINKING VEHICLE - DM ONLY	2	4	5.33	17.779	Medium	
Tech Rescue	Rescue ROPE Low Angle	2	4	5.33	17.779	Medium	

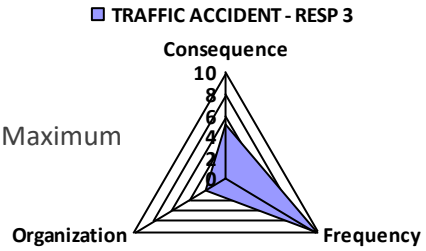
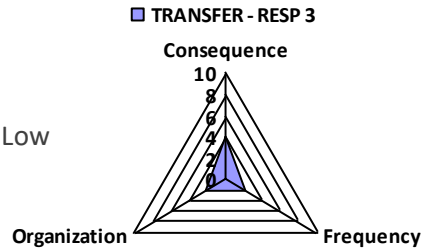
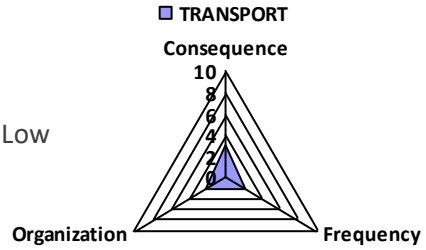
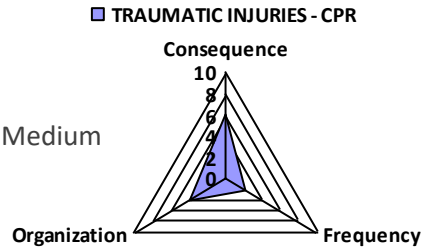
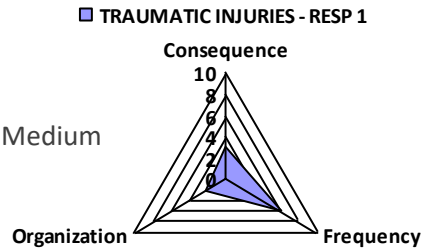
Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category	
WET	Rescue WET Dam/Strainer/Night	2	6	7.33	33.861	Maximum	
WET	Rescue WET Flood	2	6	9.33	42.579	Maximum	
WET	Rescue WET Still Water	2	4	4	13.856	Medium	
WET	Rescue WET Swift Water	4	6	4.67	29.241	Maximum	
EMS	SICK PERSON - RESP 1	10	2	2	20.199	High	

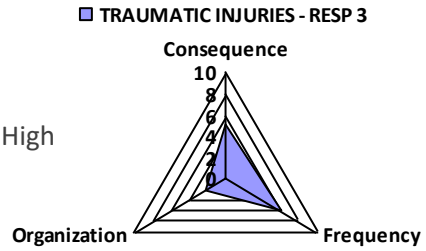
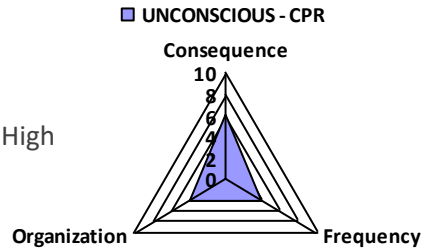
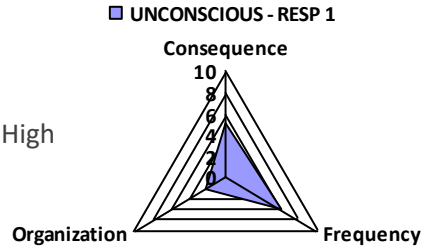
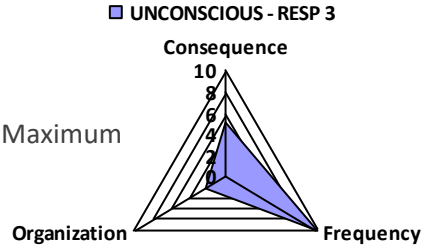
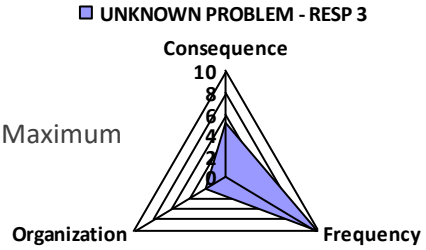
Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category	
EMS	SICK PERSON - RESP 3	10	2	2	20.199	High	
Fire	SPRINKLER ALARM	6	2	2.67	14.648	Medium	
EMS	STABBING - CPR	2	4	7	22.847	High	
EMS	STABBING - RESP 1	2	2	4	8.485	Low	
EMS	STABBING - RESP 3	6	2	6	28.142	Maximum	

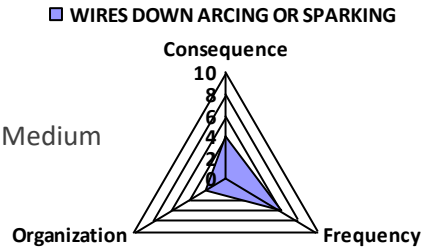
Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category	
Fire	STILL ALARM - CHOOSE SUB TYPE ALL OTHER	4	2	2.67	10.163	Low	
Fire	STILL ALARM - CHOOSE SUB TYPE GRASS FIRE - DM ONLY	6	2	4	19.799	Medium	
Fire	STILL ALARM - CHOOSE SUB TYPE ILLEGAL BURN	8	2	2	16.248	Medium	
Fire	STILL ALARM - CHOOSE SUB TYPE TRASH FIRE - DM ONLY	6	2	2.67	14.648	Medium	
Fire	STILL ALARM - CHOOSE SUB TYPE VEHICLE FIRE	6	2	4	19.799	Medium	

Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category	
EMS	STROKE - RESP 3	8	2	5	31.273	Maximum	
Fire	structure fire - commercial	6	10	7.33	73.848	Maximum	
Fire	structure fire - detached garage, shed	4	2	3.33	11.954	Low	
Fire	Structure Fire - Duplex/Jumbo	6	8	6.67	58.107	Maximum	
Fire	structure fire - high-rise	4	10	8.67	71.832	Maximum	

Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category	
Fire	structure fire - mid-rise	6	10	7.33	73.848	Maximum	
Fire	structure fire - residential	6	6	5.33	40.874	Maximum	
Tech Rescue	Tech Rescue - Trench	2	6	7.33	33.861	Maximum	
EMS	TRAFFIC ACCIDENT - CPR	2	4	7	22.847	High	
EMS	TRAFFIC ACCIDENT - RESP 1	6	2	2	12.329	Medium	

Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category	
EMS	TRAFFIC ACCIDENT - RESP 3	10	2	5	38.730	Maximum	
EMS	TRANSFER - RESP 3	2	2	4	8.485	Low	
EMS	TRANSPORT	2	2	3	6.633	Low	
EMS	TRAUMATIC INJURIES - CPR	2	4	6	19.799	Medium	
EMS	TRAUMATIC INJURIES - RESP 1	6	2	3	15.875	Medium	

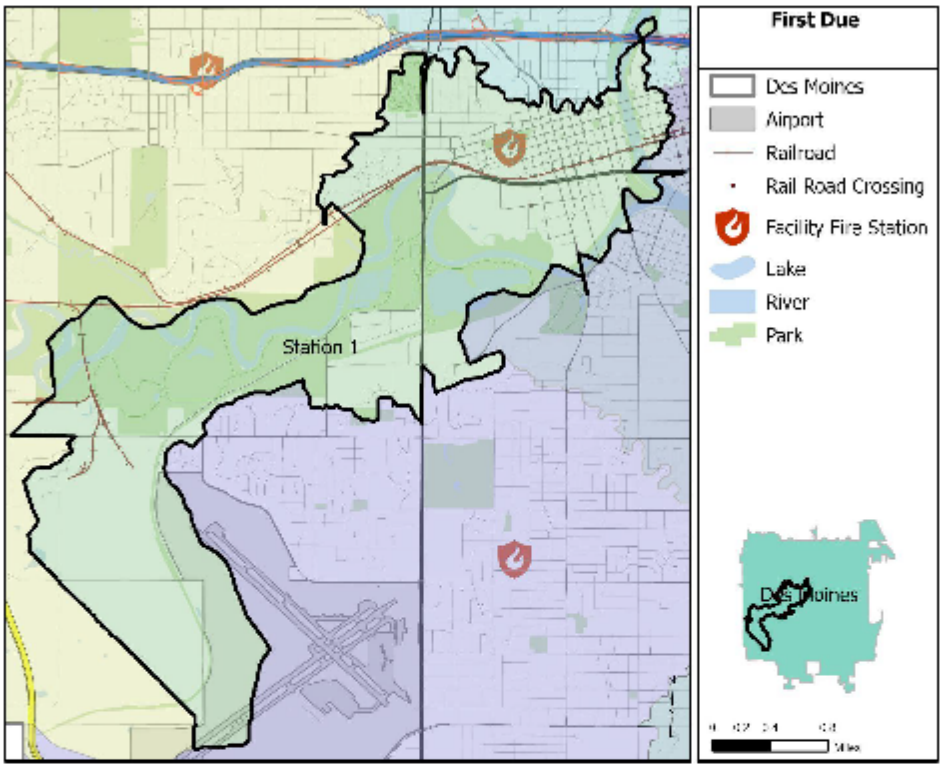
Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category	
EMS	TRAUMATIC INJURIES - RESP 3	6	2	5	23.917	High	
EMS	UNCONSCIOUS - CPR	4	4	6	26.533	High	
EMS	UNCONSCIOUS - RESP 1	6	2	5	23.917	High	
EMS	UNCONSCIOUS - RESP 3	10	2	5	38.730	Maximum	
EMS	UNKNOWN PROBLEM - RESP 3	10	2	5	38.730	Maximum	

Classification	EventType	Frequency	Organization	Consequence	Total Risk Score	Category	
Fire	WIRES DOWN ARCING OR SPARKING	6	2	4	19.799	Medium	

Appendix H: Planning Zone Details

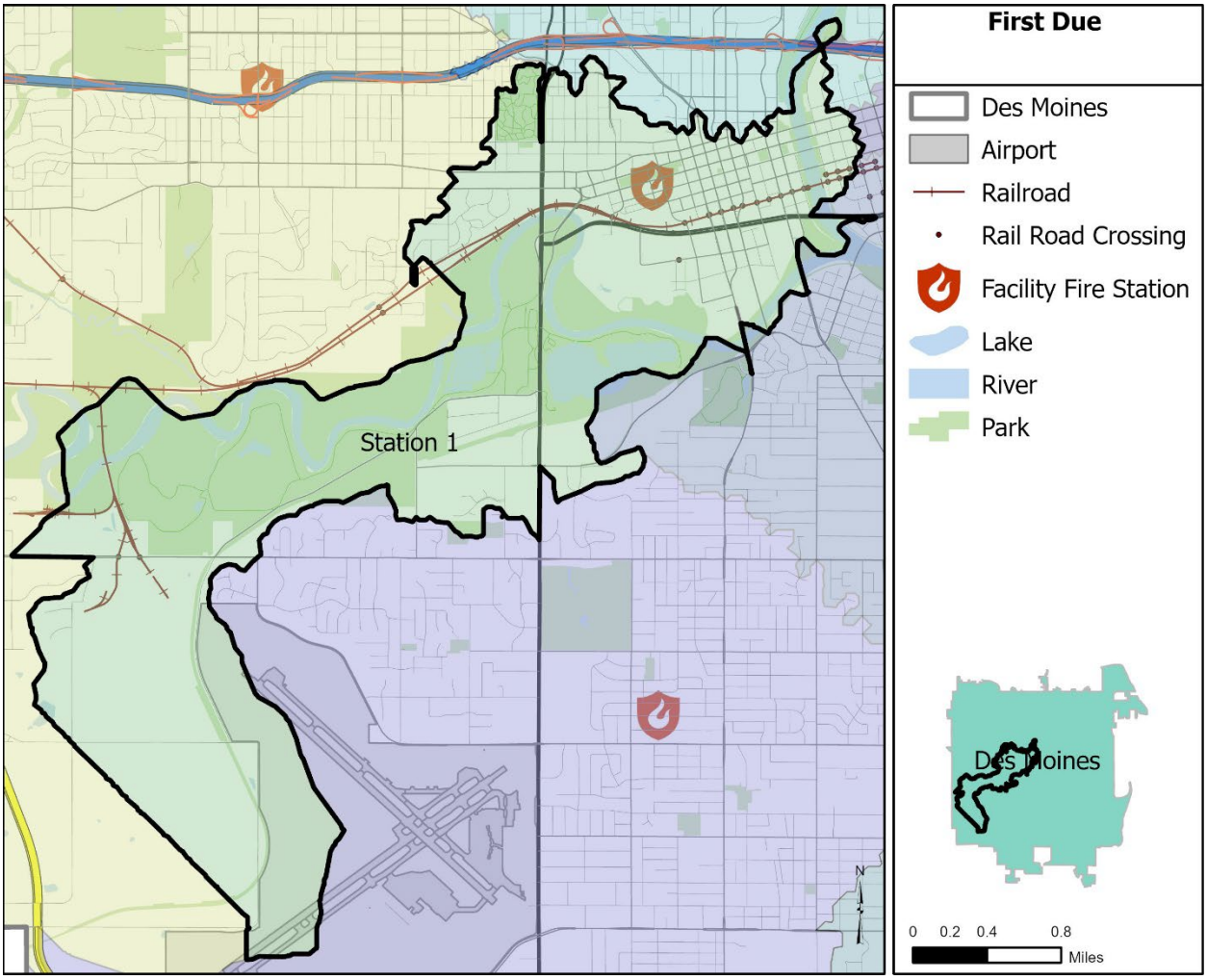
Double-click to open the entire document.

Planning Zone 1 - Station 1 First Due Area



Fire Station #1 is located at 1330 Mulberry Street. Daily minimum staffing is 9 personnel. Resources operating out of this facility are:

Planning Zone 1 - Station 1 First Due Area



Fire Station #1 is located at 1330 Mulberry Street. Daily minimum staffing is 9 personnel. Resources operating out of this facility are:

Unit Type	Minimum Staffing		Qualifications	CY 2021 Unit Response Count	Inservice Time % of year
	Qty	Rank			
Shift Commander	1	District Chief		887	100%
Engine	1 1 1	Captain Engineer Firefighter	EMT-B EMT-B EMT-B	3571	96.17%
Medic	1 1	Senior Medic Fire Medic	Paramedic Paramedic	3578	97.93%
Truck	1 1 1	Lieutenant Engineer Firefighter	EMT-B EMT-B EMT-B	1797	98.64%
Hazardous Materials		Cross-Staffed		71	
ST01, U01		Cross-Staffed		31	
Total	9			9923	

Characteristics of First Due Area

Population Density	Urban
Station Specialties	Station 1 houses the only (two) hazardous materials response apparatus. The frontline unit is cross-staffed from the other assigned suppression and EMS resources at this station. If needed, Personnel from Station 3 cross-staff a second unit for simultaneous hazardous materials response.
Area Description	Station 1 is a downtown urban landscape. This first-due area has the largest concentration of high-rise buildings and has experienced tremendous development over the last decade, specifically in the mid-rise residential category. This downtown urban population has impacted call volume for this planning zone which several years ago saw large swings in the daytime vs. nighttime populations. Adding thousands of residential units in this area has dramatically reduced the daily fluctuations in people there. In addition to the mid-rise and high-rise building stock, this area encompasses portions of the Des Moines and Raccoon Rivers and sizeable urban park areas.

Dispatches for service over the past 5 years:

Year	Units Dispatch Count	% Change
2019	9248	0.65
2020	8640	(6.57)
2021	9923	14.90

Dispatching by type and performance against agency benchmarks

CY 2021 Turnout by Classification and Event Time

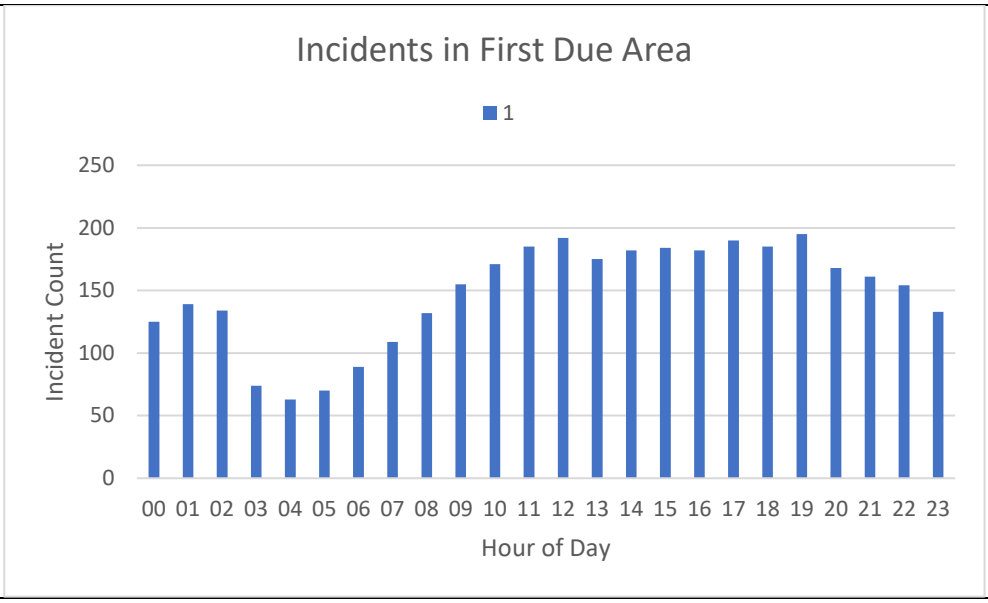
Risk Classification	*NFPA Standard*	*Station (All Units)*	
		90th	*% Met*
Fire	*1:20*	**02:33**	15%
EMS	*1:00*	**02:18**	62%
Tech Rescue	*1:20*	**02:31**	20%
HazMat	*1:20*	**03:17**	9%
WET	*1:20*	**02:16**	25%

Unit & Planning Zone Reliability

2021		Commit	Availability	Reliability		
Unit	Planning Zone	Unit Utilization	First Due Unit Availability	First-Due Area Reliability	First-Due Unit Reliability	Other than First-Due Unit Reliability
	Formula	secs from alarm to available/ secs in year service less out of service time	Unit to First Due/First Due Area	Any Unit to First Due within time limit / First Due Area Incidents	First Due unit to First Due area within time limit / First Due unit responding to First Due area	Other than First Due unit to First Due area within time limit / Other than First Due unit responding to First due area
MS01	1	21.7%	84.9%	87.2%	91.5%	63.1%
E01	1	11.2%	93.8%	86.9%	89.0%	54.7%
T01	1	5.5%	81.1%	82.7%	94.0%	34.3%

CY 2021 Unit Responses from Station – the hour of the day of the week

Year	Hr	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Total
2021	0	67	42	37	28	52	31	63	320
	1	74	43	28	29	35	46	80	335
	2	71	32	24	38	35	53	68	321
	3	40	31	25	13	34	21	35	199
	4	23	38	20	27	27	21	36	192
	5	32	25	34	30	23	32	34	210
	6	38	21	28	30	28	52	35	232
	7	32	54	49	28	39	59	34	295
	8	39	49	59	45	51	55	55	353
	9	79	73	74	77	68	75	44	490
	10	44	92	66	70	74	68	73	487
	11	77	97	76	81	64	76	81	552
	12	67	78	86	87	75	83	61	537
	13	68	81	78	87	82	80	76	552
	14	74	69	91	101	87	85	48	555
	15	61	70	73	82	89	95	77	547
	16	52	62	60	70	74	55	73	446
	17	97	55	76	87	84	70	60	529
	18	76	57	87	66	65	71	78	500
	19	81	51	53	85	84	76	86	516
	20	83	80	75	77	65	63	64	507
	21	64	52	56	56	69	78	72	447
	22	59	68	56	39	69	59	71	421
	23	45	54	47	48	44	72	74	384
	Total	1443	1374	1358	1381	1417	1476	1478	9927

Incidents occurring within First Due	
Major Transportation	• Interstate 235 runs east and west through the northern portion of this planning zone. • Downtown east-west thoroughfares include Grand Avenue, Ingersoll Avenue, and MLK Parkway • Downtown north-south thoroughfares include Fleur Drive, MLK Jr. Parkway, SW 9th, 2nd Avenue, and SE 6th
Major Infrastructure	• Century Link telephone and battery backup facility • Railroad lines (east-west through the southern portion of downtown)
Major Service and Utilities	• Water and Sewer • Natural Gas • Electric • Communications
Medical Facilities	• Unity Point Iowa Methodist Hospital (1212 Pleasant Street)
Schools	• DMPS Central Campus (1800 Grand Avenue) • DMPS Walnut Street School (901 Walnut Street)
Governmental Facilities	• Federal Courthouse (101 Locust Street) • Fire Station #1 (1330 Mulberry Street) • City Hall (400 Robert D. Ray Drive) • Police Headquarters (25 East First Street) • Terrace Hill – Governor's Mansion (2300 Grand Avenue)
Primary Target Hazard Fire	• Numerous high-rise buildings • Century Link telephone and battery backup facility • Numerous multi-resident apartment complexes
Primary Target Hazard Non-Fire	• Principal Park (minor league baseball facility) • Des Moines River • Raccoon River • Central Iowa Shelter & Services (1420 Mulberry Street) • Water Works Park (2201 George Flagg Parkway) • Gray's Lake Park (2101 Fleur Drive)

Performance Data for Planning Zone 1

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
Fire	Low	Alarm Handling	00:25	01:04	00:39
		Turnout 1st SUPPRESSION	02:47	01:20	01:27
		Travel Time 1st SUPPRESSION - Distribution	04:45	04:00	00:45
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st SUPPRESSION	**07:58**	**06:24**	01:34
		Incident Count 1st SUPPRESSION	2		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		
Fire	Medium	Alarm Handling	00:28	01:04	00:36
		Turnout 1st SUPPRESSION	02:34	01:20	01:14
		Travel Time 1st SUPPRESSION - Distribution	05:46	04:00	01:46
		Travel Time ERF - Concentration	07:09	08:00	00:51
		Total Response Time 1st SUPPRESSION	**08:31**	**06:24**	02:07
		Incident Count 1st SUPPRESSION	180		
		Total Response Time ERF	**09:39**	**10:24**	00:45
		Incident Count ERF	102		
Fire	High	Alarm Handling	00:39	01:04	00:25
		Turnout 1st SUPPRESSION	02:23	01:20	01:03
		Travel Time 1st SUPPRESSION - Distribution	07:01	04:00	03:01
		Travel Time ERF - Concentration	07:01	08:00	00:59
		Total Response Time 1st SUPPRESSION	**09:12**	**06:24**	02:48
		Incident Count 1st SUPPRESSION	58		
		Total Response Time ERF	**09:12**	**10:24**	01:12
		Incident Count ERF	58		
Fire	Maximum	Alarm Handling	00:36	01:04	00:28
		Turnout 1st SUPPRESSION	02:20	01:20	01:00
		Travel Time 1st SUPPRESSION - Distribution	03:41	04:00	00:19
		Travel Time ERF - Concentration	09:01	08:00	01:01
		Total Response Time 1st SUPPRESSION	**06:01**	**06:24**	00:23
		Incident Count 1st SUPPRESSION	121		
		Total Response Time ERF	**09:22**	**10:24**	01:02
		Incident Count ERF	1		

Performance Data for Planning Zone 1

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
EMS	Low	Alarm Handling	00:28	01:04	00:36
		Turnout Time 1st Unit	02:24	01:00	01:24
		Travel Time 1st Unit - Distribution	06:05	04:00	02:05
		Travel Time ERF - Concentration	06:08	08:00	01:52
		Total Response Time 1st Unit	**07:44**	**06:04**	01:40
		Incident Count 1st Unit - Distribution	27		
		Total Response Time ERF	**08:05**	**10:04**	01:59
		Incident Count ERF	25		
EMS	Medium	Alarm Handling	00:36	01:04	00:28
		Turnout Time 1st Unit	02:09	01:00	01:09
		Travel Time 1st Unit - Distribution	05:41	04:00	01:41
		Travel Time ERF - Concentration	05:21	08:00	02:39
		Total Response Time 1st Unit	**07:28**	**06:04**	01:24
		Incident Count 1st Unit - Distribution	321		
		Total Response Time ERF	**07:03**	**10:04**	03:01
		Incident Count ERF	280		
EMS	High	Alarm Handling	00:33	01:04	00:31
		Turnout Time 1st Unit	02:12	01:00	01:12
		Travel Time 1st Unit - Distribution	04:20	04:00	00:20
		Travel Time ERF - Concentration	04:36	08:00	03:24
		Total Response Time 1st Unit	**06:15**	**06:04**	00:11
		Incident Count 1st Unit - Distribution	1,734		
		Total Response Time ERF	**06:31**	**10:04**	03:33
		Incident Count ERF	1,603		
EMS	Maximum	Alarm Handling	00:34	01:04	00:30
		Turnout Time 1st Unit	02:11	01:00	01:11
		Travel Time 1st Unit - Distribution	03:46	04:00	00:14
		Travel Time ERF - Concentration	04:14	08:00	03:46
		Total Response Time 1st Unit	**05:38**	**06:04**	00:26
		Incident Count 1st Unit - Distribution	3,270		
		Total Response Time ERF	**06:16**	**10:04**	03:48
		Incident Count ERF	3,019		

Performance Data for Planning Zone 1

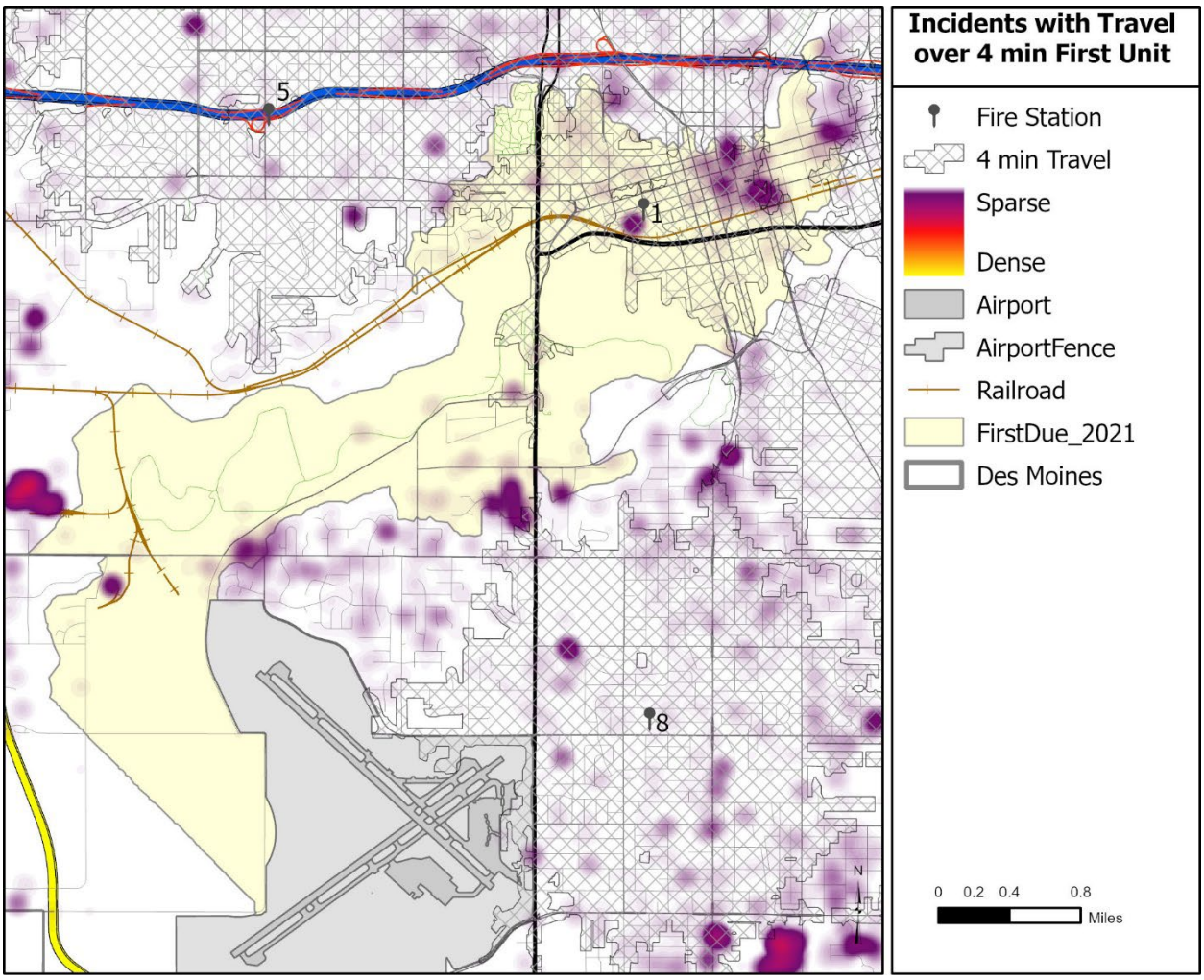
Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
Tech Rescue	Medium	Alarm Handling	00:45	01:04	**00:19**
		Turnout 1st SUPPRESSION	01:35	01:20	**00:15**
		Travel Time 1st SUPPRESSION - Distribution	05:43	04:00	**01:43**
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st SUPPRESSION	**07:33**	**06:24**	**01:09**
		Incident Count 1st SUPPRESSION	6		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		
Tech Rescue	High	Alarm Handling	00:42	01:04	**00:22**
		Turnout 1st SUPPRESSION	01:54	01:20	**00:34**
		Travel Time 1st SUPPRESSION - Distribution	02:30	04:00	**01:30**
		Travel Time ERF - Concentration	04:28	08:00	**03:32**
		Total Response Time 1st SUPPRESSION	**04:39**	**06:24**	**01:46**
		Incident Count 1st SUPPRESSION	6		
		Total Response Time ERF	**06:35**	**10:24**	**03:49**
		Incident Count ERF	2		
Tech Rescue	Maximum	Alarm Handling	00:40	01:04	**00:24**
		Turnout Time 1st Unit		01:20	
		Travel Time 1st SUPPRESSION - Distribution	03:24	04:00	**00:36**
		Travel Time ERF - Concentration	12:14	08:00	**04:14**
		Total Response Time 1st SUPPRESSION	**05:42**	**06:24**	**00:42**
		Incident Count 1st SUPPRESSION	1		
		Total Response Time ERF	**14:05**	**10:24**	**03:41**
		Incident Count ERF	1		

Performance Data for Planning Zone 1

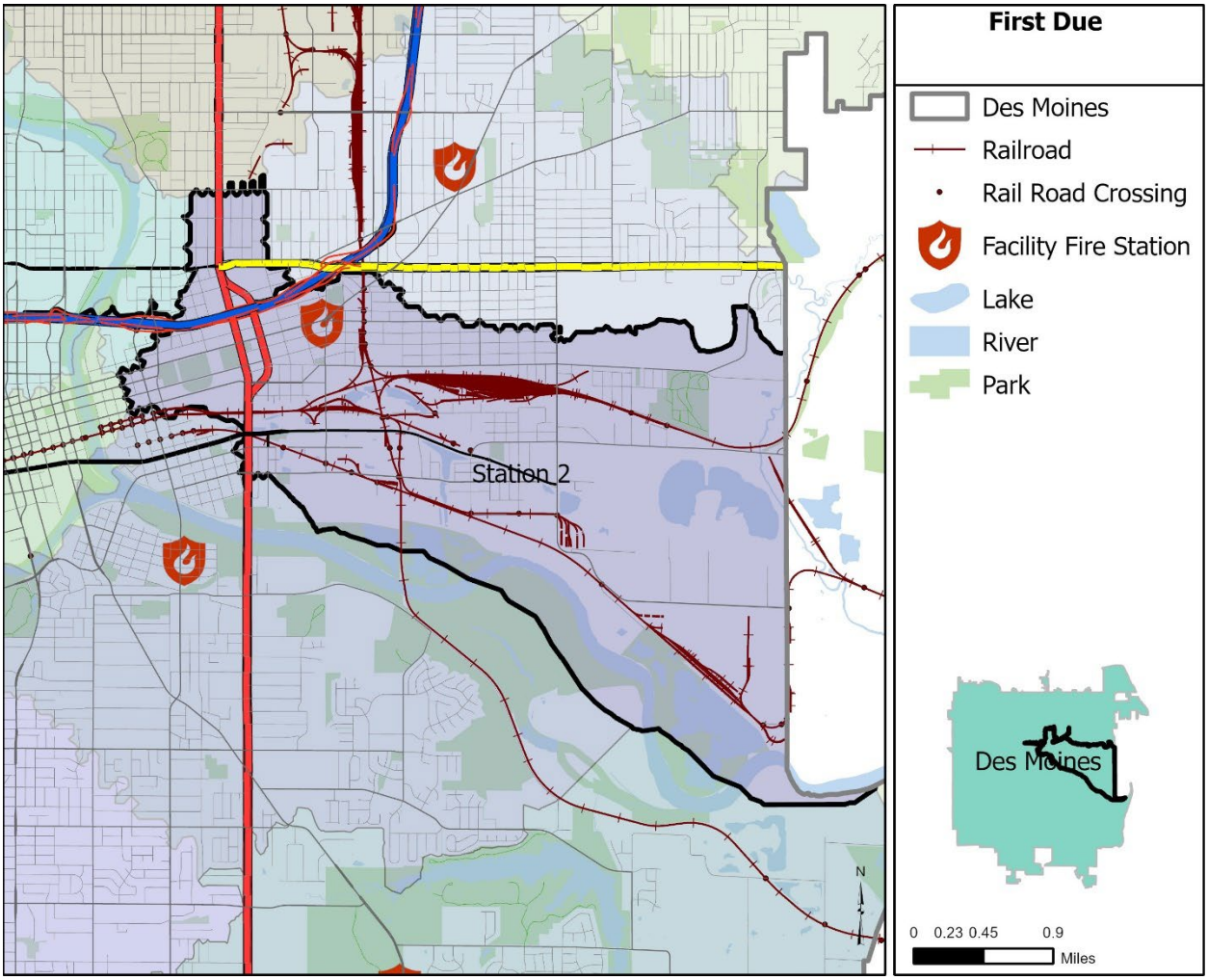
Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
HazMat	Low	Alarm Handling	00:15	01:04	**00:49**
		Turnout 1st SUPPRESSION	02:15	01:20	**00:55**
		Travel Time 1st SUPPRESSION - Distribution	05:32	04:00	**01:32**
		Travel Time ERF - Concentration	05:32	08:00	**02:28**
		Total Response Time 1st SUPPRESSION	**07:15**	**06:24**	**00:51**
		Incident Count 1st SUPPRESSION	4		
		Total Response Time ERF	**07:15**	**10:24**	**03:09**
		Incident Count ERF	4		
HazMat	Medium	Alarm Handling	01:07	01:04	**00:04**
		Turnout 1st SUPPRESSION	02:06	01:20	**00:46**
		Travel Time 1st SUPPRESSION - Distribution	04:17	04:00	**00:17**
		Travel Time ERF - Concentration	04:19	08:00	**03:42**
		Total Response Time 1st SUPPRESSION	**06:43**	**06:24**	**00:19**
		Incident Count 1st SUPPRESSION	6		
		Total Response Time ERF	**06:41**	**10:24**	**03:43**
		Incident Count ERF	5		
HazMat	High	Alarm Handling	02:01	01:04	**00:57**
		Turnout 1st SUPPRESSION	02:53	01:20	**01:33**
		Travel Time 1st SUPPRESSION - Distribution	04:08	04:00	**00:08**
		Travel Time ERF - Concentration	07:39	08:00	**00:21**
		Total Response Time 1st SUPPRESSION	**06:59**	**06:24**	**00:35**
		Incident Count 1st SUPPRESSION	11		
		Total Response Time ERF	**10:03**	**10:24**	**00:21**
		Incident Count ERF	3		

Performance Data for Planning Zone 1

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
WET	Medium	Alarm Handling	00:14	01:04	**00:50**
		Turnout Time 1st Unit	00:39	01:20	**00:41**
		Travel Time 1st Unit - Distribution	03:35	04:00	**00:25**
		Travel Time ERF - Concentration	05:19	08:00	**02:41**
		Total Response Time 1st Unit	**04:28**	**06:24**	**01:56**
		Incident Count 1st Unit - Distribution	1		
		Total Response Time ERF	**07:05**	**10:24**	**03:19**
		Incident Count ERF	1		
WET	Maximum	Alarm Handling	01:04	01:04	**00:00**
		Turnout Time 1st Unit	01:10	01:20	**00:10**
		Travel Time 1st Unit - Distribution	07:54	04:00	**03:54**
		Travel Time ERF - Concentration	00:02	08:00	**07:58**
		Total Response Time 1st Unit	**09:02**	**06:24**	**02:38**
		Incident Count 1st Unit - Distribution	9		
		Total Response Time ERF	**00:30**	**10:24**	**09:54**
		Incident Count ERF	1		


Incidents with Travel over 4 min First Unit
Fire Station
4 min Travel
Sparse
Dense
Airport
AirportFence
Railroad
FirstDue_2021
Des Moines
5
1
8
N
0 0.2 0.4 0.8
Miles

Planning Zone 2 - Station 2 First Due



Fire Station #2 is located at 1727 East Walnut Street. The daily minimum staffing is 4 personnel. Resources operating out of this facility are:

Unit Type	Minimum Staffing		Qualifications	CY 2021 Unit Response Count	Inservice Time
	Qty	Rank			
Shift Commander	1	District Chief		826	99.66%
Engine	1 1 1	Lieutenant Engineer Firefighter	EMT-B & WET Certified EMT-B & WET Certified EMT-B & WET Certified	2120	98.47%
WET		Cross-Staffed		12	
Total	4			2972	

Characteristics of First Due Area

Population Density	Urban
Station Specialties	Station 2 comprises half of the Water Emergency Team (WET) with a response tow vehicle and 2 rescue-equipped watercraft. Engine 2 is 1 of 4 extrication companies throughout the city equipped with specialized equipment and trained staff.
Area Description	Station 2 encompasses the east-central portion of Des Moines. The first due area contains multiple industrial complexes, retail stores, food and beverage services, the State Capital complex, and residential occupancies. The southern half of the Iowa State Fair Grounds is in the eastern portion of this area.

