LEE'S SUMMIT FIRE DEPARTMENT

COMMUNITY RISK ASSESSMENT-STANDARDS OF COVER

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Executive Summary

The Lee's Summit Fire Department (LSFD) was granted legal authority to provide fire protection services for the City of Lee's Summit on October 12, 1971. Since then, the department has grown into an all-hazards organization presently consisting of 139 sworn firefighters and 15 non-sworn men and women. The department's operational infrastructure consists of one communications center, seven fire stations, five pumpers, two aerial apparatus, and six rescue ambulances. The department's scope of operational service has expanded throughout the years to include emergency medical services, hazardous materials response, technical rescue, and fire suppression. Lee's Summit Fire Department also provides emergency services to the cities of Greenwood, Missouri and Unity Village, Missouri by contractual agreement.

The fire chief manages the administration division and coordinates the city's emergency management program. The support services division chief and staff are responsible for budgeting, budget control, purchasing, building, and equipment maintenance, and records retention for the department. The prevention division chief and staff are responsible for the department's loss prevention programs, youth and adult fire education programs, building plan reviews, and inspections of new and existing businesses. The training division chief and staff are responsible for developing and delivering training covering all service delivery areas including fire suppression, emergency medical services, technical rescue, hazardous materials, and emergency management. The training division is also responsible for meeting or exceeding all applicable local, state, and federal training requirements. The department communications center dispatches both emergency and non-emergency calls for seven regional fire departments contracted with the city in addition to the LSFD. The operations division chiefs and duty crews make up the department's effective response force to the community.

Section G of this document includes a risk assessment, which describes a three-dimensional or axis risk classification model used to establish levels of risk in each of the department's operational programs: fire, emergency medical services, technical rescue, and hazardous materials. The risk assessment variables were the probability of occurrence, community consequence, and impact on the department's ability to protect the community. Resultant scores for low, moderate, high and maximum risk levels were identified while considering an associated critical task analysis of responders and equipment to establish benchmark and baseline service level objectives for each emergency program provided to the community.

Historical department response performance is assessed in section B, which measures distribution and concentration response data. The current placement of department resources reflects a historical focus on distribution, or the first arriving unit; and not concentration, or the arrival of an effective response force.

The department performed a travel time or "drive time" analysis to determine areas of the community capable of being reached in four minutes or less to comply with NFPA 1710 fire station recommendations. To do so, the city's geographic information system (GIS) modeled the response capabilities on existing city streets and highways. Service gaps were identified based on areas of the community which could not be reached from a fire station in four minutes or less. Additional travel studies were conducted against travel times of eight minutes for the arrival of the multiple resources needed on an incident, or the "effective response force"

required to mitigate all incident types and risk levels. Through this process, several service gaps were identified, particularly in the northern and southern response districts. To evaluate resource reliability, a study of all incident responses was performed by response district, particularly the percentage of time the assigned apparatus responded in their district. Incident demand by service program was evaluated by response district to provide an analysis. Incident demand by service program, risk location, assessed values, and reported fire loss was analyzed by emergency service zones (ESZ's) which are 1-kilometer square map grids encompassing all response areas. The quantitative incident demand data was layered into a thermal density map by service program to show "hot spots" and visually identify the historical probability of incidents. Incident demand by each hour of the day, day of the week, and month of the year was evaluated to identify trends and peak volume periods which provide the department insight and direction for more efficient and effective resource planning.

Department response performance for all service programs has been regularly assessed since the department became a registered agency for the Commission on Fire Accreditation International (CFAI) in 2013. The results for this edition of the Community Risk Assessment-Standards of Cover (CRA-SOC) are included in section H. Several components of the total response time identify needs for improvement. Call processing/alarm handling deviates from the benchmarks in all service delivery areas except for EMS. Turnout times consistently deviate from NFPA benchmarks in all programs and across all risk levels. However, the most critical response time deviations from NFPA 1710 benchmarks are related to concentration travel times; or the time it takes to assemble an effective response force (ERF). These conclusions are consistent with the travel time research using GIS, and the Insurance Services Office (ISO) public protection classification study in 2017, which all evaluate the capabilities of current deployment locations/stations. Benchmark response objectives included in section I for all of the department's operational programs represent what are considered best practices. These benchmarks were developed using industry standards such as NFPA 1710: *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments, 2010 edition*, NFPA 1221: *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems*, the Center for Public Safety Excellence (CPSE) and Commission on Fire Accreditation International (CFAI) documents: *CFAI: Fire and Emergency Service Self-Assessment Manual, 9th Edition*, and *CFAI: Standards of Cover, 6th Edition.*

Section J of the SOC describes the methodology of continuous improvement the department will incorporate to ensure baseline performance in all service delivery areas improves over time. The compliance team will continuously monitor response performance compliance with monthly, quarterly, and annual reports. The development of the system for regular analysis with recommendations has been designed to coincide with the annual department budget development process as funding requests for the next fiscal year can be formulated as necessary, if funding resources permit.

Recommendations for Improved Effectiveness in Deployment and Coverage

Immediate (within 12 months) Recommendations:

1. The analysis of this community risk assessment and current mitigation capabilities to deploy and respond to those risks indicates that the greatest immediate needs for the department are staffing increases for the communications center, operations division, and administration divisions. Therefore, it is recommended that the department leadership begin working with city leaders to identify sustainable revenue streams that can support these expansion needs.

2. To generate funding for these recommendations, the department should work collaboratively with other city resources to support the research, evaluation, and application process for grant funds that could potentially offset the costs associated with departmental expansion and continuous improvement strategies.

3. To become more proactive, it is recommended the department collaborate with city staff to identify and formalize expansion triggers for the department that adhere to the 4-minute travel time identified in NFPA 1710 and the 1.5-mile travel distance recommended by ISO. To continue to meet the needs of the community as it develops, ensure that these triggers are included in the city's comprehensive build-out plans for future development, and encourage the use of development incentives to fund new stations when proposed development exceeds deployment capabilities to meet NFPA 1710 response performance standards.

4. Conduct comprehensive strategic planning evaluation in anticipation of potential Station 4 and Station 5 relocation/reconstruction. These response districts are extremely vulnerable due to their existing gaps in coverage, and any relocation must consider NFPA 1710 response time recommendations and ISO travel distance recommendations. Without additional stations being constructed and staffed in these districts, the department must continue to provide the maximum protection to these districts from a single deployment location.

5. To address the community risk identified through this assessment, the department should add an additional rescue (ambulance) once Station 3 is constructed. District 3 has the highest EMS demand by district and currently relies on adjacent district rescues to respond. To improve response times and service delivery in the community, Station 3 needs a rescue.

6. If Rescue 3 and the associated staffing expansions are denied or delayed, the department should consider repositioning Rescue 7 to Station 3. District 3 has the highest EMS demand by district and currently relies on adjacent district rescues to respond. Given the geographical positioning of Station 3, the infrastructure in the immediate area may allow for greater resiliency against the demand to cover

other districts within the community. If Rescue 7 is repositioned to Station 3, evaluate the ability to replace a Rescue in District 7 as soon as possible.

7. Investigate available technology to assist in the compliance monitoring process and data analysis needed for accreditation and strategic planning identified in Goal 7 of the 2018-2023 Strategic Plan.
8. Continue to pursue opportunities to increase firefighter preparedness and safety through acquiring live fire training props for the department as identified in Goal 3 of the 2018-2023 Strategic Plan.
9. The department is encouraged to research and implement available information technologies as identified in Goal 2 and Goal 7 of the 2018-2023 Strategic Plan. These efforts will enhance department operations and improve its ability to serve the community.

Near Term (within 2-5 years) recommendations:

1. Evaluate the recommendations from the study of the Communications Center to ensure processing procedures and staffing levels comply with national standards. As soon as practicable, implement the staffing recommendations of the study in order to enhance operational effectiveness, safety, and efficiency.
2. Increase staffing levels in administration to efficiently and effectively manage departmental operations and plan for the needs of the community. When funding allows, add administration staffing consistent with the span of control recommendations of one administrator managing between three to seven operational personnel. To attain that goal, the administration should seek to increase staffing by a minimum of ten to twelve personnel over the next four years. Minimum staffing recommendations for all divisions:
    - Administrative assistants (2)
    - Prevention Division (2) - Captain of Prevention, Inspector/Fire Investigator
    - Training Division (4) - Battalion Chief of EMS, Captain of EMS, two Community Paramedics
    - Support Services Division (1) - Battalion Chief of Planning
    - Administration Division (1) - GIS analyst/ITS Support
    - Deputy Chiefs (2) – Deputy Chief of Operations, Deputy Chief of Administration
3. Construct an additional station (Station 8) in the northern portion of fire station District 4, which is located in Council District 3. Given the infrastructure in place and geographic information system (GIS) modeled travel times, resources deployed from Station 4 cannot physically get to several emergency service zones in that area to meet industry benchmarks.

4. Closely monitor the call volume and response times from Station 1 (headquarters), and if warranted, consider additional staffed resources at Station 1. An additional pumper or truck and rescue would address reliability issues identified within this high demand district, and the rest of the community.
5. Request an additional ladder truck for the city in order to reduce ERF times on high risk/high consequence incidents and address the documented ISO recommendations received in 2017. Ensure the ladder truck is in the best position to respond most efficiently to tactical related risk structures.
6. If approval for an additional ladder truck is denied or delayed, re-evaluate the positioning of the Station 7 ladder truck. Consideration of the community's fire risks and deployment modeling from Station 3 indicates that this apparatus would be more effective if assigned to a more centralized location. Ensure the ladder truck is in the best position to respond most efficiently to high-risk structures throughout the city.
7. Actively participate in the comprehensive planning processes for the city. Ensure that all development planning includes input and recommendations from fire personnel related to fire protection for the city.
8. The department should look closely at the organization's records management (*Fire Data Management* or "FDM") capabilities. If, after evaluation, the system is determined to be unable to meet the needs of the organization, evaluate other records management systems to ensure the department is using a system to efficiently and effectively meet its needs.
9. Evaluate the advantages and disadvantages of utilizing a new deployment model for EMS calls. Consider strategies that would reduce the volume on pumpers, trucks, and chief officers. Any evaluation must ensure that the quality of service for emergency medical incidents or the safety of the department's personnel is not compromised. Considerations should include the evaluation of additional devices or technology on apparatus that can assist with care and improve service delivery.

Long Term (within 5-10 years) recommendations:

1. Monitor and adjust staffing levels within the administration as necessary to ensure that the span of control between administration, the communications center, and operational staffing meets recommended levels as expansion takes place.

2. Evaluate the advantages and disadvantages of a staffing plan, which includes minimum staffing of four firefighters on every fire apparatus to become compliant with NFPA 1710 standards. This staffing would allow the ERF to arrive sooner with fewer physical resources to transport personnel to high-risk incidents. This staffing would also be consistent with the National Institute for Standards and Technology (NIST) Field Experiments Study findings documented in Appendix A.

3. Evaluate opportunities to construct an additional station in the area around the Bailey Road Bridge joining north and south 291 Highway. This location is a challenge to get to against the response benchmarks and will continue to develop with the 50 Highway/291 Highway interchange redevelopment. This station would have great mobility throughout the community given the major infrastructure in the immediate area and would also address the volume of emergency responses occurring in the core of the city.

4. Closely monitor the development in the area of New Longview, View High, and Paragon Star. These locations, on the extreme western boundary of the city, exceed the four-minute travel time identified in NFPA 1710 and the 1.5-mile travel distance recommended by ISO. Consider constructing an additional station that can effectively cover the area or investigate the advantages and disadvantages of operating multiple fire apparatus out of Station 3 until a new fire station is constructed.

5. Develop plans to address the travel time issues identified for coverage areas that currently exceed NFPA 1710 response time recommendations. Strategically plan, using creative deployment concepts and progressive strategies to minimize the impact of elongated response times to the community. Active participation in the comprehensive planning processes for the city must ensure that all development planning includes input and recommendations from fire personnel related to fire protection for the city.

COMMUNITY RISK ASSESSMENT-STANDARDS OF COVER

A. Description of Community Served

Introduction

Every community is different. Each community has its own set of unique hazards, risks, and vulnerabilities; and each community has its own unique set of capabilities to respond to those risks. As part of a community-focused continuous improvement process, the Lee's Summit Fire Department (LSFD) has completed a Community Risk Assessment (CRA) and Standards of Cover (SOC) for the City of Lee's Summit.

The information and data collected have identified the risks to the community, the resources available to mitigate them, and describes the current response performance capabilities of the LSFD. The accreditation model established by the Commission on Fire Accreditation International (CFAI) mandates that these risk and deployment assessments be completed every five years to ensure that hazards and vulnerabilities are constantly assessed and analyzed to provide the highest level of protection for the community. This document provides an overview of Lee's Summit, the fire department structure and services, risk assessment of the community, current deployment, and performance data. It also identifies critical tasking for effective response force determination and includes a plan to maintain and improve these response capabilities in the future.

Community and Department Legal Basis

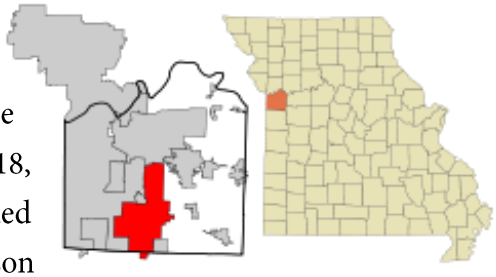
The Lee's Summit governance model is that of a mayor and eight city council members, with two council members representing each of the four council districts. The city manager serves as the city's executive officer, acting as superintendent for all city departments. The LSFD falls under the organizational system of the city as a self-regulating department, creating internal policies and regulations while adhering to the overhead policies and direction of the governing body.

Photo 1 Front Row, left to right: Craig Faith, Trish Carlyle, Mayor Bill Baird, Diane Forte, Phyllis Edson / Back Row, left to right: Fred DeMoro, Mayor Pro Tem Beto Lopez, Rob Binney, Bob Johnson

On October 12, 1971, the City of Lee's Summit Board of Aldermen ordained Chapter 16 ½ within the amended Ordinance 1317, thereby "providing for a modern efficient fire department." Once approved by the mayor, the fire department became legally established within the code of ordinances for the City of Lee's Summit. Contracted fire department response services are also provided for the City of Greenwood and Unity Village, Missouri. Currently, the Lee's Summit Fire Department has no automatic aid agreements with other agencies.

COMMUNITY RISK ASSESSMENT-STANDARDS OF COVER

History of the Community



Lee's Summit is in the southeast portion of the Kansas City metropolitan area. The city was incorporated in 1865 and originally included the 70 acres of land (0.109 square miles) that surrounded the railroad depot. The city has grown steadily for 153 years, and as of 2018, has annexed land 25 different times. Several annexations of land included neighborhoods that extended out of the southern border of Jackson County into Cass County.

Today, Lee's Summit has grown to be the sixth largest city in Missouri with a current population of 98,469 within a 65.87 square mile jurisdictional boundary. In recent years, the city has experienced accelerated development and investment throughout the city in all sectors; including commercial, industrial, and residential. At the same time, the city government has maintained a strong commitment to quality services for the citizens of Lee's Summit. The city has the unique distinction of being one of only ten cities in the nation to hold four national level accreditations in its organization: Parks and Recreation, Public Works, Police, and Fire. This commitment has not gone unnoticed; in 2017 Lee's Summit garnered eight prestigious national and regional honors, such as the best in the nation ranking for "10 Happiest Mid-Sized Cities in America" and one of the "Safest Communities" in Missouri.

Two large regional hospitals call Lee's Summit home: Saint Luke's East and Lee's Summit Medical Center. These exceptional healthcare facilities provide for the needs of the community with state-of-the-art services and they continue to expand in order to meet the growing demand for service in the community.

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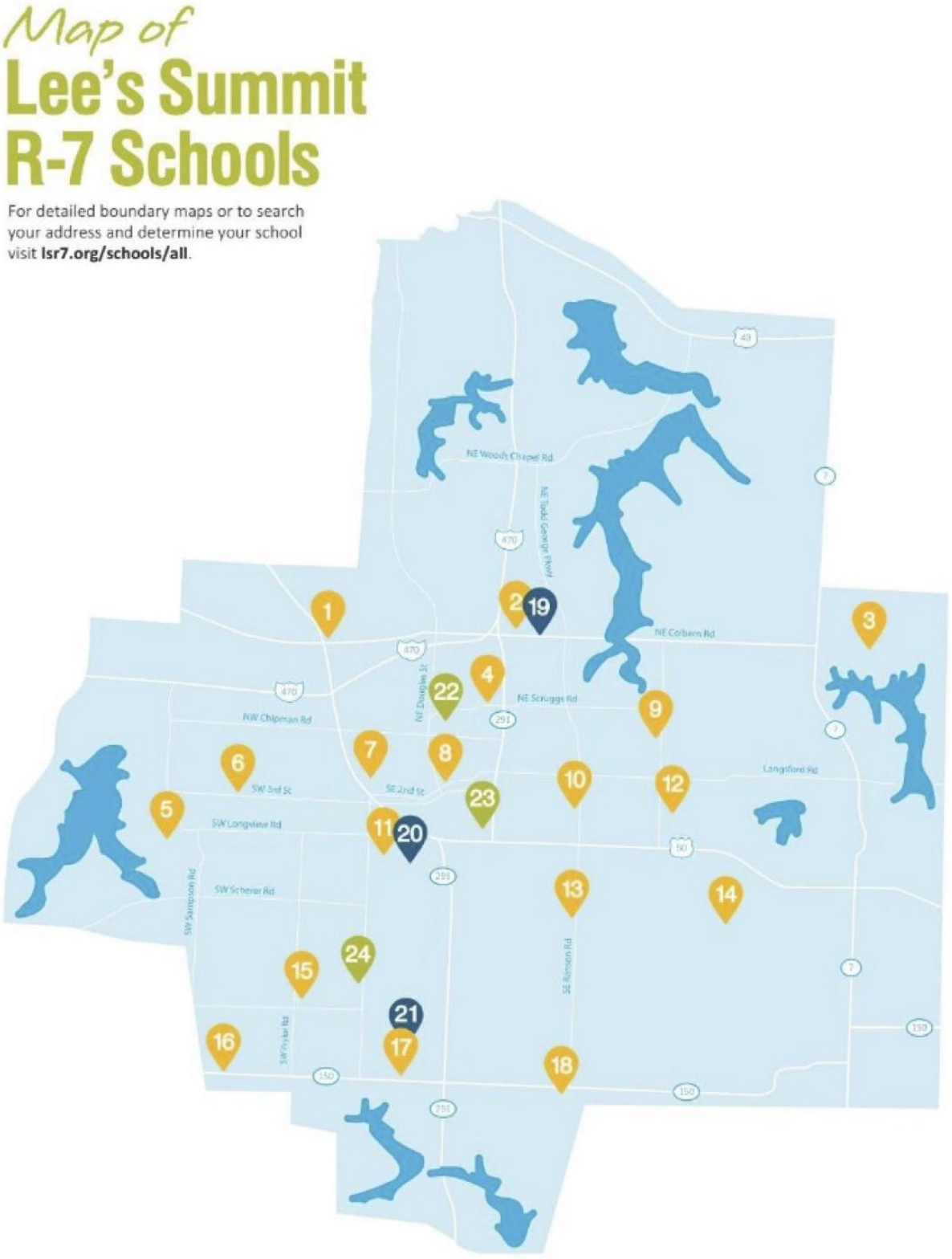
The R-7 school district provides a world-class education to the children of Lee's Summit from elementary through high school. The school district has met all criteria to earn the state's top designation for academic achievement, is fully accredited, and in 2018 was the "Winner of Missouri's Distinction in Performance Award." The school district has grown by an average of 335 new students annually since 1990, with enrollment for 2018-2019 at 17,937 with a supporting staff of 3,116 administrators and educators. The district currently includes 18 elementary schools, three middle schools, three high schools, an alternative secondary school, a secondary technology academy, an early education center, and a special-education day-treatment center. Lee's Summit was recently featured in *BusinessWeek* magazine as Missouri's "Best Place in America to Raise Kids." Only one town was selected from each state, and the most important factors in this analysis were school performance, affordability, and safety. *Money* magazine named Lee's Summit R-7 schools as seventh best in the nation in its annual "Best Places to Live" issue focusing on the nation's top 100 small cities.

The northern portion of the city is also home to three schools from the Blue Springs School District. Delta Woods Middle School educates over 850 seventh and eighth-grade students from Lee's Summit, Independence, and Blue Springs with a staff of 90 teachers and administrators. Voy Spears Elementary and Chapel Lakes Elementary each educate over 500 students from first grade through sixth grade with a staff of 70 teachers and administrators. These schools along with their staff and students also fall under the protection of the Lee's Summit Fire Department due to their location within the jurisdictional boundary of the city.

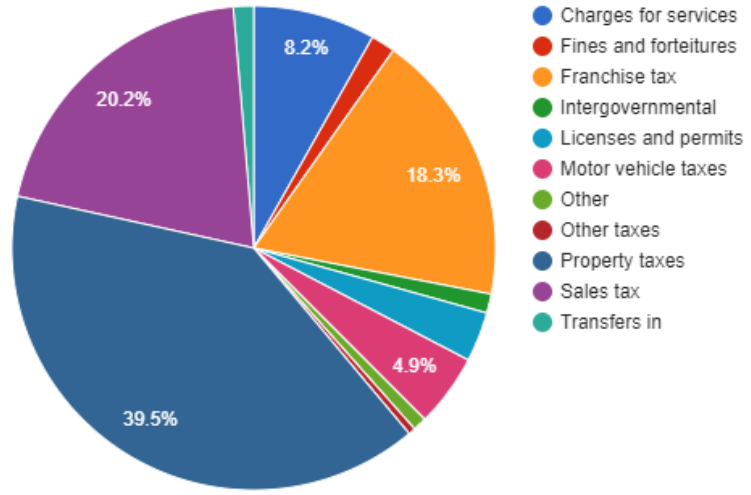
Map 1: Lee's Summit R-7 Schools
(Yellow: Elementary / Blue: Middle / Green: High)

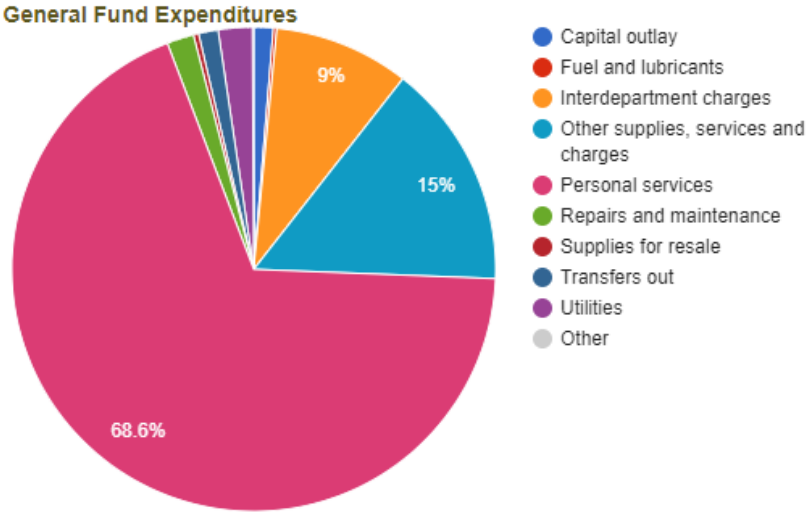


Community Financial Basis

The department is funded by the city's general fund, which is shared by ten city departments. The fire department's budget is developed by input from staff members who look at existing and possible new programs and services, staffing requirements, and past fiscal year trends. All revenue received from contract services or ambulance billing is remitted to the city's general fund. Once the department's budget is developed, the fire chief, with the help of staff, presents it to the city manager. The city manager, in turn, presents the general fund budget to the Finance and Budget Committee of the City Council. Once the committee members evaluate and recommend passage of the total budget, it is then introduced to the full council for passage. The city's annual budget is formulated by revenue predictions based on actuarial and predictive trends.