Dispatches for service over the past 4 years:

Year	Units Dispatch Count	% Change
2019	2798	(0.11)
2020	3425	22.41
2021	2972	(13.23)

Dispatching by type and performance against agency benchmarks

CY 2021 Turnout by Classification and Event Time

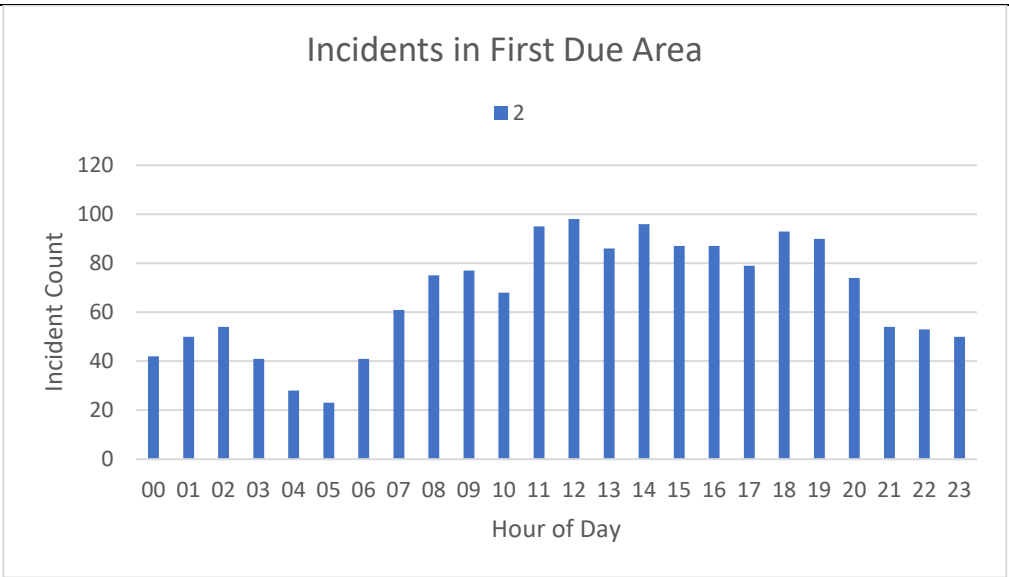
Event Type	*NFPA Standard*	*Station*	
		90th	*% Met*
Fire	*1:20*	**02:27**	17%
EMS	*1:00*	**02:17**	46%
Tech Rescue	*1:20*	**02:39**	14%
HazMat	*1:20*	**02:28**	17%

Unit & Planning Zone Reliability

2021		Commit	Availability	Reliability		
Unit	Planning Zone	Unit Utilization	First Due Unit Availability	First-Due Area Reliability	First-Due Unit Reliability	Other than First-Due Unit Reliability
	Formula	secs from alarm to available/ secs in year service less out of service time	Unit to First Due/First Due Area	Any Unit to First Due within time limit / First Due Area Incidents	First Due unit to First Due area within time limit / First Due unit responding to First Due area	Other than First Due unit to First Due area within time limit / Other than First Due unit responding to First due area
MS02	2	0.1%	0.3%	68.2%	100.0%	68.1%
E02	2	7.6%	90.9%	75.0%	74.9%	75.5%

Unit Responses from Station – hour of day & day of week

Year	Hr	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Total
2021	0	11	25	15	5	15	13	12	96
	1	15	14	3	7	12	15	27	93
	2	13	13	7	7	10	12	17	79
	3	7	20	6	4	9	8	15	69
	4	8	8	6	7	11	5	11	56
	5	11	7	9	6	5	10	10	58
	6	5	13	8	16	8	10	9	69
	7	9	13	11	18	13	12	9	85
	8	11	21	18	20	24	25	13	132
	9	27	18	12	29	23	15	6	130
	10	20	18	20	31	22	16	22	149
	11	13	22	22	20	33	20	23	153
	12	19	23	20	28	19	20	23	152
	13	23	26	25	16	16	24	20	150
	14	29	20	19	38	24	39	22	191
	15	17	19	24	35	23	28	24	170
	16	22	14	13	29	23	22	24	147
	17	28	21	27	20	22	24	14	156
	18	25	25	16	28	22	17	31	164
	19	34	18	20	23	23	21	28	167
	20	32	20	29	28	26	14	15	164
	21	27	19	13	13	21	21	22	136
	22	16	15	8	11	27	14	13	104
	23	12	17	17	16	12	14	14	102
	Total	434	429	368	455	443	419	424	2972

Incidents occurring within First Due	
Major Transportation	• Interstate 235 runs east and west through the North-East corner of Station 2 territory • Major east-west thoroughfares include East MLK Jr. Parkway, Dean Avenue, and East Grand Avenue. • Major north-south thoroughfares include East 14th Street (Highway 69), East 18th Street, and East 30th Street
Major Infrastructure	• Numerous Railroad lines and rail yards • Des Moines Sewage Treatment (3000 Vandalia Road)
Major Service and Utilities	• Water and sewer • Natural Gas • Electric • Communications
Medical Facilities	None
Schools	• Capitol View Elementary School (320 E 16th Street) • East High School (815 E 13th Street) • Hiatt Middle School (1214 E 15th Street) • Willard Elementary School (2941 Dean Avenue)
Governmental Facilities	• Iowa State Capital Complex (1007 E Grand Avenue) • Richard A. Clark Municipal Service Center (1551 E. MLK Jr. Parkway) • Fire Administration, Maintenance, & Training (2715 Dean Avenue)
Primary Target Hazard Fire	• Cargill Inc. (3030 E. Granger Avenue) • Kemin Industries (1900 Scott Avenue) • Titan Tire Corporation (2345 East Market Street) • Siegwerk (129 SE 18th Street) • Iowa State Fair Grounds (3000 East Grand Avenue) • Helena Chemical (3525 Vandalia Road)
Primary Target Hazard Non-Fire	• Des Moines River • Iowa State Fair Grounds (3000 East Grand Avenue) • Duke Williams Stadium (1591 East University Avenue)

	• Iowa State Capital Complex (1007 E Grand Avenue) • Des Moines Sewage Treatment (3000 Vandalia Road) • Helena Chemical (3525 Vandalia Road) • Railroad Transload Facility (357 SE 15th Street)

Performance Data for Planning Zone 2

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
Fire	Low	Alarm Handling	00:24	01:04	00:40
		Turnout 1st SUPPRESSION	02:37	01:20	01:17
		Travel Time 1st SUPPRESSION - Distribution	05:34	04:00	01:34
		Travel Time ERF - Concentration	06:00	08:00	02:00
		Total Response Time 1st SUPPRESSION	**07:46**	**06:24**	01:22
		Incident Count 1st SUPPRESSION	22		
		Total Response Time ERF	**07:59**	**10:24**	02:25
		Incident Count ERF	16		
Fire	Medium	Alarm Handling	00:27	01:04	00:37
		Turnout 1st SUPPRESSION	02:31	01:20	01:11
		Travel Time 1st SUPPRESSION - Distribution	07:03	04:00	03:03
		Travel Time ERF - Concentration	07:29	08:00	00:31
		Total Response Time 1st SUPPRESSION	**09:05**	**06:24**	02:41
		Incident Count 1st SUPPRESSION	170		
		Total Response Time ERF	**09:51**	**10:24**	00:33
		Incident Count ERF	58		
Fire	High	Alarm Handling	00:36	01:04	00:28
		Turnout 1st SUPPRESSION	02:36	01:20	01:16
		Travel Time 1st SUPPRESSION - Distribution	07:01	04:00	03:01
		Travel Time ERF - Concentration	07:01	08:00	00:59
		Total Response Time 1st SUPPRESSION	**09:42**	**06:24**	03:18
		Incident Count 1st SUPPRESSION	17		
		Total Response Time ERF	**09:42**	**10:24**	00:42
		Incident Count ERF	17		
Fire	Maximum	Alarm Handling	00:30	01:04	00:34
		Turnout 1st SUPPRESSION	02:24	01:20	01:04
		Travel Time 1st SUPPRESSION - Distribution	04:50	04:00	00:50
		Travel Time ERF - Concentration	10:12	08:00	02:12
		Total Response Time 1st SUPPRESSION	**07:17**	**06:24**	00:53
		Incident Count 1st SUPPRESSION	112		
		Total Response Time ERF	**12:58**	**10:24**	02:34
		Incident Count ERF	33		

Performance Data for Planning Zone 2

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
EMS	Low	Alarm Handling	00:41	01:04	00:23
		Turnout Time 1st Unit	01:47	01:00	00:47
		Travel Time 1st Unit - Distribution	06:45	04:00	02:45
		Travel Time ERF - Concentration	06:45	08:00	01:15
		Total Response Time 1st Unit	**08:17**	**06:04**	02:13
		Incident Count 1st Unit - Distribution	17		
		Total Response Time ERF	**08:17**	**10:04**	01:47
		Incident Count ERF	17		
EMS	Medium	Alarm Handling	00:35	01:04	00:29
		Turnout Time 1st Unit	02:10	01:00	01:10
		Travel Time 1st Unit - Distribution	05:51	04:00	01:51
		Travel Time ERF - Concentration	06:08	08:00	01:52
		Total Response Time 1st Unit	**07:33**	**06:04**	01:29
		Incident Count 1st Unit - Distribution	161		
		Total Response Time ERF	**07:40**	**10:04**	02:24
		Incident Count ERF	150		
EMS	High	Alarm Handling	00:35	01:04	00:29
		Turnout Time 1st Unit	02:15	01:00	01:15
		Travel Time 1st Unit - Distribution	04:57	04:00	00:57
		Travel Time ERF - Concentration	05:09	08:00	02:51
		Total Response Time 1st Unit	**06:52**	**06:04**	00:48
		Incident Count 1st Unit - Distribution	950		
		Total Response Time ERF	**07:08**	**10:04**	02:56
		Incident Count ERF	925		
EMS	Maximum	Alarm Handling	00:35	01:04	00:29
		Turnout Time 1st Unit	02:13	01:00	01:13
		Travel Time 1st Unit - Distribution	04:56	04:00	00:56
		Travel Time ERF - Concentration	05:39	08:00	02:22
		Total Response Time 1st Unit	**06:49**	**06:04**	00:45
		Incident Count 1st Unit - Distribution	1,470		
		Total Response Time ERF	**07:36**	**10:04**	02:28
		Incident Count ERF	1,377		

Performance Data for Planning Zone 2

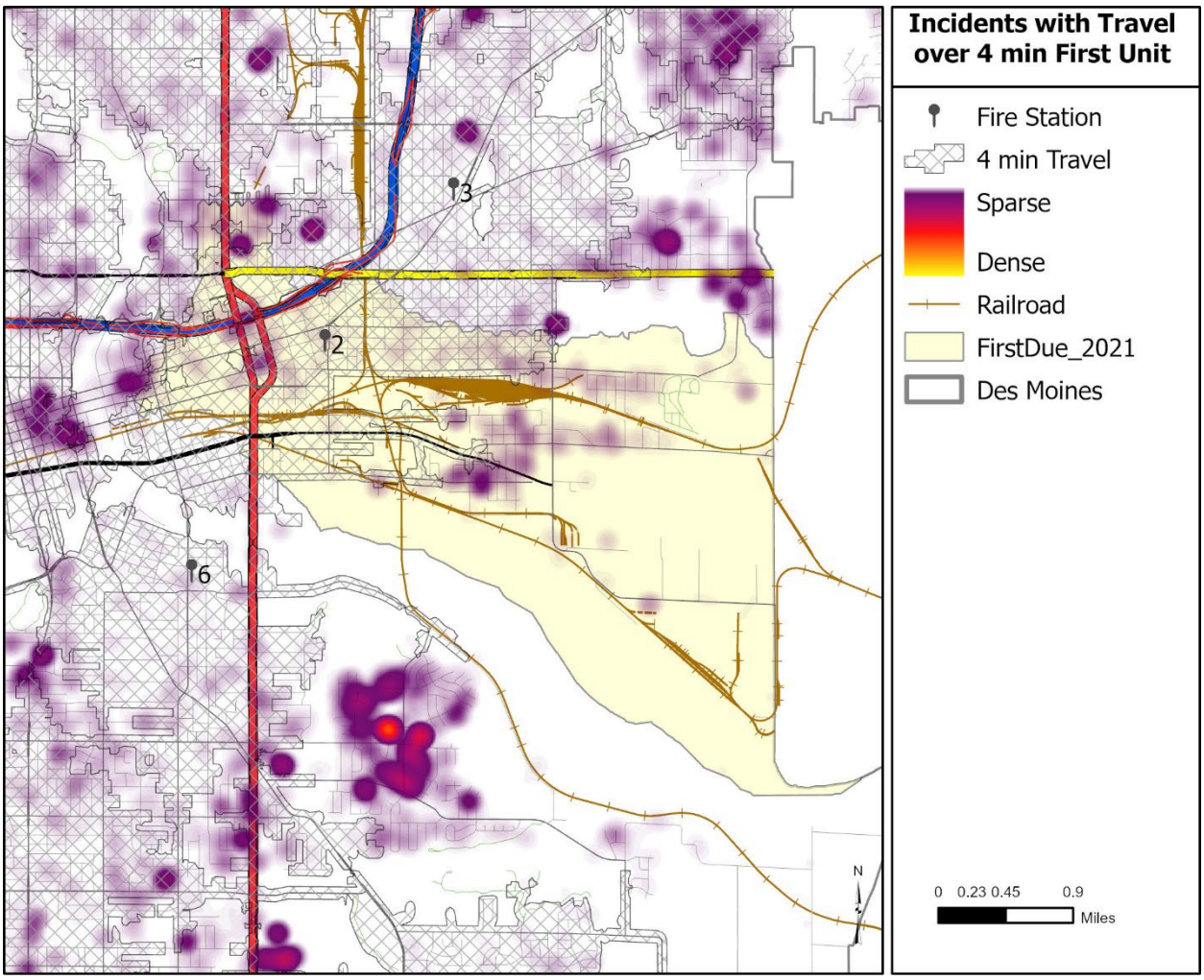
Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
Tech Rescue	Medium	Alarm Handling	00:20	01:04	**00:44**
		Turnout 1st SUPPRESSION	01:05	01:20	**00:15**
		Travel Time 1st SUPPRESSION - Distribution	05:05	04:00	**01:05**
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st SUPPRESSION	**06:30**	**06:24**	**00:06**
		Incident Count 1st SUPPRESSION	1		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		
Tech Rescue	High	Alarm Handling	00:52	01:04	**00:12**
		Turnout 1st SUPPRESSION	02:35	01:20	**01:15**
		Travel Time 1st SUPPRESSION - Distribution	04:21	04:00	**00:21**
		Travel Time ERF - Concentration	11:05	08:00	**03:05**
		Total Response Time 1st SUPPRESSION	**06:41**	**06:24**	**00:17**
		Incident Count 1st SUPPRESSION	11		
		Total Response Time ERF	**13:48**	**10:24**	**03:24**
		Incident Count ERF	8		
Tech Rescue	Maximum	Alarm Handling	01:06	01:04	**00:02**
		Turnout Time 1st Unit	00:08	01:20	**01:12**
		Travel Time 1st SUPPRESSION - Distribution	01:10	04:00	**02:50**
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st SUPPRESSION	**02:24**	**06:24**	**04:00**
		Incident Count 1st SUPPRESSION	1		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		

Performance Data for Planning Zone 2

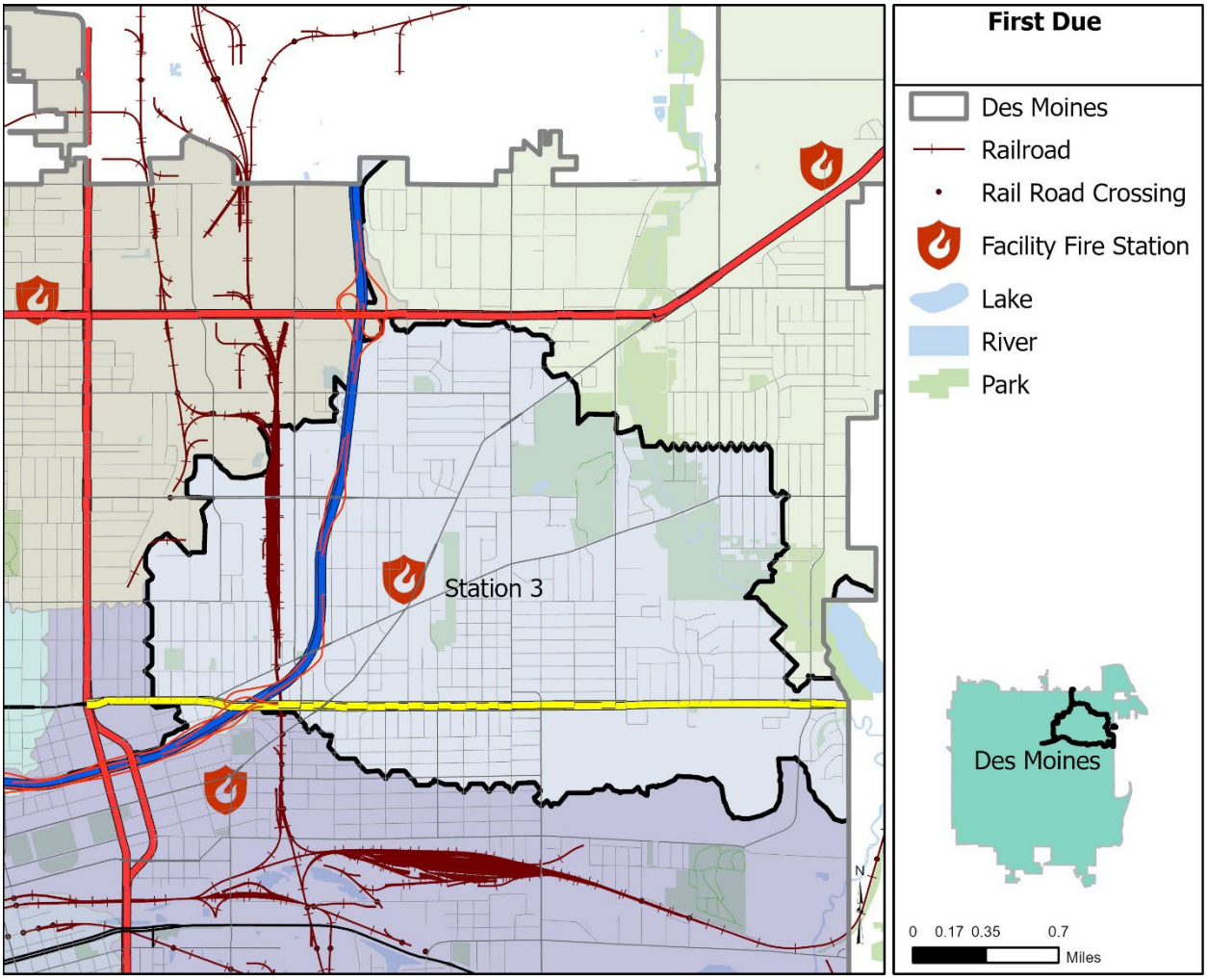
Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
HazMat	Low	Alarm Handling	00:27	01:04	**00:37**
		Turnout 1st SUPPRESSION	01:59	01:20	**00:39**
		Travel Time 1st SUPPRESSION - Distribution	04:20	04:00	**00:20**
		Travel Time ERF - Concentration	04:20	08:00	**03:40**
		Total Response Time 1st SUPPRESSION	**06:25**	**06:24**	**00:01**
		Incident Count 1st SUPPRESSION	3		
		Total Response Time ERF	**06:25**	**10:24**	**03:59**
		Incident Count ERF	3		
HazMat	Medium	Alarm Handling	01:36	01:04	**00:32**
		Turnout 1st SUPPRESSION	02:39	01:20	**01:19**
		Travel Time 1st SUPPRESSION - Distribution	07:12	04:00	**03:12**
		Travel Time ERF - Concentration	06:08	08:00	**01:52**
		Total Response Time 1st SUPPRESSION	**09:11**	**06:24**	**02:47**
		Incident Count 1st SUPPRESSION	17		
		Total Response Time ERF	**08:38**	**10:24**	**01:46**
		Incident Count ERF	17		
HazMat	High	Alarm Handling	01:43	01:04	**00:39**
		Turnout 1st SUPPRESSION	02:25	01:20	**01:05**
		Travel Time 1st SUPPRESSION - Distribution	04:06	04:00	**00:06**
		Travel Time ERF - Concentration	04:04	08:00	**03:56**
		Total Response Time 1st SUPPRESSION	**06:43**	**06:24**	**00:19**
		Incident Count 1st SUPPRESSION	10		
		Total Response Time ERF	**06:38**	**10:24**	**03:46**
		Incident Count ERF	1		

Performance Data for Planning Zone 2

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
WET	Medium	Alarm Handling	00:35	01:04	**00:29**
		Turnout Time 1st Unit	01:29	01:20	**00:09**
		Travel Time 1st Unit - Distribution	06:00	04:00	**02:00**
		Travel Time ERF - Concentration	05:47	08:00	**02:13**
		Total Response Time 1st Unit	**08:04**	**06:24**	**01:40**
		Incident Count 1st Unit - Distribution	1		
		Total Response Time ERF	**08:57**	**10:24**	**01:27**
		Incident Count ERF	1		
WET	Maximum	Alarm Handling	01:01	01:04	**00:03**
		Turnout Time 1st Unit	00:10	01:20	**01:10**
		Travel Time 1st Unit - Distribution	03:43	04:00	**00:17**
		Travel Time ERF - Concentration	08:00	08:00	**00:00**
		Total Response Time 1st Unit	**04:44**	**06:24**	**01:40**
		Incident Count 1st Unit - Distribution	1		
		Total Response Time ERF	**09:23**	**10:24**	**01:01**
		Incident Count ERF	1		


Incidents with Travel over 4 min First Unit
Fire Station
4 min Travel
Sparse
Dense
Railroad
FirstDue_2021
Des Moines
3
2
1
6
N
0 0.23 0.45 0.9
Miles

Planning Zone 3 - Station 3 First Due



Fire Station #3 is located at 2458 Easton Boulevard. The daily minimum staffing is 5 personnel. Resources operating out of this facility are:

Unit Type	Minimum Staffing		Qualifications	CY 2021 Unit Response Count	Inservice Time
	Qty	Rank			
Engine*	1 1 1	Captain Engineer Firefighter	EMT-B EMT-B EMT-B	1,337	47.27%
Medic	1 1	Senior Medic Fire Medic	Paramedic Paramedic	3,394	97.57%
Truck	1 1 1	Lieutenant Engineer Firefighter	EMT-B EMT-B EMT-B	2,689	98.02%
HazMat		Cross-Staffed		23	
Total	5*	Engine moved to Station 11 Nov. 2021 (8 prior to move)		7,443	

Characteristics of First Due Area

Population Density	Urban
Station Specialties	Station 3 personnel fill in as Hazardous Materials Technicians at Station 1 as daily staffing vacancies occur.
Area Description	Station 3 is primarily composed of small or medium-sized single-family residential dwellings with a few multi-family homes scattered throughout. The western corridor of this area, which runs north along Interstate 235 and the railroad tracks, has various sizes of industrial facilities and warehouses, providing additional transportation traffic in this area. This first-due area also includes a portion of the Iowa State Fairgrounds which draws large crowds during numerous weeks throughout the year.

Dispatches for service over the past 4 years:

Year	Units Dispatch Count	% Change
2019	6891	(2.24)
2020	6864	(0.39)
2021	7443	8.19

Dispatching by type and performance against agency benchmarks

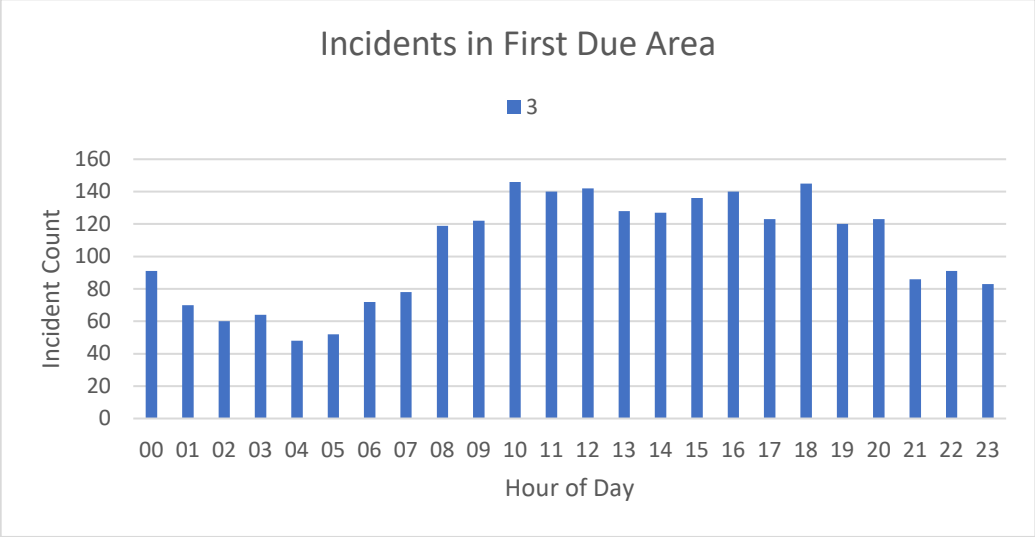
CY 2021 Turnout by Shift and Event Time			
Event Type	*NFPA Standard*	*Station*	
		90th	*% Met*
Fire	*1:20*	02:26	9%
EMS	*1:00*	02:20	58%
Tech Rescue	*1:20*	02:17	9%
HazMat	*1:20*	03:33	4%

Unit & Planning Zone Reliability

2021		Commit	Availability	Reliability		
Unit	Planning Zone	Unit Utilization	First Due Unit Availability	First-Due Area Reliability	First-Due Unit Reliability	Other than First-Due Unit Reliability
	Formula	secs from alarm to available/ secs in year service less out of service time	Unit to First Due/First Due Area	Any Unit to First Due within time limit / First Due Area Incidents	First Due unit to First Due area within time limit / First Due unit responding to First Due area	Other than First Due unit to First Due area within time limit / Other than First Due unit responding to First due area
MS03	3	23.5%	88.8%	79.3%	83.2%	47.3%
E03	3	7.8%	56.3%	66.2%	80.7%	47.4%
T03	3	9.2%	98.7%	76.8%	77.6%	16.7%

Unit Responses from Station – hour of day & day of week

Year	Hr	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Total
2021	0	47	40	28	26	30	31	42	244
	1	33	29	31	32	31	35	33	224
	2	38	25	18	24	22	27	37	191
	3	39	28	25	30	28	27	33	210
	4	24	13	29	31	31	22	22	172
	5	29	23	19	28	16	20	16	151
	6	34	27	24	33	22	22	29	191
	7	25	40	31	37	31	25	29	218
	8	43	37	59	49	37	52	40	317
	9	54	52	56	67	50	48	29	356
	10	47	50	62	40	53	53	56	361
	11	49	68	70	57	51	55	54	404
	12	60	64	56	60	50	43	63	396
	13	47	64	73	48	50	44	53	379
	14	55	58	59	61	64	65	56	418
	15	51	63	56	63	57	56	51	397
	16	46	60	69	54	52	60	51	392
	17	57	61	55	59	49	58	44	383
	18	55	57	67	72	63	60	57	431
	19	53	64	55	55	49	57	49	382
	20	45	50	60	60	50	45	60	370
	21	44	48	47	32	39	43	52	305
	22	33	41	34	29	35	48	54	274
	23	32	56	37	39	32	28	36	260
	Total	1040	1118	1120	1086	992	1024	1046	7426

Incidents occurring within First Due	
Major Transportation	• Interstate 235 runs north and south through the western portion of this planning zone • East-west thoroughfares include University Avenue and East Euclid Avenue • Easton Boulevard and Hubbell Avenue crisscross this territory at Station 3's location, providing two major thoroughfares from southwest to northeast
Major Infrastructure	• Railroad lines (north-south through the western portion of this planning zone)
Major Service and Utilities	• Water and Sewer • Natural Gas • Electric • Communications
Medical Facilities	• Broadlawns East Clinic
Schools	• Brubaker Elementary (2900 E. 42nd Street) • Garton Elementary (2820 E. 24th Street) • Grandview Christian School (2905 NE 46th Street) • Hoyt Middle School (2700 E. 42nd Street) • Joshua Christian Academy (1740 Garfield Avenue) • McKee Education Center (2116 E 39th Court) • Stowe Elementary (1411 E. 33rd Street)
Governmental Facilities	• Des Moines Eastside Public Library (2559 Hubbell Avenue) • Des Moines Teachout Aquatic Center (2601 Hubbell Avenue)
Primary Target Hazard Fire	• Heavy industrial and warehouse occupancies are located along the Delaware and Dixon corridor. • Airgas Welding Supply (2525 Dixon Avenue) • American Spirit Graphics (2525 Delaware Avenue) • Blue Ridge Logistics (1500 Delaware Avenue) • Valley View Village (2571 Guthrie Avenue) • Stonecrest Apartments (3330 E. 25th Street)

Primary Target Hazard Non-Fire	• AE Dairy (2201 Hubbell Avenue) • Iowa State Fairgrounds (3000 E. Grand Avenue) • Valley View Village (2571 Guthrie Avenue)

Performance Data for Planning Zone 3

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
Fire	Low	Alarm Handling	00:28	01:04	00:36
		Turnout 1st SUPPRESSION	02:36	01:20	01:16
		Travel Time 1st SUPPRESSION - Distribution	04:39	04:00	00:39
		Travel Time ERF - Concentration	05:05	08:00	02:55
		Total Response Time 1st SUPPRESSION	**06:35**	**06:24**	00:11
		Incident Count 1st SUPPRESSION	19		
		Total Response Time ERF	**06:26**	**10:24**	03:58
		Incident Count ERF	15		
Fire	Medium	Alarm Handling	00:35	01:04	00:29
		Turnout 1st SUPPRESSION	02:25	01:20	01:05
		Travel Time 1st SUPPRESSION - Distribution	05:48	04:00	01:48
		Travel Time ERF - Concentration	07:43	08:00	00:17
		Total Response Time 1st SUPPRESSION	**07:59**	**06:24**	01:35
		Incident Count 1st SUPPRESSION	141		
		Total Response Time ERF	**08:48**	**10:24**	01:36
		Incident Count ERF	47		
Fire	High	Alarm Handling	00:34	01:04	00:30
		Turnout 1st SUPPRESSION	02:30	01:20	01:10
		Travel Time 1st SUPPRESSION - Distribution	06:42	04:00	02:42
		Travel Time ERF - Concentration	06:42	08:00	01:18
		Total Response Time 1st SUPPRESSION	**08:57**	**06:24**	02:33
		Incident Count 1st SUPPRESSION	63		
		Total Response Time ERF	**08:57**	**10:24**	01:27
		Incident Count ERF	63		
Fire	Maximum	Alarm Handling	00:29	01:04	00:35
		Turnout 1st SUPPRESSION	02:18	01:20	00:58
		Travel Time 1st SUPPRESSION - Distribution	04:02	04:00	00:02
		Travel Time ERF - Concentration	11:44	08:00	03:44
		Total Response Time 1st SUPPRESSION	**06:10**	**06:24**	00:14
		Incident Count 1st SUPPRESSION	141		
		Total Response Time ERF	**13:16**	**10:24**	02:52
		Incident Count ERF	47		

Performance Data for Planning Zone 3

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
EMS	Low	Alarm Handling	00:28	01:04	00:36
		Turnout Time 1st Unit	01:54	01:00	00:54
		Travel Time 1st Unit - Distribution	03:58	04:00	00:02
		Travel Time ERF - Concentration	04:01	08:00	03:59
		Total Response Time 1st Unit	**06:19**	**06:04**	00:15
		Incident Count 1st Unit - Distribution	24		
		Total Response Time ERF	**06:29**	**10:04**	03:35
		Incident Count ERF	22		
EMS	Medium	Alarm Handling	00:37	01:04	00:27
		Turnout Time 1st Unit	02:30	01:00	01:30
		Travel Time 1st Unit - Distribution	05:55	04:00	01:55
		Travel Time ERF - Concentration	06:19	08:00	01:41
		Total Response Time 1st Unit	**07:41**	**06:04**	01:37
		Incident Count 1st Unit - Distribution	249		
		Total Response Time ERF	**08:03**	**10:04**	02:01
		Incident Count ERF	235		
EMS	High	Alarm Handling	00:33	01:04	00:31
		Turnout Time 1st Unit	02:18	01:00	01:18
		Travel Time 1st Unit - Distribution	05:11	04:00	01:11
		Travel Time ERF - Concentration	05:20	08:00	02:40
		Total Response Time 1st Unit	**07:06**	**06:04**	01:02
		Incident Count 1st Unit - Distribution	1,559		
		Total Response Time ERF	**07:16**	**10:04**	02:48
		Incident Count ERF	1,512		
EMS	Maximum	Alarm Handling	00:34	01:04	00:30
		Turnout Time 1st Unit	02:18	01:00	01:18
		Travel Time 1st Unit - Distribution	04:52	04:00	00:52
		Travel Time ERF - Concentration	05:28	08:00	02:32
		Total Response Time 1st Unit	**06:51**	**06:04**	00:47
		Incident Count 1st Unit - Distribution	2,213		
		Total Response Time ERF	**07:35**	**10:04**	02:29
		Incident Count ERF	2,088		