Chart 1: City Revenue and Expenditures

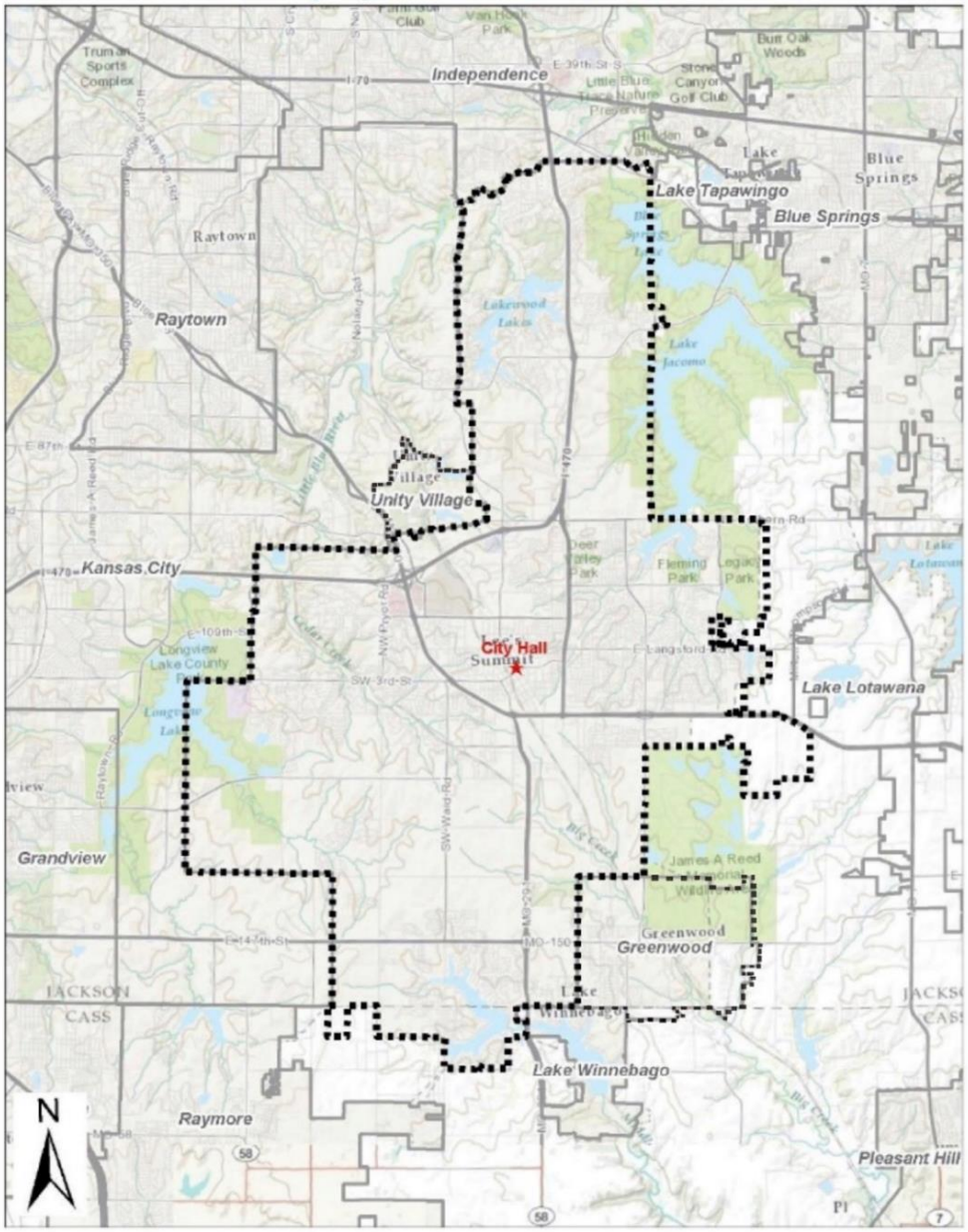




Community Boundaries

The fire department's jurisdictional boundaries are created by the City of Lee's Summit's geographical boundaries and the boundaries of its contract agencies, Unity Village and Greenwood, Missouri. Unity Village comprises 1.97 square miles of land and Greenwood comprises 3.97 square miles of land, which increases the total response area for the LSFD to 71.81 square miles. There are five neighboring fire departments or fire protection services that border the coverage areas and have mutual aid agreements with the LSFD: Kansas City Fire Department to the west, South Metro Fire Protection District to the south, Prairie Township Fire Protection District to the east, Central Jackson County Fire Protection District to the northeast, and Independence Fire Department to the north.

Map 2: Lee's Summit, Missouri

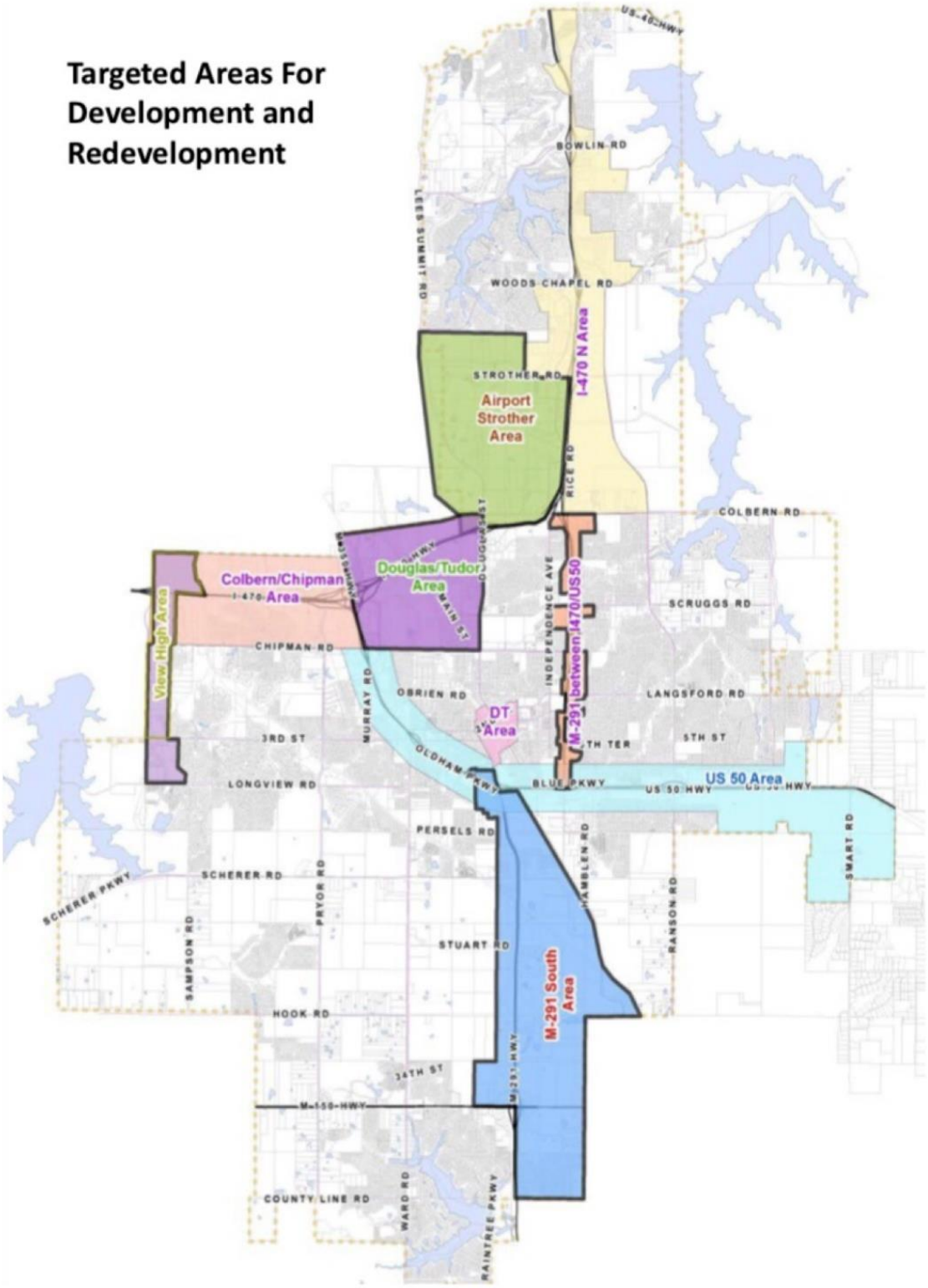


Community Planning Areas

The Economic Development Council, the Historic Preservation Commission, and the Downtown Master Plan of Lee's Summit have prioritized investment in the downtown area for the past decade. As a result, the downtown area has flourished into a destination with dining and drinking establishments, local businesses, a farmer's market, and event spaces. Downtown Lee's Summit also hosts multiple festivals throughout the summer, as well as larger annual events like Downtown Days and Oktoberfest, where approximately 70,000 visitors congregate for weekend fun and festivities.

For 2018, there have been seven Transportation Development Districts (TDD) and five Community Improvement Districts (CID) authorized by the Jackson County Circuit Court within portions of the City of Lee's Summit. The city has also designated the Lakewood corridor as a development corridor, allowing the area to grow by enhancing the infrastructure and encouraging the influx of commercial development in the area. Another area of development focus for the city is in the area of Highway M-291 and US 50, where significant infrastructure investment has occurred to encourage and support future development.

Map 3: Targeted Areas for Development and Redevelopment



Community Transportation Systems

The transportation network for the City of Lee's Summit is comprised of streets/highways, runways, and railways. Lee's Summit is intersected by six highway corridors including I-470, US 40, US 50, M-291, M-150, and M-350. These corridors are used daily by commuters to reach destinations throughout the Kansas City metropolitan region for work and travel. These same corridors are also utilized daily by semi-tractor trailers transporting significant quantities of hazardous materials throughout the region and beyond.

On May 11, 2018, a ribbon-cutting ceremony was held for the completion of a new interchange at US 50 and Route 291 South. Changing the old 291 overpasses into a diverging diamond design eases traffic congestion and allows for higher traffic volumes along the heavily traveled route. In addition, the interchange is expected to increase economic growth and expansion south of US 50. Ingress and egress from the city are primarily served by maintained federal, state, and city roadways. Traffic flow and accessibility are often affected by weather conditions and rush hour traffic volume.

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Lee's Summit Municipal Airport is located in the north-central sector of the city. The regional airport is a non-towered facility with no on-site air traffic control and is primarily utilized by smaller aircraft. As a result, the airport is not currently required to have onsite fire and rescue support. This will soon change as the airport is in the midst of an expansion project that will allow for larger aircraft. Current runways are positioned in north-south/east-west directions. Runway 18-36 is 5,501-feet long and 100-feet wide, while runway 11-29 is 4,000-feet long and 75-feet wide. Both runways have a 60,000-pound aircraft capacity and there is a 40,000 square foot heated and enclosed hanger available. According to airport administrative staff, Lee's Summit Municipal Airport experiences approximately 52,000 take-offs/landings annually. Residential homes, businesses, and highways are located directly in landing patterns of both runways.

Lee's Summit has approximately 6.5 miles of active railway located within city limits, 8.5 miles including the contracted City of Greenwood, Missouri. The railway is now owned and operated by Union Pacific but was originally built by Missouri Pacific in 1905. Several downtown streets were built along the northwest to the southeast direction of the track. Part of the city's current name (Summit) is derived from the fact that the train depot is located along the highest elevation of railway between Kansas City and St. Louis.

The line is utilized for both freight and passenger service. Freight trains ordinarily contain agricultural, automotive, chemicals, coal, industrial products, and intermodal. Amtrak provides passenger service twice daily for northbound and twice daily for southbound departures. According to Amtrak, 167,440 passengers traveled the Missouri River Runner service corridor from Kansas City to St. Louis in 2018.

While Lee's Summit has not experienced a derailment, there have been train versus auto collisions at the four railroad crossing intersections in the area of service. There are business and residential corridors along the railway. Two of the four railroad crossing intersections in Lee's Summit city limits are centrally located in the Historic Downtown Main Street core where festivals and concerts are conducted annually. LSFD apparatus have a response option of utilizing unimpeded 2nd Street to avoid delays during railway crossing use and festivals in the downtown core. The two other railroad crossings are on less-traveled response routes but could pose delays encountering railway use.

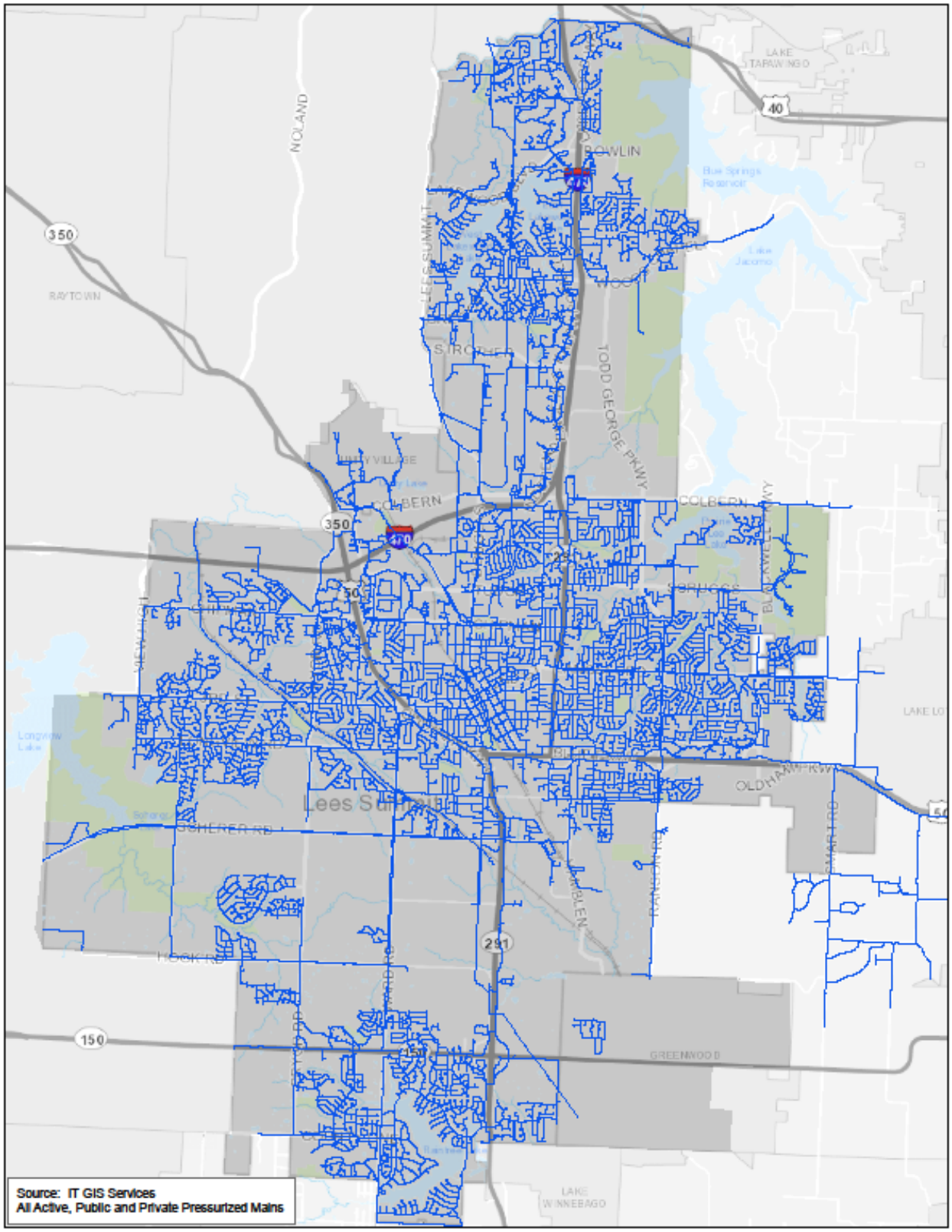
Community Critical Infrastructure

The City of Lee's Summit is currently served by two primary water purveyors: Lee's Summit Water Utilities (LSWU) and Public Water and Sewer District #13 (PWSD13). The LSWU and PWSD13 provide reliable water throughout the city with the exception of several areas along the city borders that are served by the neighboring jurisdictions such as the City of Independence, City of Kansas City, and Cass County Public Water District #3. LSWU receives its water from two suppliers, the City of Kansas City and the City of Independence. LSWU has a storage capacity of 35.2 million gallons per day. 11 million gallons are stored in four elevated water towers for both pressure and storage, and 24.2 million gallons are stored in four ground storage systems that work in conjunction with four pump stations for pressure and storage needs. PWSD13 covers areas of the northeast central portions of the city and receives its water from the Tri-County Water Authority. PWSD13 has a storage capacity of one million gallons.

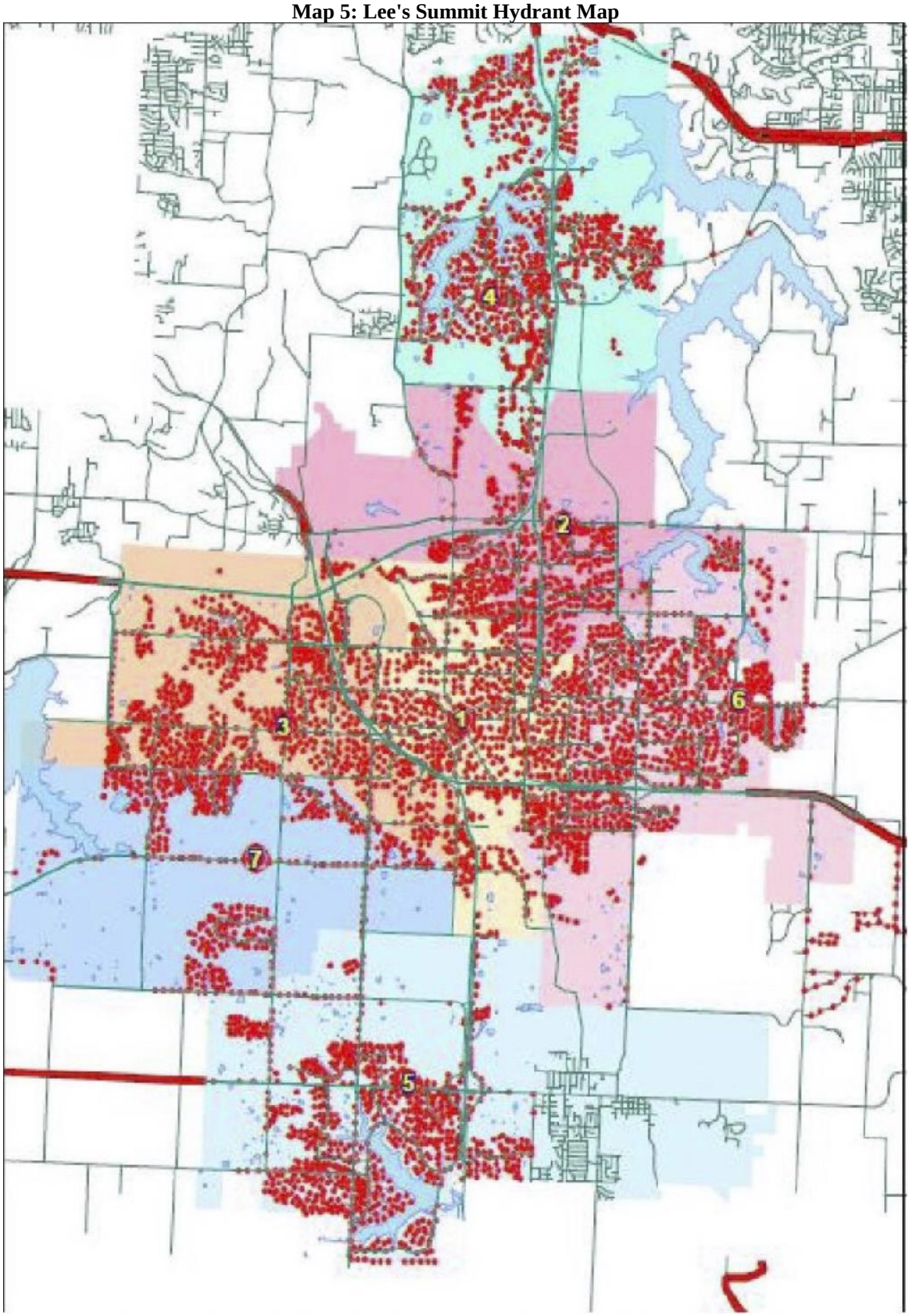
The department serves two additional areas by contract. Those areas are Unity Village and the City of Greenwood, Missouri. Unity Village is served by its own water system and has its own storage capacity of 100,000 gallons. Fire hydrants within Unity Village are supplied by both Unity Village and LSWU.

The City of Greenwood is served by Public Water and Sewer District #12 (PWSD12) and Cass County Water District #6 (CWD6). PWSD12 receives its water from the City of Kansas City and the Tri-County Water Authority. PWSD12 has a storage capacity of one million gallons. LSWU has emergency interconnects to supplement all purveyors in all areas of service including contract service areas.

Map 4: Public and Private Pressurized Mains



Map 5: Lee's Summit Hydrant Map



COMMUNITY RISK ASSESSMENT-STANDARDS OF COVER

The City of Lee's Summit has an extensive natural gas infrastructure serving the community. Owned and operated by Spire Energy, the following maps identify critical gas main infrastructure using the following key:

For additional clarity, pounds per square inch gauge (**psig**), indicates that the pressure is relative to atmospheric pressure.

Red lines are high-pressure gas mains operating over 100 psig.

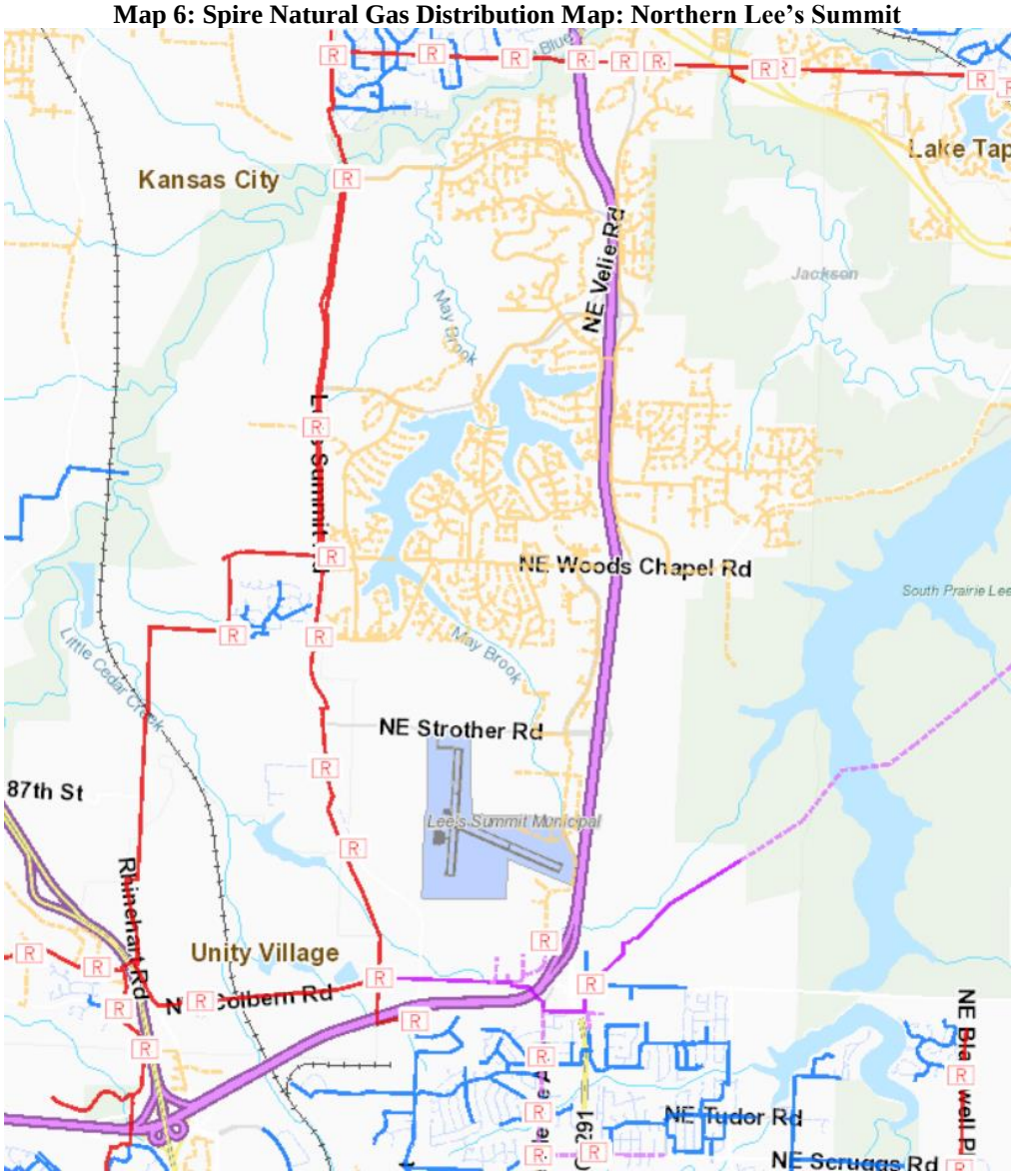
Purple are mains over 60 psig and under 100 psig.

Blue are grid mains over 25 psig and under 6o psig.

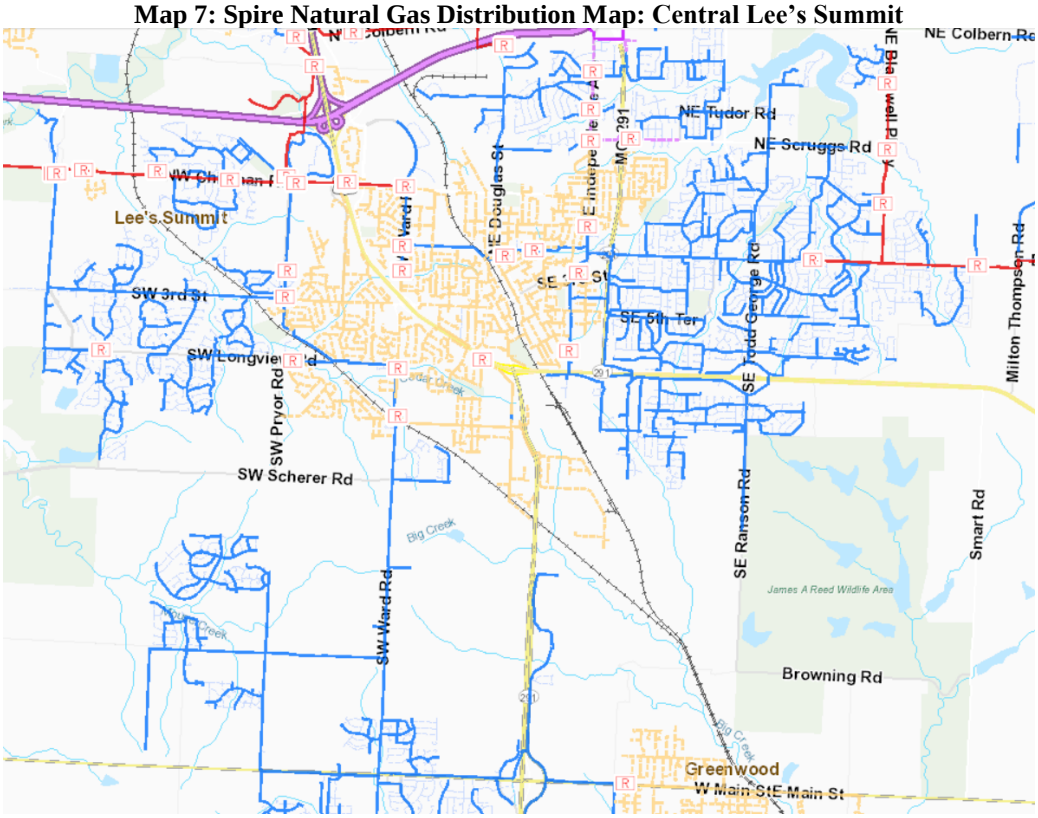
Orange are grid mains 25 psig and less.