Performance Data for Planning Zone 3

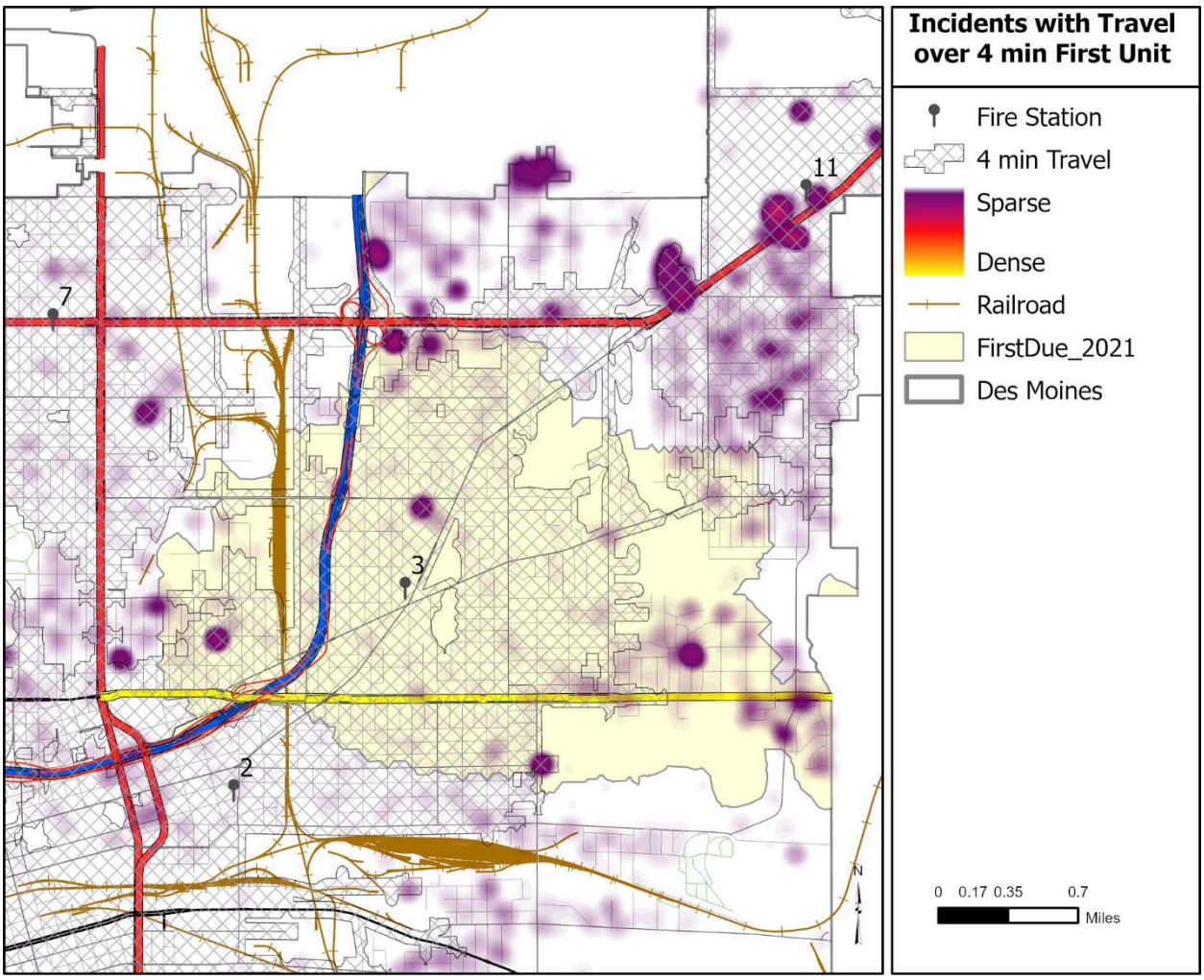
Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
Tech Rescue	Medium	Alarm Handling	00:39	01:04	00:25
		Turnout 1st SUPPRESSION	01:03	01:20	00:17
		Travel Time 1st SUPPRESSION - Distribution	08:20	04:00	04:20
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st SUPPRESSION	**09:13**	**06:24**	02:49
		Incident Count 1st SUPPRESSION	2		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		
Tech Rescue	High	Alarm Handling	00:38	01:04	00:26
		Turnout 1st SUPPRESSION	01:47	01:20	00:27
		Travel Time 1st SUPPRESSION - Distribution	04:15	04:00	00:15
		Travel Time ERF - Concentration	08:00	08:00	00:00
		Total Response Time 1st SUPPRESSION	**05:55**	**06:24**	00:29
		Incident Count 1st SUPPRESSION	5		
		Total Response Time ERF	**10:11**	**10:24**	00:13
		Incident Count ERF	3		
Tech Rescue	Maximum	Alarm Handling		01:04	
		Turnout Time 1st Unit		01:20	
		Travel Time 1st SUPPRESSION - Distribution		04:00	
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st SUPPRESSION		**06:24**	
		Incident Count 1st SUPPRESSION	0		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		

Performance Data for Planning Zone 3

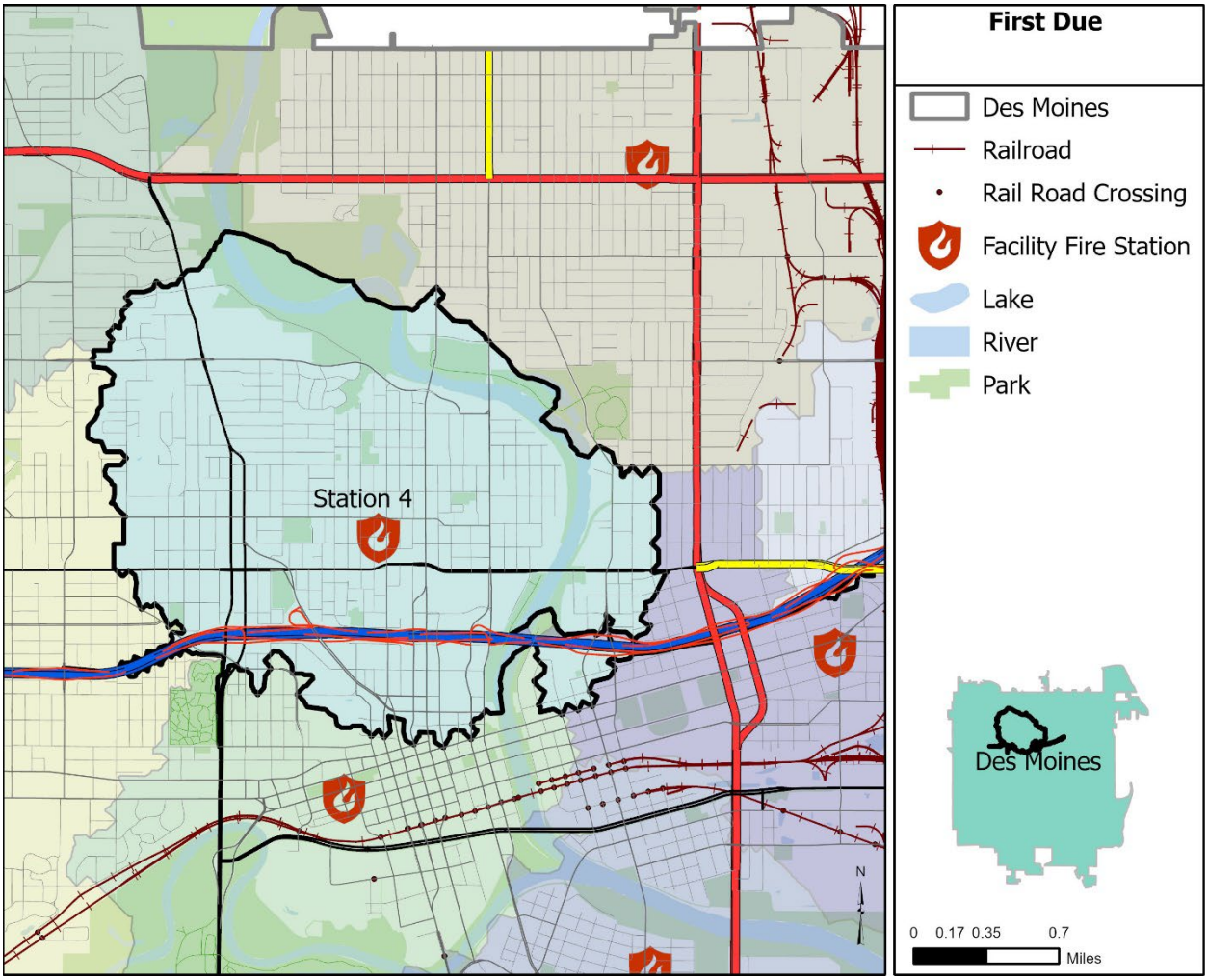
Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
HazMat	Low	Alarm Handling	00:16	01:04	**00:48**
		Turnout 1st SUPPRESSION	02:07	01:20	**00:47**
		Travel Time 1st SUPPRESSION - Distribution	03:17	04:00	**00:43**
		Travel Time ERF - Concentration	03:17	08:00	**04:43**
		Total Response Time 1st SUPPRESSION	**05:23**	**06:24**	**01:01**
		Incident Count 1st SUPPRESSION	4		
		Total Response Time ERF	**05:23**	**10:24**	**05:01**
		Incident Count ERF	4		
HazMat	Medium	Alarm Handling	00:55	01:04	**00:09**
		Turnout 1st SUPPRESSION	02:56	01:20	**01:36**
		Travel Time 1st SUPPRESSION - Distribution	05:30	04:00	**01:30**
		Travel Time ERF - Concentration	06:13	08:00	**01:47**
		Total Response Time 1st SUPPRESSION	**08:31**	**06:24**	**02:07**
		Incident Count 1st SUPPRESSION	24		
		Total Response Time ERF	**08:48**	**10:24**	**01:36**
		Incident Count ERF	21		
HazMat	High	Alarm Handling	01:22	01:04	**00:18**
		Turnout 1st SUPPRESSION	02:23	01:20	**01:03**
		Travel Time 1st SUPPRESSION - Distribution	04:04	04:00	**00:04**
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st SUPPRESSION	**07:49**	**06:24**	**01:25**
		Incident Count 1st SUPPRESSION	2		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		

Performance Data for Planning Zone 3

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
WET	Medium	Alarm Handling	00:32	01:04	**00:32**
		Turnout Time 1st Unit	01:05	01:20	**00:15**
		Travel Time 1st Unit - Distribution	01:09	04:00	**02:51**
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st Unit	**02:46**	**06:24**	**03:38**
		Incident Count 1st Unit - Distribution	1		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		
WET	Maximum	Alarm Handling	00:05	01:04	**00:59**
		Turnout Time 1st Unit	00:09	01:20	**01:11**
		Travel Time 1st Unit - Distribution	00:05	04:00	**03:55**
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st Unit	**00:19**	**06:24**	**06:05**
		Incident Count 1st Unit - Distribution	1		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		


Incidents with Travel over 4 min First Unit
Fire Station
4 min Travel
Sparse
Dense
Railroad
FirstDue_2021
Des Moines
11
7
3
2
1
N
0 0.17 0.35 0.7
Miles

Planning Zone 4 - Station 4 First Due



Fire Station # 4 is located at 917 University Avenue. The daily minimum staffing is 5 personnel. Resources operating out of this facility are:

Unit Type	Minimum Staffing		Qualifications	CY 2021 Unit Response Count	Inservice Time
	Qty	Rank			
Engine	1 1 1	Captain Engineer Firefighter	EMT B & T/R Certified EMT B & T/R Certified EMT B & T/R Certified	3534	98.42%
Medic	1 1	Senior Fire Medic Fire Medic	Paramedic & T/R Certified Paramedic & T/R Certified	3801	95.88%
Power Unit	2	Cross Staffed		16	
Total	5			7351	

Characteristics of First Due Area

Population Density	Urban
Station Specialties	Station 4 personnel, in conjunction with Station 7 personnel, serve as members of the Technical Rescue Team. Technical Rescue responses require specialized equipment on Engine 4, Medic 4, and Technical Rescue 7. All units are simultaneously dispatched to calls for technical rescue incidents and perform operations as one cohesive team.
Area Description	Planning zone 4 represents the greatest diversity present in the city regarding both the demographic makeup of the residents and multiple different types of occupancy classifications within this planning zone. The Station 4 first-due response area sits in the city's center on the northern edge of the downtown corridor. Even though it is geographically small, the mixture of occupancies consisting of single-family dwellings, mid-rise multiple-family residences, high-rise commercial and residential, 3 institutions of higher learning, 3 major healthcare facilities, and numerous large warehouse structures generate a high demand for service. This area of the city is also densely populated, with many daily visitors. Most of the structures within the response area were built in the early 1900s with the least amount of built-in fire protection systems present in these occupancies.

Dispatches for service over the past 4 years:

Year	Units Dispatch Count	% Change
2019	6693	3.06
2020	6480	(3.18)
2021	7351	13.19

Dispatching by type and performance against agency benchmarks

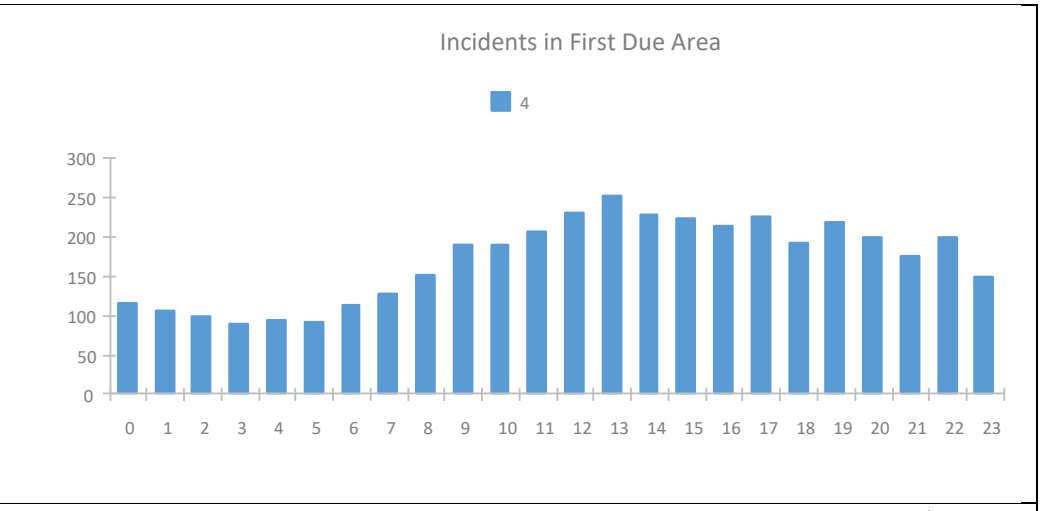
CY 2021 Turnout by Shift and Event Time			
Event Type	*NFPA Standard*	*Station*	
		90th	*% Met*
Fire	*1:20*	**02:22**	15%
EMS	*1:00*	**02:11**	57%
Tech Rescue	*1:20*	**02:36**	32%
HazMat	*1:20*	**02:20**	10%
WET	*1:20*	**01:53**	13%

Unit & Planning Zone Reliability

2021		Commit	Availability	Reliability		
Unit	Planning Zone	Unit Utilization	First Due Unit Availability	First-Due Area Reliability	First-Due Unit Reliability	Other than First-Due Unit Reliability
	Formula	secs from alarm to available/ secs in year service less out of service time	Unit to First Due/First Due Area	Any Unit to First Due within time limit / First Due Area Incidents	First Due unit to First Due area within time limit / First Due unit responding to First Due area	Other than First Due unit to First Due area within time limit / Other than First Due unit responding to First due area
MS04	4	21.9%	76.7%	81.6%	86.6%	64.8%
E04	4	11.6%	83.6%	80.6%	83.7%	64.5%

Unit Responses from Station – hour of day & day of week

Year	Hr	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Total
2021	0	42	38	41	24	30	30	32	237
	1	34	29	22	18	31	22	49	205
	2	38	19	20	31	14	36	29	187
	3	31	22	28	16	20	14	27	158
	4	34	29	20	18	30	27	21	179
	5	20	24	21	24	16	25	25	155
	6	17	30	28	22	19	29	34	179
	7	25	30	27	23	44	43	22	214
	8	32	38	39	43	48	51	40	291
	9	43	54	48	54	60	55	40	354
	10	33	56	53	52	46	47	58	345
	11	44	63	66	48	40	54	51	366
	12	48	54	61	77	57	54	46	397
	13	50	67	71	61	49	62	54	414
	14	61	44	62	57	57	63	39	383
	15	46	69	60	69	52	49	57	402
	16	48	61	54	59	53	60	60	395
	17	55	44	60	54	71	42	59	385
	18	63	59	56	39	40	52	58	367
	19	52	50	47	49	53	70	62	383
	20	51	42	48	59	47	53	59	359
	21	46	44	47	40	52	59	57	345
	22	53	48	41	54	45	47	59	347
	23	46	44	40	30	37	48	43	288
	Total	1012	1058	1060	1021	1011	1092	1081	7335

Incidents occurring within First Due	
Major Transportation	• North-south thoroughfares include Martin Luther King Jr. Parkway/19th Street, 2nd Avenue, and 6th Avenue • East-west thoroughfares include Interstate 235 runs along the southern edge of the planning zones, University Avenue bisects the planning zone, and Hickman Road, which runs along the northern portion of the planning zone.
Major Infrastructure	• Des Moines Waterworks Supply Intake (1125 Prospect Road) • Numerous Bridges over the Des Moines River and I-235 freeway
Major Service and Utilities	• Water and Sewer • Natural Gas • Electric • Communications
Medical Facilities	• Broadlawns Medical Center (1801 Hickman Road) • Iowa Lutheran Hospital (700 E. University Avenue) • MercyOne Medical Center (1111 6th Avenue)

Schools	• Drake University (2507 University Avenue)
	• Des Moines Area Community College – Urban Campus (1100 7th Street)
	• Mercy College of Health Sciences (928 6th Avenue)
	• Des Moines Public Schools
	  ○ North High School (501 Holcomb Avenue)
	  ○ Middle School Alternative Center (1801 16th Street)
	  ○ Carver Community Elementary (705 E. University Avenue)
	  ○ Edmunds Elementary (950 15th Street)
	  ○ King Elementary (1849 Forest Avenue)
	  ○ Moulton Elementary (1541 8th Street)

Governmental Facilities	• United States Post Office – Main Des Moines Facility (1165 2nd Avenue) • Polk County Emergency Management/Public Health (1907 Carpenter)

Primary Target Hazard Fire	• Elderly and Multi-family Residential Units
	  ○ Corinthian Gardens (1011 University Avenue)
	  ○ Oak Ridge Apartments (926 & 929 Oakridge Drive)
	  ○ Rose of Des Moines (1330 19th Street)
	  ○ Royal View Apartments (1101 Crocker Street)
	• United States Post Office – Main Des Moines Facility (1165 2nd Avenue)

	• Health Care Institutions
	  ○ Broadlawns Medical Center (1801 Hickman Road)
	  ○ Iowa Lutheran Hospital (700 E. University Avenue)
	  ○ MercyOne Medical Center (1111 6th Avenue)
	• Wells Fargo Arena/Hy-Vee Hall (730 3rd Street)
	• Drake University (2507 University Avenue)

Primary Target Hazard Non-Fire	• Wells Fargo Arena/Hy-Vee Hall (730 3rd Street) • Praxair (1700 2nd Avenue) • United States Post Office – Main Des Moines Facility (1165 2nd Avenue) • Lauridsen State Park (901 2nd Avenue) • Drake University (2507 University Avenue) • Des Moines River

Performance Data for Planning Zone 4

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
Fire	Low	Alarm Handling	01:09	01:04	**00:05**
		Turnout 1st SUPPRESSION	02:06	01:20	**00:46**
		Travel Time 1st SUPPRESSION - Distribution	04:36	04:00	**00:36**
		Travel Time ERF - Concentration	04:44	08:00	**03:16**
		Total Response Time 1st SUPPRESSION	**06:48**	**06:24**	**00:24**
		Incident Count 1st SUPPRESSION	10		
		Total Response Time ERF	**07:43**	**10:24**	**02:41**
		Incident Count ERF	7		
Fire	Medium	Alarm Handling	00:33	01:04	**00:32**
		Turnout 1st SUPPRESSION	02:23	01:20	**01:03**
		Travel Time 1st SUPPRESSION - Distribution	05:21	04:00	**01:21**
		Travel Time ERF - Concentration	07:00	08:00	**01:00**
		Total Response Time 1st SUPPRESSION	**07:29**	**06:24**	**01:05**
		Incident Count 1st SUPPRESSION	216		
		Total Response Time ERF	**09:31**	**10:24**	**00:53**
		Incident Count ERF	58		
Fire	High	Alarm Handling	00:28	01:04	**00:36**
		Turnout 1st SUPPRESSION	02:52	01:20	**01:32**
		Travel Time 1st SUPPRESSION - Distribution	05:56	04:00	**01:56**
		Travel Time ERF - Concentration	05:56	08:00	**02:04**
		Total Response Time 1st SUPPRESSION	**08:11**	**06:24**	**01:47**
		Incident Count 1st SUPPRESSION	62		
		Total Response Time ERF	**08:11**	**10:24**	**02:13**
		Incident Count ERF	61		
Fire	Maximum	Alarm Handling	00:31	01:04	**00:33**
		Turnout 1st SUPPRESSION	02:08	01:20	**00:48**
		Travel Time 1st SUPPRESSION - Distribution	04:01	04:00	**00:01**
		Travel Time ERF - Concentration	11:03	08:00	**03:03**
		Total Response Time 1st SUPPRESSION	**05:55**	**06:24**	**00:29**
		Incident Count 1st SUPPRESSION	203		
		Total Response Time ERF	**12:53**	**10:24**	**02:29**
		Incident Count ERF	35		

Performance Data for Planning Zone 4

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
EMS	Low	Alarm Handling	00:33	01:04	00:31
		Turnout Time 1st Unit	02:06	01:00	01:06
		Travel Time 1st Unit - Distribution	05:31	04:00	01:31
		Travel Time ERF - Concentration	05:23	08:00	02:37
		Total Response Time 1st Unit	**07:23**	**06:04**	01:19
		Incident Count 1st Unit - Distribution	24		
		Total Response Time ERF	**07:17**	**10:04**	02:47
		Incident Count ERF	19		
EMS	Medium	Alarm Handling	00:36	01:04	00:28
		Turnout Time 1st Unit	02:12	01:00	01:12
		Travel Time 1st Unit - Distribution	05:17	04:00	01:17
		Travel Time ERF - Concentration	05:30	08:00	02:30
		Total Response Time 1st Unit	**07:08**	**06:04**	01:04
		Incident Count 1st Unit - Distribution	389		
		Total Response Time ERF	**07:20**	**10:04**	02:44
		Incident Count ERF	358		
EMS	High	Alarm Handling	00:35	01:04	00:29
		Turnout Time 1st Unit	02:10	01:00	01:10
		Travel Time 1st Unit - Distribution	04:33	04:00	00:33
		Travel Time ERF - Concentration	04:52	08:00	03:08
		Total Response Time 1st Unit	**06:27**	**06:04**	00:23
		Incident Count 1st Unit - Distribution	2,490		
		Total Response Time ERF	**06:46**	**10:04**	03:18
		Incident Count ERF	2,371		
EMS	Maximum	Alarm Handling	00:35	01:04	00:29
		Turnout Time 1st Unit	02:05	01:00	01:05
		Travel Time 1st Unit - Distribution	04:24	04:00	00:24
		Travel Time ERF - Concentration	05:01	08:00	02:59
		Total Response Time 1st Unit	**06:12**	**06:04**	00:08
		Incident Count 1st Unit - Distribution	3,783		
		Total Response Time ERF	**06:58**	**10:04**	03:06
		Incident Count ERF	3,565		

Performance Data for Planning Zone 4

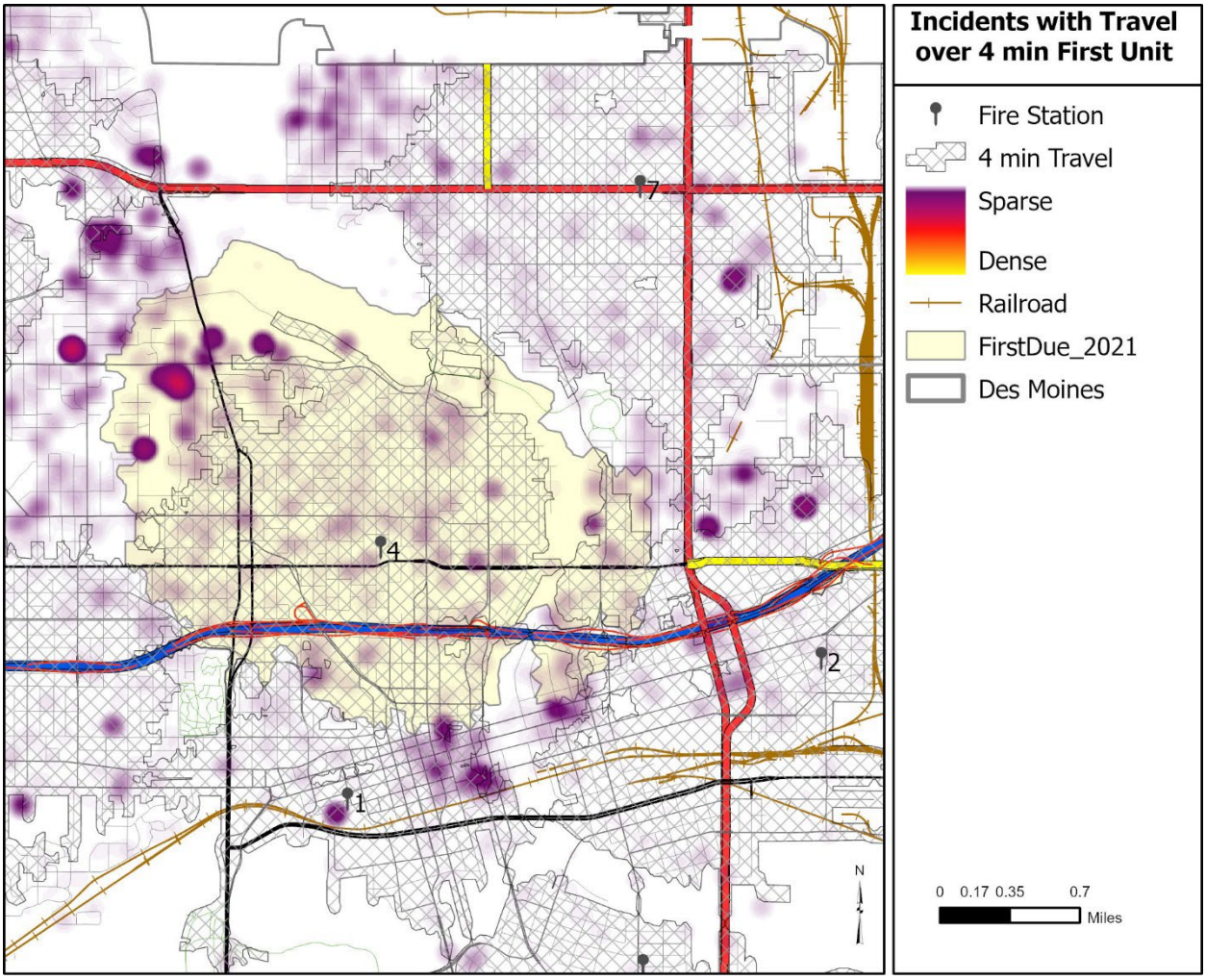
Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
Tech Rescue	Medium	Alarm Handling	00:28	01:04	00:36
		Turnout 1st SUPPRESSION	02:14	01:20	00:54
		Travel Time 1st SUPPRESSION - Distribution	03:59	04:00	00:01
		Travel Time ERF - Concentration		08:00	08:00
		Total Response Time 1st SUPPRESSION	**05:45**	**06:24**	00:39
		Incident Count 1st SUPPRESSION	5		
		Total Response Time ERF		**10:24**	10:24
		Incident Count ERF	0		
Tech Rescue	High	Alarm Handling	00:57	01:04	00:07
		Turnout 1st SUPPRESSION	02:16	01:20	00:56
		Travel Time 1st SUPPRESSION - Distribution	04:38	04:00	00:38
		Travel Time ERF - Concentration	05:57	08:00	02:03
		Total Response Time 1st SUPPRESSION	**08:29**	**06:24**	02:05
		Incident Count 1st SUPPRESSION	14		
		Total Response Time ERF	**08:15**	**10:24**	02:08
		Incident Count ERF	6		
Tech Rescue	Maximum	Alarm Handling		01:04	01:04
		Turnout Time 1st Unit		01:20	01:20
		Travel Time 1st SUPPRESSION - Distribution		04:00	04:00
		Travel Time ERF - Concentration		08:00	08:00
		Total Response Time 1st SUPPRESSION		**06:24**	06:24
		Incident Count 1st SUPPRESSION	0		
		Total Response Time ERF		**10:24**	10:24
		Incident Count ERF	0		

Performance Data for Planning Zone 4

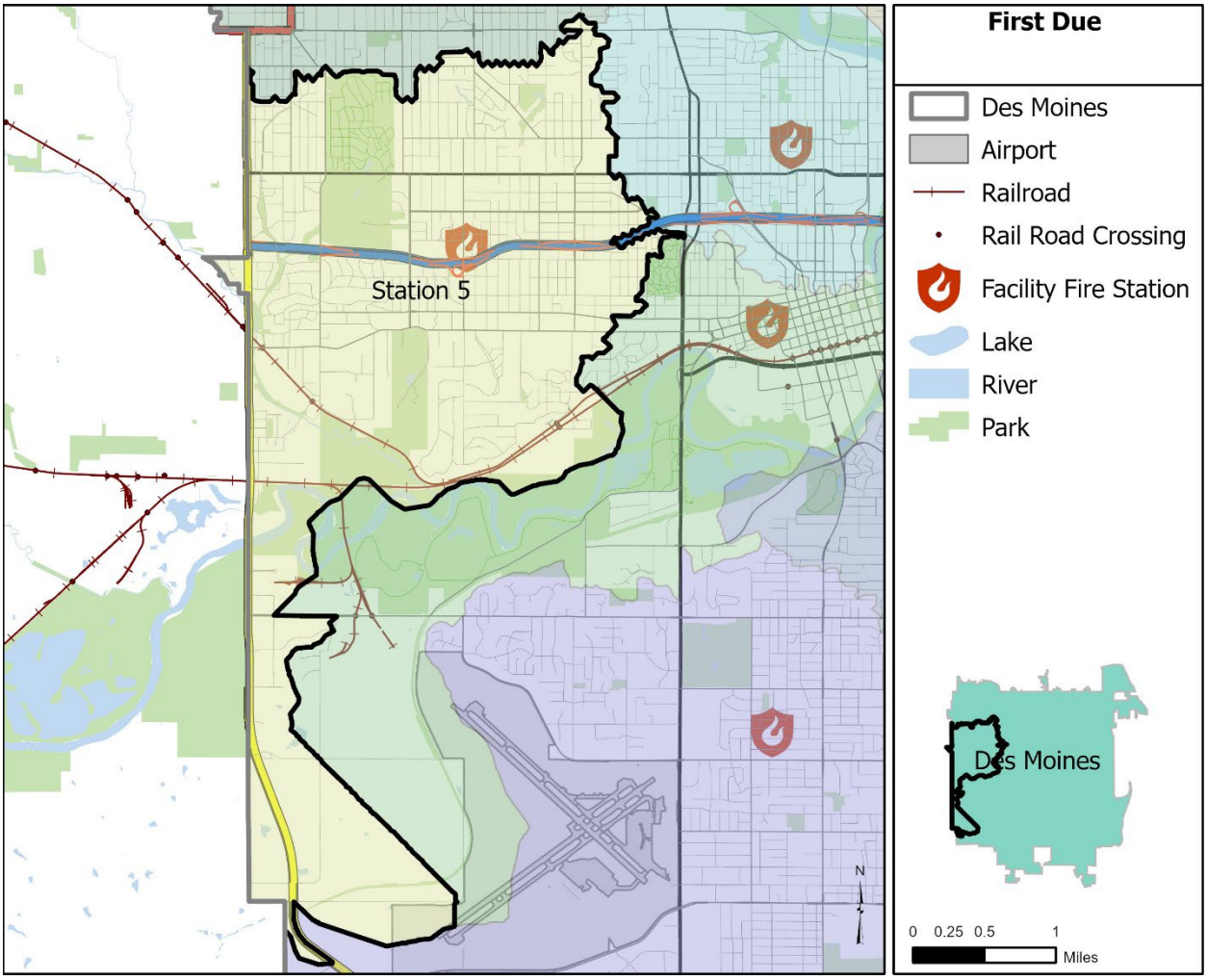
Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
HazMat	Low	Alarm Handling	00:17	01:04	**00:47**
		Turnout 1st SUPPRESSION	02:50	01:20	**01:30**
		Travel Time 1st SUPPRESSION - Distribution	05:08	04:00	**01:08**
		Travel Time ERF - Concentration	05:08	08:00	**02:52**
		Total Response Time 1st SUPPRESSION	**07:56**	**06:24**	**01:32**
		Incident Count 1st SUPPRESSION	5		
		Total Response Time ERF	**07:56**	**10:24**	**02:28**
		Incident Count ERF	5		
HazMat	Medium	Alarm Handling	01:16	01:04	**00:12**
		Turnout 1st SUPPRESSION	02:42	01:20	**01:22**
		Travel Time 1st SUPPRESSION - Distribution	06:07	04:00	**02:07**
		Travel Time ERF - Concentration	06:04	08:00	**01:56**
		Total Response Time 1st SUPPRESSION	**08:15**	**06:24**	**01:51**
		Incident Count 1st SUPPRESSION	30		
		Total Response Time ERF	**07:46**	**10:24**	**02:38**
		Incident Count ERF	27		
HazMat	High	Alarm Handling	01:17	01:04	**00:13**
		Turnout 1st SUPPRESSION	02:44	01:20	**01:24**
		Travel Time 1st SUPPRESSION - Distribution	04:14	04:00	**00:14**
		Travel Time ERF - Concentration	06:36	08:00	**01:24**
		Total Response Time 1st SUPPRESSION	**07:29**	**06:24**	**01:05**
		Incident Count 1st SUPPRESSION	15		
		Total Response Time ERF	**10:18**	**10:24**	**00:06**
		Incident Count ERF	1		

Performance Data for Planning Zone 4

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
WET	Medium	Alarm Handling	00:42	01:04	**00:22**
		Turnout Time 1st Unit	01:08	01:20	**00:12**
		Travel Time 1st Unit - Distribution	02:40	04:00	**01:20**
		Travel Time ERF - Concentration		08:00	**08:00**
		Total Response Time 1st Unit	**04:29**	**06:24**	**01:55**
		Incident Count 1st Unit - Distribution	3		
		Total Response Time ERF		**10:24**	**10:24**
		Incident Count ERF	0		
WET	Maximum	Alarm Handling	01:10	01:04	**00:06**
		Turnout Time 1st Unit	01:52	01:20	**00:32**
		Travel Time 1st Unit - Distribution	04:22	04:00	**00:22**
		Travel Time ERF - Concentration	18:29	08:00	**10:29**
		Total Response Time 1st Unit	**06:28**	**06:24**	**00:04**
		Incident Count 1st Unit - Distribution	16		
		Total Response Time ERF	**20:10**	**10:24**	**09:46**
		Incident Count ERF	5		


Incidents with Travel over 4 min First Unit
Fire Station
4 min Travel
Sparse
Dense
Railroad
FirstDue_2021
Des Moines
7
4
2
1
N
0 0.17 0.35 0.7
Miles

Planning Zone 5 - Station 5 First Due



Fire Station #5 is located at 711 42nd Street. The daily minimum staffing is 5 personnel. Resources operating out of this facility are for:

Unit Type	Minimum Staffing		Qualifications	CY 2021 Unit Response Count	Inservice Time
	Qty	Rank			
Engine	1 1 1	Captain Engineer Firefighter	EMT-B EMT-B EMT-B	2,542	99.99%
Medic	1 1	Senior Medic Fire Medic	Paramedic Paramedic	2,378	96.20%
Mobile Command		Crossed-Staffed			
Total	5			4,920	

Characteristics of First Due Area

Population Density	Urban
Station Specialties	Engine 5 is 1 of 4 extrication companies throughout the city equipped with specialized equipment and trained staff. Station 5 houses the only Fire Department Mobile Command Unit. Mobile Command is used for long-duration incidents (e.g., significant fires and pre-planned special events). This unit is cross-staffed by Station 5 personnel, administrative or off-duty personnel.
Area Description	Station 5 has an assortment of building and occupancy classifications within the planning zone. Many single-family dwellings range from the late 1800s to modern new construction. A vast range of multi-family homes, from early 1900s duplexes to the contemporary high-rise, upscale condominium living complex—commercial structures from one-story strip malls to high-rise office and mixed-use. A small number of industrial warehouses and manufacturing are also in this inventory. Racoon River and Walnut Creek make this planning zone suspectable to seasonal flooding. Interstate commerce and daily commuter traffic impact travel in this zone. It has a vast mix of socioeconomic factors that provide a diverse population of residents and workforce.