"R" in a box designates above ground regulator stations cutting higher to lower pressure main.

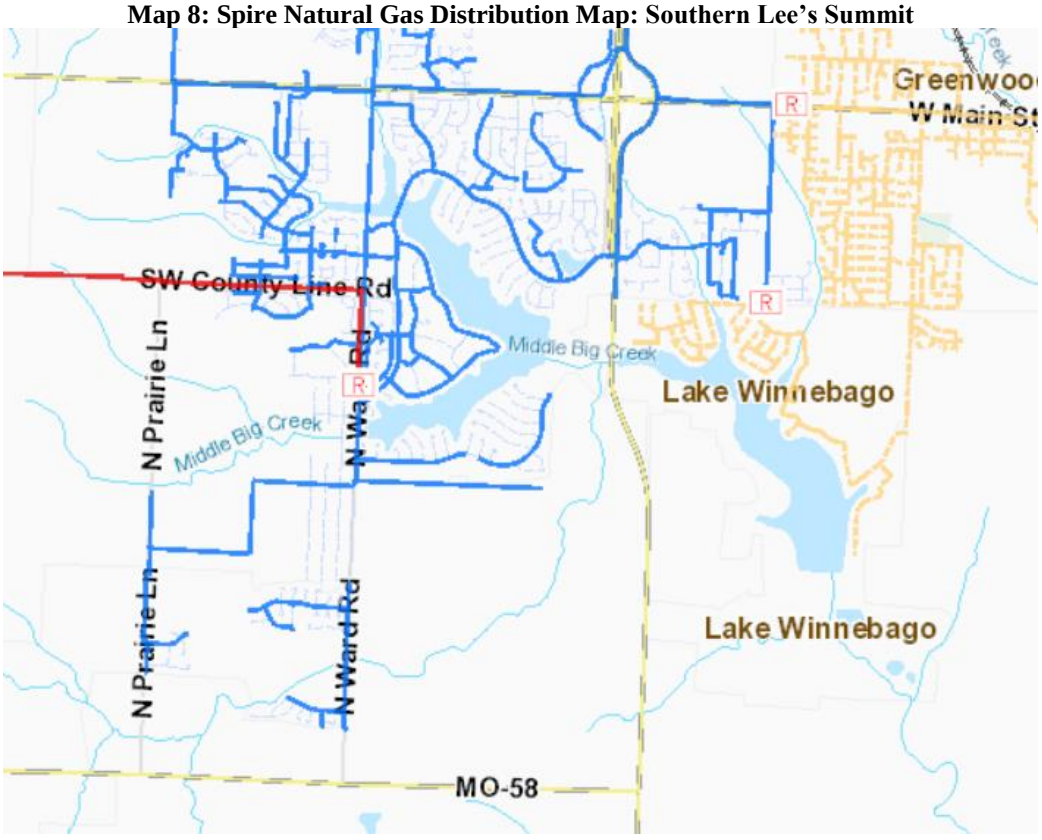
Map 6: Spire Natural Gas Distribution Map: Northern Lee's Summit



Map 7: Spire Natural Gas Distribution Map: Central Lee's Summit



Map 8: Spire Natural Gas Distribution Map: Southern Lee's Summit



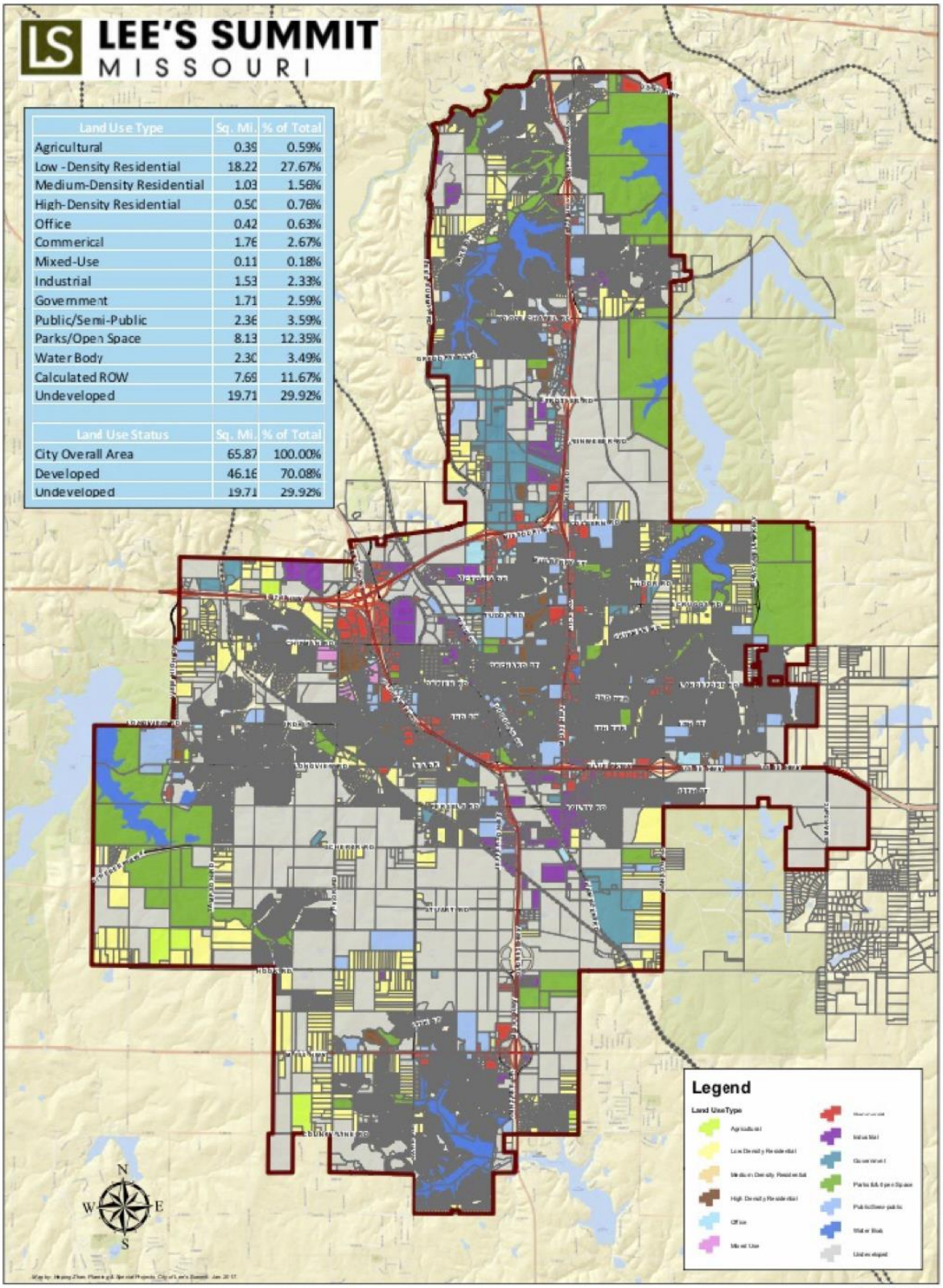
Kansas City Power and Light (KCP&L) owns and operates the electrical power grid for the City of Lee's Summit. The city has three electrical substations within its jurisdictional boundaries, located on Longview Road, Tudor Road, and Blackwell Road. From those substations, the power is distributed throughout the city by overhead and underground transmission lines.

Community Land Use and Zoning

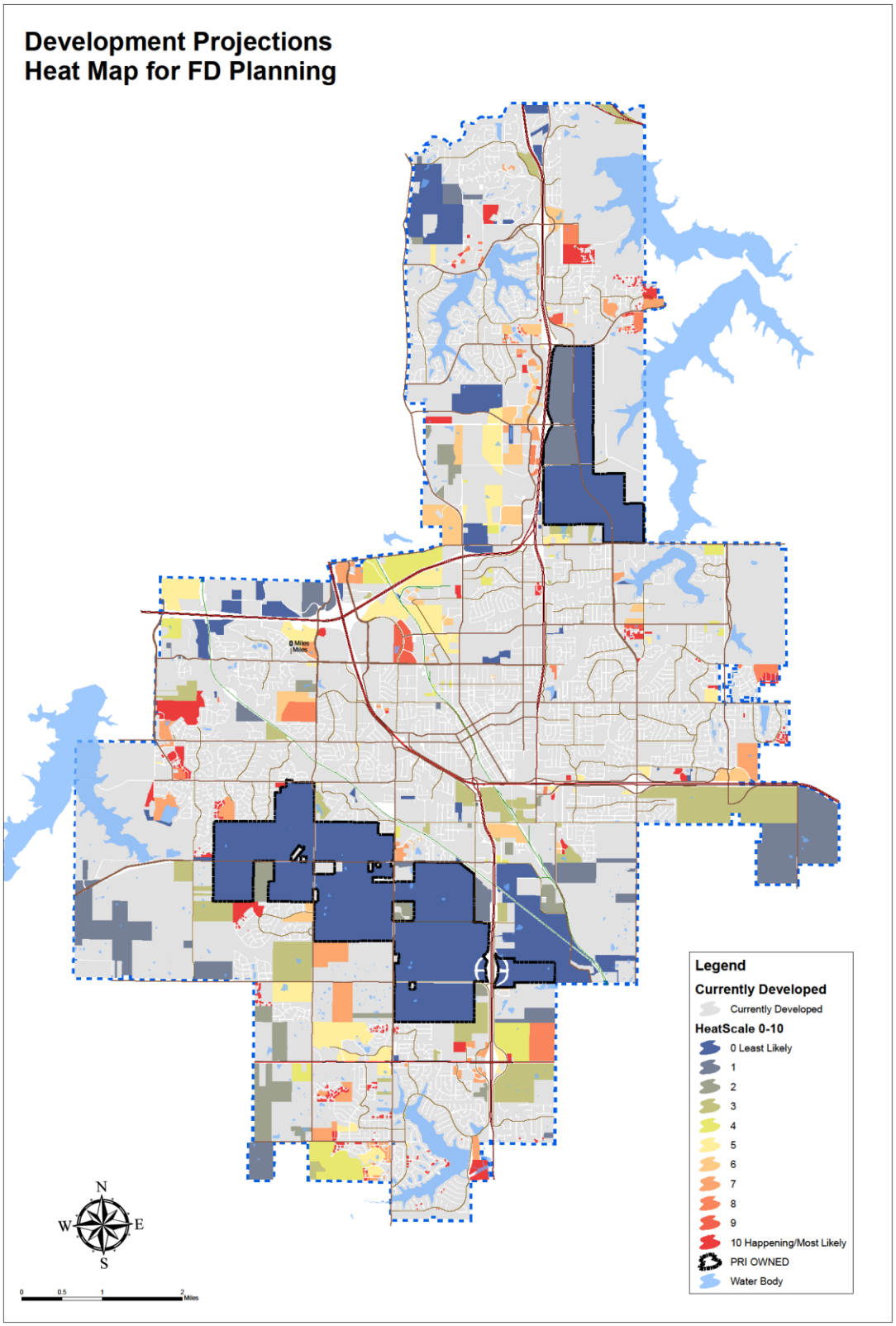
The city uses zoning areas to determine land use. Currently, Lee's Summit has a ratio of approximately 70% developed land with 30% of land remaining undeveloped. In January of 2019, it was announced that two large tracks of land are coming open for development within city limits that have up to now been virtually untouched open spaces. The 4,000 acres are owned by Property Reserve Inc. (PRI), but discussions and planning have begun between city leaders and PRI towards the development of these land holdings in the coming years. Lee's Summit has historically been considered a bedroom community with people choosing to live here but work elsewhere. Specific to land use by types: 30.03% is dedicated to some type of residential living and 5.81% is used for commercial, office, mixed-use, or industrial. The remaining 64% is made up of park land, government holdings, right of ways, and undeveloped land. Recent years have seen an increase in commercial building construction which indicates that the city is transitioning from a bedroom community to one where people choose to live, work, raise families, and seek entertainment opportunities.

The city established a development center to improve the efficiency of the processes a new business must undergo when moving to the community. The city also adopted an *Economic Development Incentive Policy* supporting the *Economic Development Vision* as outlined by the city council. This policy includes information on the type and availability of incentive programs as well as targeted economic development outcomes and geographic areas. The city is prepared to strategically and responsibly consider the use of incentive programs to meet the economic development goals and outcomes in support of this vision.

Map 9: Land Use Map (January 2017)



Map 10: Development Projections Heat Map



COMMUNITY RISK ASSESSMENT-STANDARDS OF COVER

Community Topography

At an elevation of 1,040 feet, the city of Lee's Summit is one of the highest points between St. Louis and Kansas City, in the state. With this elevation come slight rolling hills as well as flat and low-lying areas. During periods of heavy rain, some of these low areas are prone to swift water and flooding.

Neighborhoods consist of sidewalks, community pools, native and imported trees, along with shrubs and grasses. The city has a park system running throughout the community which provides approximately 8.13 square miles of various ball fields, trails, open space, water features, and shelter houses for community use. This amount equates to 12.35% of the overall land mass of the city.

The city is home to four county lakes and two private lake communities. There are a number of creeks and ponds scattered throughout the city as well. In total, 3.49% of the city is covered by water. At the very northern portion of the city, there is a cave system that has been converted to warehouse and manufacturing facilities that occupy 1.5 million square feet of space.

Community Geography

Lee's Summit is located southeast of the Kansas City Metro in northwestern Missouri. In 2019, after 25 land annexations, Lee's Summit now consists of 65.87 miles including 2.3 square miles of water. Lee's Summit is bordered by the Missouri cities of Independence to the north, Unity Village to the northwest, Kansas City to the west, Raymore to the southwest, Greenwood to the southeast and primarily unincorporated areas to the east. Lee's Summit highest point sits at 1,040 feet elevation.

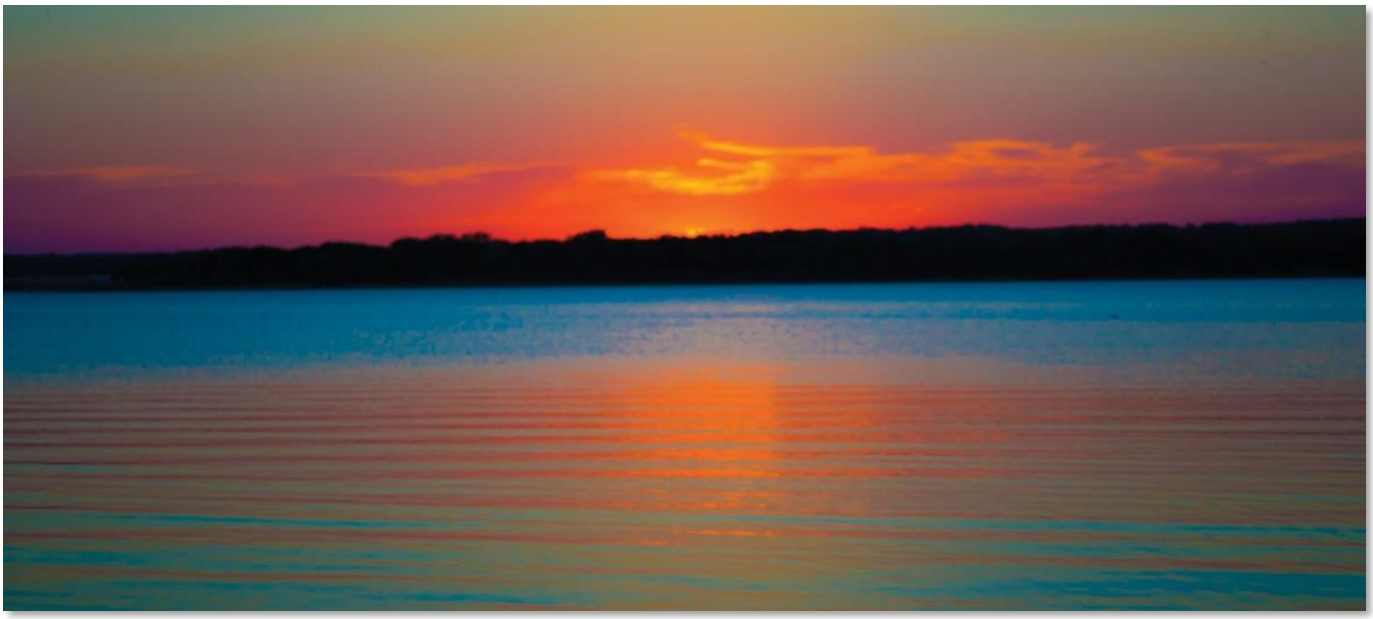
Community Geology

Located in the rolling hills of northwestern Missouri, Lee's Summit is situated in the stable crustal platform of the midcontinent region. The region is tectonically stable, so earthquakes are rare. Interbedded limestone and shale are typical of the bedrock formation in Lee's Summit, which provides a strong foundation for the building construction in the region. The subsurface rocks of the region are consolidated limestone, sandstone, and shale, many of which contain fossils of marine invertebrates, such as crinoids, corals, and brachiopods. The thick limestone beds of the region provide valuable resources for building materials like cut stone, crushed aggregate, and cement, much of which is mined in several large quarries surrounding Lee's Summit. A former underground mined cave, which is now utilized for 1.5 million square feet of subterranean warehouse rental space, is located in the northern part of the city.

COMMUNITY RISK ASSESSMENT-STANDARDS OF COVER

Community Physiography

The Natural Divisions of Missouri divided Missouri into six relatively distinct natural divisions. Lee's Summit is a combination of two of these, Glaciated Plains and Osage Plains. What used to be woody vegetation and prairies in Lee's Summit have developed into residential and business lands. Residential developments consist mostly of transplanted trees and lawn grass conducive for the region. It is not uncommon for residential neighborhoods to be located adjacent to agricultural farm and livestock properties. The undeveloped sections consist of approximately 5,184 acres, or 8.1 square miles of city parks and greenways, pockets of native trees, native grasslands, and agricultural. Large portions of Lee's Summit are still dedicated to farming, due to fertile soil, predictable growing cycles, and climate zones. Approximately 0.37 square miles are zoned agricultural use, but Lee's Summit has large sections of land owned by Property Reserve Inc. (PRI) that are still used for agricultural purposes.

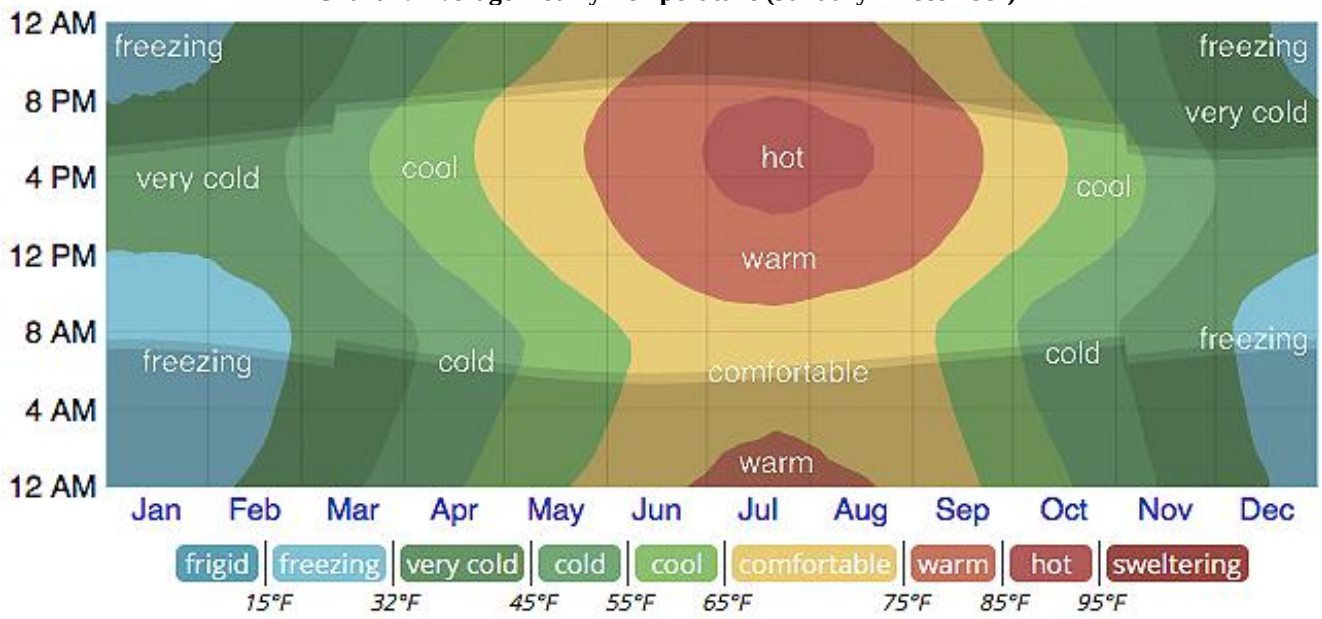


Community Climate

Lee's Summit, Missouri is located in the Midwest, which is classified as Humid Continental with hot summers and year-round precipitation on the Koppen climate classification scale. Lee's Summit has a temperate climate that experiences all four seasons, the summers are hot, muggy, and wet; the winters are very cold and windy, and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from 23°F to 89°F and is rarely below 7°F or above 97°F.

The length of daylight varies greatly throughout the year in this area. The most daylight occurs on June 21 with 14:55 hours, compared to the shortest being on December 21 at 9:25 hours.

Chart 2: Average Hourly Temperature (January - December)

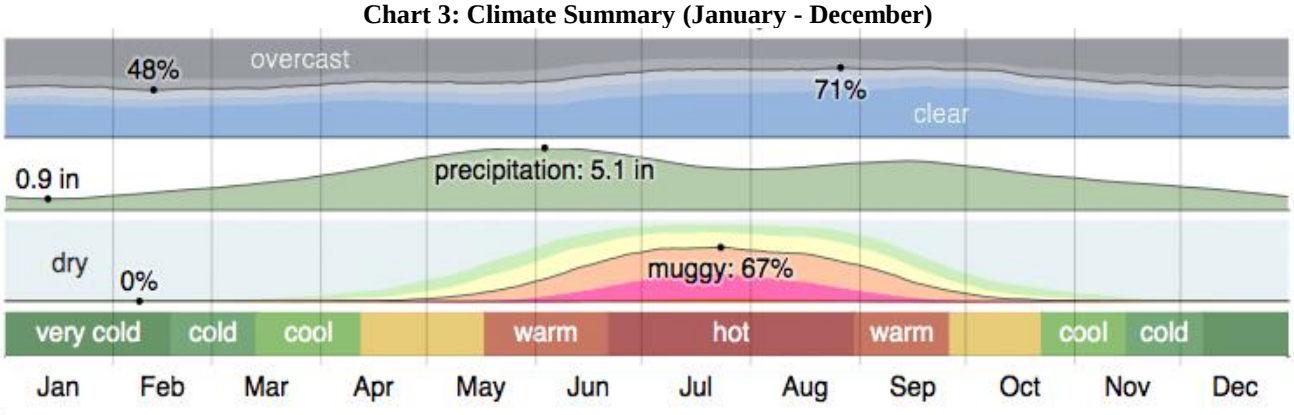


The warm season lasts from late May through the early part of September with the average daily high above 79 degrees. Drought conditions are common during the summer, with temperatures exceeding 90 degrees for approximately 40-50 days per year. In order to provide relief to the community during these periods of excessive heat and humidity, the Emergency Management Plan included a collaborative agreement with Lee's Summit Parks and Recreation and the Mid-Continent Library system to operate as "cooling centers" during excessive heat warnings.

COMMUNITY RISK ASSESSMENT-STANDARDS OF COVER

The cold season lasts from late November through the end of February with average daily temperatures below 47 degrees. Lee's Summit experiences freezing temperatures annually, with an average of 91 days below freezing. Lee's Summit experiences an average of two to five days a year below zero degrees. Winter precipitation is common in the area, with sleet, freezing rain, and snow or a combination of the three during a single event. When wintry conditions are forecasted, the city responds proactively by staffing the Public Works snow fleet to pre-treat all city streets before the anticipated precipitation, which transitions to street clearing as soon as accumulating snow begins to affect the city. The department has modeled that approach, and staffs the two department plows to mitigate the impacts of weather by responding to all service calls during winter weather events. This has been proven to improve incident outcomes by providing greater accessibility to emergency incidents for the responding units during cardiac arrests, vehicle extrications, and structure fires.

Chart 3: Climate Summary (January - December)



Lee's Summit averages 41 inches of rain annually. Measurable precipitation occurs on average about 100 days per year. In October of 2018, Lee's Summit experienced over 11 inches of rain in a 72-hour period. Similar to much of the Midwest, Lee's Summit is subject to its fair share of extreme weather. Powerful thunderstorms and flash floods accompany the heat, while ice accumulation and moderate snowfall come with chilling temperatures. In the past five years, the city has been impacted by three tornados ranging in strength from EF0-EF1, on the Enhanced Fujita scale.

Although the exception rather than the rule, during these extreme events the department adds staffing and actively monitors vulnerable areas of the jurisdiction by activating the Department Operations Center (DOC). If activated, the DOC reports back to the Emergency Operations Center (EOC) on the conditions, actions, and needs of the community.