Dispatches for service over the past 4 years:

Year	Units Dispatch Count	% Change
2019	4763	1.73
2020	4535	(4.79)
2021	4920	8.49

Dispatching by type and performance against agency benchmarks

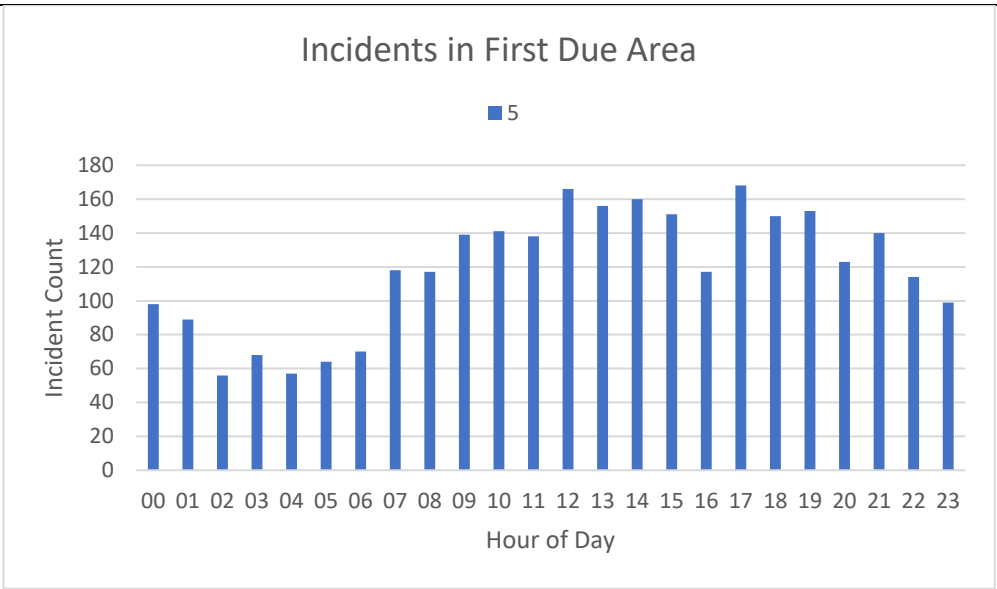
CY 2021 Turnout by Shift and Event Time			
Event Type	*NFPA Standard*	*Station*	
		90th	*% Met*
Fire	*1:20*	02:28	10%
EMS	*1:00*	02:15	59%
Tech Rescue	*1:20*	01:41	15%
HazMat	*1:20*	02:40	13%

Unit & Planning Zone Reliability

2021		Commit	Availability	Reliability		
Unit	Planning Zone	Unit Utilization	First Due Unit Availability	First-Due Area Reliability	First-Due Unit Reliability	Other than First-Due Unit Reliability
	Formula	secs from alarm to available/ secs in year service less out of service time	Unit to First Due/First Due Area	Any Unit to First Due within time limit / First Due Area Incidents	First Due unit to First Due area within time limit / First Due unit responding to First Due area	Other than First Due unit to First Due area within time limit / Other than First Due unit responding to First due area
MS05	5	15.4%	81.7%	75.7%	80.5%	53.8%
E05	5	9.4%	85.1%	73.7%	75.5%	63.6%

Unit Responses from Station – hour of day & day of week

Year	Hr	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Total
2021	0	25	21	11	21	25	16	29	148
	1	30	17	15	17	18	13	30	140
	2	24	8	10	13	9	11	22	97
	3	17	16	15	9	22	9	25	113
	4	24	15	8	9	11	10	11	88
	5	12	20	13	13	15	13	19	105
	6	25	18	13	14	25	18	10	123
	7	17	43	25	19	28	30	28	190
	8	31	32	19	29	27	34	25	197
	9	34	26	43	37	40	34	19	233
	10	29	36	40	23	47	37	26	238
	11	36	42	36	45	37	39	24	259
	12	44	50	44	52	41	43	34	308
	13	37	53	46	43	35	35	36	285
	14	36	42	46	49	47	42	35	297
	15	31	36	37	29	43	46	35	257
	16	37	33	24	31	43	33	23	224
	17	42	23	47	49	49	42	33	285
	18	40	37	44	33	24	32	41	251
	19	40	23	34	41	46	43	46	273
	20	32	27	17	30	33	33	34	206
	21	33	39	42	40	30	27	31	242
	22	20	23	29	21	40	29	34	196
	23	21	28	24	18	28	27	19	165
	Total	717	708	682	685	763	696	669	4920

Incidents occurring within First Due	
Major Transportation	• Interstate 235 runs east and west through the central portion of this planning zone • East-west thoroughfares include Grand Avenue, Ingersoll Avenue, University Avenue • North-south thoroughfares include 63rd Street (Iowa Highway 28)
Major Infrastructure	• High-Pressure Natural Gas • National Fiber Optic Trunk Line
Major Service and Utilities	• Water and Sewer • Natural Gas • Electric • Communications
Medical Facilities	• Des Moines University Medical School and Clinics
Schools	• Roosevelt High School (4419 Center St) • Hubbell Elementary School (800 42nd St) • Callahan Elementary School (3010 Center St) • Ruby Van Meter Secondary Special School (710 28th St) • Smouse Opportunity School (2820 Center St) • Bergman Academy (100 45th St) • St. Augustin Catholic School (4320 Grand Ave) • Des Moines University (3200 Grand)
Governmental Facilities	None
Primary Target Hazard Fire	• Wesley Acres Retirement Community (3520 Grand Ave) • Plymouth Place High Rise Living Center (4111 Ingersol Ave) • Scottish Rite Park (3909 Woodland Ave) • Grand Condos (3660 Grand Ave) • West Grand Towers Condo (3663 Grand Ave) • 3000 Grand Apartments (3000 Grand Ave)

Primary Target Hazard Non-Fire	• Raccoon River • Walnut Creek • Wesley Acres Retirement Community • Drake University

Performance Data for Planning Zone 5

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
Fire	Low	Alarm Handling	00:20	01:04	**00:44**
		Turnout 1st SUPPRESSION	01:59	01:20	**00:39**
		Travel Time 1st SUPPRESSION - Distribution	08:13	04:00	**04:13**
		Travel Time ERF - Concentration	06:43	08:00	**01:18**
		Total Response Time 1st SUPPRESSION	**10:09**	**06:24**	**03:45**
		Incident Count 1st SUPPRESSION	10		
		Total Response Time ERF	**08:34**	**10:24**	**01:49**
		Incident Count ERF	5		
Fire	Medium	Alarm Handling	00:34	01:04	**00:30**
		Turnout 1st SUPPRESSION	02:26	01:20	**01:06**
		Travel Time 1st SUPPRESSION - Distribution	08:03	04:00	**04:03**
		Travel Time ERF - Concentration	10:42	08:00	**02:42**
		Total Response Time 1st SUPPRESSION	**10:09**	**06:24**	**03:45**
		Incident Count 1st SUPPRESSION	133		
		Total Response Time ERF	**12:58**	**10:24**	**02:34**
		Incident Count ERF	50		
Fire	High	Alarm Handling	00:25	01:04	**00:39**
		Turnout 1st SUPPRESSION	02:38	01:20	**01:18**
		Travel Time 1st SUPPRESSION - Distribution	09:39	04:00	**05:39**
		Travel Time ERF - Concentration	09:39	08:00	**01:39**
		Total Response Time 1st SUPPRESSION	**11:36**	**06:24**	**05:12**
		Incident Count 1st SUPPRESSION	55		
		Total Response Time ERF	**11:36**	**10:24**	**01:12**
		Incident Count ERF	54		
Fire	Maximum	Alarm Handling	00:30	01:04	**00:34**
		Turnout 1st SUPPRESSION	02:16	01:20	**00:56**
		Travel Time 1st SUPPRESSION - Distribution	05:12	04:00	**01:12**
		Travel Time ERF - Concentration	10:56	08:00	**02:56**
		Total Response Time 1st SUPPRESSION	**06:59**	**06:24**	**00:35**
		Incident Count 1st SUPPRESSION	172		
		Total Response Time ERF	**13:26**	**10:24**	**03:02**
		Incident Count ERF	30		

Performance Data for Planning Zone 5

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
EMS	Low	Alarm Handling	00:25	01:04	00:39
		Turnout Time 1st Unit	02:39	01:00	01:39
		Travel Time 1st Unit - Distribution	07:26	04:00	03:26
		Travel Time ERF - Concentration	07:22	08:00	00:38
		Total Response Time 1st Unit	**09:29**	**06:04**	03:25
		Incident Count 1st Unit - Distribution	18		
		Total Response Time ERF	**09:32**	**10:04**	00:32
		Incident Count ERF	17		
EMS	Medium	Alarm Handling	00:34	01:04	00:30
		Turnout Time 1st Unit	02:09	01:00	01:09
		Travel Time 1st Unit - Distribution	06:09	04:00	02:09
		Travel Time ERF - Concentration	06:16	08:00	01:44
		Total Response Time 1st Unit	**08:03**	**06:04**	01:59
		Incident Count 1st Unit - Distribution	312		
		Total Response Time ERF	**08:12**	**10:04**	01:52
		Incident Count ERF	292		
EMS	High	Alarm Handling	00:29	01:04	00:35
		Turnout Time 1st Unit	02:11	01:00	01:11
		Travel Time 1st Unit - Distribution	05:39	04:00	01:39
		Travel Time ERF - Concentration	06:00	08:00	02:00
		Total Response Time 1st Unit	**07:09**	**06:04**	01:05
		Incident Count 1st Unit - Distribution	1,701		
		Total Response Time ERF	**07:44**	**10:04**	02:20
		Incident Count ERF	1,642		
EMS	Maximum	Alarm Handling	00:31	01:04	00:33
		Turnout Time 1st Unit	02:08	01:00	01:08
		Travel Time 1st Unit - Distribution	05:08	04:00	01:08
		Travel Time ERF - Concentration	05:59	08:00	02:01
		Total Response Time 1st Unit	**06:50**	**06:04**	00:46
		Incident Count 1st Unit - Distribution	2,711		
		Total Response Time ERF	**07:53**	**10:04**	02:11
		Incident Count ERF	2,527		

Performance Data for Planning Zone 5

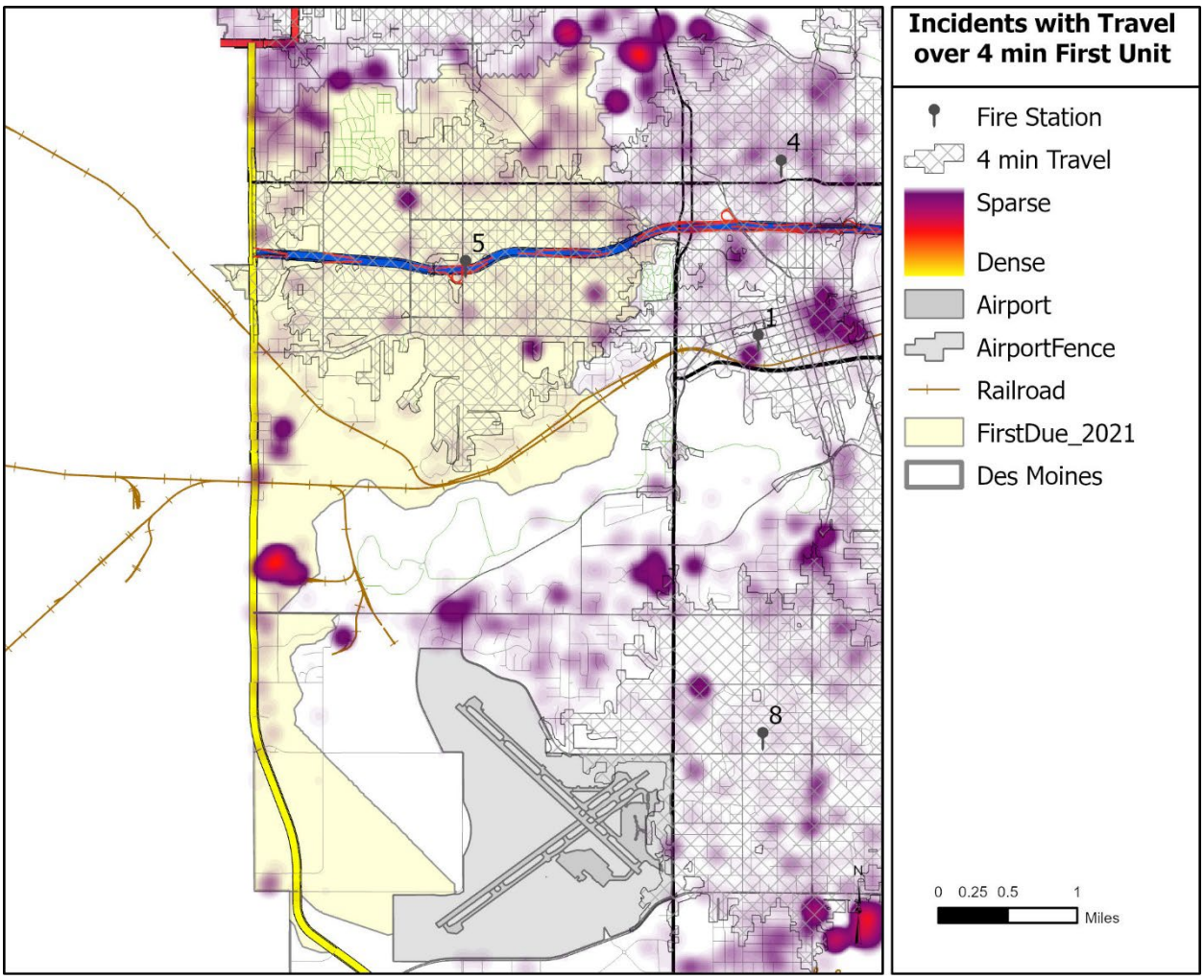
Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
Tech Rescue	Medium	Alarm Handling	00:04	01:04	**01:00**
		Turnout 1st SUPPRESSION	01:39	01:20	**00:19**
		Travel Time 1st SUPPRESSION - Distribution	02:51	04:00	**01:09**
		Travel Time ERF - Concentration		08:00	**08:00**
		Total Response Time 1st SUPPRESSION	**04:34**	**06:24**	**01:50**
		Incident Count 1st SUPPRESSION	1		
		Total Response Time ERF		**10:24**	**10:24**
		Incident Count ERF	0		
Tech Rescue	High	Alarm Handling	00:52	01:04	**00:12**
		Turnout 1st SUPPRESSION	01:53	01:20	**00:33**
		Travel Time 1st SUPPRESSION - Distribution	05:09	04:00	**01:09**
		Travel Time ERF - Concentration	08:46	08:00	**00:46**
		Total Response Time 1st SUPPRESSION	**07:30**	**06:24**	**01:06**
		Incident Count 1st SUPPRESSION	7		
		Total Response Time ERF	**11:06**	**10:24**	**00:42**
		Incident Count ERF	3		
Tech Rescue	Maximum	Alarm Handling		01:04	
		Turnout Time 1st Unit		01:20	
		Travel Time 1st SUPPRESSION - Distribution		04:00	
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st SUPPRESSION		**06:24**	
		Incident Count 1st SUPPRESSION	0		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		

Performance Data for Planning Zone 5

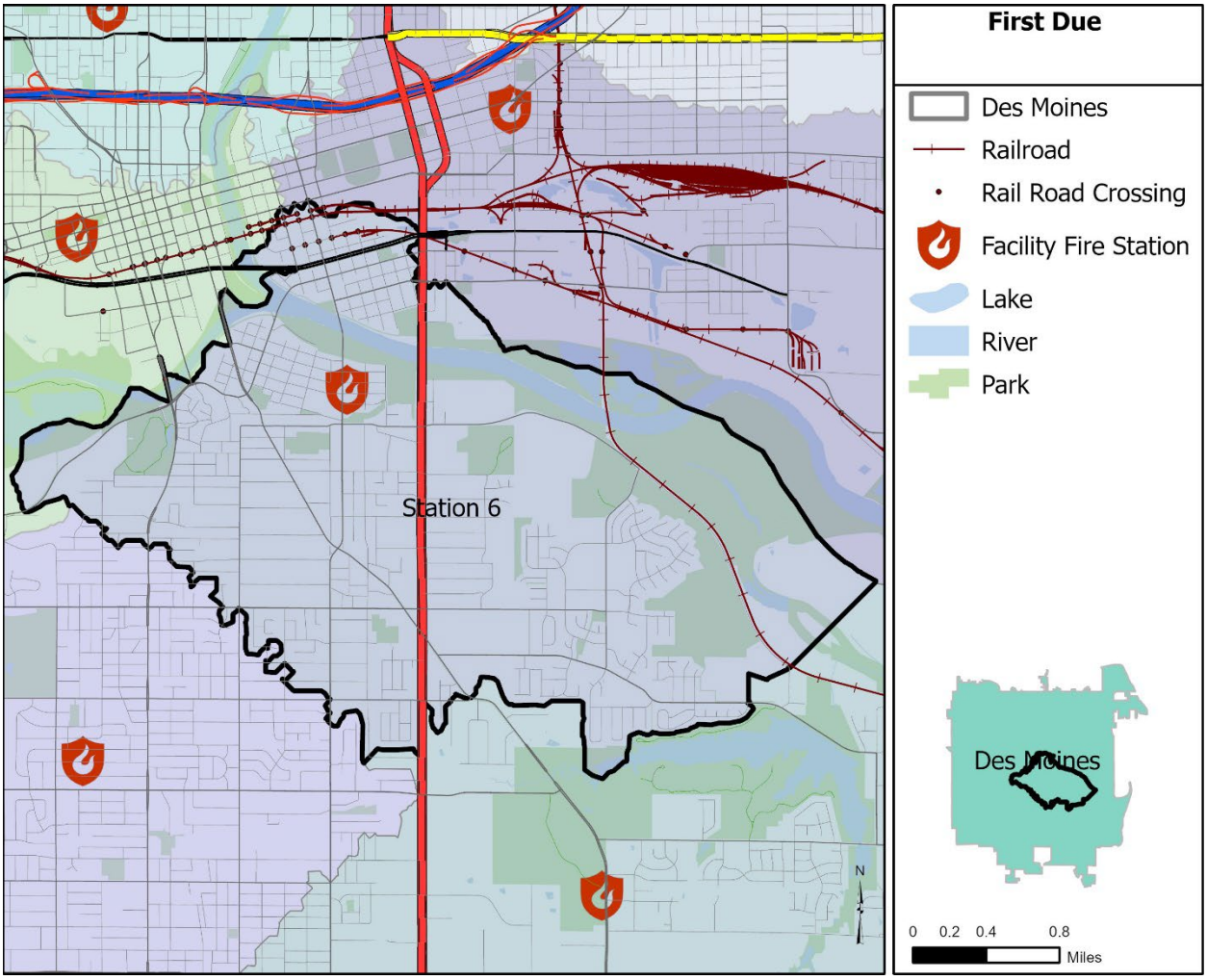
Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
HazMat	Low	Alarm Handling	01:05	01:04	**00:01**
		Turnout 1st SUPPRESSION	02:18	01:20	**00:58**
		Travel Time 1st SUPPRESSION - Distribution	05:59	04:00	**01:59**
		Travel Time ERF - Concentration	05:59	08:00	**02:01**
		Total Response Time 1st SUPPRESSION	**07:40**	**06:24**	**01:16**
		Incident Count 1st SUPPRESSION	2		
		Total Response Time ERF	**07:40**	**10:24**	**02:44**
		Incident Count ERF	2		
HazMat	Medium	Alarm Handling	01:06	01:04	**00:02**
		Turnout 1st SUPPRESSION	02:20	01:20	**01:00**
		Travel Time 1st SUPPRESSION - Distribution	05:26	04:00	**01:25**
		Travel Time ERF - Concentration	05:22	08:00	**02:38**
		Total Response Time 1st SUPPRESSION	**07:59**	**06:24**	**01:35**
		Incident Count 1st SUPPRESSION	46		
		Total Response Time ERF	**07:46**	**10:24**	**02:38**
		Incident Count ERF	38		
HazMat	High	Alarm Handling	01:26	01:04	**00:22**
		Turnout 1st SUPPRESSION	03:00	01:20	**01:39**
		Travel Time 1st SUPPRESSION - Distribution	06:12	04:00	**02:12**
		Travel Time ERF - Concentration		08:00	**08:00**
		Total Response Time 1st SUPPRESSION	**09:16**	**06:24**	**02:52**
		Incident Count 1st SUPPRESSION	16		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		

Performance Data for Planning Zone 5

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
WET	Medium	Alarm Handling		01:04	
		Turnout Time 1st Unit		01:20	
		Travel Time 1st Unit - Distribution		04:00	
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st Unit		**06:24**	
		Incident Count 1st Unit - Distribution	0		
		Total Response Time ERF		**10:24**	**10:24**
		Incident Count ERF	0		
WET	Maximum	Alarm Handling	00:39	01:04	**00:25**
		Turnout Time 1st Unit	01:49	01:20	**00:29**
		Travel Time 1st Unit - Distribution	08:27	04:00	**04:27**
		Travel Time ERF - Concentration	12:20	08:00	**04:20**
		Total Response Time 1st Unit	**09:06**	**06:24**	**02:42**
		Incident Count 1st Unit - Distribution	2		
		Total Response Time ERF	**13:47**	**10:24**	**03:23**
		Incident Count ERF	1		


Incidents with Travel over 4 min First Unit
Fire Station
4 min Travel
Sparse
Dense
Airport
AirportFence
Railroad
FirstDue_2021
Des Moines
4
5
1
8
N
0 0.25 0.5 1
Miles

Planning Zone 6- Station 6 First Due



Fire Station #6 is located at 1919 SE 6th Street. Daily minimum staffing is 5 personnel. Resources operating out of this facility are:

Unit Type	Minimum Staffing		Qualifications	CY 2021 Unit Response Count	Inservice Time
	Qty	Rank			
Medic	1 1	Senior Medic Fire Medic	Paramedic & WET Certified Paramedic & WET Certified	2818	97.17%
Truck	1 1 1	Captain Engineer Firefighter	EMT-B & WET Certified EMT-B & WET Certified EMT-B & WET Certified	2919	98.20%
WET		Cross-Staffed		11	
Total	5			5748	

Characteristics of First Due Area

Population Density	Dense Suburban
Station Specialties	Station 6 comprises half of the Water Emergency Team (WET) with a response tow vehicle and 2 rescue-equipped watercraft. All five personnel will respond to the WET assignment together. Medic 6 and Truck 6 go out of service when a WET event type is dispatched.
Area Description	This area of Des Moines, known as the McKinley School/Columbus Park neighborhood, is vibrant with multiple city parks, unique local restaurants, and communities. This area boasts the intersection of the Des Moines and Raccoon Rivers. This area has a minimal industrial footprint and mainly comprises neighborhoods with single-family dwellings. Recent development trends in this area have been newly constructed multifamily homes going up closer to downtown. Many locations in this area are susceptible to flooding as the levee system protects a large portion of this planning zone. The City has developed (in conjunction with the US Army Corps of Engineers) a plan over the next decade to alter and improve the levees within this area.

Dispatches for service over the past 4 years:

Year	Units Dispatch Count	% Change
2019	5284	3.83
2020	5424	2.65
2021	5748	5.97

Dispatching by type and performance against agency benchmarks

CY 2021 Turnout by Shift and Event Time

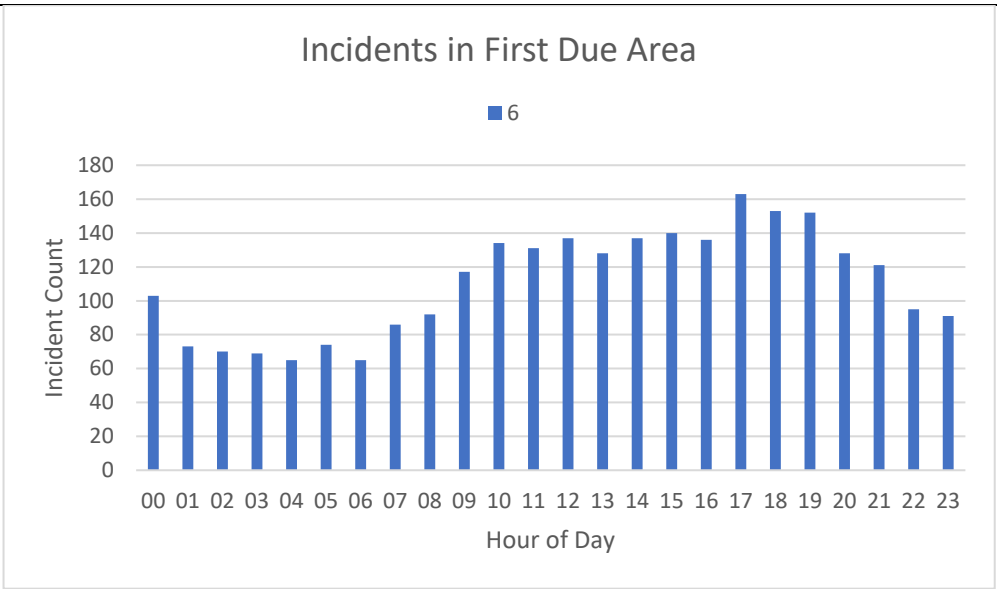
Event Type	*NFPA Standard*	*Station*	
		90th	*% Met*
Fire	*1:20*	02:26	10%
EMS	*1:00*	02:05	66%
Tech Rescue	*1:20*	02:15	4%
HazMat	*1:20*	02:18	16%
WET	*1:20*	01:51	33%

Unit & Planning Zone Reliability

2021		Commit	Availability	Reliability		
Unit	Planning Zone	Unit Utilization	First Due Unit Availability	First-Due Area Reliability	First-Due Unit Reliability	Other than First-Due Unit Reliability
	Formula	secs from alarm to available/ secs in year service less out of service time	Unit to First Due/First Due Area	Any Unit to First Due within time limit / First Due Area Incidents	First Due unit to First Due area within time limit / First Due unit responding to First Due area	Other than First Due unit to First Due area within time limit / Other than First Due unit responding to First due area
MS06	6	19.4%	85.0%	63.0%	66.7%	41.7%
T06	6	9.9%	95.2%	53.0%		53.0%

Unit Responses from Station – hour of day & day of week

Year	Hr	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Total
2021	0	44	33	28	15	28	25	25	198
	1	31	21	18	14	20	19	42	165
	2	32	18	26	21	12	31	14	154
	3	15	27	16	16	17	22	37	150
	4	23	22	20	20	18	13	21	137
	5	24	17	22	20	13	20	16	132
	6	23	18	17	19	16	20	21	134
	7	17	29	34	25	30	28	23	186
	8	19	28	34	34	35	48	25	223
	9	43	37	36	46	54	34	26	276
	10	30	45	50	47	54	45	44	315
	11	37	41	49	41	47	46	35	296
	12	46	46	37	40	49	43	43	304
	13	40	47	53	43	45	39	39	306
	14	40	53	42	49	40	43	50	317
	15	41	36	54	51	47	36	31	296
	16	33	39	45	47	51	55	45	315
	17	48	47	52	44	36	30	46	303
	18	45	42	46	41	46	45	53	318
	19	39	38	42	43	48	41	49	300
	20	39	38	33	43	37	23	51	264
	21	44	42	21	37	37	49	31	261
	22	31	37	14	22	35	28	37	204
	23	28	27	27	31	20	33	28	194
	Total	812	828	816	809	835	816	832	5748

Incidents occurring within First Due	
Major Transportation	• Located near Highway 5/65 bypass with access to 1-80 and I-35 • Future SE Connector roadway with complete signalized intersections at SE 36th Street and SE 43rd Street • Primary North and South access via SE 14th St. or SW 9th St. • Primary East and West via Park Ave. • Direct into Downtown via Indianola Ave.
Major Infrastructure	• Railroad
Major Service and Utilities	• Water • Sanitary Sewer • Wastewater Treatment • Natural Gas • Electricity • Fiber Optics
Medical Facilities	• Rehab Counseling and Detoxification Therapy Inc. (205 Thornton Avenue)
Schools	• McKinley Elementary School (1610 SE 6th Street) • St. Anthony Catholic School (16 Columbus Avenue) • Weeks Junior High School (901 E Park Avenue) • Abraham Lincoln High School (2600 SW 9th Street) • Howe Elementary School (2900 Indianola Avenue) • River Woods Elementary School (2929 SE 22nd Street)
Governmental Facilities	• City Municipal Yards/Public Works (216 SE 5th Street)
Primary Target Hazard Fire	• Diamond Oil Company (702 SE Raccoon Street)
Primary Target Hazard Non-Fire	• Scotty's Body Shop (504 SE 6th Street) • Southview Manor Senior Housing (2417 SW 9th Street) • Des Moines and Raccoon Rivers

Performance Data for Planning Zone 6

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
Fire	Low	Alarm Handling	00:29	01:04	**00:35**
		Turnout 1st SUPPRESSION	02:18	01:20	**00:58**
		Travel Time 1st SUPPRESSION - Distribution	04:35	04:00	**00:35**
		Travel Time ERF - Concentration	05:14	08:00	**02:46**
		Total Response Time 1st SUPPRESSION	**06:39**	**06:24**	**00:15**
		Incident Count 1st SUPPRESSION	15		
		Total Response Time ERF	**08:04**	**10:24**	**02:20**
		Incident Count ERF	7		
Fire	Medium	Alarm Handling	00:26	01:04	**00:38**
		Turnout 1st SUPPRESSION	02:18	01:20	**00:58**
		Travel Time 1st SUPPRESSION - Distribution	06:06	04:00	**02:06**
		Travel Time ERF - Concentration	07:02	08:00	**00:58**
		Total Response Time 1st SUPPRESSION	**08:10**	**06:24**	**01:46**
		Incident Count 1st SUPPRESSION	123		
		Total Response Time ERF	**09:21**	**10:24**	**01:03**
		Incident Count ERF	25		
Fire	High	Alarm Handling	00:24	01:04	**00:40**
		Turnout 1st SUPPRESSION	02:49	01:20	**01:29**
		Travel Time 1st SUPPRESSION - Distribution	06:51	04:00	**02:51**
		Travel Time ERF - Concentration	06:51	08:00	**01:09**
		Total Response Time 1st SUPPRESSION	**09:27**	**06:24**	**03:03**
		Incident Count 1st SUPPRESSION	44		
		Total Response Time ERF	**09:27**	**10:24**	**00:57**
		Incident Count ERF	43		
Fire	Maximum	Alarm Handling	00:33	01:04	**00:31**
		Turnout 1st SUPPRESSION	02:12	01:20	**00:52**
		Travel Time 1st SUPPRESSION - Distribution	04:44	04:00	**00:44**
		Travel Time ERF - Concentration	07:58	08:00	**00:02**
		Total Response Time 1st SUPPRESSION	**06:52**	**06:24**	**00:28**
		Incident Count 1st SUPPRESSION	158		
		Total Response Time ERF	**10:18**	**10:24**	**00:06**
		Incident Count ERF	22		

Performance Data for Planning Zone 6

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
EMS	Low	Alarm Handling	00:24	01:04	00:40
		Turnout Time 1st Unit	01:47	01:00	00:47
		Travel Time 1st Unit - Distribution	05:14	04:00	01:14
		Travel Time ERF - Concentration	05:25	08:00	02:35
		Total Response Time 1st Unit	**06:51**	**06:04**	00:47
		Incident Count 1st Unit - Distribution	25		
		Total Response Time ERF	**07:22**	**10:04**	02:42
		Incident Count ERF	23		
EMS	Medium	Alarm Handling	00:26	01:04	00:38
		Turnout Time 1st Unit	02:08	01:00	01:09
		Travel Time 1st Unit - Distribution	06:20	04:00	02:20
		Travel Time ERF - Concentration	06:35	08:00	01:25
		Total Response Time 1st Unit	**08:10**	**06:04**	02:06
		Incident Count 1st Unit - Distribution	290		
		Total Response Time ERF	**08:24**	**10:04**	01:40
		Incident Count ERF	258		
EMS	High	Alarm Handling	00:32	01:04	00:32
		Turnout Time 1st Unit	02:05	01:00	01:05
		Travel Time 1st Unit - Distribution	05:31	04:00	01:31
		Travel Time ERF - Concentration	05:44	08:00	02:16
		Total Response Time 1st Unit	**07:16**	**06:04**	01:12
		Incident Count 1st Unit - Distribution	1,693		
		Total Response Time ERF	**07:38**	**10:04**	02:26
		Incident Count ERF	1,604		
EMS	Maximum	Alarm Handling	00:33	01:04	00:31
		Turnout Time 1st Unit	01:59	01:00	00:59
		Travel Time 1st Unit - Distribution	05:21	04:00	01:21
		Travel Time ERF - Concentration	05:48	08:00	02:12
		Total Response Time 1st Unit	**07:07**	**06:04**	01:03
		Incident Count 1st Unit - Distribution	2,461		
		Total Response Time ERF	**07:47**	**10:04**	02:17
		Incident Count ERF	2,297		

Performance Data for Planning Zone 6

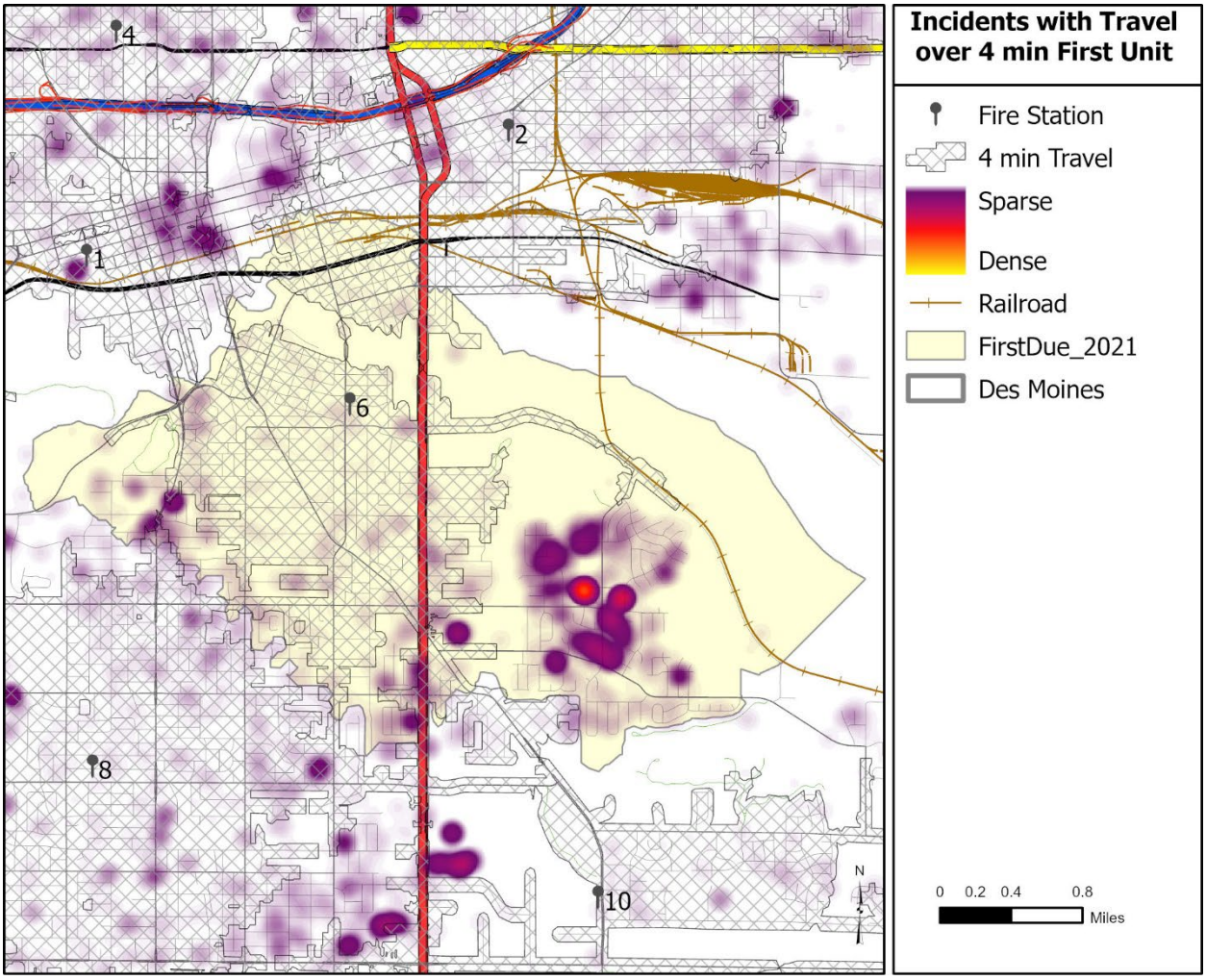
Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
Tech Rescue	Medium	Alarm Handling	00:05	01:04	**00:59**
		Turnout 1st SUPPRESSION	01:13	01:20	**00:07**
		Travel Time 1st SUPPRESSION - Distribution	02:45	04:00	**01:15**
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st SUPPRESSION	**04:03**	**06:24**	**02:21**
		Incident Count 1st SUPPRESSION	1		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		
Tech Rescue	High	Alarm Handling	00:39	01:04	**00:25**
		Turnout 1st SUPPRESSION	02:14	01:20	**00:54**
		Travel Time 1st SUPPRESSION - Distribution	03:58	04:00	**00:02**
		Travel Time ERF - Concentration	06:32	08:00	**01:28**
		Total Response Time 1st SUPPRESSION	**06:09**	**06:24**	**00:15**
		Incident Count 1st SUPPRESSION	12		
		Total Response Time ERF	**09:17**	**10:24**	**01:07**
		Incident Count ERF	4		
Tech Rescue	Maximum	Alarm Handling		01:04	
		Turnout Time 1st Unit		01:20	
		Travel Time 1st SUPPRESSION - Distribution		04:00	
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st SUPPRESSION		**06:24**	
		Incident Count 1st SUPPRESSION	0		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		