COMMUNITY RISK ASSESSMENT-STANDARDS OF COVER

Map 11 Tornado Path - July 1, 2015

Photo 2 EF-1 Tornado (July 1, 2015)

Map 12 EF-0 Tornado Path - March 6, 2017

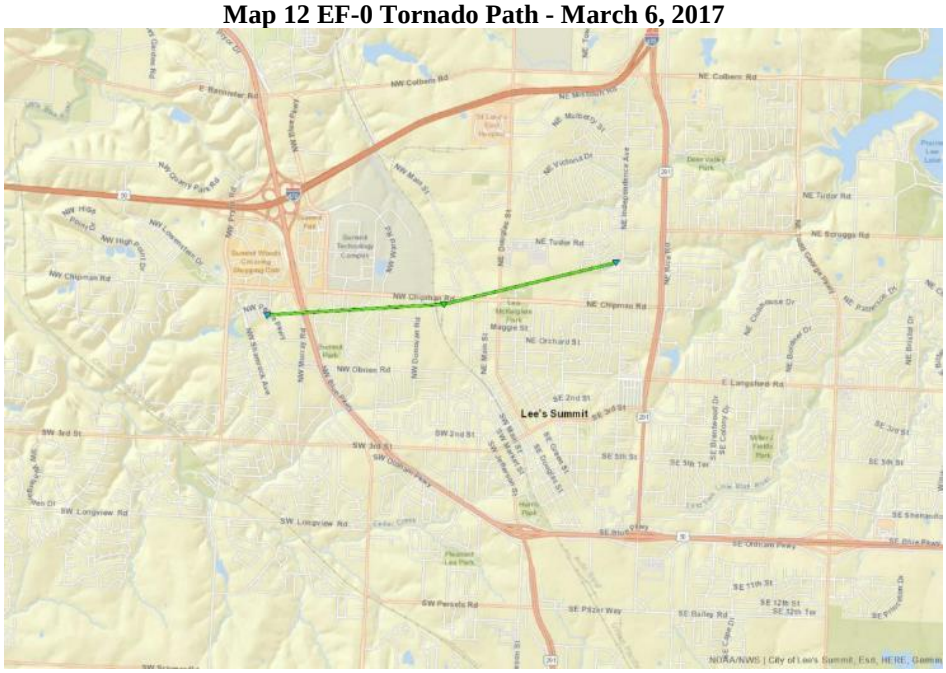


Photo 3: EF-0 Tornado (March 6, 2017)

Photo 4: Damage from EF-0 Tornado (March 6, 2017)

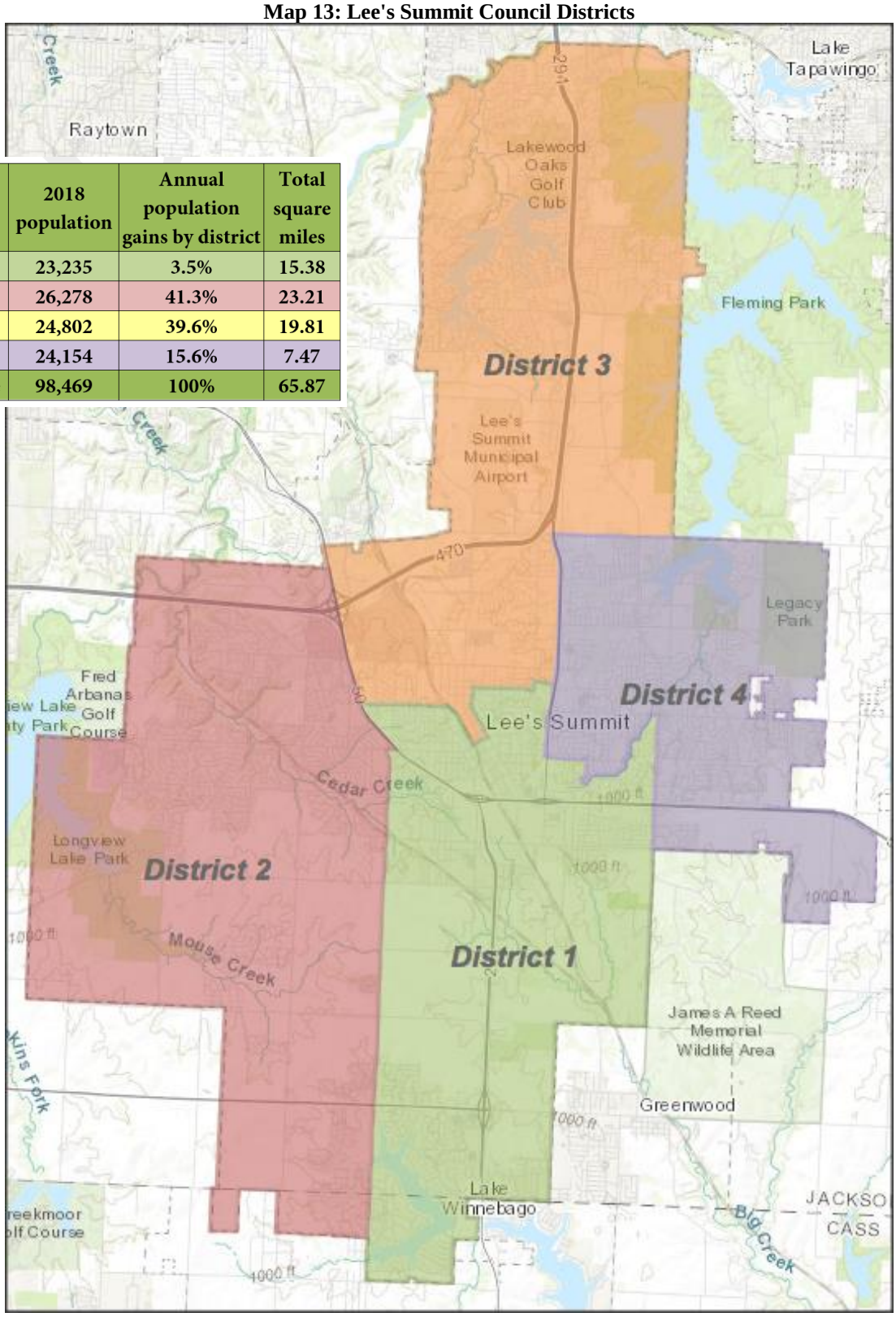
In January of 2002, a crippling ice storm covered Lee's Summit and surrounding areas. This particular event generated hundreds of calls over a three-day period. A powerful warm weather event occurred on July 1, 2015, when an EF-1 tornado touched down in the center of the city. Since that time there have been several EF-0 tornados that have impacted the city, most recently on March 6, 2017, which damaged multiple homes and businesses in its path through the center of the community.

Community Population/Population Densities

In 2019, the population of Lee's Summit was 98,469, this is a population increase of 7.5% since the 2010 census. This ranks Lee's Summit as the sixth largest city in the state of Missouri. The City of Lee's Summit stretches over 65.87 square miles, making its population density 1,495 people per square mile. The city, divided into four distinct Council districts, has different characteristics in population demographics and each is represented by two elected officials.

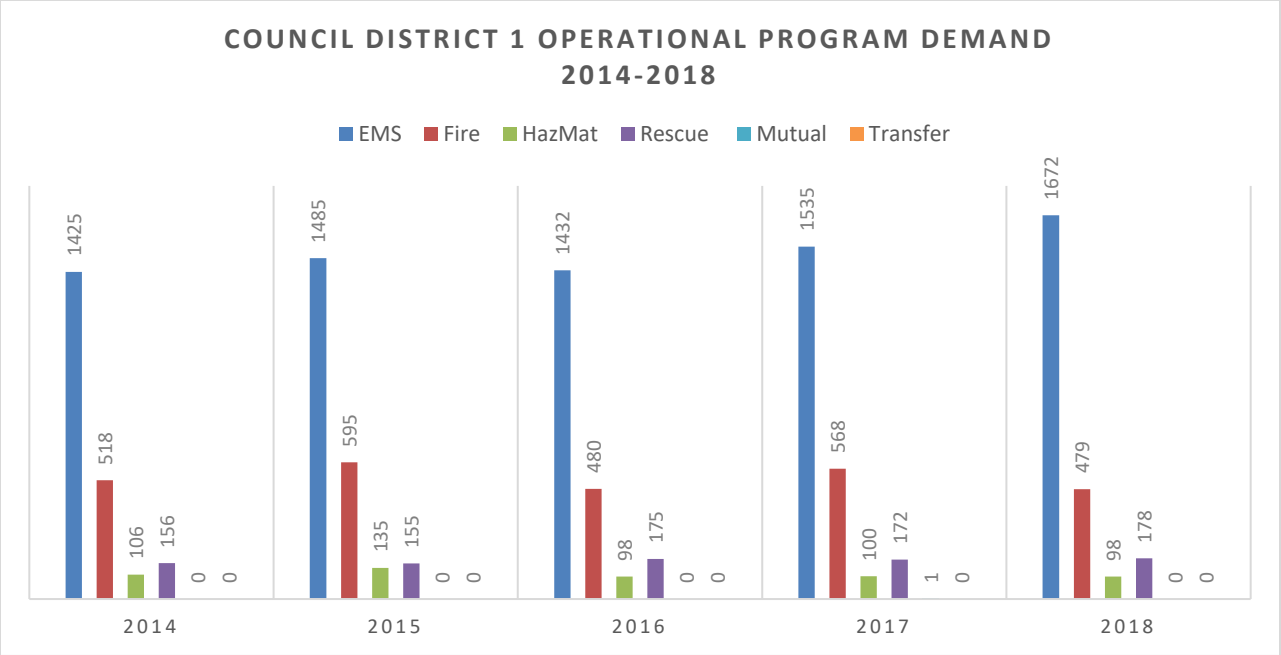
Map 13: Lee's Summit Council Districts

Council District	2018 population	Annual population gains by district	Total square miles
1	23,235	3.5%	15.38
2	26,278	41.3%	23.21
3	24,802	39.6%	19.81
4	24,154	15.6%	7.47
Citywide	98,469	100%	65.87



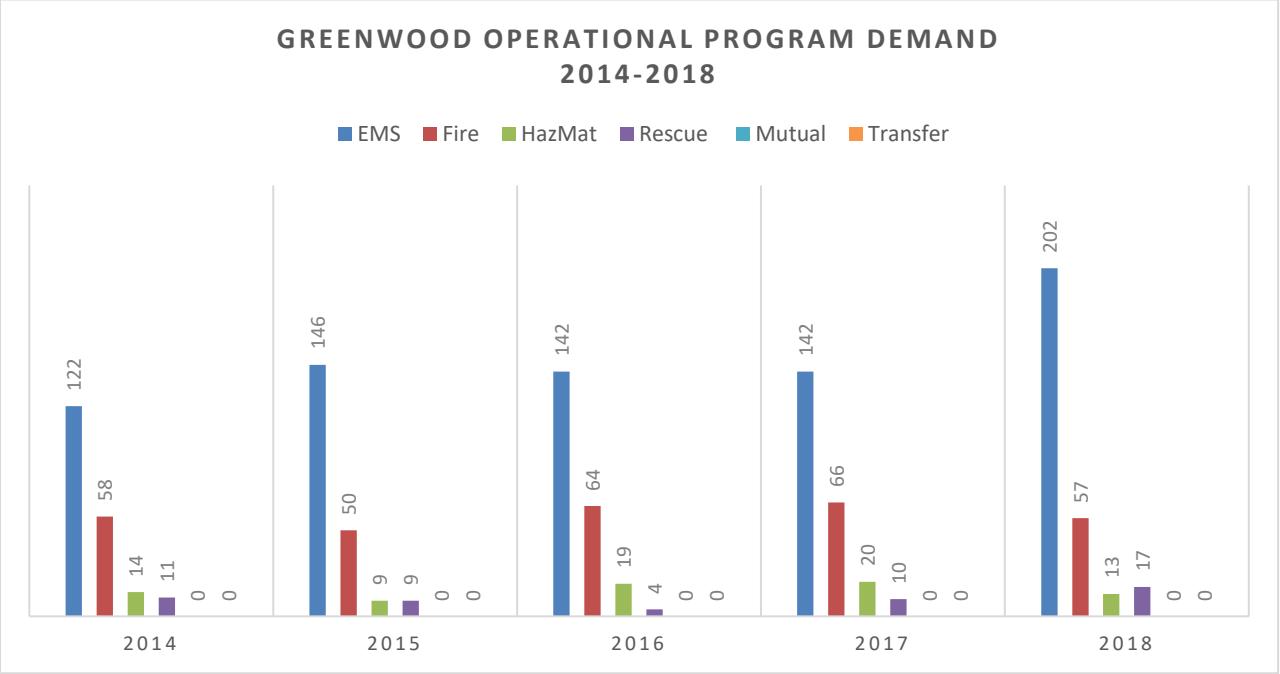
District 1 is the second smallest district and contains most of the city's southeast region. The population of district 1 is 23,235, which is an increase of 14.5% since 2010.