Performance Data for Planning Zone 6

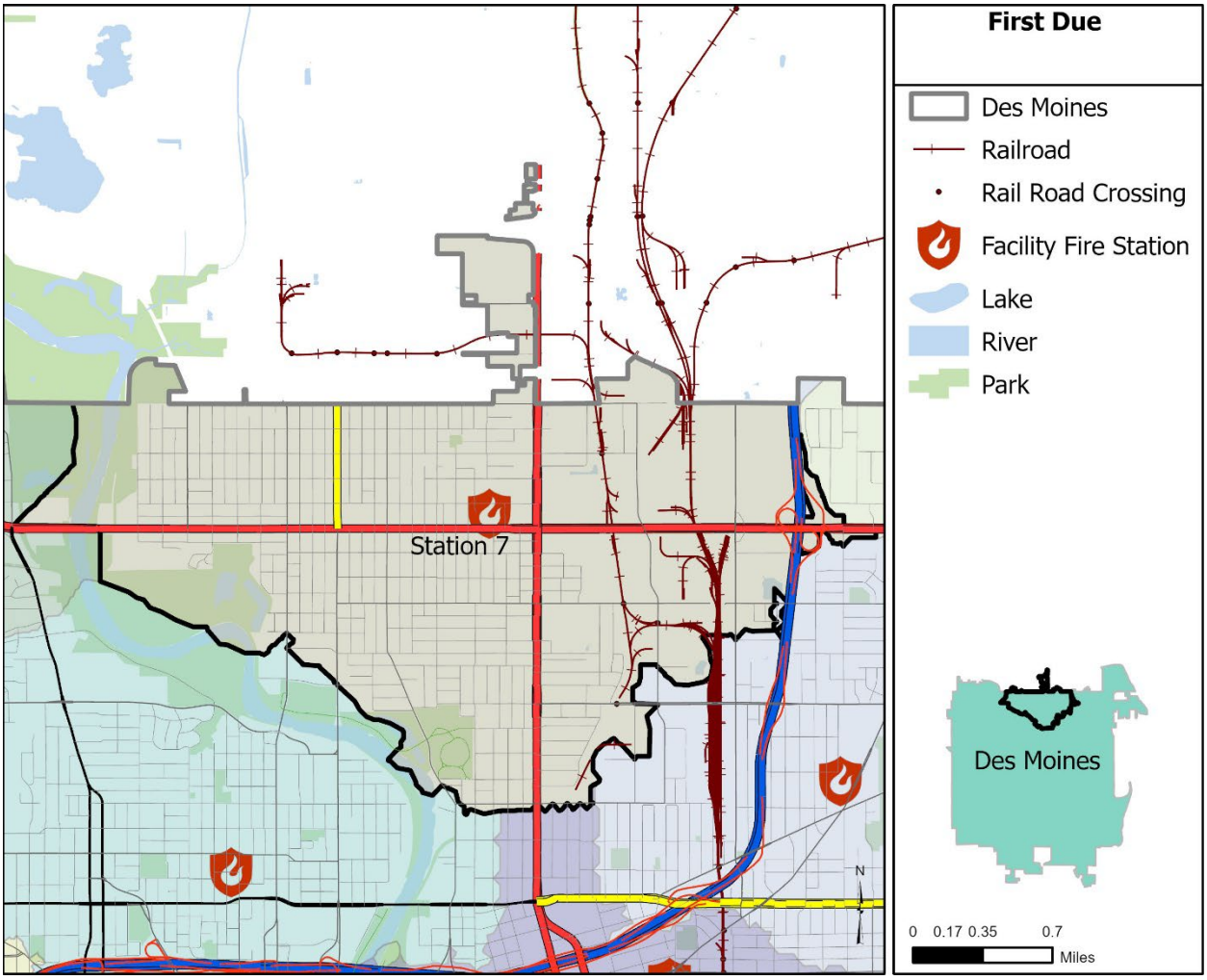
Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
HazMat	Low	Alarm Handling	00:53	01:04	**00:11**
		Turnout 1st SUPPRESSION	01:43	01:20	**00:23**
		Travel Time 1st SUPPRESSION - Distribution	04:43	04:00	**00:43**
		Travel Time ERF - Concentration	04:43	08:00	**03:17**
		Total Response Time 1st SUPPRESSION	**06:47**	**06:24**	**00:23**
		Incident Count 1st SUPPRESSION	3		
		Total Response Time ERF	**06:47**	**10:24**	**03:37**
		Incident Count ERF	3		
HazMat	Medium	Alarm Handling	01:12	01:04	**00:08**
		Turnout 1st SUPPRESSION	02:34	01:20	**01:14**
		Travel Time 1st SUPPRESSION - Distribution	05:04	04:00	**01:04**
		Travel Time ERF - Concentration	05:08	08:00	**02:52**
		Total Response Time 1st SUPPRESSION	**07:41**	**06:24**	**01:17**
		Incident Count 1st SUPPRESSION	24		
		Total Response Time ERF	**07:46**	**10:24**	**02:38**
		Incident Count ERF	21		
HazMat	High	Alarm Handling	01:16	01:04	**00:12**
		Turnout 1st SUPPRESSION	02:50	01:20	**01:30**
		Travel Time 1st SUPPRESSION - Distribution	04:36	04:00	**00:36**
		Travel Time ERF - Concentration	06:08	08:00	**01:52**
		Total Response Time 1st SUPPRESSION	**08:01**	**06:24**	**01:37**
		Incident Count 1st SUPPRESSION	10		
		Total Response Time ERF	**10:43**	**10:24**	**00:19**
		Incident Count ERF	1		

Performance Data for Planning Zone 6

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
WET	Medium	Alarm Handling	01:14	01:04	**00:10**
		Turnout Time 1st Unit	01:17	01:20	**00:03**
		Travel Time 1st Unit - Distribution	02:51	04:00	**01:09**
		Travel Time ERF - Concentration	05:08	08:00	**02:52**
		Total Response Time 1st Unit	**05:22**	**06:24**	**01:02**
		Incident Count 1st Unit - Distribution	1		
		Total Response Time ERF	**07:05**	**10:24**	**03:19**
		Incident Count ERF	1		
WET	Maximum	Alarm Handling	01:26	01:04	**00:22**
		Turnout Time 1st Unit	02:02	01:20	**00:42**
		Travel Time 1st Unit - Distribution	04:35	04:00	**00:35**
		Travel Time ERF - Concentration	06:10	08:00	**01:50**
		Total Response Time 1st Unit	**06:14**	**06:24**	**00:10**
		Incident Count 1st Unit - Distribution	11		
		Total Response Time ERF	**08:25**	**10:24**	**01:59**
		Incident Count ERF	2		


Incidents with Travel over 4 min First Unit
Fire Station
4 min Travel
Sparse
Dense
Railroad
FirstDue_2021
Des Moines
0 0.2 0.4 0.8
Miles
N
4
2
1
6
8
10

Planning Zone 7 - Station 7 First Due



Fire Station 7 is located at 3500 E. 12th Street. The daily minimum staffing is 5 personnel. Resources operating out of this facility are:

Unit Type	Minimum Staffing		Qualifications	CY 20## Unit Response Count	Inservice Time
	Qty	Rank			
Engine	3	Captain Engineer Firefighter	EMT B/TRT EMT B/TRT EMT B/TRT	2534	98.75%
Medic	2	Senior Medic Medic	Paramedic/TRT Paramedic/TRT	2847	97.74%
Tech Rescue		Cross-Staffed		8	
Total	5			5389	

Characteristics of First Due Area

Population Density	Urban
Station Specialties	Engine 7 is 1 of 4 extrication companies throughout the city equipped with specialized equipment and trained staff. Additionally, Station 7 personnel, in conjunction with Station 4 personnel, serve as members of the Technical Rescue Team. Technical rescue responses are accomplished with specialized equipment on Engine 4, Medic 4, and Technical Rescue 7. All units are simultaneously dispatched to calls for technical rescue incidents and perform operations as one cohesive team. Technical Rescue Capabilities include High Angle, Confined Space, Trench, Heavy Equipment Extrication, Grain Bin, and basic Structural Shoring.
Area Description	Station 7 is situated in the north-central portion of Des Moines. The first due area contains multiple industrial complexes, a large rail yard, retail stores, food and beverage services, Grandview College, and residential occupancies. In addition, this station frequently responds beyond the city limits to provide medical services to the Polk County Jail, which is just beyond the northern city limit. The Des Moines River cuts through the northwest corner of this response area.

Dispatches for service over the past 4 years:

Year	Units Dispatch Count	% Change
2019	4923	0.84
2020	5039	2.36
2021	5389	6.95

Dispatching by type and performance against agency benchmarks

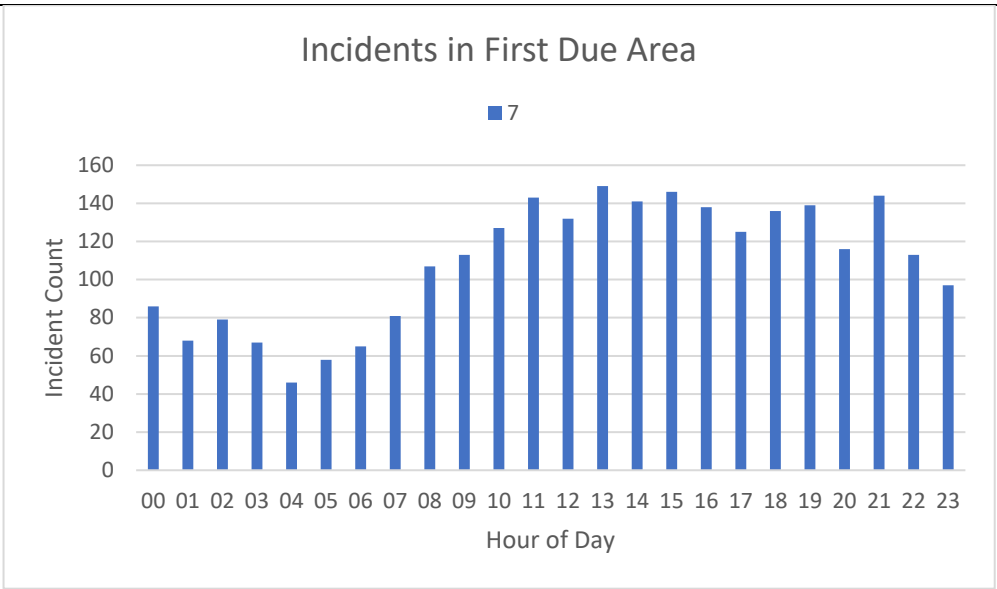
CY 2021 Turnout by Shift and Event Time			
Event Type	*NFPA Standard*	*Station*	
		90th	*% Met*
Fire	*1:20*	02:06	11%
EMS	*1:00*	02:02	67%
Tech Rescue	*1:20*	01:53	19%
HazMat	*1:20*	02:29	10%
WET	*1:20*	01:29	30%

Unit & Planning Zone Reliability

2021		Commit	Availability	Reliability		
Unit	Planning Zone	Unit Utilization	First Due Unit Availability	First-Due Area Reliability	First-Due Unit Reliability	Other than First-Due Unit Reliability
	Formula	secs from alarm to available/ secs in year service less out of service time	Unit to First Due/First Due Area	Any Unit to First Due within time limit / First Due Area Incidents	First Due unit to First Due area within time limit / First Due unit responding to First Due area	Other than First Due unit to First Due area within time limit / Other than First Due unit responding to First due area
MS07	7	17.6%	90.1%	79.8%	85.6%	25.8%
E07	7	8.7%	89.4%	71.6%	77.1%	25.4%

Unit Responses from Station – hour of day & day of week

Year	Hr	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Total
2021	0	26	25	15	24	22	18	32	162
	1	16	22	19	15	17	13	25	127
	2	29	20	19	23	18	26	20	155
	3	32	20	16	12	11	27	17	135
	4	11	14	16	11	13	12	14	91
	5	12	11	12	16	17	21	17	106
	6	20	24	15	19	21	25	17	141
	7	20	35	17	26	24	20	16	158
	8	34	29	34	40	31	26	43	237
	9	35	37	31	42	42	23	27	237
	10	25	38	42	24	44	37	49	259
	11	36	49	45	49	45	45	45	314
	12	28	45	46	40	43	49	43	294
	13	49	55	41	43	40	52	42	322
	14	34	38	66	54	39	49	35	315
	15	32	41	38	50	33	52	39	285
	16	41	37	51	46	44	35	32	286
	17	36	40	45	47	42	39	29	278
	18	31	46	39	38	47	50	47	298
	19	45	40	36	43	28	39	42	273
	20	38	35	35	39	42	35	23	247
	21	45	35	33	34	40	40	38	265
	22	22	37	27	26	31	37	36	216
	23	27	27	13	22	29	32	38	188
	Total	724	800	751	783	763	802	766	5389

Incidents occurring within First Due	
Major Transportation	• North-south thoroughfares include Interstate 235 runs along the eastern edge of the planning zone, 2nd Avenue, 6th Avenue, and E. 14th Street • East-west thoroughfares include Interstate 80/35 runs along the northern edge of the planning zone and Euclid Avenue
Major Infrastructure	• Railroad lines (north-south through the eastern portion of this planning zone)
Major Service and Utilities	• Water and Sewer • Natural Gas • Electric • Communications
Medical Facilities	• Concentra Urgent Care
Schools	• Harding Middle School (203 E Euclid Ave) • Cattell Elementary School (3101 E 12th St) • Findley Elementary School (3025 Oxford St) • North High School (501 Holcomb Ave) • Madison Elementary School (806 Hoffman Ave) • Oak Park Elementary School (3928 6th Ave) • Garton Elementary School (2820 E 24th St) • Goodrell Middle School (3300 E 29th St) • Grandview Elementary School (2905 NE 46th Ave)
Governmental Facilities	• Polk County River Place – County Offices (2309 Euclid Ave) • Northside Library (3516 5th Ave) • Polk County Jail – (contractual EMS coverage) (1985 NE 51st Pl)
Primary Target Hazard Fire	• Archer Daniels Midland (ADM) Plant (1935 E Euclid Ave) • Park Fair Mall (100 E Euclid Av) • Liberty Tire Recycling (1914 E. Euclid Avenue)
Primary Target Hazard Non-Fire	• Park Fair Mall (100 E Euclid Av)

Performance Data for Planning Zone 7

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
Fire	Low	Alarm Handling	00:37	01:04	00:27
		Turnout 1st SUPPRESSION	02:00	01:20	00:40
		Travel Time 1st SUPPRESSION - Distribution	03:36	04:00	00:24
		Travel Time ERF - Concentration	05:25	08:00	02:35
		Total Response Time 1st SUPPRESSION	**05:29**	**06:24**	00:55
		Incident Count 1st SUPPRESSION	16		
		Total Response Time ERF	**06:38**	**10:24**	03:46
		Incident Count ERF	9		
Fire	Medium	Alarm Handling	00:32	01:04	00:32
		Turnout 1st SUPPRESSION	02:18	01:20	00:58
		Travel Time 1st SUPPRESSION - Distribution	06:32	04:00	02:32
		Travel Time ERF - Concentration	08:44	08:00	00:44
		Total Response Time 1st SUPPRESSION	**09:09**	**06:24**	02:45
		Incident Count 1st SUPPRESSION	188		
		Total Response Time ERF	**10:43**	**10:24**	00:19
		Incident Count ERF	69		
Fire	High	Alarm Handling	00:39	01:04	00:25
		Turnout 1st SUPPRESSION	02:20	01:20	01:00
		Travel Time 1st SUPPRESSION - Distribution	07:19	04:00	03:19
		Travel Time ERF - Concentration	07:09	08:00	00:51
		Total Response Time 1st SUPPRESSION	**08:35**	**06:24**	02:11
		Incident Count 1st SUPPRESSION	80		
		Total Response Time ERF	**08:33**	**10:24**	01:51
		Incident Count ERF	80		
Fire	Maximum	Alarm Handling	00:33	01:04	00:31
		Turnout 1st SUPPRESSION	02:05	01:20	00:45
		Travel Time 1st SUPPRESSION - Distribution	04:23	04:00	00:23
		Travel Time ERF - Concentration	09:20	08:00	01:20
		Total Response Time 1st SUPPRESSION	**06:27**	**06:24**	00:03
		Incident Count 1st SUPPRESSION	132		
		Total Response Time ERF	**11:46**	**10:24**	01:22
		Incident Count ERF	25		

Performance Data for Planning Zone 7

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
EMS	Low	Alarm Handling	00:33	01:04	00:31
		Turnout Time 1st Unit	02:18	01:00	01:18
		Travel Time 1st Unit - Distribution	04:20	04:00	00:20
		Travel Time ERF - Concentration	04:24	08:00	03:36
		Total Response Time 1st Unit	**06:31**	**06:04**	00:27
		Incident Count 1st Unit - Distribution	19		
		Total Response Time ERF	**06:34**	**10:04**	03:30
		Incident Count ERF	17		
EMS	Medium	Alarm Handling	00:30	01:04	00:34
		Turnout Time 1st Unit	02:04	01:00	01:04
		Travel Time 1st Unit - Distribution	05:52	04:00	01:52
		Travel Time ERF - Concentration	06:06	08:00	01:54
		Total Response Time 1st Unit	**07:27**	**06:04**	01:23
		Incident Count 1st Unit - Distribution	259		
		Total Response Time ERF	**08:05**	**10:04**	01:59
		Incident Count ERF	230		
EMS	High	Alarm Handling	00:32	01:04	00:32
		Turnout Time 1st Unit	02:00	01:00	01:00
		Travel Time 1st Unit - Distribution	04:55	04:00	00:55
		Travel Time ERF - Concentration	05:23	08:00	02:37
		Total Response Time 1st Unit	**06:46**	**06:04**	00:42
		Incident Count 1st Unit - Distribution	1,650		
		Total Response Time ERF	**07:13**	**10:04**	02:51
		Incident Count ERF	1,587		
EMS	Maximum	Alarm Handling	00:33	01:04	00:31
		Turnout Time 1st Unit	01:57	01:00	00:57
		Travel Time 1st Unit - Distribution	04:45	04:00	00:45
		Travel Time ERF - Concentration	05:32	08:00	02:28
		Total Response Time 1st Unit	**06:25**	**06:04**	00:21
		Incident Count 1st Unit - Distribution	2,364		
		Total Response Time ERF	**07:20**	**10:04**	02:44
		Incident Count ERF	2,148		

Performance Data for Planning Zone 7

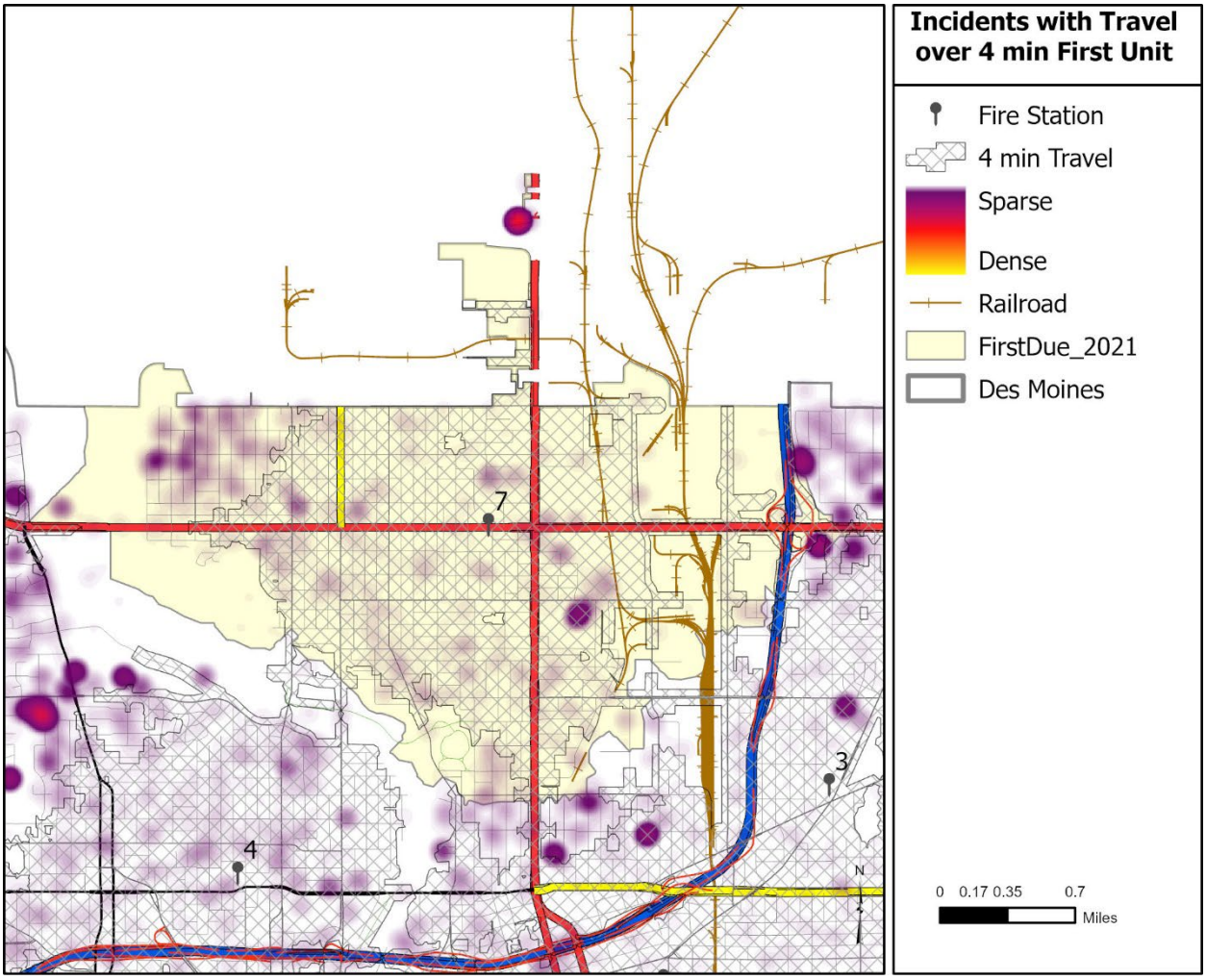
Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
Tech Rescue	Medium	Alarm Handling		01:04	
		Turnout 1st SUPPRESSION		01:20	
		Travel Time 1st SUPPRESSION - Distribution		04:00	
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st SUPPRESSION		**06:24**	
		Incident Count 1st SUPPRESSION	0		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		
Tech Rescue	High	Alarm Handling	00:29	01:04	**00:35**
		Turnout 1st SUPPRESSION	02:00	01:20	**00:40**
		Travel Time 1st SUPPRESSION - Distribution	05:21	04:00	**01:21**
		Travel Time ERF - Concentration	08:55	08:00	**00:55**
		Total Response Time 1st SUPPRESSION	**07:12**	**06:24**	**00:48**
		Incident Count 1st SUPPRESSION	12		
		Total Response Time ERF	**10:41**	**10:24**	**00:17**
		Incident Count ERF	6		
Tech Rescue	Maximum	Alarm Handling		01:04	
		Turnout Time 1st Unit		01:20	
		Travel Time 1st SUPPRESSION - Distribution		04:00	
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st SUPPRESSION		**06:24**	
		Incident Count 1st SUPPRESSION	0		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		

Performance Data for Planning Zone 7

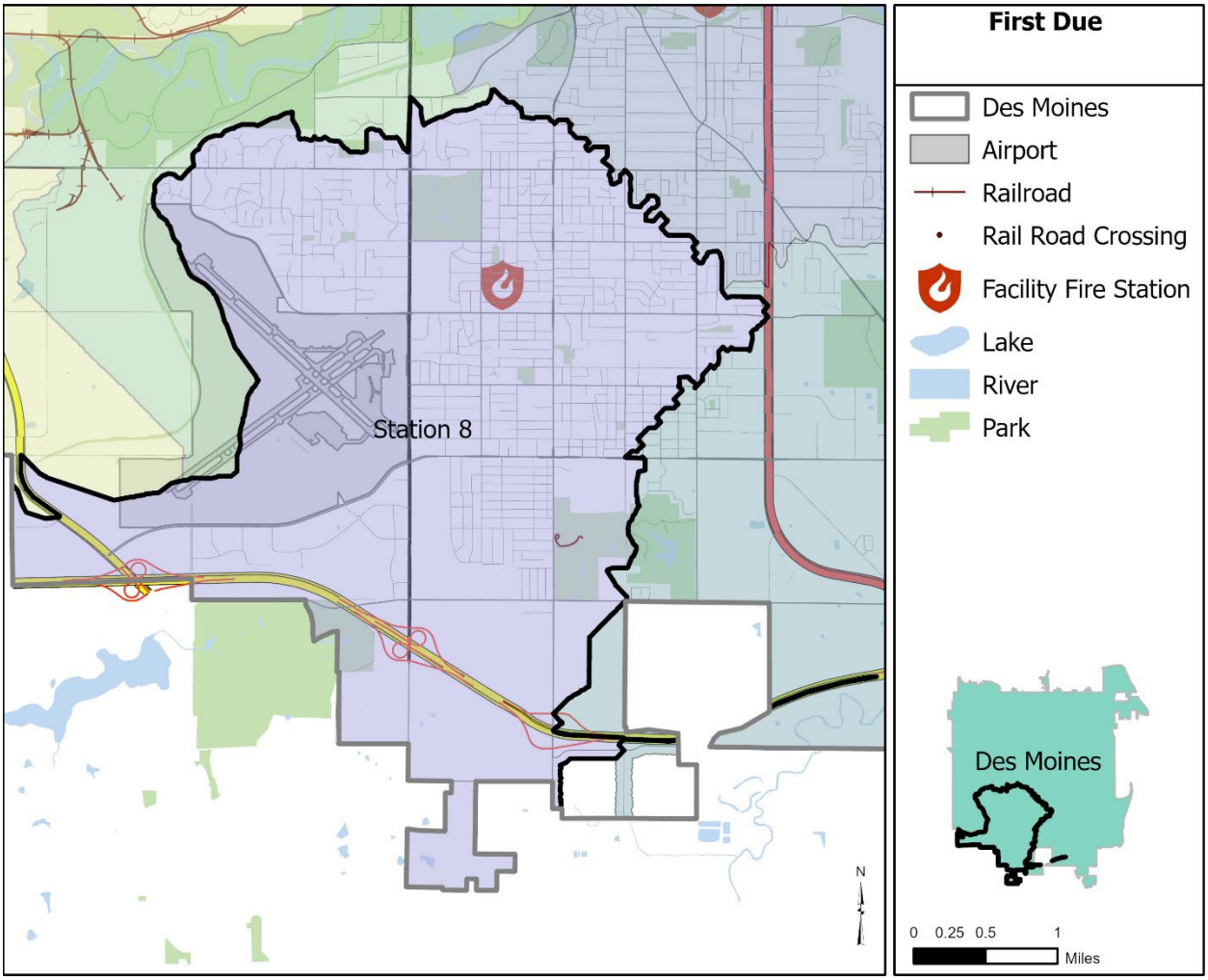
Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
HazMat	Low	Alarm Handling	00:27	01:04	**00:37**
		Turnout 1st SUPPRESSION	02:25	01:20	**01:06**
		Travel Time 1st SUPPRESSION - Distribution	04:50	04:00	**00:49**
		Travel Time ERF - Concentration	04:50	08:00	**03:11**
		Total Response Time 1st SUPPRESSION	**07:42**	**06:24**	**01:18**
		Incident Count 1st SUPPRESSION	6		
		Total Response Time ERF	**07:42**	**10:24**	**02:42**
		Incident Count ERF	6		
HazMat	Medium	Alarm Handling	01:02	01:04	**00:02**
		Turnout 1st SUPPRESSION	02:21	01:20	**01:01**
		Travel Time 1st SUPPRESSION - Distribution	04:42	04:00	**00:42**
		Travel Time ERF - Concentration	06:14	08:00	**01:46**
		Total Response Time 1st SUPPRESSION	**07:46**	**06:24**	**01:22**
		Incident Count 1st SUPPRESSION	28		
		Total Response Time ERF	**09:26**	**10:24**	**00:57**
		Incident Count ERF	26		
HazMat	High	Alarm Handling	00:57	01:04	**00:07**
		Turnout 1st SUPPRESSION	02:52	01:20	**01:32**
		Travel Time 1st SUPPRESSION - Distribution	04:55	04:00	**00:54**
		Travel Time ERF - Concentration	06:56	08:00	**01:04**
		Total Response Time 1st SUPPRESSION	**07:45**	**06:24**	**01:21**
		Incident Count 1st SUPPRESSION	6		
		Total Response Time ERF	**07:30**	**10:24**	**02:54**
		Incident Count ERF	3		

Performance Data for Planning Zone 7

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
WET	Medium	Alarm Handling	01:23	01:04	**00:19**
		Turnout Time 1st Unit	01:22	01:20	**00:02**
		Travel Time 1st Unit - Distribution	03:40	04:00	**00:20**
		Travel Time ERF - Concentration	08:07	08:00	**00:07**
		Total Response Time 1st Unit	**06:25**	**06:24**	**00:01**
		Incident Count 1st Unit - Distribution	1		
		Total Response Time ERF	**09:34**	**10:24**	**00:50**
		Incident Count ERF	1		
WET	Maximum	Alarm Handling	01:20	01:04	**00:16**
		Turnout Time 1st Unit	01:38	01:20	**00:18**
		Travel Time 1st Unit - Distribution	04:07	04:00	**00:07**
		Travel Time ERF - Concentration		08:00	**08:00**
		Total Response Time 1st Unit	**04:58**	**06:24**	**01:26**
		Incident Count 1st Unit - Distribution	7		
		Total Response Time ERF		**10:24**	**10:24**
		Incident Count ERF	0		


Incidents with Travel over 4 min First Unit
Fire Station
4 min Travel
Sparse
Dense
Railroad
FirstDue_2021
Des Moines
7
3
4
N
0 0.17 0.35 0.7
Miles

Planning Zone 8 - Station 8 First Due



Fire Station #8 is located at 1249 McKinley Avenue. The daily minimum staffing is 5 personnel. Resources operating out of this facility are:

Unit Type	Minimum Staffing		Qualifications	CY 2021 Unit Response Count	Inservice Time
	Qty	Rank			
Engine	1 1 1	Captain Engineer Firefighter	EMT-B EMT-B EMT-B	942	31.67%
Medic	1 1	Senior Fire Medic Fire Medic	Paramedic Paramedic	2942	96.44%
Truck	1 1 1	Lieutenant Engineer Firefighter	EMT-B EMT-B Paramedic	2772	88.75%
Brush Truck		Cross-Staffed			
Utility		Cross-Staffed			
Total	8/5	Engine is in service when staffing allows		6656	

Characteristics of First Due Area

Population Density	Urban
Station Specialties	Station 8 houses a brush truck and utility/UTV, which serve as the only wildland suppression apparatus operated by the department. Brush Truck 8 and Utility 8 are 4-wheel drive equipped to allow suppression crews to work in the off-road terrain typically associated with wildland fires. Brush Truck 8 and Utility 8 are equipped with onboard, slide-in suppression units designed to extinguish wildland fires in a pump and roll capacity.
Area Description	The Station 8 response area is mainly comprised of urban residential neighborhoods with small plots of green space located on the southern borders in undeveloped sections of the planning zone and 2 small industrial parks in the southwest and northwest sections. Residential neighbors consist of one- and two-story single-family dwellings, mid-rise apartment buildings, and retail businesses to support the residents in the area. The Station 8 planning zone also has the Des Moines International Airport, Iowa Air National Guard Base, and the United States Army Officer Training Base located in the southern sections of the response area.

Dispatches for service over the past 4 years:

Year	Units Dispatch Count	% Change
2019	6298	1.04
2020	6220	(1.24)
2021	6656	7.01

Dispatching by type and performance against agency benchmarks

CY 2021 Turnout by Shift and Event Time

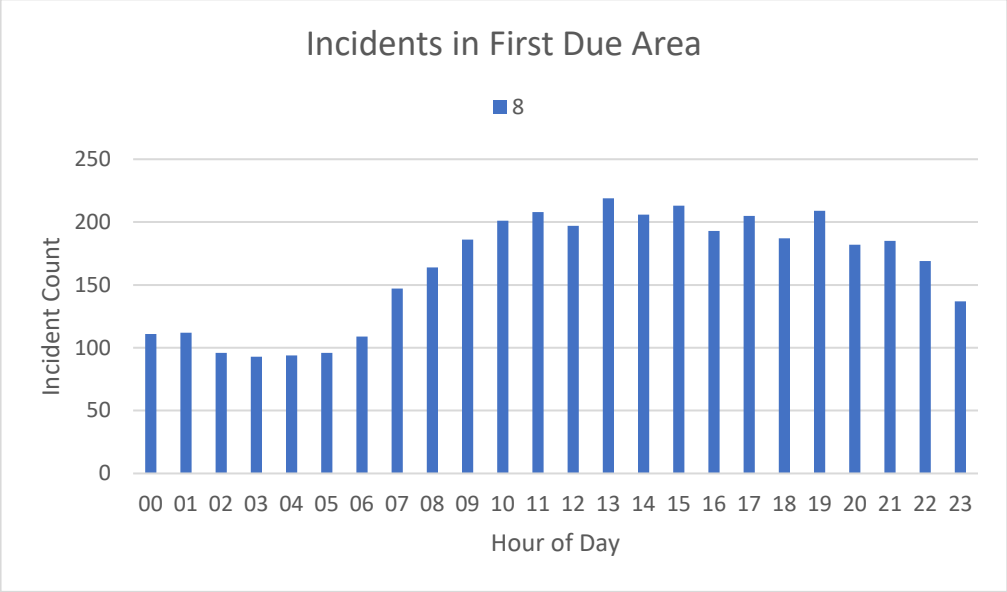
Event Type	*NFPA Standard*	*Station*	
		90th	*% Met*
Fire	*1:20*	02:33	11%
EMS	*1:00*	02:17	55%
Tech Rescue	*1:20*	02:16	11%
HazMat	*1:20*	02:49	15%

Unit & Planning Zone Reliability

2021		Commit	Availability	Reliability		
Unit	Planning Zone	Unit Utilization	First Due Unit Availability	First-Due Area Reliability	First-Due Unit Reliability	Other than First-Due Unit Reliability
	Formula	secs from alarm to available/ secs in year service less out of service time	Unit to First Due/First Due Area	Any Unit to First Due within time limit / First Due Area Incidents	First Due unit to First Due area within time limit / First Due unit responding to First Due area	Other than First Due unit to First Due area within time limit / Other than First Due unit responding to First due area
MS08	8	23.6%	84.7%	68.1%	76.0%	24.6%
E08	8	11.7%	66.0%	57.2%	71.6%	29.4%
T08	8	10.7%	93.8%	66.4%	68.7%	30.0%

Unit Responses from Station – hour of day & day of week

Year	Hr	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Total
2021	0	39	29	22	21	25	27	28	191
	1	40	34	33	21	18	21	25	192
	2	23	26	17	19	29	18	31	163
	3	34	24	20	6	26	26	16	152
	4	24	22	12	17	16	29	32	152
	5	27	33	26	20	26	19	20	171
	6	27	31	18	20	39	22	24	181
	7	18	30	42	37	31	39	33	230
	8	37	32	51	46	41	47	27	281
	9	41	46	50	47	48	48	33	313
	10	53	50	63	47	61	39	43	356
	11	52	64	36	42	54	58	35	341
	12	34	58	46	55	59	60	44	356
	13	46	63	60	71	50	44	47	381
	14	49	54	43	62	42	52	37	339
	15	47	47	44	59	46	55	50	348
	16	41	38	44	42	56	54	53	328
	17	36	57	62	52	42	51	47	347
	18	49	63	57	48	38	39	44	338
	19	37	50	55	49	60	49	45	345
	20	39	61	46	49	46	23	43	307
	21	42	45	41	38	54	40	59	319
	22	38	46	39	39	38	47	42	289
	23	34	23	33	32	26	46	42	236
	Total	907	1026	960	939	971	953	900	6656

Incidents occurring within First Due	
Major Transportation	North and South Routes • Highway 28/63rd Street • Fleur Drive (Major thoroughfare to the Des Moines Int. Airport) • Southwest 9th Street East and West Routes • Highway 5 By-pass • Army Post Road (Major thoroughfare to the Des Moines Int. Airport)
Major Infrastructure	• Air transportation hub – Des Moines Int. Airport (5800 Fleur Drive)
Major Service and Utilities	• Water and Sewer • Natural Gas • Electric • Communications
Medical Facilities	Mercy One Medical Clinic (6601 SW 9th Street)

Schools	Des Moines Public Schools
	• Lincoln High School (2600 SW 9th Street)
	• Brody Middle School (2501 Park Avenue)
	• Elementary Schools
	  ○ Jefferson (2425 Waterous Avenue)
	  ○ Morris (1401 Geil Avenue)
	  ○ Park Avenue (3141 SW 9th Street)
	  ○ South Union (4201 South Union Street)
	  ○ Wright (5001 SW 14th Street)

Governmental Facilities	• Iowa Air National Guard Base (3100 McKinley Avenue) • United State Army Training Base – Ft Des Moines (225 E. Army Post Road) • Des Moines International Airport (5800 Fleur Drive) • Blank Park Zoo (74010 SW 9th Street)

Primary Target Hazard Fire	• Park Fleur Condominiums (3131 Fleur Drive)
	• Fort Des Moines Residential Complex (6908 Chaffee Road)
	• Des Moines International Airport (5800 Fleur Drive)
	• Hotels
	  ○ Holiday Inn (6111 Fleur Drive)
	  ○ Homewood Suites (6220 Stagecoach Drive)
	  ○ Ramada (1810 Army Post Road)

Primary Target Hazard Non-Fire	• Des Moines International Airport (5800 Fleur Drive) • Siegwerk USA Inc. (3535 SW 56th Street) • Gannett Publishing (7400 Register Drive) • FedEx Air Hub (5800 Fleur Drive)

Performance Data for Planning Zone 8

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
Fire	Low	Alarm Handling	00:39	01:04	**00:25**
		Turnout 1st SUPPRESSION	01:51	01:20	**00:31**
		Travel Time 1st SUPPRESSION - Distribution	06:34	04:00	**02:34**
		Travel Time ERF - Concentration	06:00	08:00	**02:00**
		Total Response Time 1st SUPPRESSION	**09:19**	**06:24**	**02:55**
		Incident Count 1st SUPPRESSION	10		
		Total Response Time ERF	**07:53**	**10:24**	**02:31**
		Incident Count ERF	7		
Fire	Medium	Alarm Handling	00:29	01:04	**00:35**
		Turnout 1st SUPPRESSION	02:44	01:20	**01:24**
		Travel Time 1st SUPPRESSION - Distribution	06:44	04:00	**02:44**
		Travel Time ERF - Concentration	09:24	08:00	**01:24**
		Total Response Time 1st SUPPRESSION	**09:02**	**06:24**	**02:38**
		Incident Count 1st SUPPRESSION	139		
		Total Response Time ERF	**11:28**	**10:24**	**01:04**
		Incident Count ERF	56		
Fire	High	Alarm Handling	00:34	01:04	**00:30**
		Turnout 1st SUPPRESSION	02:28	01:20	**01:08**
		Travel Time 1st SUPPRESSION - Distribution	06:54	04:00	**02:54**
		Travel Time ERF - Concentration	06:54	08:00	**01:06**
		Total Response Time 1st SUPPRESSION	**08:40**	**06:24**	**02:16**
		Incident Count 1st SUPPRESSION	85		
		Total Response Time ERF	**08:40**	**10:24**	**01:44**
		Incident Count ERF	84		
Fire	Maximum	Alarm Handling	00:35	01:04	**00:29**
		Turnout 1st SUPPRESSION	02:30	01:20	**01:10**
		Travel Time 1st SUPPRESSION - Distribution	04:55	04:00	**00:55**
		Travel Time ERF - Concentration	09:53	08:00	**01:53**
		Total Response Time 1st SUPPRESSION	**07:01**	**06:24**	**00:37**
		Incident Count 1st SUPPRESSION	198		
		Total Response Time ERF	**11:26**	**10:24**	**01:02**
		Incident Count ERF	32		

Performance Data for Planning Zone 8

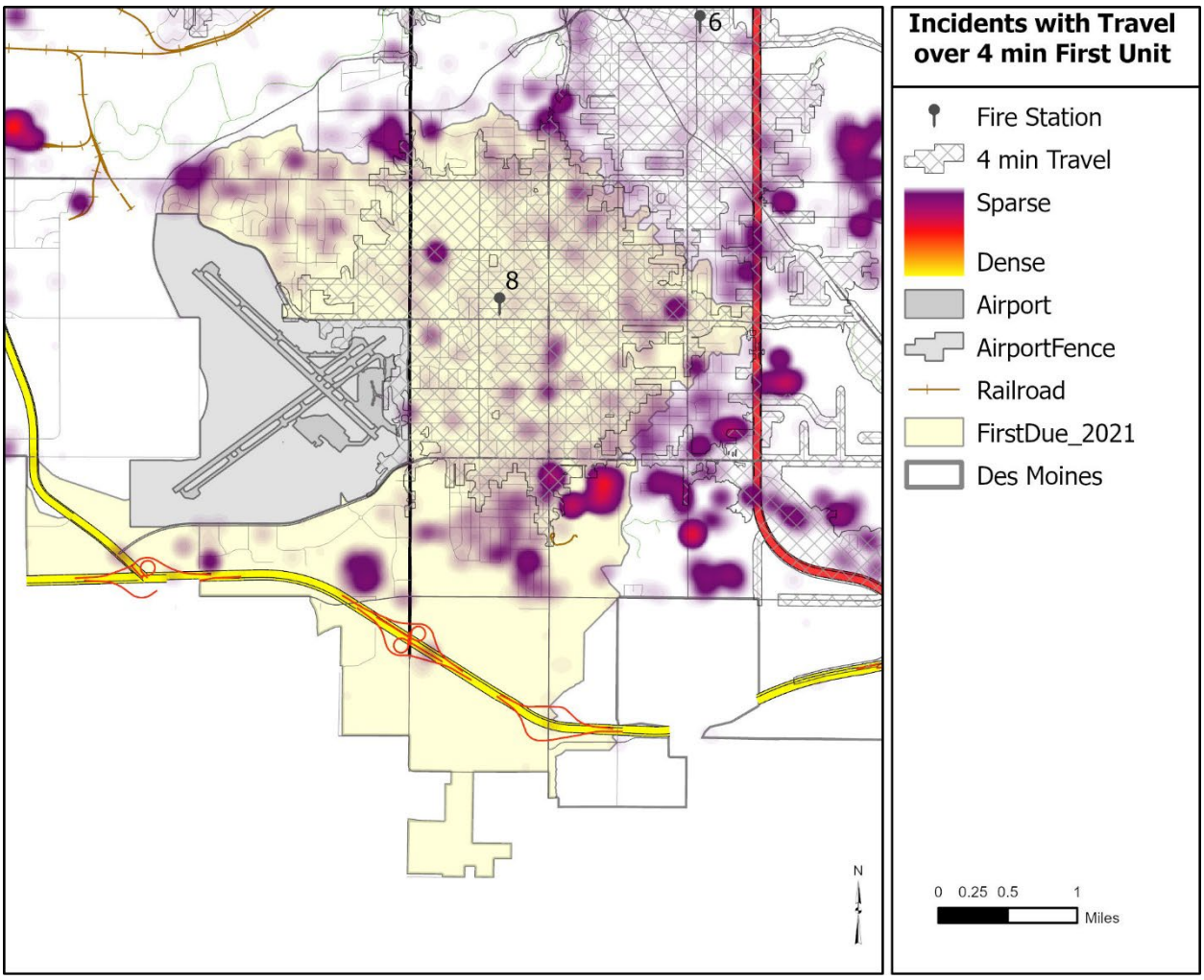
Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
EMS	Low	Alarm Handling	00:25	01:04	**00:39**
		Turnout Time 1st Unit	02:20	01:00	**01:20**
		Travel Time 1st Unit - Distribution	07:32	04:00	**03:32**
		Travel Time ERF - Concentration	06:52	08:00	**01:08**
		Total Response Time 1st Unit	**09:10**	**06:04**	**03:06**
		Incident Count 1st Unit - Distribution	19		
		Total Response Time ERF	**08:27**	**10:04**	**01:37**
		Incident Count ERF	18		
EMS	Medium	Alarm Handling	00:36	01:04	**00:28**
		Turnout Time 1st Unit	02:15	01:00	**01:15**
		Travel Time 1st Unit - Distribution	06:06	04:00	**02:06**
		Travel Time ERF - Concentration	06:18	08:00	**01:42**
		Total Response Time 1st Unit	**08:05**	**06:04**	**02:01**
		Incident Count 1st Unit - Distribution	413		
		Total Response Time ERF	**08:25**	**10:04**	**01:39**
		Incident Count ERF	393		
EMS	High	Alarm Handling	00:32	01:04	**00:32**
		Turnout Time 1st Unit	02:16	01:00	**01:16**
		Travel Time 1st Unit - Distribution	05:28	04:00	**01:28**
		Travel Time ERF - Concentration	05:46	08:00	**02:14**
		Total Response Time 1st Unit	**07:18**	**06:04**	**01:14**
		Incident Count 1st Unit - Distribution	2,524		
		Total Response Time ERF	**07:41**	**10:04**	**02:23**
		Incident Count ERF	2,439		
EMS	Maximum	Alarm Handling	00:33	01:04	**00:31**
		Turnout Time 1st Unit	02:11	01:00	**01:11**
		Travel Time 1st Unit - Distribution	05:22	04:00	**01:22**
		Travel Time ERF - Concentration	06:00	08:00	**02:00**
		Total Response Time 1st Unit	**07:06**	**06:04**	**01:02**
		Incident Count 1st Unit - Distribution	3,459		
		Total Response Time ERF	**07:54**	**10:04**	**02:10**
		Incident Count ERF	3,248		

Performance Data for Planning Zone 8

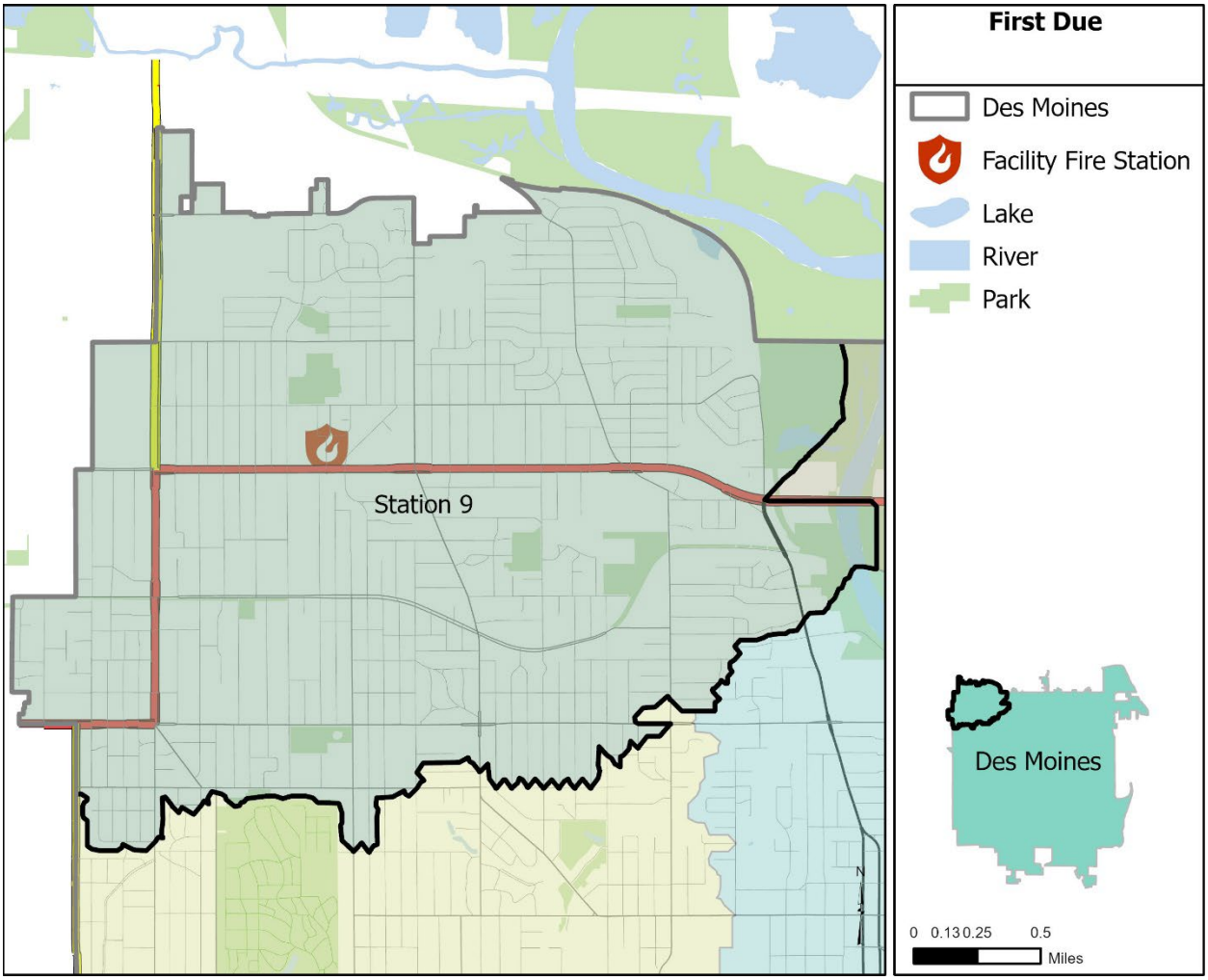
Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
Tech Rescue	Medium	Alarm Handling	00:07	01:04	**00:57**
		Turnout 1st SUPPRESSION	01:04	01:20	**00:16**
		Travel Time 1st SUPPRESSION - Distribution	05:03	04:00	**01:03**
		Travel Time ERF - Concentration		08:00	**08:00**
		Total Response Time 1st SUPPRESSION	**06:14**	**06:24**	**00:10**
		Incident Count 1st SUPPRESSION	1		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		
Tech Rescue	High	Alarm Handling	01:09	01:04	**00:05**
		Turnout 1st SUPPRESSION	02:45	01:20	**01:25**
		Travel Time 1st SUPPRESSION - Distribution	06:16	04:00	**02:16**
		Travel Time ERF - Concentration	07:13	08:00	**00:47**
		Total Response Time 1st SUPPRESSION	**08:56**	**06:24**	**02:32**
		Incident Count 1st SUPPRESSION	13		
		Total Response Time ERF	**09:49**	**10:24**	**00:35**
		Incident Count ERF	7		
Tech Rescue	Maximum	Alarm Handling		01:04	
		Turnout Time 1st Unit		01:20	
		Travel Time 1st SUPPRESSION - Distribution		04:00	
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st SUPPRESSION		**06:24**	
		Incident Count 1st SUPPRESSION	0		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		

Performance Data for Planning Zone 8

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
HazMat	Low	Alarm Handling	00:52	01:04	**00:12**
		Turnout 1st SUPPRESSION	03:00	01:20	**01:40**
		Travel Time 1st SUPPRESSION - Distribution	06:09	04:00	**02:09**
		Travel Time ERF - Concentration	06:09	08:00	**01:51**
		Total Response Time 1st SUPPRESSION	**09:16**	**06:24**	**02:52**
		Incident Count 1st SUPPRESSION	3		
		Total Response Time ERF	**09:16**	**10:24**	**01:08**
		Incident Count ERF	2		
HazMat	Medium	Alarm Handling	01:18	01:04	**00:14**
		Turnout 1st SUPPRESSION	02:31	01:20	**01:11**
		Travel Time 1st SUPPRESSION - Distribution	07:04	04:00	**03:04**
		Travel Time ERF - Concentration	06:17	08:00	**01:43**
		Total Response Time 1st SUPPRESSION	**09:05**	**06:24**	**02:41**
		Incident Count 1st SUPPRESSION	25		
		Total Response Time ERF	**07:58**	**10:24**	**02:26**
		Incident Count ERF	23		
HazMat	High	Alarm Handling	00:25	01:04	**00:39**
		Turnout 1st SUPPRESSION	03:19	01:20	**01:59**
		Travel Time 1st SUPPRESSION - Distribution	04:10	04:00	**00:10**
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st SUPPRESSION	**06:48**	**06:24**	**00:24**
		Incident Count 1st SUPPRESSION	4		
		Total Response Time ERF		**10:24**	**10:24**
		Incident Count ERF	0		


6
8
N
Incidents with Travel over 4 min First Unit
Fire Station
4 min Travel
Sparse
Dense
Airport
AirportFence
Railroad
FirstDue_2021
Des Moines
0 0.25 0.5 1
Miles

Planning Zone 9 - Station 9 First Due



Fire Station #9 is located at 4800 Douglas Avenue. The daily minimum staffing is 5 personnel. Resources operating out of this facility are:

Unit Type	Minimum Staffing		Qualifications	CY 2021 Unit Response Count	Inservice Time
	Qty	Rank			
Engine	1 1 1	Captain Firefighter Engineer	EMT-B EMT-B EMT-B	506	22.95%
Medic	1 1	Senior Medic Fire Medic	Paramedic Paramedic	2400	97.46%
Truck	1 1 1	Lieutenant Engineer Firefighter	EMT-B EMT-B Paramedic	2580	97.55%
Total	8/5	Engine is in service when staffing allows		5486	

Characteristics of First Due Area

Population Density	Urban
Station Specialties	None Assigned
Area Description	The area covered by Station 9 is located in the city's northwest corner and adjoins two other jurisdictions: Urbandale to the west and Johnston to the north. This area primarily comprises single-family homes in an area known as Beaverdale. The planning zone also includes many multi-family residential homes, apartments, and retirement and rehabilitation-type facilities. There are focused areas of small businesses utilized by the local neighborhood for typical goods and services. A large shopping center with big box-type stores on the northwest side of this planning zone also receives response services from the neighboring city of Urbandale.

Dispatches for service over the past 4 years:

Year	Units Dispatch Count	% Change
2019	5473	(1.99)
2020	5323	(2.74)
2021	5486	3.06

Dispatching by type and performance against agency benchmarks

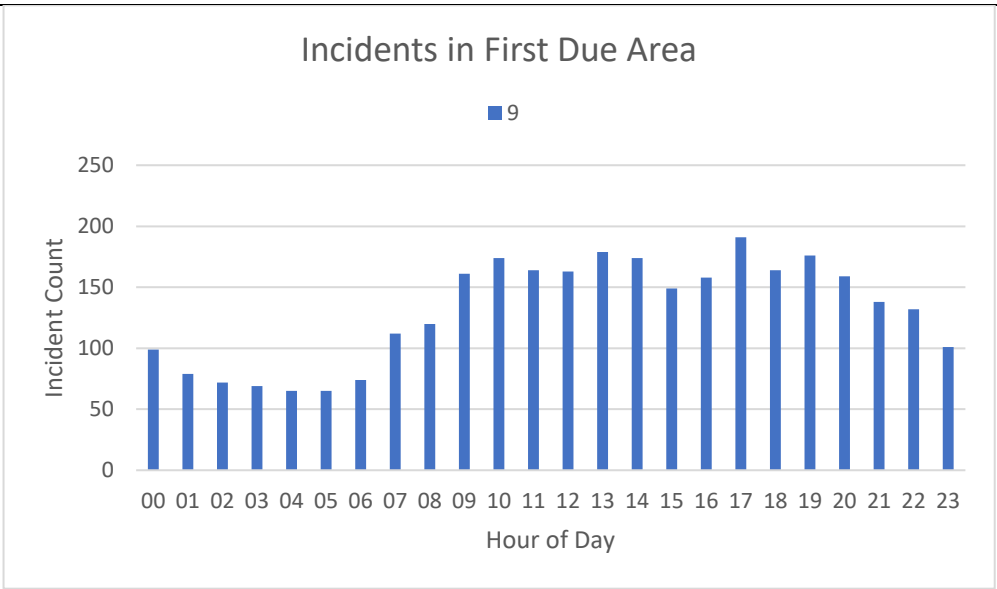
CY 2021 Turnout by Shift and Event Time			
Event Type	*NFPA Standard*	*Station*	
		90th	*% Met*
Fire	*1:20*	02:18	10%
EMS	*1:00*	02:05	65%
Tech Rescue	*1:20*	01:59	14%
HazMat	*1:20*	02:42	19%
WET	*1:20*	01:00	67%

Unit & Planning Zone Reliability

2021		Commit	Availability	Reliability		
Unit	Planning Zone	Unit Utilization	First Due Unit Availability	First-Due Area Reliability	First-Due Unit Reliability	Other than First-Due Unit Reliability
	Formula	secs from alarm to available/ secs in year service less out of service time	Unit to First Due/First Due Area	Any Unit to First Due within time limit / First Due Area Incidents	First Due unit to First Due area within time limit / First Due unit responding to First Due area	Other than First Due unit to First Due area within time limit / Other than First Due unit responding to First due area
MS09	9	17.1%	89.8%	75.6%	81.3%	23.6%
E09	9	7.1%	60.1%	57.6%	79.5%	21.8%
T09	9	8.6%	99.6%	73.8%	73.7%	100.0%

Unit Responses from Station – hour of day & day of week

Year	Hr	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Total
2021	0	40	24	34	15	25	22	30	190
	1	23	19	12	29	12	25	26	146
	2	20	18	23	20	18	7	22	128
	3	27	26	13	2	16	19	19	122
	4	27	17	18	18	13	13	9	115
	5	21	22	17	17	27	8	9	121
	6	10	17	16	18	16	25	15	117
	7	23	22	26	19	25	29	29	173
	8	34	45	26	33	24	37	28	227
	9	53	25	35	37	55	42	36	283
	10	37	47	40	34	45	49	35	287
	11	45	40	41	56	47	42	50	321
	12	39	35	46	51	30	55	34	290
	13	53	44	53	35	47	40	52	324
	14	35	46	55	31	43	37	41	288
	15	30	37	38	39	33	44	34	255
	16	43	51	38	34	46	27	26	265
	17	59	35	50	53	56	31	36	320
	18	31	46	63	31	39	42	33	285
	19	42	32	46	46	38	39	57	300
	20	30	35	39	54	30	42	47	277
	21	49	26	44	24	45	34	41	263
	22	22	43	30	28	32	35	34	224
	23	25	25	26	13	27	23	26	165
	Total	818	777	829	737	789	767	769	5486

Incidents occurring within First Due	
Major Transportation	• 63rd Street/Merle Hay Road (Iowa Highway 28) is on the western border of this planning zone and establishes the city limits to the west • Douglas Avenue (Iowa Highway 6) runs primarily east to west on the northern portion of this planning zone • Martin Luther King Jr. Parkway runs north to south on the eastern side of this planning zone • Hickman Road runs west to east through the southern part of this planning zone
Major Infrastructure	• The water tower at tower park is one of the city's largest elevated water storage sites.
Major Service and Utilities	• Water and Sewer • Natural Gas • Electric • Communications
Medical Facilities	• Veterans Affairs Health Care Systems
Schools	• Herbert Hoover High School (4800 Aurora Avenue) • Moore Elementary School (3716 50th Street) • Woodlawn Education Center (4000 Lower Beaver Road) • Samuelson Elementary School (3929 Bel Air Road) • Hillis Elementary School (2401 56th Street) • Monroe Elementary School (3015 Francis Avenue) • Perkins Elementary School (4301 College Avenue)
Governmental Facilities	• Polk and Dallas County River Plaza (WIC) (2300 Euclid Avenue) • Franklin Avenue Library (5000 Franklin Avenue) • Northwest Community Center (5110 Franklin Avenue)
Primary Target Hazard Fire	• Edencrest at Beaverdale (3410 Beaver Avenue) • Holiday Beaverdale Estates (4610 Douglas Avenue) • Calvin Community and Calvin Square (4210 Hickman Road)

	• Frank W. Smith Retirement Center (2100 Beaver Avenue)
Primary Target Hazard Non-Fire	• Des Moines River borders the northeast edge of this area

Performance Data for Planning Zone 9

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
Fire	Low	Alarm Handling	00:19	01:04	**00:45**
		Turnout 1st SUPPRESSION	02:23	01:20	**01:03**
		Travel Time 1st SUPPRESSION - Distribution	03:46	04:00	**00:14**
		Travel Time ERF - Concentration	06:02	08:00	**01:58**
		Total Response Time 1st SUPPRESSION	**05:45**	**06:24**	**00:39**
		Incident Count 1st SUPPRESSION	15		
		Total Response Time ERF	**07:36**	**10:24**	**02:48**
		Incident Count ERF	13		
Fire	Medium	Alarm Handling	00:37	01:04	**00:27**
		Turnout 1st SUPPRESSION	02:18	01:20	**00:58**
		Travel Time 1st SUPPRESSION - Distribution	06:16	04:00	**02:16**
		Travel Time ERF - Concentration	09:18	08:00	**01:18**
		Total Response Time 1st SUPPRESSION	**08:47**	**06:24**	**02:23**
		Incident Count 1st SUPPRESSION	126		
		Total Response Time ERF	**11:26**	**10:24**	**01:02**
		Incident Count ERF	40		
Fire	High	Alarm Handling	00:27	01:04	**00:37**
		Turnout 1st SUPPRESSION	02:41	01:20	**01:21**
		Travel Time 1st SUPPRESSION - Distribution	08:35	04:00	**04:35**
		Travel Time ERF - Concentration	08:26	08:00	**00:26**
		Total Response Time 1st SUPPRESSION	**10:16**	**06:24**	**03:52**
		Incident Count 1st SUPPRESSION	91		
		Total Response Time ERF	**10:03**	**10:24**	**00:21**
		Incident Count ERF	89		
Fire	Maximum	Alarm Handling	00:33	01:04	**00:31**
		Turnout 1st SUPPRESSION	02:03	01:20	**00:43**
		Travel Time 1st SUPPRESSION - Distribution	04:52	04:00	**00:52**
		Travel Time ERF - Concentration	12:27	08:00	**04:27**
		Total Response Time 1st SUPPRESSION	**06:44**	**06:24**	**00:20**
		Incident Count 1st SUPPRESSION	222		
		Total Response Time ERF	**13:55**	**10:24**	**03:31**
		Incident Count ERF	18		

Performance Data for Planning Zone 9

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
EMS	Low	Alarm Handling	00:22	01:04	**00:42**
		Turnout Time 1st Unit	02:03	01:00	**01:03**
		Travel Time 1st Unit - Distribution	07:07	04:00	**03:07**
		Travel Time ERF - Concentration	06:49	08:00	**01:11**
		Total Response Time 1st Unit	**08:26**	**06:04**	**02:22**
		Incident Count 1st Unit - Distribution	29		
		Total Response Time ERF	**07:51**	**10:04**	**02:13**
		Incident Count ERF	27		
EMS	Medium	Alarm Handling	00:38	01:04	**00:26**
		Turnout Time 1st Unit	02:12	01:00	**01:12**
		Travel Time 1st Unit - Distribution	05:44	04:00	**01:44**
		Travel Time ERF - Concentration	05:48	08:00	**02:12**
		Total Response Time 1st Unit	**07:27**	**06:04**	**01:23**
		Incident Count 1st Unit - Distribution	318		
		Total Response Time ERF	**07:43**	**10:04**	**02:21**
		Incident Count ERF	300		
EMS	High	Alarm Handling	00:29	01:04	**00:35**
		Turnout Time 1st Unit	02:11	01:00	**01:11**
		Travel Time 1st Unit - Distribution	05:15	04:00	**01:15**
		Travel Time ERF - Concentration	05:42	08:00	**02:18**
		Total Response Time 1st Unit	**07:08**	**06:04**	**01:04**
		Incident Count 1st Unit - Distribution	1,831		
		Total Response Time ERF	**07:40**	**10:04**	**02:24**
		Incident Count ERF	1,752		
EMS	Maximum	Alarm Handling	00:30	01:04	**00:34**
		Turnout Time 1st Unit	02:03	01:00	**01:03**
		Travel Time 1st Unit - Distribution	04:49	04:00	**00:49**
		Travel Time ERF - Concentration	05:37	08:00	**02:23**
		Total Response Time 1st Unit	**06:38**	**06:04**	**00:34**
		Incident Count 1st Unit - Distribution	3,033		
		Total Response Time ERF	**07:32**	**10:04**	**02:32**
		Incident Count ERF	2,845		

Performance Data for Planning Zone 9

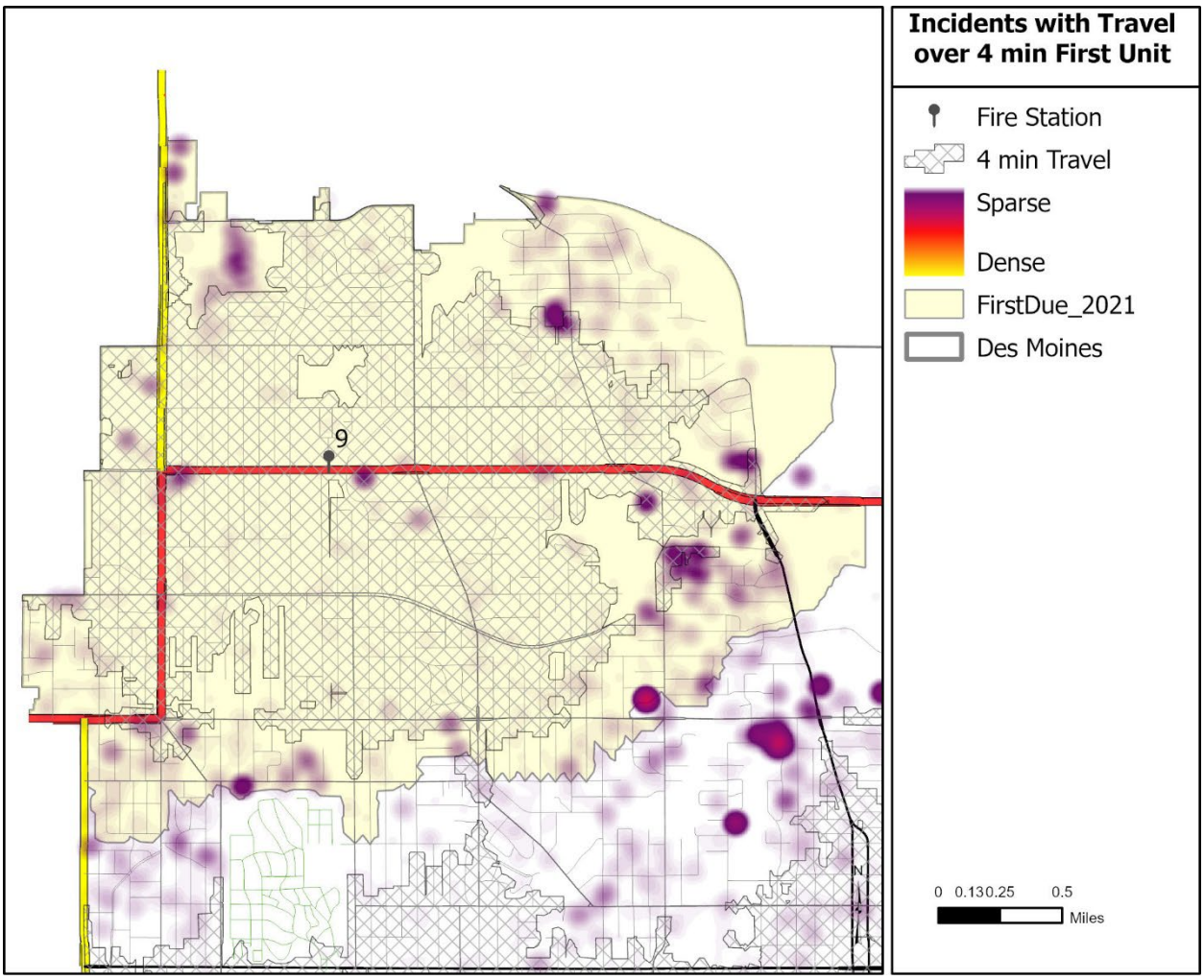
Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
Tech Rescue	Medium	Alarm Handling	00:13	01:04	00:51
		Turnout 1st SUPPRESSION	02:15	01:20	00:55
		Travel Time 1st SUPPRESSION - Distribution	02:36	04:00	01:24
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st SUPPRESSION	**05:04**	**06:24**	01:20
		Incident Count 1st SUPPRESSION	1		
		Total Response Time ERF		**10:24**	10:24
		Incident Count ERF	0		
Tech Rescue	High	Alarm Handling	00:29	01:04	00:35
		Turnout 1st SUPPRESSION	01:50	01:20	00:30
		Travel Time 1st SUPPRESSION - Distribution	08:01	04:00	04:01
		Travel Time ERF - Concentration	07:53	08:00	00:07
		Total Response Time 1st SUPPRESSION	**09:57**	**06:24**	03:33
		Incident Count 1st SUPPRESSION	10		
		Total Response Time ERF	**09:20**	**10:24**	01:04
		Incident Count ERF	3		
Tech Rescue	Maximum	Alarm Handling		01:04	
		Turnout Time 1st Unit		01:20	
		Travel Time 1st SUPPRESSION - Distribution		04:00	
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st SUPPRESSION		**06:24**	
		Incident Count 1st SUPPRESSION	0		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		

Performance Data for Planning Zone 9

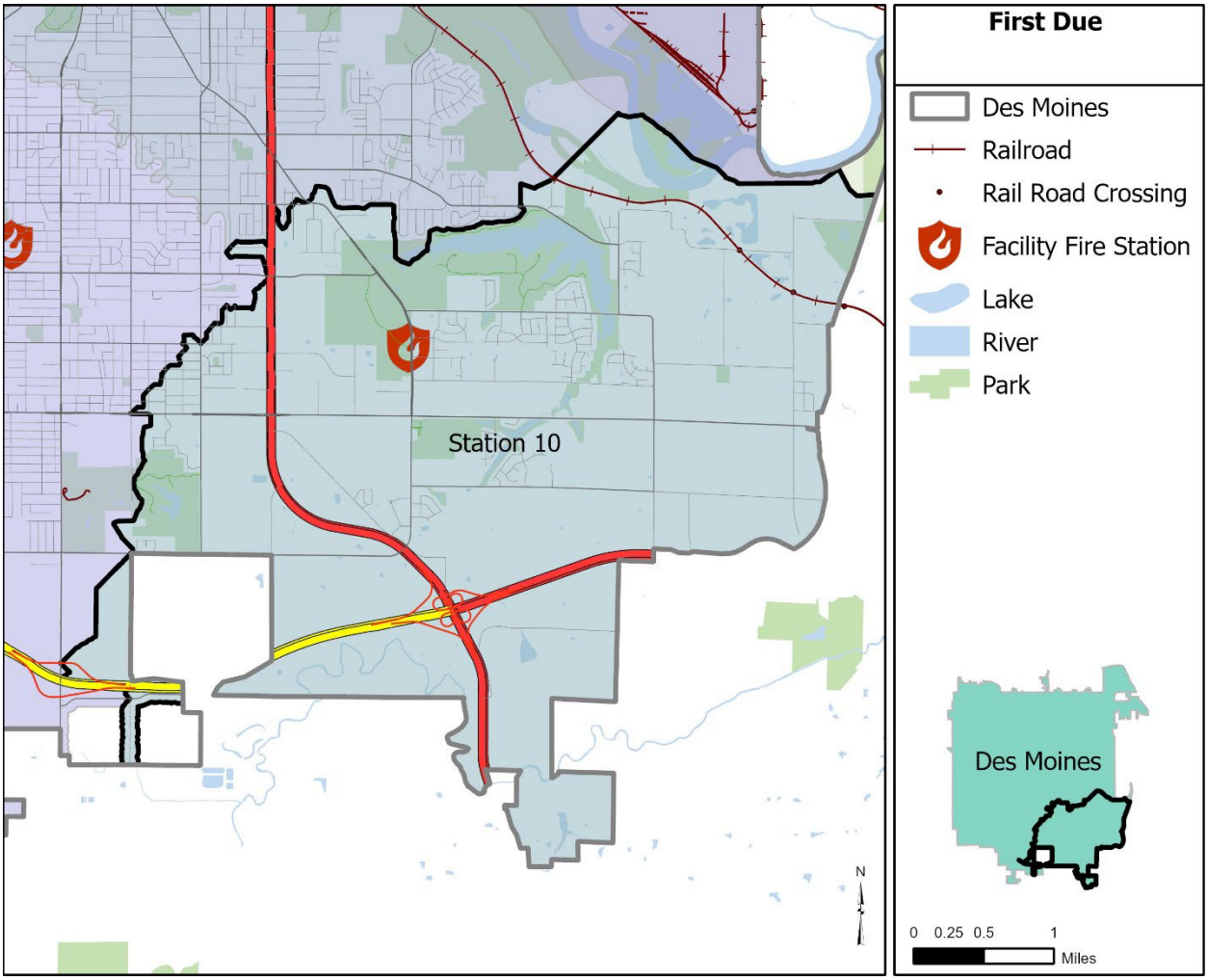
Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
HazMat	Low	Alarm Handling	00:24	01:04	**00:40**
		Turnout 1st SUPPRESSION	02:16	01:20	**00:56**
		Travel Time 1st SUPPRESSION - Distribution	05:15	04:00	**01:14**
		Travel Time ERF - Concentration	05:15	08:00	**02:46**
		Total Response Time 1st SUPPRESSION	**07:04**	**06:24**	**00:40**
		Incident Count 1st SUPPRESSION	6		
		Total Response Time ERF	**07:04**	**10:24**	**03:20**
		Incident Count ERF	6		
HazMat	Medium	Alarm Handling	00:58	01:04	**00:06**
		Turnout 1st SUPPRESSION	02:29	01:20	**01:09**
		Travel Time 1st SUPPRESSION - Distribution	06:09	04:00	**02:09**
		Travel Time ERF - Concentration	07:12	08:00	**00:48**
		Total Response Time 1st SUPPRESSION	**08:56**	**06:24**	**02:32**
		Incident Count 1st SUPPRESSION	17		
		Total Response Time ERF	**10:02**	**10:24**	**00:22**
		Incident Count ERF	13		
HazMat	High	Alarm Handling	00:49	01:04	**00:15**
		Turnout 1st SUPPRESSION	02:19	01:20	**00:59**
		Travel Time 1st SUPPRESSION - Distribution	06:34	04:00	**02:34**
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st SUPPRESSION	**09:10**	**06:24**	**02:46**
		Incident Count 1st SUPPRESSION	15		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		

Performance Data for Planning Zone 9

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
WET	Medium	Alarm Handling	01:53	01:04	**00:49**
		Turnout Time 1st Unit	01:30	01:20	**00:10**
		Travel Time 1st Unit - Distribution	05:58	04:00	**01:58**
		Travel Time ERF - Concentration	05:58	08:00	**02:02**
		Total Response Time 1st Unit	**07:51**	**06:24**	**01:27**
		Incident Count 1st Unit - Distribution	1		
		Total Response Time ERF	**07:51**	**10:24**	**02:33**
		Incident Count ERF	1		
WET	Maximum	Alarm Handling	01:55	01:04	**00:51**
		Turnout Time 1st Unit	01:24	01:20	**00:04**
		Travel Time 1st Unit - Distribution	09:48	04:00	**05:48**
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st Unit	**10:17**	**06:24**	**03:53**
		Incident Count 1st Unit - Distribution	4		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		


Incidents with Travel over 4 min First Unit
Fire Station
4 min Travel
Sparse
Dense
FirstDue_2021
Des Moines
9
N
0 0.130.25 0.5
Miles

Planning Zone 10 - Station 10 First Due



Fire Station #10 is located at 5900 E. Indianola Road. The daily minimum staffing is 5 personnel. Resources operating out of this facility are:

Unit Type	Minimum Staffing		Qualifications	CY 2021 Unit Response Count	Inservice Time
	Qty	Rank			
Engine	1 1 1	Captain Engineer Firefighter	EMT B EMT B EMT B	2274	99.24%
Medic	1 1	Senior Medic Fire Medic	Paramedic Paramedic	1992	94.62%
Tender		Cross-Staffed		4	
Total	5			4270	

Characteristics of First Due Area

Population Density	Urban
Station Specialties	Engine 10 is 1 of 4 extrication companies throughout the city equipped with specialized equipment and trained staff.
Area Description	Planning zone 10 encompasses the southeast portion of Des Moines. Both the Highway 5 Bypass and SE 14th Street are major thoroughfares. The first due area contains heavy commercial and large green spaces interspersed with residential occupancies. Easter Lake is one of many parks in the area.

Dispatches for service over the past 4 years:

Year	Units Dispatch Count	% Change
2019	3854	9.52
2020	3886	0.83
2021	4270	9.88

Dispatching by type and performance against agency benchmarks

CY 2021 Turnout by Shift and Event Time

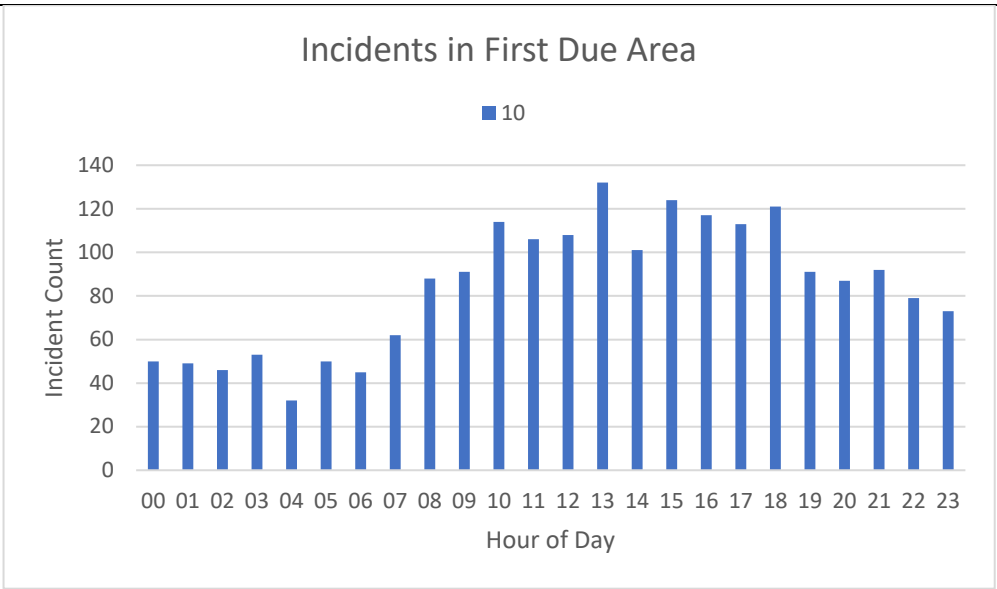
Event Type	*NFPA Standard*	*Station*	
		90th	*% Met*
Fire	*1:20*	02:43	9%
EMS	*1:00*	02:15	57%
Tech Rescue	*1:20*	02:28	10%
HazMat	*1:20*	02:22	5%
WET	*1:20*	01:14	50%

Unit & Planning Zone Reliability

2021		Commit	Availability	Reliability		
Unit	Planning Zone	Unit Utilization	First Due Unit Availability	First-Due Area Reliability	First-Due Unit Reliability	Other than First-Due Unit Reliability
	Formula	secs from alarm to available/ secs in year service less out of service time	Unit to First Due/First Due Area	Any Unit to First Due within time limit / First Due Area Incidents	First Due unit to First Due area within time limit / First Due unit responding to First Due area	Other than First Due unit to First Due area within time limit / Other than First Due unit responding to First due area
MS10	10	16.0%	84.8%	56.2%	62.0%	23.3%
E10	10	7.8%	95.7%	54.8%	55.4%	40.9%
T10	10			20.9%		20.9%

Unit Responses from Station – hour of day & day of week

Year	Hr	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Total
2021	0	23	17	20	9	23	13	20	125
	1	31	17	7	7	8	14	23	107
	2	23	7	10	14	11	12	15	92
	3	19	18	14	11	16	12	17	107
	4	20	12	5	6	11	10	12	76
	5	11	22	18	17	12	8	14	102
	6	15	12	9	6	18	14	8	82
	7	17	18	19	15	18	16	18	121
	8	17	17	33	22	29	24	25	167
	9	27	26	25	33	22	25	26	184
	10	32	26	42	31	48	37	31	247
	11	37	46	30	32	32	42	36	255
	12	36	31	37	36	27	46	24	237
	13	43	38	42	52	23	34	35	267
	14	34	44	35	42	17	27	32	231
	15	40	33	53	40	52	36	30	284
	16	31	27	41	21	33	33	21	207
	17	34	35	42	47	31	30	30	249
	18	35	27	36	41	29	37	37	242
	19	23	17	32	30	39	29	38	208
	20	36	41	32	26	26	25	23	209
	21	22	35	28	12	24	30	28	179
	22	28	23	15	22	25	22	28	163
	23	20	15	11	19	22	21	21	129
	Total	654	604	636	591	596	597	592	4270

Incidents occurring within First Due	
Major Transportation	• North-south thoroughfares include SE 14th Street and Indianola Avenue (which runs diagonally to downtown) • East-west thoroughfares include Army Post Road, McKinley Avenue, and the Iowa Highway 5 Bypass (which transitions to a north-south highway along the easternmost portion of the planning zone)
Major Infrastructure	• Water and Sewer • Natural Gas • Electric • Communications
Major Service and Utilities	• Verizon Cell Tower
Medical Facilities	• Southridge Family Clinic (6520 SE 14th St)
Schools	• DMACC Southridge Campus (1111 E Army Post Rd) • McCombs Middle School (201 County Line Rd) • Multiple Elementary Schools
Governmental Facilities	None
Primary Target Hazard Fire	• Southridge Mall • Multiple 3-5 story multi-family complexes
Primary Target Hazard Non-Fire	• Southridge Mall (1111 E Army Post Rd) • Easter Lake Park (2830 Easter Lake Dr) • Prairie Hills Assisted Living & Memory Care (5815 SE 27th St)

Performance Data for Planning Zone 10

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
Fire	Low	Alarm Handling	00:17	01:04	00:47
		Turnout 1st SUPPRESSION	02:31	01:20	01:11
		Travel Time 1st SUPPRESSION - Distribution	07:24	04:00	03:24
		Travel Time ERF - Concentration	10:36	08:00	02:36
		Total Response Time 1st SUPPRESSION	**09:56**	**06:24**	03:32
		Incident Count 1st SUPPRESSION	3		
		Total Response Time ERF	**13:12**	**10:24**	02:48
		Incident Count ERF	3		
Fire	Medium	Alarm Handling	00:40	01:04	00:24
		Turnout 1st SUPPRESSION	02:36	01:20	01:16
		Travel Time 1st SUPPRESSION - Distribution	08:05	04:00	04:05
		Travel Time ERF - Concentration	09:38	08:00	01:38
		Total Response Time 1st SUPPRESSION	**10:12**	**06:24**	03:48
		Incident Count 1st SUPPRESSION	112		
		Total Response Time ERF	**11:53**	**10:24**	01:29
		Incident Count ERF	38		
Fire	High	Alarm Handling	00:28	01:04	00:36
		Turnout 1st SUPPRESSION	02:31	01:20	01:11
		Travel Time 1st SUPPRESSION - Distribution	07:30	04:00	03:30
		Travel Time ERF - Concentration	07:30	08:00	00:30
		Total Response Time 1st SUPPRESSION	**09:06**	**06:24**	02:42
		Incident Count 1st SUPPRESSION	60		
		Total Response Time ERF	**09:06**	**10:24**	01:18
		Incident Count ERF	60		
Fire	Maximum	Alarm Handling	00:37	01:04	00:27
		Turnout 1st SUPPRESSION	02:37	01:20	01:17
		Travel Time 1st SUPPRESSION - Distribution	05:28	04:00	01:28
		Travel Time ERF - Concentration	12:22	08:00	04:22
		Total Response Time 1st SUPPRESSION	**07:29**	**06:24**	01:05
		Incident Count 1st SUPPRESSION	84		
		Total Response Time ERF	**14:41**	**10:24**	04:17
		Incident Count ERF	14		

Performance Data for Planning Zone 10

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
EMS	Low	Alarm Handling	00:19	01:04	00:45
		Turnout Time 1st Unit	01:47	01:00	00:47
		Travel Time 1st Unit - Distribution	05:29	04:00	01:29
		Travel Time ERF - Concentration	05:58	08:00	02:02
		Total Response Time 1st Unit	**07:31**	**06:04**	01:27
		Incident Count 1st Unit - Distribution	18		
		Total Response Time ERF	**07:31**	**10:04**	02:33
		Incident Count ERF	18		
EMS	Medium	Alarm Handling	00:26	01:04	00:38
		Turnout Time 1st Unit	02:11	01:00	01:11
		Travel Time 1st Unit - Distribution	06:40	04:00	02:40
		Travel Time ERF - Concentration	07:00	08:00	01:00
		Total Response Time 1st Unit	**08:33**	**06:04**	02:29
		Incident Count 1st Unit - Distribution	201		
		Total Response Time ERF	**08:36**	**10:04**	01:28
		Incident Count ERF	186		
EMS	High	Alarm Handling	00:29	01:04	00:35
		Turnout Time 1st Unit	02:11	01:00	01:11
		Travel Time 1st Unit - Distribution	05:41	04:00	01:41
		Travel Time ERF - Concentration	06:05	08:00	01:55
		Total Response Time 1st Unit	**07:29**	**06:04**	01:25
		Incident Count 1st Unit - Distribution	1,356		
		Total Response Time ERF	**07:57**	**10:04**	02:07
		Incident Count ERF	1,296		
EMS	Maximum	Alarm Handling	00:31	01:04	00:33
		Turnout Time 1st Unit	02:04	01:00	01:04
		Travel Time 1st Unit - Distribution	05:26	04:00	01:26
		Travel Time ERF - Concentration	06:09	08:00	01:51
		Total Response Time 1st Unit	**07:10**	**06:04**	01:06
		Incident Count 1st Unit - Distribution	1,957		
		Total Response Time ERF	**07:55**	**10:04**	02:09
		Incident Count ERF	1,829		

Performance Data for Planning Zone 10

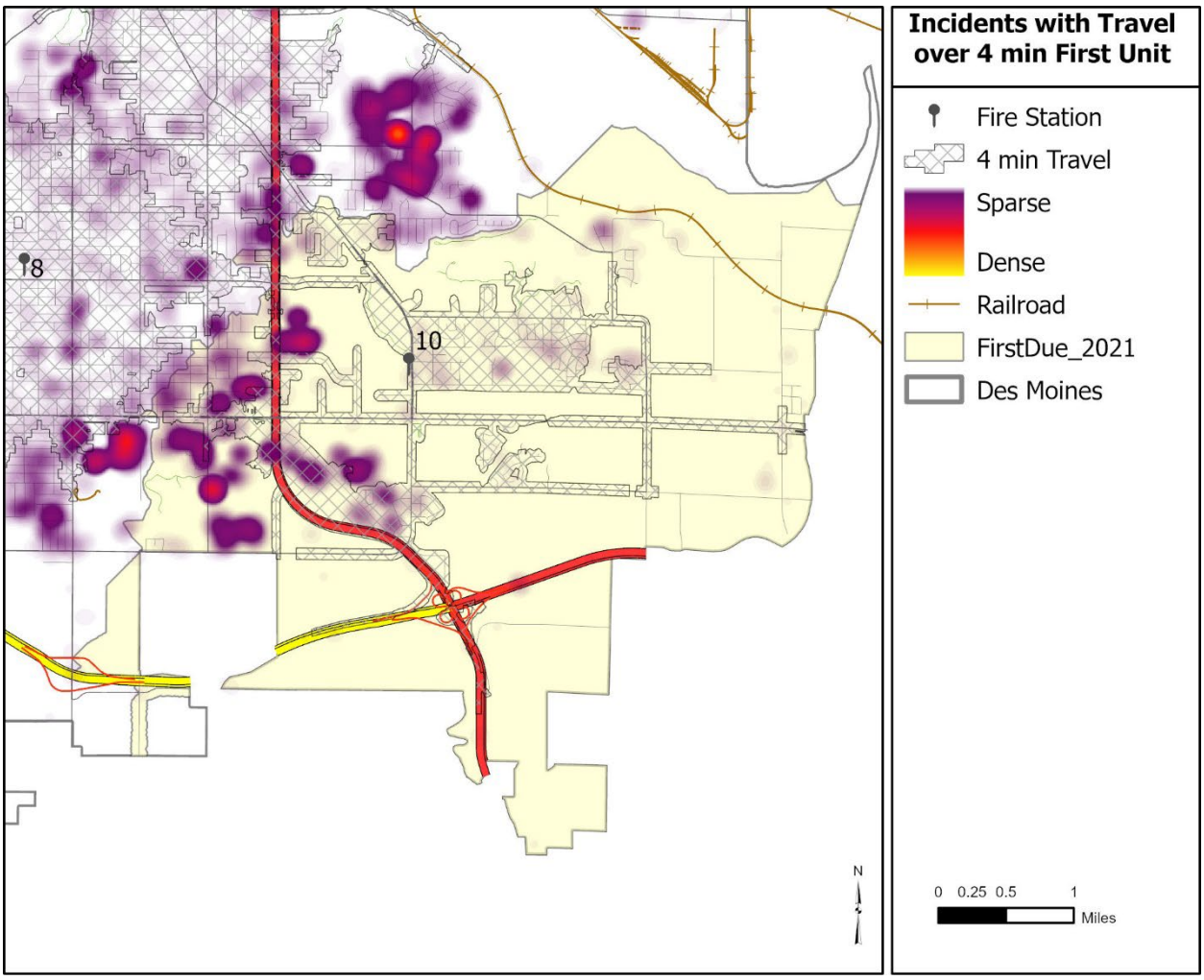
Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
Tech Rescue	Medium	Alarm Handling	00:07	01:04	**00:57**
		Turnout 1st SUPPRESSION	01:52	01:20	**00:32**
		Travel Time 1st SUPPRESSION - Distribution	04:25	04:00	**00:25**
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st SUPPRESSION	**06:24**	**06:24**	**00:00**
		Incident Count 1st SUPPRESSION	1		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		
Tech Rescue	High	Alarm Handling	00:41	01:04	**00:23**
		Turnout 1st SUPPRESSION	02:04	01:20	**00:44**
		Travel Time 1st SUPPRESSION - Distribution	04:11	04:00	**00:11**
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st SUPPRESSION	**06:41**	**06:24**	**00:17**
		Incident Count 1st SUPPRESSION	5		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		
Tech Rescue	Maximum	Alarm Handling		01:04	
		Turnout Time 1st Unit		01:20	
		Travel Time 1st SUPPRESSION - Distribution		04:00	
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st SUPPRESSION		**06:24**	
		Incident Count 1st SUPPRESSION	0		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		

Performance Data for Planning Zone 10

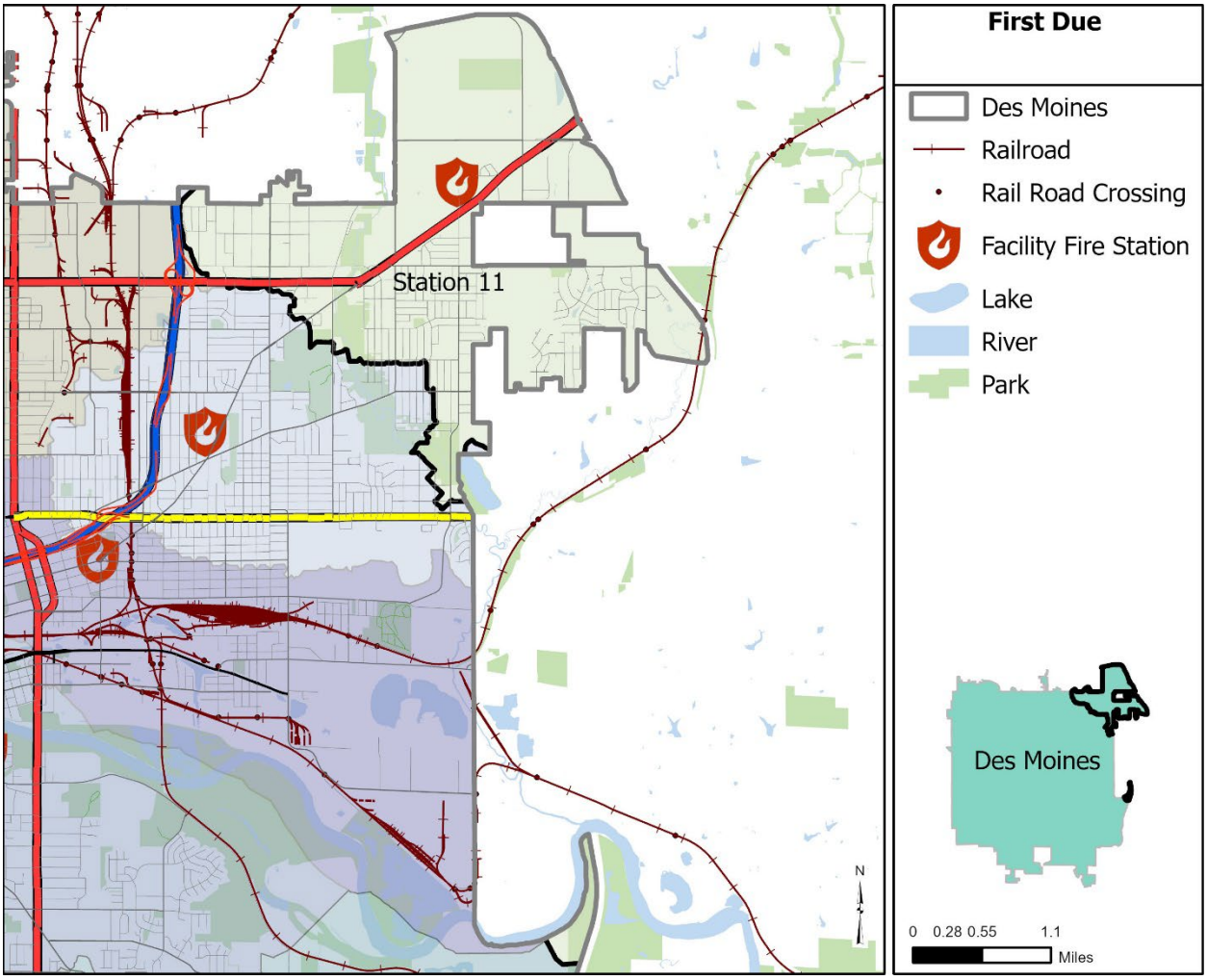
Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
HazMat	Low	Alarm Handling	00:14	01:04	**00:50**
		Turnout 1st SUPPRESSION	02:29	01:20	**01:08**
		Travel Time 1st SUPPRESSION - Distribution	05:20	04:00	**01:20**
		Travel Time ERF - Concentration	05:20	08:00	**02:40**
		Total Response Time 1st SUPPRESSION	**07:52**	**06:24**	**01:28**
		Incident Count 1st SUPPRESSION	4		
		Total Response Time ERF	**07:52**	**10:24**	**02:32**
		Incident Count ERF	3		
HazMat	Medium	Alarm Handling	00:34	01:04	**00:30**
		Turnout 1st SUPPRESSION	02:35	01:20	**01:15**
		Travel Time 1st SUPPRESSION - Distribution	07:24	04:00	**03:24**
		Travel Time ERF - Concentration	06:26	08:00	**01:34**
		Total Response Time 1st SUPPRESSION	**09:59**	**06:24**	**03:35**
		Incident Count 1st SUPPRESSION	17		
		Total Response Time ERF	**08:25**	**10:24**	**01:59**
		Incident Count ERF	15		
HazMat	High	Alarm Handling	01:26	01:04	**00:22**
		Turnout 1st SUPPRESSION	02:06	01:20	**00:46**
		Travel Time 1st SUPPRESSION - Distribution	04:39	04:00	**00:39**
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st SUPPRESSION	**07:10**	**06:24**	**00:47**
		Incident Count 1st SUPPRESSION	4		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		

Performance Data for Planning Zone 10

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
WET	Medium	Alarm Handling	00:26	01:04	**00:38**
		Turnout Time 1st Unit	01:55	01:20	**00:35**
		Travel Time 1st Unit - Distribution	06:51	04:00	**02:51**
		Travel Time ERF - Concentration	06:16	08:00	**01:44**
		Total Response Time 1st Unit	**07:07**	**06:24**	**00:43**
		Incident Count 1st Unit - Distribution	2		
		Total Response Time ERF	**07:40**	**10:24**	**02:44**
		Incident Count ERF	1		
WET	Maximum	Alarm Handling		01:04	
		Turnout Time 1st Unit		01:20	
		Travel Time 1st Unit - Distribution		04:00	
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st Unit		**06:24**	
		Incident Count 1st Unit - Distribution	0		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		


18
10
N
Incidents with Travel over 4 min First Unit
Fire Station
4 min Travel
Sparse
Dense
Railroad
FirstDue_2021
Des Moines
0 0.25 0.5 1
Miles

Planning Zone 11 - Station 11 First Due



Fire Station 11 is located at 4150 E. 42nd Street. The daily minimum staffing is 5 personnel. Resources operating out of this facility are:

Unit Type	Minimum Staffing		Qualifications	CY 2021 Unit Response Count	Inservice Time
	Qty	Rank			
Engine	1 1 1	Captain Engineer Firefighter	EMT-B EMT-B EMT-B	331	17.38%
Medic	1 1	Senior Medic Fire Medic	Paramedic Paramedic	19	35.71%
Tender		Cross-Staffed			
Total	5			350	

Characteristics of First Due Area

Population Density	Urban
Station Specialties	Station 11 houses one of two tenders. This unit is crossed staffed from the other assigned suppression and EMS resources at this station.
Area Description	Station 11 planning zone is comprised of single-family residential dwellings with focused areas of medium to heavy industrial facilities and warehouses. Along with clusters of 3-5 story multi-family apartment complexes, this area has an urban-rural interface with isolated pockets of un-hydrated streets. Additionally, this planning zone has tremendous growth potential for single-family and multi-family dwellings. A steady increase in population and building permits is anticipated in this area. A competition softball complex is in this zone. The 2021 opening of Station 11 has reduced the demand for service at Station 3.

Dispatches for service over the past 4 years:

Year	Units Dispatch Count	% Change
2021	350	-

Dispatching by type and performance against agency benchmarks

CY 2021 Turnout by Shift and Event Time

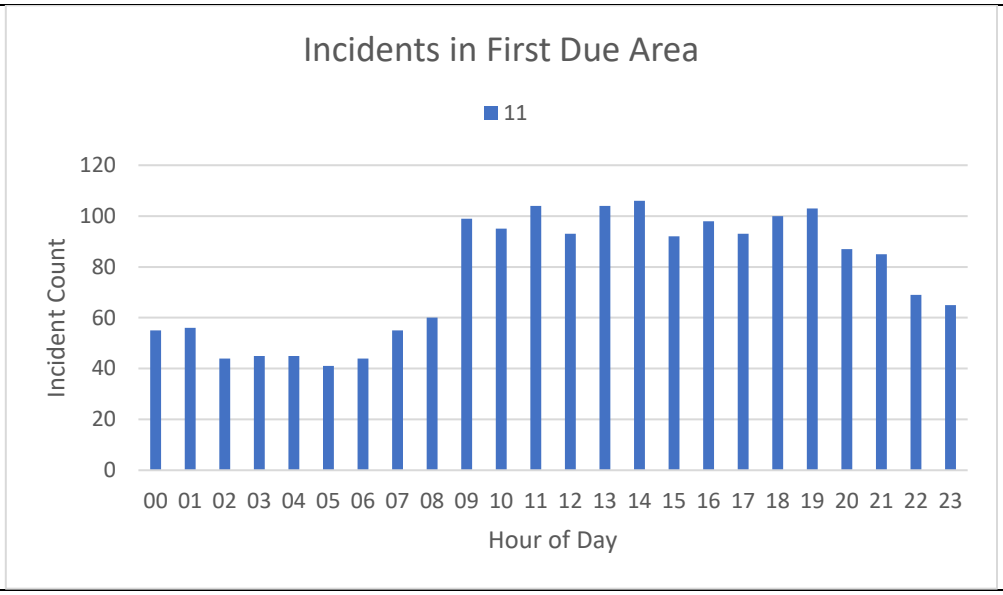
Event Type	*NFPA Standard*	*Station*	
		90th	*% Met*
Fire	*1:20*	02:22	4%
EMS	*1:00*	02:15	52%
Tech Rescue	*1:20*	01:38	0%
HazMat	*1:20*	01:29	0%

Unit & Planning Zone Reliability

2021		Commit	Availability	Reliability		
Unit	Planning Zone	Unit Utilization	First Due Unit Availability	First-Due Area Reliability	First-Due Unit Reliability	Other than First-Due Unit Reliability
	Formula	secs from alarm to available/ secs in year service less out of service time	Unit to First Due/First Due Area	Any Unit to First Due within time limit / First Due Area Incidents	First Due unit to First Due area within time limit / First Due unit responding to First Due area	Other than First Due unit to First Due area within time limit / Other than First Due unit responding to First due area
MS11	11	16.1%	1.4%	39.2%	100.0%	38.3%
E11	11	6.5%	41.5%	52.5%	81.5%	32.0%

Unit Responses from Station – hour of day & day of week

Year	Hr	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Total
2021	0	2		1	1	4	2	2	12
	1		1		1		1	1	4
	2		3	3	1	2	1		10
	3	3		1	1	1	2	1	9
	4	2	2	2		2	2		10
	5	1	1	4			1	2	9
	6		1	1	4			1	7
	7			2	4	1		1	8
	8	1	2		2	2	1	2	10
	9	3	2	5	13	3	3	2	31
	10		2	1	3	2	4	4	16
	11	2	3	5	4	1	2	3	20
	12	1	5	4	2	2	4	1	19
	13		3	4	2	4	2	2	17
	14		3	1	3	2	4	3	16
	15	3	1	2	5	3	3	3	20
	16	2	3	2	4	5	2	4	22
	17	1	1	1	2	4	3	2	14
	18	5	3	2	3	1	2	3	19
	19	3	5	3	2	2	4	4	23
	20	1	3	1	4	4	2	2	17
	21	1	1	3	3		2	2	12
	22	1	5	4		1	1	1	13
	23		2	2	3	1	2	2	12
	Total	32	52	54	67	47	50	48	350

Incidents occurring within First Due	
Major Transportation	• Interstate 235 runs north and south through the western portion of this planning zone • Interstate 80 runs east and west at the northern boundary of this planning zone • U.S. Highway 65 runs along the eastern boundary • Iowa Highway 6 runs east and west through this planning zone
Major Infrastructure	• Northern Natural Gas Transportation Pipeline • Railroad lines
Major Service and Utilities	• Water and Sewer • Natural Gas • Electric • Communications
Medical Facilities	None
Schools	• Hoyt Middle School (2700 E 42nd Street) • Brubaker Elementary School (2900 E 42nd Street) • Delaware Elementary School (4401 E 46th Street)
Governmental Facilities	None
Primary Target Hazard Fire	• Kings Court Mobile Home Park • Multiple 3 and 4 Story Apartment Complexes
Primary Target Hazard Non-Fire	• Four Mile Creek (flash flooding potential)

Performance Data for Planning Zone 11

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
Fire	Low	Alarm Handling	00:14	01:04	**00:50**
		Turnout 1st SUPPRESSION	02:18	01:20	**00:58**
		Travel Time 1st SUPPRESSION - Distribution	05:12	04:00	**01:12**
		Travel Time ERF - Concentration	05:45	08:00	**02:15**
		Total Response Time 1st SUPPRESSION	**07:12**	**06:24**	**00:48**
		Incident Count 1st SUPPRESSION	9		
		Total Response Time ERF	**07:55**	**10:24**	**02:29**
		Incident Count ERF	6		
Fire	Medium	Alarm Handling	00:29	01:04	**00:35**
		Turnout 1st SUPPRESSION	02:23	01:20	**01:03**
		Travel Time 1st SUPPRESSION - Distribution	07:47	04:00	**03:47**
		Travel Time ERF - Concentration	09:58	08:00	**01:58**
		Total Response Time 1st SUPPRESSION	**09:39**	**06:24**	**03:15**
		Incident Count 1st SUPPRESSION	77		
		Total Response Time ERF	**11:55**	**10:24**	**01:31**
		Incident Count ERF	17		
Fire	High	Alarm Handling	00:23	01:04	**00:41**
		Turnout 1st SUPPRESSION	02:24	01:20	**01:04**
		Travel Time 1st SUPPRESSION - Distribution	09:59	04:00	**05:59**
		Travel Time ERF - Concentration	09:59	08:00	**01:59**
		Total Response Time 1st SUPPRESSION	**11:48**	**06:24**	**05:24**
		Incident Count 1st SUPPRESSION	45		
		Total Response Time ERF	**11:48**	**10:24**	**01:24**
		Incident Count ERF	45		
Fire	Maximum	Alarm Handling	00:32	01:04	**00:32**
		Turnout 1st SUPPRESSION	01:59	01:20	**00:39**
		Travel Time 1st SUPPRESSION - Distribution	06:14	04:00	**02:14**
		Travel Time ERF - Concentration	13:34	08:00	**05:34**
		Total Response Time 1st SUPPRESSION	**08:05**	**06:24**	**01:41**
		Incident Count 1st SUPPRESSION	93		
		Total Response Time ERF	**15:51**	**10:24**	**05:27**
		Incident Count ERF	15		

Performance Data for Planning Zone 11

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
EMS	Low	Alarm Handling	00:23	01:04	**00:41**
		Turnout Time 1st Unit	02:11	01:00	**01:11**
		Travel Time 1st Unit - Distribution	09:45	04:00	**05:45**
		Travel Time ERF - Concentration	09:45	08:00	**01:45**
		Total Response Time 1st Unit	**11:08**	**06:04**	**05:04**
		Incident Count 1st Unit - Distribution	19		
		Total Response Time ERF	**11:08**	**10:04**	**01:04**
		Incident Count ERF	19		
EMS	Medium	Alarm Handling	00:39	01:04	**00:25**
		Turnout Time 1st Unit	02:16	01:00	**01:16**
		Travel Time 1st Unit - Distribution	07:56	04:00	**03:56**
		Travel Time ERF - Concentration	07:45	08:00	**00:15**
		Total Response Time 1st Unit	**09:40**	**06:04**	**03:36**
		Incident Count 1st Unit - Distribution	169		
		Total Response Time ERF	**09:36**	**10:04**	**00:28**
		Incident Count ERF	159		
EMS	High	Alarm Handling	00:36	01:04	**00:28**
		Turnout Time 1st Unit	02:17	01:00	**01:17**
		Travel Time 1st Unit - Distribution	07:01	04:00	**03:01**
		Travel Time ERF - Concentration	07:21	08:00	**00:39**
		Total Response Time 1st Unit	**08:53**	**06:04**	**02:49**
		Incident Count 1st Unit - Distribution	1,200		
		Total Response Time ERF	**09:24**	**10:04**	**00:40**
		Incident Count ERF	1,158		
EMS	Maximum	Alarm Handling	00:38	01:04	**00:26**
		Turnout Time 1st Unit	02:15	01:00	**01:15**
		Travel Time 1st Unit - Distribution	06:55	04:00	**02:55**
		Travel Time ERF - Concentration	07:35	08:00	**00:25**
		Total Response Time 1st Unit	**08:51**	**06:04**	**02:47**
		Incident Count 1st Unit - Distribution	1,521		
		Total Response Time ERF	**09:25**	**10:04**	**00:39**
		Incident Count ERF	1,413		

Performance Data for Planning Zone 11

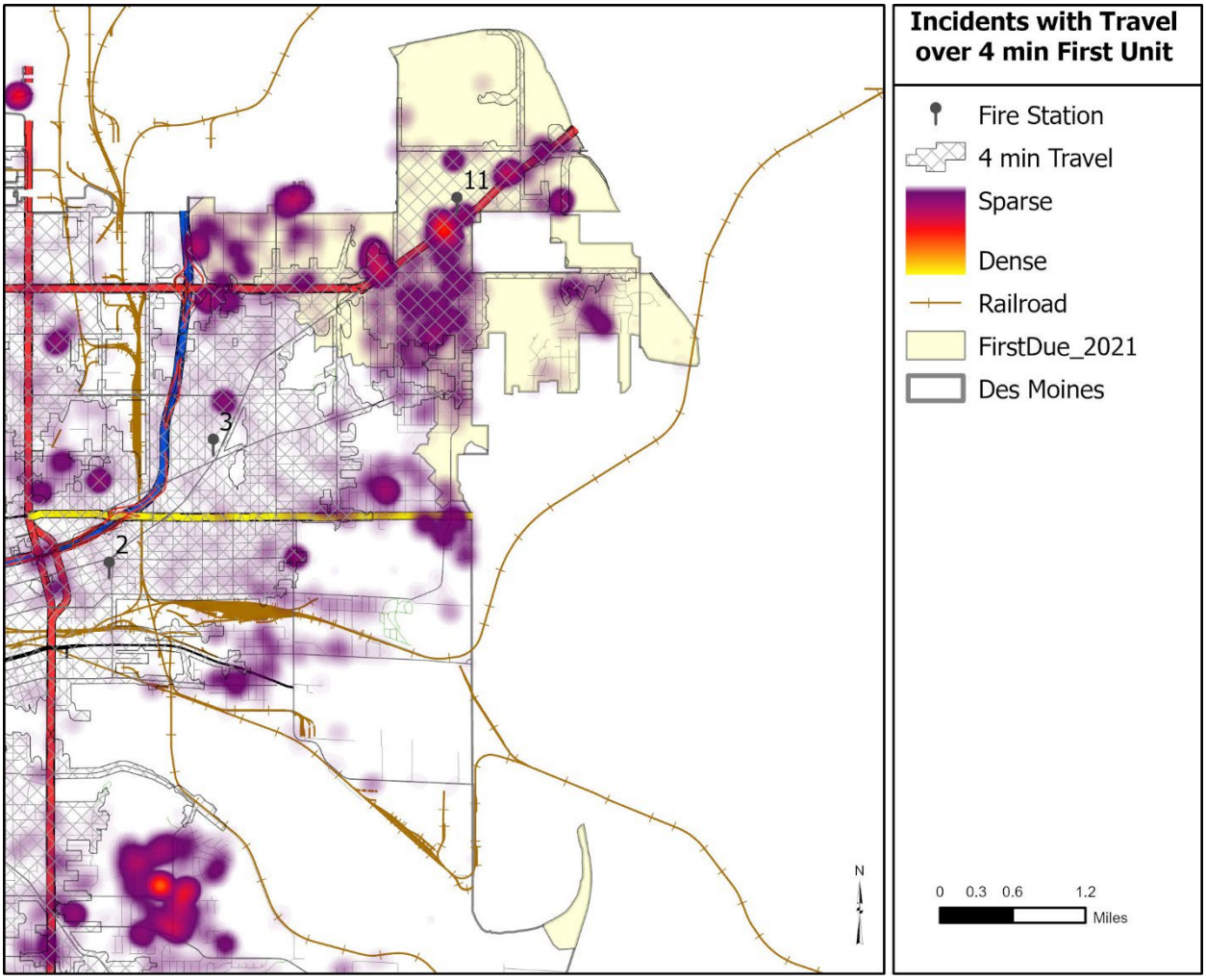
Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
Tech Rescue	Medium	Alarm Handling	01:04	01:04	00:00
		Turnout 1st SUPPRESSION	00:41	01:20	00:39
		Travel Time 1st SUPPRESSION - Distribution	11:56	04:00	07:56
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st SUPPRESSION	**13:41**	**06:24**	07:17
		Incident Count 1st SUPPRESSION	1		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		
Tech Rescue	High	Alarm Handling	00:42	01:04	00:23
		Turnout 1st SUPPRESSION	03:19	01:20	01:59
		Travel Time 1st SUPPRESSION - Distribution	09:12	04:00	05:12
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st SUPPRESSION	**12:52**	**06:24**	06:28
		Incident Count 1st SUPPRESSION	2		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		
Tech Rescue	Maximum	Alarm Handling		01:04	
		Turnout Time 1st Unit		01:20	
		Travel Time 1st SUPPRESSION - Distribution		04:00	
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st SUPPRESSION		**06:24**	
		Incident Count 1st SUPPRESSION	0		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		

Performance Data for Planning Zone 11

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
HazMat	Low	Alarm Handling	00:11	01:04	**00:53**
		Turnout 1st SUPPRESSION	03:12	01:20	**01:52**
		Travel Time 1st SUPPRESSION - Distribution	06:05	04:00	**02:05**
		Travel Time ERF - Concentration	06:05	08:00	**01:55**
		Total Response Time 1st SUPPRESSION	**09:29**	**06:24**	**03:05**
		Incident Count 1st SUPPRESSION	2		
		Total Response Time ERF	**09:29**	**10:24**	**00:55**
		Incident Count ERF	2		
HazMat	Medium	Alarm Handling	01:35	01:04	**00:31**
		Turnout 1st SUPPRESSION	02:59	01:20	**01:39**
		Travel Time 1st SUPPRESSION - Distribution	14:06	04:00	**10:06**
		Travel Time ERF - Concentration	14:31	08:00	**06:31**
		Total Response Time 1st SUPPRESSION	**15:39**	**06:24**	**09:15**
		Incident Count 1st SUPPRESSION	9		
		Total Response Time ERF	**16:06**	**10:24**	**05:42**
		Incident Count ERF	8		
HazMat	High	Alarm Handling	01:31	01:04	**00:27**
		Turnout 1st SUPPRESSION	02:09	01:20	**00:49**
		Travel Time 1st SUPPRESSION - Distribution	07:49	04:00	**03:49**
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st SUPPRESSION	**10:43**	**06:24**	**04:19**
		Incident Count 1st SUPPRESSION	3		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		

Performance Data for Planning Zone 11

Classifi-cation	Category	90th Percentile Times	Baseline 2019-2021	Bench-mark	Gap 2019-2021
WET	Medium	Alarm Handling	00:25	01:04	**00:39**
		Turnout Time 1st Unit	00:31	01:20	**00:49**
		Travel Time 1st Unit - Distribution	03:01	04:00	**00:59**
		Travel Time ERF - Concentration	09:17	08:00	**01:17**
		Total Response Time 1st Unit	**03:57**	**06:24**	**02:27**
		Incident Count 1st Unit - Distribution	1		
		Total Response Time ERF	**11:15**	**10:24**	**00:51**
		Incident Count ERF	1		
WET	Maximum	Alarm Handling		01:04	
		Turnout Time 1st Unit		01:20	
		Travel Time 1st Unit - Distribution		04:00	
		Travel Time ERF - Concentration		08:00	
		Total Response Time 1st Unit		**06:24**	
		Incident Count 1st Unit - Distribution	0		
		Total Response Time ERF		**10:24**	
		Incident Count ERF	0		


Incidents with Travel over 4 min First Unit
Fire Station
4 min Travel
Sparse
Dense
Railroad
FirstDue_2021
Des Moines
11
3
2
N
0 0.3 0.6 1.2
Miles

Appendix I: 90th Percentile Calculation

The department calculation of the 90th percentile aligns with the Commission on Fire Accreditation International®'s *Quality Improvement for the Fire and Emergency Services* 10th Edition Definition Three, based on linear interpolation.

Definition Three

This definition is based on linear interpolation and is used when the percentile sought is not a whole number. For example, the 90th percentile of a data set of 100 is 90. We know that because we multiply the desired percentile by the values count in the date set. If we wanted to find the 90th percentile value of a data set of 13, we would have to multiply 13 by 0.9, yielding 11.7. There is no value in rank order 11.7, so we need to do some math to find the answer. We could round up the rank orders 11 and 12, then find 70 - percent of the difference and add that to the value of rank order 11. The result is the rank order of 11.7 which explains why you may observe a 90th percentile in your calculations and not be able to find a corresponding value I the dataset.

DMFD used Excel and SQL statements to produce these calculations for the SOC. The functions used were.

PERCENTILE_CONT - Calculates a percentile based on a continuous distribution of the column value in SQL Server. The result is interpolated and might not be equal to any of the specific values in the column.

PERCENTILE.EXC - will interpolate when the value for the specified percentile lies between two values in the array.

Appendix J: Analysis Recommendations

Recommendation Boxes

1. For future data analysis, call types (examples: private alarm) should be broken out into sub-call types (water flow, emergency pendant activation, and general fire alarm) to accurately assess the frequency of these incidents.

2. All response plans should be updated in the CAD system to accurately dispatch the number and type of units by risk in lieu of all structure fires being dispatched as a regular alarm.

3. For future data analysis, it is recommended that the department analyze reliability in terms of the number of calls in the planning zone where the unit assigned to that planning zone is available (regardless of whether or not that unit was dispatched).

4. For continued analysis, it is recommended that the department analyze unit utilization thresholds to ensure these values are appropriate for the expected workload and desired reliability within the system.

5. Presently, the department is only able to track times from when the call is transferred to fire dispatch. It is recommended to validate the total response time and that the alarm handling time accurately reflect the time when a call taker answers the call until the responding units are notified.

From Section J - Recommendations for Improved Effectiveness in Deployment and Coverage

The department has reviewed workload and performance in various formats and frequencies. This document and process represent a consistent and repeatable analysis methodology (recommendations to improve this analysis and methodology are in Appendix J). Through this analysis, the department has determined the need to address the gaps/shortcomings in performance in the following ways: reconfiguration/ redeployment of resources, adding additional resources and capabilities to the current system, and consideration/ implementation of alternative methods to address risks within the city of Des Moines:

- The addition of Station 11 in November 2021 is an example of redeployment and adding resources to the system. The station opened in November 2021 with a single redeployed engine company, and in July 2022, the city added a new medic squad (ambulance). Anecdotally, this has positively affected response times in the northeastern portion of Des Moines and reduced the workload on units and personnel at Stations 3 and 7. Reducing the workload should also make them more available to respond to calls in their first-due area. The department will not completely know the impact of these changes until data from 2022 can be analyzed.
- The relocation of Station 4 (planned for mid-2025) is an example of how the department can reconfigure the response system to address the risk and call volume within the city. Station 4's new location will specifically address an area (between stations 4, 5, and 9) of the city that is outside of the 4-minute travel time from the current configuration of fixed assets. Once this station and the resources deployed from the station move, the department will need to examine the impact of this change, especially along the eastern and southern borders of planning zone 4 of today.
- Areas of the city that experience first arriving unit travel time exceeding 4 minutes (categorized generally as the areas on the eastern edge of planning zone 6 and the western edge of planning zone 5) is primarily attributable to the limited street network in the area and travel time to a fire station. One potential solution that warrants further investigation is the concept of traffic preemption. The ability

to manipulate traffic signals is one option that may contribute to reducing response travel times throughout the city and may help alleviate excessive travel times to these isolated areas.

- Areas in the southern portion of Des Moines (categorized generally as the area south of the Raccoon and Des Moines Rives) with a substantial number of calls where the first arriving unit travel time exceeded 4 minutes require a more significant study of potential station locations. Stations 8 and 10 will need replacement eventually (next ten years). Adding another station will be necessary to meet the benchmark performance objectives in the city's southern region. There will need to be careful consideration as to the timing and location of these new facilities to ensure these changes do not negatively impact the system's performance.
    - In addition to the potential movement of fixed assets in the southern portion of the city, alternative measures such as; retroactive installation of fire protection systems, intensified fire prevention education efforts, and increased neighborhood outreach should all be considered to reduce the risk and severity of incidents occurring within these areas known to be outside of 4 minutes travel time from fixed assets.
- The density and timing of calls within the central portion of the city will require further investigation to determine the most appropriate improvements needed to address these demands. Possible solutions include consistent staffing of Engines 8 and 9 to reduce calls for Engines 1 and 4 beyond their planning zone, peak-time resources to address the density of calls during certain hours of the day and day of the week, as well as pursuing diversion and alternative response programs (e.g., CARE team responses) to reduce the demand for resources in these areas.
- The department will seek to increase efficiency in turnout times system-wide using a multipronged approach.
    - Short term, the department can provide increased awareness of turnout times by:
        - Seek funding to add modern, effective station alerting and turnout timing equipment into existing stations.
        - Publish reports outlining turnout times by station, division, and classification to all personnel,
        - ensuring data quality through personnel education,
        - quality assurance review, and
        - the use of outlier data qualification practices.
    - In the long term, the department will improve station design for all new builds and station remodels. The department is acutely aware of distances and impediments impacting turnout times. Station architecture concerning turnout was a priority in the design and construction of Station 11 and is part of the design discussion for Station 4.

Appendix K: 2022 Data

Response Summary (Table 4)

Year	Fire	EMS	Tech Rescue	HazMat	WET	Other	Total Incidents
2019	5,319	21,516	140	395	49	106	27,525
2020	5,914	21,872	86	422	16	48	28,358
2021	6,178	23,799	170	382	20	196	30,745
2022	6,233	25,300	152	437	26	226	32,374

Planning Zone Incidents (Table 13)

	First Due Station	Fire	EMS	Tech Rescue	HazMat	WET	Other	Total
2022	Outside city	33	159		2	1	8	**203**
2022	1	597	3,251	68	26	10	47	**3,999**
2022	2	434	1,181	3	27		17	**1,662**
2022	3	548	1,959	6	40		30	**2,583**
2022	4	684	3,293	21	44	7	85	**4,134**
2022	5	580	2,346	10	71	2	12	**3,021**
2022	6	555	2,097	2	34	2	13	**2,703**
2022	7	528	1,961	4	45	3	1	**2,542**
2022	8	689	3,103	8	60		11	**3,871**
2022	9	748	2,669	8	41	1	1	**3,468**
2022	10	462	1,811	17	25		1	**2,316**
2022	11	375	1,470	5	22			**1,872**
2022	**Total Incidents**	**6,233**	**25,300**	**152**	**437**	**26**	**226**	**32,374**

Station Unit Responses 2022 (Table 14)

Station	Unit	Fire	EMS	Tech Rescue	HazMat	WET	Other	Total
01	DC01	604	111	30	74	25	3	847
	E01	1,175	2,420	74	55	12	3	3,739
	HAZ01		1		21		2	24
	MCC01						5	5
	MS01	182	3,569	3	7	9	4	3,774
	ST01						12	12
	T01	1,192	563	21	86	20	3	1,885
	U01		3				30	33
01 Total		**3,153**	**6,667**	**128**	**243**	**66**	**62**	**10,319**

Station	Unit	Fire	EMS	Tech Rescue	HazMat	WET	Other	Total
02	DC02	620	66	13	46	23	2	770
	E02	879	1,160	16	64		7	2,126
	MS02		2					2
02 Total		**1,499**	**1,228**	**29**	**110**	**23**	**9**	**2,898**
03	HAZ03		1		30		1	32
	MS03	162	2,986	4	6	2	10	3,170
	T03	1,043	1,767	10	96	3	2	2,921
03 Total		**1,205**	**4,754**	**14**	**132**	**5**	**13**	**6,123**
04	E04	1,106	2,364	25	52	6	1	3,554
	MS04	233	3,596	9	12	5	15	3,870
	PU4	7	1					8
04 Total		**1,346**	**5,961**	**34**	**64**	**11**	**16**	**7,432**
05	E05	781	1,741	23	88	3	2	2,638
	MS05	129	2,432	10	6	4	5	2,586
05 Total		**910**	**4,173**	**33**	**94**	**7**	**7**	**5,224**
06	E06	1						1
	MS06	180	2,722	4	6	19	1	2,932
	T06	1,065	1,716	4	73	2	1	2,861
06 Total		**1,246**	**4,438**	**8**	**79**	**21**	**2**	**5,794**
07	E07	753	1,609	14	56	2	1	2,435
	MS07	149	2,442	2	9	3		2,605
	TN07	1						1
	TR07	2						2
07 Total		**905**	**4,051**	**16**	**65**	**5**	**1**	**5,043**
08	BR08	12					1	13
	E08	89	248	2	4			343
	MS08	120	2,820	6	11	2		2,959
	T08	895	2,278	13	66	1		3,253
	U08	5	1				14	20
08 Total		**1,121**	**5,347**	**21**	**81**	**3**	**15**	**6,588**
09	E09	123	241		8			372
	MS09	92	2,456	8	4	1	2	2,563
	T09	878	1,794	11	76	2	1	2,762
09 Total		**1,093**	**4,491**	**19**	**88**	**3**	**3**	**5,697**
10	E10	758	1,617	17	71		1	2,464
	MS10	102	1,980	4	8	1	1	2,096
	TN10	9						9
10 Total		**869**	**3,597**	**21**	**79**	**1**	**2**	**4,569**
11	E11	475	1,192	6	25		3	1,701
	MS11	69	849	4	2		6	930
	TN11	6						6
11 Total		**550**	**2,041**	**10**	**27**		**9**	**2,637**

Station	Unit	Fire	EMS	Tech Rescue	HazMat	WET	Other	Total
AARF	AARF	28	66	1	3			98
AARF Total		**28**	**66**	**1**	**3**			**98**
Fire Admin	F101	1					1	2
	F102	5	2		1		1	9
	F103	2	1					3
	F104	5						5
	F112	1						1
	F32	1						1
	F41				4	1		5
	F61	41						41
	F63	3	1					4
	F65	7						7
	F70	13	1					14
	F71	77			1		2	80
	F72	28			1			29
	F80				2		1	3
	F81		1		12		6	19
Fire Admin Total		**184**	**6**		**21**	**1**	**11**	**223**
NA	NA						2	2
NA Total							**2**	**2**
SPECIAL-EVENT	E20						16	16
	E21						2	2
	E24						1	1
	MS20		1				118	119
	MS21		3				34	37
	MS22						38	38
	MS23						18	18
	MS24						1	1
	MS25						10	10
	MS26						7	7
SPECIAL-EVENT Total			**4**				**245**	**249**
WET	WT2					13		13
	WT6					13	2	15
WET Total						**26**	**2**	**28**
Grand Total		**14,109**	**46,824**	**334**	**1,086**	**172**	**399**	**62,924**

Emergent Workload & Reliability (Tables 15, 16 & Appendix E)

2022		Emergent Workload				Reliability		
Unit	Planning Zone	Planning Zone	1st Due Unit to Planning Zone	Other Units to Planning Zone	Unit Total runs	Planning Zone Reliability	1st-Due Unit Reliability	Other than 1st-Due Unit Reliability
Notes		*Canceled responses are excluded.*				*The response goal (turnout + travel) 5:20*		
MS01	PZ-1	1134	932	202	1231	87.0%	92.5%	61.9%
MS02	PZ-2	320	0	320	1	62.5%		
MS03	PZ-3	933	810	123	1206	80.8%	85.3%	51.2%
MS04	PZ-4	1368	1054	314	1327	84.4%	89.6%	66.9%
MS05	PZ-5	1124	936	188	1108	71.8%	77.8%	42.0%
MS06	PZ-6	1042	876	166	1119	64.4%	67.6%	47.6%
MS07	PZ-7	948	817	131	1003	78.8%	86.4%	31.3%
MS08	PZ-8	1425	1213	212	1439	68.2%	75.8%	24.5%
MS09	PZ-9	1376	1222	154	1337	75.4%	83.0%	15.6%
MS10	PZ-10	884	738	146	917	51.8%	56.5%	28.1%
MS11	PZ-11	481	276	205	345	64.4%	80.1%	43.4%
E01	PZ-1	942	866	76	1154	90.3%	92.5%	65.8%
E02	PZ-2	609	558	51	744	74.5%	77.1%	47.1%
E03	PZ-3	176	0	176	0	50.6%		
E04	PZ-4	1186	956	230	1133	82.0%	87.1%	60.9%
E05	PZ-5	711	610	101	703	70.9%	75.2%	44.6%
E06	PZ-6	130	0	130	0	42.3%		
E07	PZ-7	728	674	54	769	74.6%	78.8%	22.2%
E08	PZ-8	186	70	116	81	46.8%	75.7%	29.3%
E09	PZ-9	157	61	96	70	43.9%	63.9%	31.3%
E10	PZ-10	528	517	11	649	51.3%	51.5%	45.5%
E11	PZ-11	660	643	17	710	76.2%	77.8%	17.6%
T01	PZ-1	233	180	53	258	73.4%	86.1%	30.2%
	PZ-2	88	0	88	0	55.7%		55.7%
T03	PZ-3	559	556	3	752	79.1%	79.3%	33.3%
	PZ-4	49	0	49	0	61.2%		61.2%
	PZ-5	65	0	65	0	27.7%		27.7%
T06	PZ-6	534	511	23	629	73.0%	74.2%	47.8%
	PZ-7	30	0	30	0	30.0%		30.0%
T08	PZ-8	890	832	58	959	68.4%	71.3%	27.6%
T09	PZ-9	678	671	7	725	68.9%	68.7%	85.7%
T10	PZ-10	86	0	86	0	22.1%		22.1%
	PZ-11	111	0	111	0	32.4%		32.4%
Supression	PZ-1	1175	1046	129	1412	87.0%	91.4%	51.2%
Supression	PZ-2	697	558	139	744	72.2%	77.1%	52.5%
Supression	PZ-3	735	556	179	752	72.2%	79.3%	50.3%
Supression	PZ-4	1235	956	279	1133	81.2%	87.1%	60.9%
Supression	PZ-5	776	610	166	703	67.3%	75.2%	38.0%
Supression	PZ-6	664	511	153	629	67.0%	74.2%	43.1%
Supression	PZ-7	758	674	84	769	72.8%	78.8%	25.0%
Supression	PZ-8	1076	902	174	1040	64.7%	71.6%	28.7%
Supression	PZ-9	835	732	103	795	64.2%	68.3%	35.0%
Supression	PZ-10	614	517	97	649	47.2%	51.5%	24.7%
Supression	PZ-11	771	643	128	710	69.9%	77.8%	30.5%

Commitment Factor (UHU) (Table 18)

2022		Commit
Unit	Planning Zone	Unit Utilization
		time on call / time in-service
MS01	PZ-1	21.8%
MS02	PZ-2	0.0%
MS03	PZ-3	21.4%
MS04	PZ-4	21.8%
MS05	PZ-5	16.4%
MS06	PZ-6	19.7%
MS07	PZ-7	16.0%
MS08	PZ-8	23.5%
MS09	PZ-9	17.8%
MS10	PZ-10	16.1%
MS11	PZ-11	11.2%
E01	PZ-1	11.5%
E02	PZ-2	8.3%
E03	PZ-3	
E04	PZ-4	12.1%
E05	PZ-5	9.4%
E06	PZ-6	
E07	PZ-7	8.4%
E08	PZ-8	7.9%
E09	PZ-9	5.6%
E10	PZ-10	8.4%
E11	PZ-11	5.9%
T01	PZ-1	5.9%
	PZ-2	
T03	PZ-3	10.0%
	PZ-4	
	PZ-5	
T06	PZ-6	10.0%
	PZ-7	
T08	PZ-8	11.8%
T09	PZ-9	9.6%
T10	PZ-10	
	PZ-11	

Out-of-Service Percentages for Medic Squads, Engines, and Trucks (Table 19)

Units Out of Service Frontline Units 1/1/2019 thru 12/31/2022 Percent of Time Frontline Units are out of service by year.					
Unit	**2019**	**2020**	**2021**	**2022**	**Notes**
E01	5.2%	5.6%	3.9%	2.2%	
E02	2.3%	2.0%	1.5%	2.5%	
E03	31.5%	48.2%	40.6%		Removed from service Nov 2021
E04	1.7%	1.2%	1.0%	1.6%	
E05	0.7%	0.8%	0.6%	0.9%	
E06	4.3%	0.0%			Removed from service Jan 2020
E07	2.9%	1.3%	1.4%	1.6%	
E08	22.0%	11.9%	70.5%	82.7%	
E09	57.1%	61.1%	76.5%	76.3%	
E10		1.0%	0.8%	1.0%	In-service Jan 2020
E11			0.2%	0.6%	In-service Nov 2021
MS01	2.4%	4.0%	2.5%	2.8%	
MS02		27.3%			Pilot project when staffing allowed
MS03	2.5%	3.3%	2.8%	3.9%	
MS04	3.9%	5.8%	4.0%	3.0%	
MS05	2.2%	4.5%	3.4%	2.9%	
MS06	2.6%	3.9%	3.4%	3.7%	
MS07	3.7%	5.2%	2.9%	3.4%	
MS08	2.1%	4.1%	3.3%	2.9%	
MS09	3.2%	3.1%	2.5%	5.5%	
MS10	4.3%	5.8%	4.8%	5.4%	
MS11			18.6%	42.3%	In-service July 2022- prior as staffing allowed
T01	2.7%	3.6%	1.6%	1.2%	
T03	1.7%	1.7%	1.7%	0.5%	
T06		2.0%	1.3%	1.7%	In-service Jan 2020
T08	32.6%	44.6%	11.6%	1.3%	
T09	1.7%	1.9%	1.1%	0.8%	
T10	1.0%	0.5%			Removed from service Jan 2020

Performance & GapTables

Classification	Category	90th Percentile Times	2019	2020	2021	2022	2019-2022	Bench mark	GAP 2019-2022
Fire	Low	Alarm Handling	00:26	00:25	00:36	00:41	00:33	01:04	00:31
		Turnout 1st SUPPRESSION	02:33	02:23	02:25	02:21	02:28	01:20	01:08
		Travel Time 1st SUPPRESSION - Distribution	06:08	05:00	04:31	05:54	05:22	04:00	01:22
		Travel Time ERF - Concentration	06:36	05:38	06:08	05:39	06:06	08:00	01:54
		Total Response Time ERF	08:07	07:31	08:16	07:57	08:09	10:24	02:15
		Incident Count 1st SUPPRESSION	29	45	57	52	183		
		Total Response Time 1st SUPPRESSION	07:58	06:55	07:13	08:13	07:41	06:24	01:17
		Incident Count ERF	18	33	37	31	119		
	Medium	Alarm Handling	00:33	00:33	00:28	00:28	00:31	01:04	00:33
		Turnout 1st SUPPRESSION	02:26	02:32	02:29	02:32	02:30	01:20	01:10
		Travel Time 1st SUPPRESSION - Distribution	07:00	06:53	06:34	06:47	06:49	04:00	02:49
		Travel Time ERF - Concentration	08:29	08:38	08:51	08:56	08:46	08:00	00:46
		Total Response Time ERF	10:36	11:01	10:59	11:16	11:01	10:24	00:37
		Incident Count 1st SUPPRESSION	442	576	587	579	2184		
		Total Response Time 1st SUPPRESSION	09:12	08:40	08:51	08:51	08:57	06:24	02:33
		Incident Count ERF	181	188	191	204	764		
	High	Alarm Handling	00:38	00:29	00:28	00:24	00:28	01:04	00:36
		Turnout 1st SUPPRESSION	02:36	02:35	02:32	02:37	02:35	01:20	01:15
		Travel Time 1st SUPPRESSION - Distribution	08:26	07:55	07:25	07:58	07:51	04:00	03:51
		Travel Time ERF - Concentration	08:26	07:55	07:21	07:58	07:51	08:00	00:09
		Total Response Time ERF	10:19	09:56	09:13	10:01	09:57	10:24	00:27
		Incident Count 1st SUPPRESSION	143	245	272	322	982		
		Total Response Time 1st SUPPRESSION	10:19	09:56	09:18	10:10	10:02	06:24	03:38
		Incident Count ERF	143	241	270	322	976		
	Maximum	Alarm Handling	00:37	00:31	00:27	00:28	00:32	01:04	00:32
		Turnout 1st SUPPRESSION	02:15	02:17	02:14	02:18	02:16	01:20	00:56
		Travel Time 1st SUPPRESSION - Distribution	04:56	04:45	04:42	05:03	04:53	04:00	00:53
		Travel Time ERF - Concentration	11:07	11:46	11:49	11:03	11:32	08:00	03:32
		Total Response Time ERF	13:29	13:51	13:20	13:38	13:39	10:24	03:15
		Incident Count 1st SUPPRESSION	505	558	573	521	2157		
		Total Response Time 1st SUPPRESSION	06:56	06:49	06:40	07:03	06:52	06:24	00:28
		Incident Count ERF	86	95	91	101	373		

Classification	Category	90th Percentile Times	2019	2020	2021	2022	2019-2022	Benchmark	GAP 2019-2022
EMS	Low	Alarm Handling	00:32	00:34	00:21	00:34	00:31	01:04	00:33
		Turnout Time 1st Unit	02:11	02:20	02:05	02:04	02:11	01:20	00:51
		Travel Time 1st Unit - Distribution	06:45	06:44	06:05	06:12	06:35	04:00	02:35
		Travel Time ERF - Concentration	06:45	06:18	06:07	06:38	06:36	08:00	01:24
		Total Response Time 1st Unit	08:35	09:09	07:47	07:17	08:11	06:24	01:47
		Incident Count 1st Unit - Distribution	70	53	75	66	264		
		Total Response Time 1st SUPPRESSION	07:41	06:48	06:22	06:10	06:48	06:24	00:24
		Incident Count ERF	66	48	68	61	243		
	Medium	Alarm Handling	00:37	00:34	00:31	00:25	00:32	01:04	00:32
		Turnout Time 1st Unit	02:12	02:14	02:12	02:11	02:12	01:20	00:52
		Travel Time 1st Unit - Distribution	05:51	05:44	05:50	05:33	05:46	04:00	01:46
		Travel Time ERF - Concentration	05:55	05:53	05:55	05:40	05:51	08:00	02:09
		Total Response Time 1st Unit	07:42	07:52	07:39	07:14	07:38	06:24	01:14
		Incident Count 1st Unit - Distribution	988	790	847	938	3563		
		Total Response Time 1st SUPPRESSION	07:12	07:07	06:51	06:46	06:58	06:24	00:34
		Incident Count ERF	924	703	770	856	3253		
	High	Alarm Handling	00:34	00:32	00:30	00:27	00:31	01:04	00:33
		Turnout Time 1st Unit	02:13	02:12	02:10	02:08	02:11	01:20	00:51
		Travel Time 1st Unit - Distribution	05:36	05:26	05:20	05:19	05:25	04:00	01:25
		Travel Time ERF - Concentration	05:51	05:47	05:38	05:36	05:42	08:00	02:18
		Total Response Time 1st Unit	07:27	07:18	07:09	07:07	07:15	06:24	00:51
		Incident Count 1st Unit - Distribution	5573	6156	6700	6759	25188		
		Total Response Time 1st SUPPRESSION	07:19	07:17	07:09	07:03	07:12	06:24	00:48
		Incident Count ERF	5382	5881	6402	6474	24139		
	Maximum	Alarm Handling	00:37	00:32	00:30	00:28	00:32	01:04	00:32
		Turnout Time 1st Unit	02:08	02:07	02:06	02:05	02:06	01:20	00:46
		Travel Time 1st Unit - Distribution	05:10	05:04	05:03	04:58	05:04	04:00	01:04
		Travel Time ERF - Concentration	05:53	05:38	05:39	05:39	05:42	08:00	02:18
		Total Response Time 1st Unit	06:59	06:53	06:46	06:40	06:50	06:24	00:26
		Incident Count 1st Unit - Distribution	9760	9232	10003	10711	39706		
		Total Response Time 1st SUPPRESSION	07:07	07:00	06:53	06:43	06:55	06:24	00:31
		Incident Count ERF	9188	8575	9297	9966	37026		

Classification	Category	90th Percentile Times	2019	2020	2021	2022	2019-2022	Bench mark	GAP 2019-2022
Tech Rescue	Medium	Alarm Handling	00:51	00:32	00:40	00:20	00:40	01:04	00:24
		Turnout 1st SUPPRESSION	01:53	02:14	01:43	01:57	01:55	01:20	00:35
		Travel Time 1st SUPPRESSION - Distribution	07:38	05:40	05:42	06:15	06:12	04:00	02:12
		Travel Time ERF - Concentration						08:00	08:00
		Total Response Time ERF						10:24	10:24
		Incident Count 1st SUPPRESSION	8	4	8	10	30		
		Total Response Time 1st SUPPRESSION	09:35	07:17	07:18	08:26	08:14	06:24	01:50
		Incident Count ERF							
	High	Alarm Handling	00:53	00:51	00:44	00:43	00:47	01:04	00:17
		Turnout 1st SUPPRESSION	02:28	02:16	02:19	02:21	02:25	01:20	01:05
		Travel Time 1st SUPPRESSION - Distribution	06:10	03:19	05:31	03:51	05:27	04:00	01:27
		Travel Time ERF - Concentration	08:46	05:25	08:55	06:45	08:42	08:00	00:42
		Total Response Time ERF	11:06	08:08	11:36	09:22	10:58	10:24	00:34
		Incident Count 1st SUPPRESSION	24	24	49	38	135		
		Total Response Time 1st SUPPRESSION	08:44	05:37	08:16	07:26	07:46	06:24	01:22
		Incident Count ERF	13	7	19	6	45		
	Maximum	Alarm Handling	01:06		00:40	00:20	01:01	01:04	00:03
		Turnout 1st SUPPRESSION	00:08		01:38	02:14	02:07	01:20	00:47
		Travel Time 1st SUPPRESSION - Distribution	01:10		03:24	03:32	03:30	04:00	00:30
		Travel Time ERF - Concentration			12:14		12:14	08:00	04:14
		Total Response Time ERF			14:05		14:05	10:24	03:41
		Incident Count 1st SUPPRESSION	1		1	1	3		
		Total Response Time 1st SUPPRESSION	02:24		05:42	06:06	06:01	06:24	00:23
		Incident Count ERF			1		1		

Classification	Category	90th Percentile Times	2019	2020	2021	2022	2019-2022	Benchmark	GAP 2019-2022
HazMat	Low	Alarm Handling	00:17	01:01	00:27	00:18	00:34	01:04	00:30
		Turnout 1st SUPPRESSION	02:54	02:30	02:57	02:22	02:46	01:20	01:25
		Travel Time 1st SUPPRESSION - Distribution	05:37	03:29	05:49	08:45	06:21	04:00	02:21
		Travel Time ERF - Concentration	05:37	03:29	05:49	08:45	06:21	08:00	01:39
		Total Response Time ERF	08:45	05:46	08:41	10:36	09:41	10:24	00:43
		Incident Count 1st SUPPRESSION	7	7	7	5	26		
		Total Response Time 1st SUPPRESSION	08:45	05:46	08:41	10:36	09:41	06:24	03:17
		Incident Count ERF	6	6	7	5	24		
	Medium	Alarm Handling	00:51	00:50	00:56	00:37	00:49	01:04	00:15
		Turnout 1st SUPPRESSION	02:35	02:52	02:23	02:40	02:41	01:20	01:21
		Travel Time 1st SUPPRESSION - Distribution	05:34	06:18	06:00	06:43	06:20	04:00	02:20
		Travel Time ERF - Concentration	06:43	06:41	06:02	07:20	06:51	08:00	01:09
		Total Response Time ERF	08:23	08:50	08:05	10:18	09:20	10:24	01:04
		Incident Count 1st SUPPRESSION	45	62	54	71	232		
		Total Response Time 1st SUPPRESSION	08:16	08:18	07:44	09:30	08:35	06:24	02:11
		Incident Count ERF	39	54	42	62	197		
	High	Alarm Handling	01:28	01:26	01:16	00:54	01:19	01:04	00:16
		Turnout 1st SUPPRESSION	02:47	02:34	02:34	02:22	02:33	01:20	01:14
		Travel Time 1st SUPPRESSION - Distribution	07:10	05:49	04:59	06:08	06:12	04:00	02:12
		Travel Time ERF - Concentration	06:13	06:02	07:11	07:45	06:52	08:00	01:08
		Total Response Time ERF	09:15	08:14	09:06	10:17	09:20	10:24	01:04
		Incident Count 1st SUPPRESSION	69	65	65	86	285		
		Total Response Time 1st SUPPRESSION	09:28	08:59	07:44	08:20	08:59	06:24	02:35
		Incident Count ERF	36	36	37	59	168		

Classification	Category	90th Percentile Times	2019	2020	2021	2022	2019-2022	Benchmark	GAP 2019-2022
WET	Medium	Alarm Handling	01:53	00:34	01:19	00:19	01:53	01:04	**00:49**
		Turnout Time 1st Unit	01:30	01:24	01:19	01:09	01:30	01:20	**00:10**
		Travel Time 1st Unit - Distribution	05:58	05:02	06:51	04:25	05:59	04:00	**01:59**
		Travel Time ERF - Concentration	06:18	05:47	07:11	05:09	06:38	08:00	**01:22**
		Total Response Time 1st Unit	07:51	07:00	06:59	05:41	07:51	06:24	**01:27**
		Incident Count 1st Unit - Distribution	5	3	4	2	14		
		Total Response Time 1st SUPPRESSION	07:49	00:00	06:25		07:49	06:24	**01:25**
		Incident Count ERF	2	1	4	1	8		
	Maximum	Alarm Handling	01:31	01:17	01:08	01:32	01:29	01:04	**00:25**
		Turnout Time 1st Unit	01:38	01:42	01:49	01:25	01:42	01:20	**00:22**
		Travel Time 1st Unit - Distribution	08:27	04:19	04:22	08:04	06:45	04:00	**02:45**
		Travel Time ERF - Concentration	12:20	18:41	09:04	14:33	13:31	08:00	**05:31**
		Total Response Time 1st Unit	09:20	05:48	05:40	08:54	08:22	06:24	**01:58**
		Incident Count 1st Unit - Distribution	23	13	15	19	70		
		Total Response Time 1st SUPPRESSION	08:13	05:32	05:23	08:54	08:54	06:24	**02:30**
		Incident Count ERF	3	4	3	7	17		