Chart 4: Council District 1 Operational Program Demand (2014-2018)



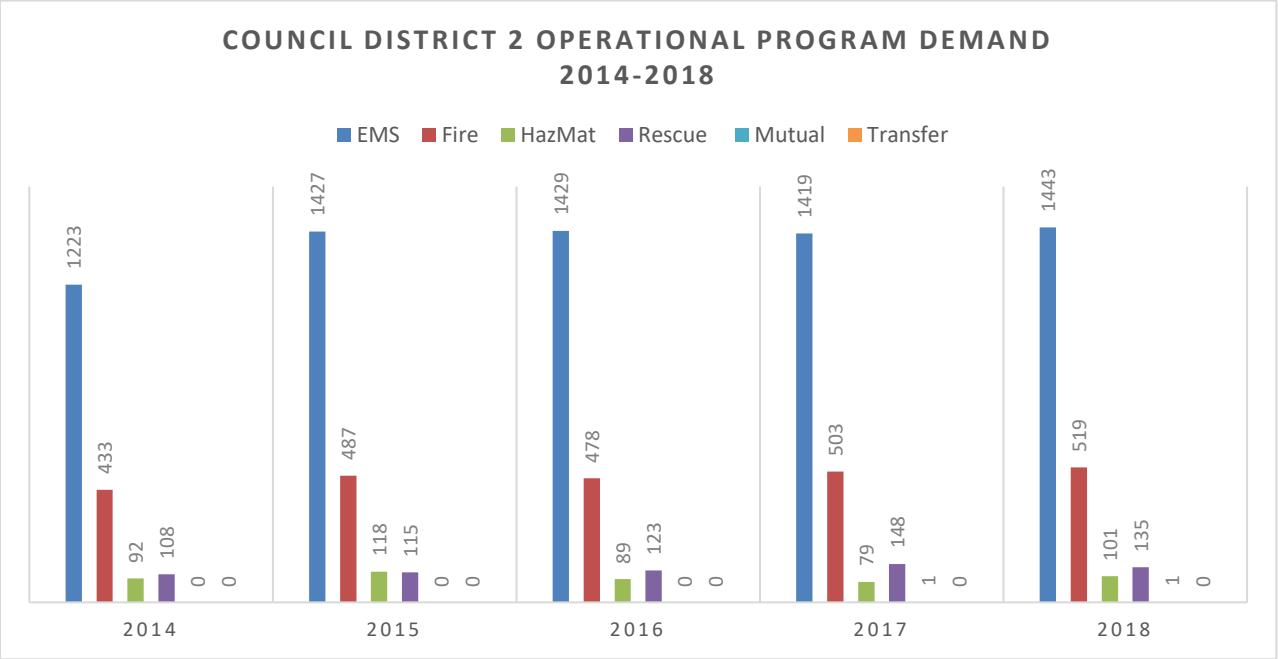
The department also has a contract with the city of Greenwood for fire and emergency service protection. The incidents generated by this contract are responded to by Station 5 personnel and apparatus located at 3650 SW Windemere Drive.

Chart 5: Greenwood Operational Program Demand (2014-2018)



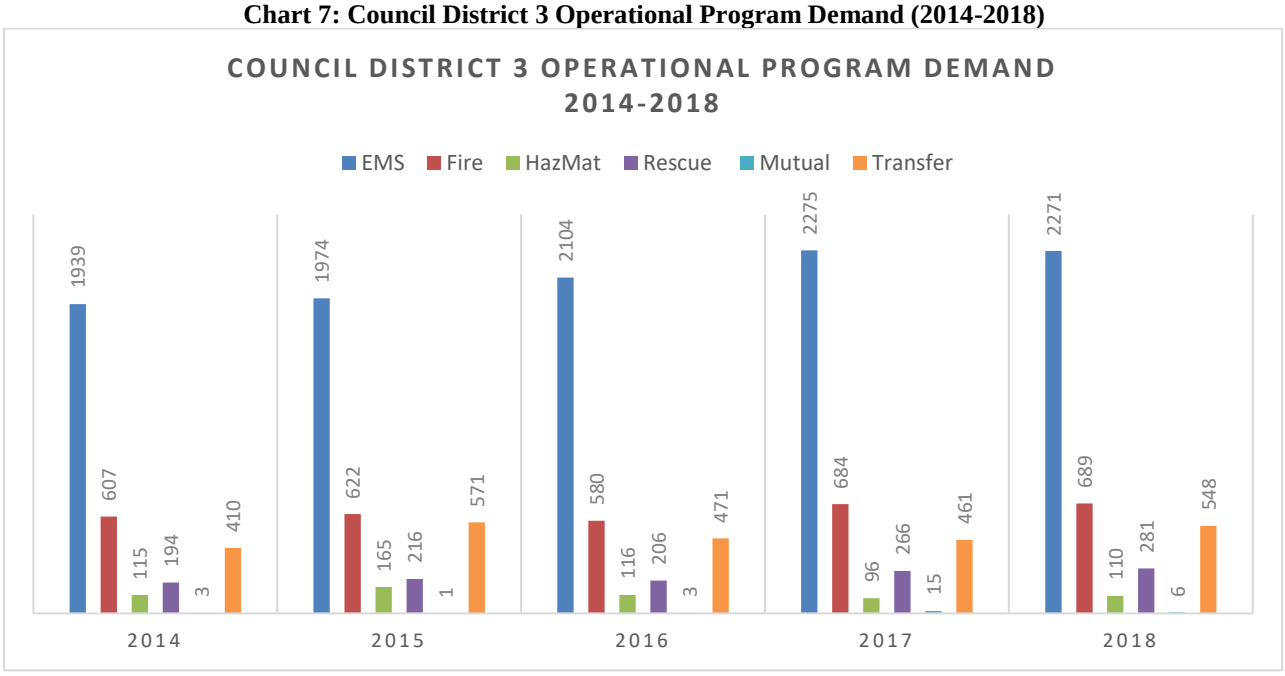
District 2 is not only the city's largest district by 3.4 square miles, but it is also the largest population by 1,476 individuals and it covers the western side of the city. The population of district 2 is 26,278 residents, which is a decrease of 5.9% since 2010.

Chart 6: Council District 2 Operational Program Demand (2014-2018)



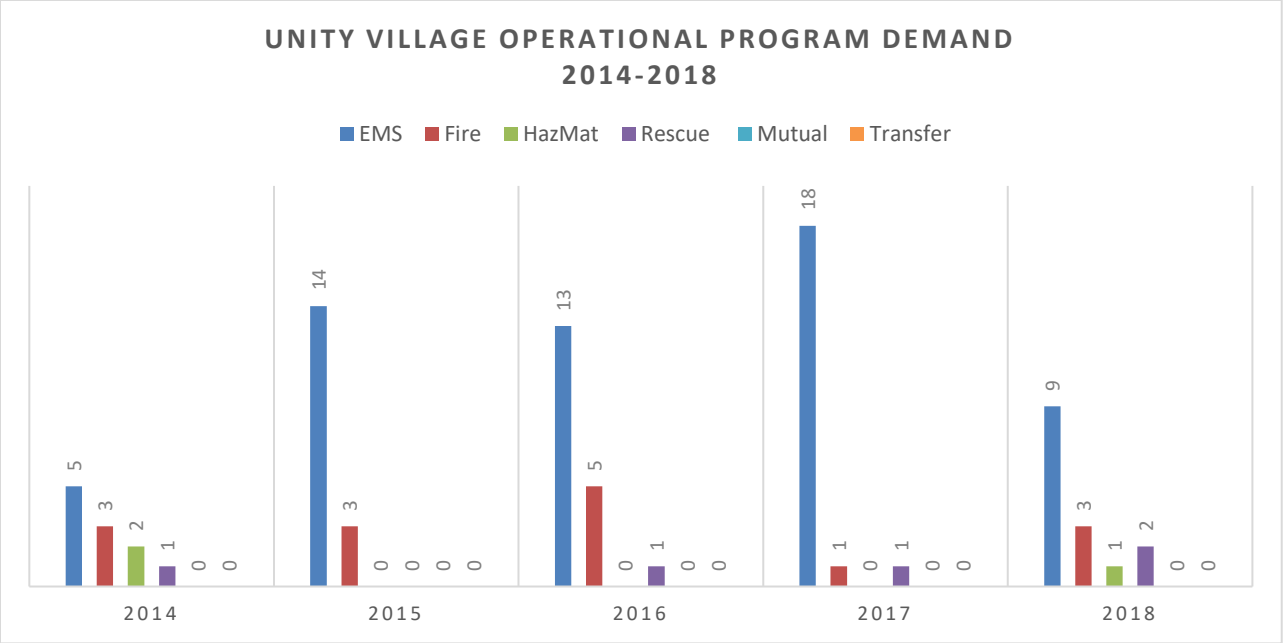
District 3 is the second largest district and the second highest in population. District 3 covers the northernmost section of the city and has had an 8.3% increase in residents since 2010 with a population of 24,802.

Chart 7: Council District 3 Operational Program Demand (2014-2018)



The department also has a contract with Unity Village for fire and emergency service protection. Station 2 personnel and apparatus typically respond to Unity Village from 2000 NE Rice Road.

Chart 8: Unity Village Operational Program Demand (2014-2018)



District 4 covers the eastern side of the city and is the smallest district by 7.91 square miles. Even though it is the smallest district by a considerable amount, it has a population of 24,154, which is an increase of 32.5% since 2010, which is the largest increase in population out of all districts.

Chart 9: Council District 4 Operational Program Demand (2014-2018)

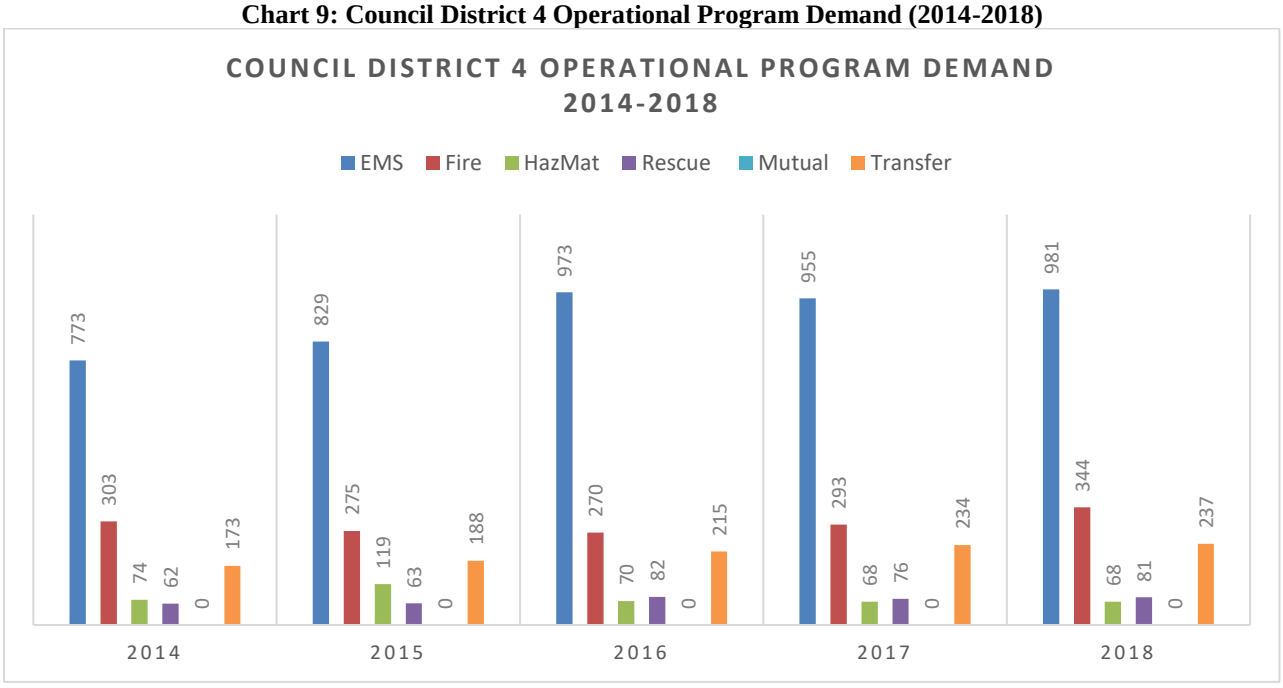
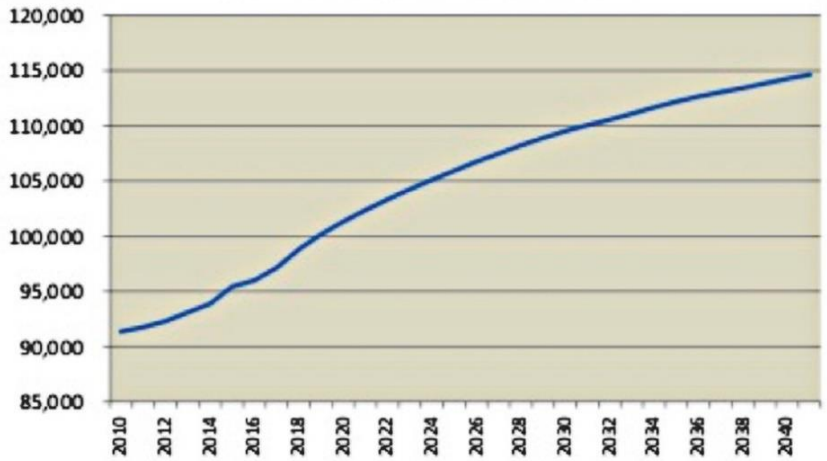


Chart 10: Projected Total Population by the end of the year (2010-2040)

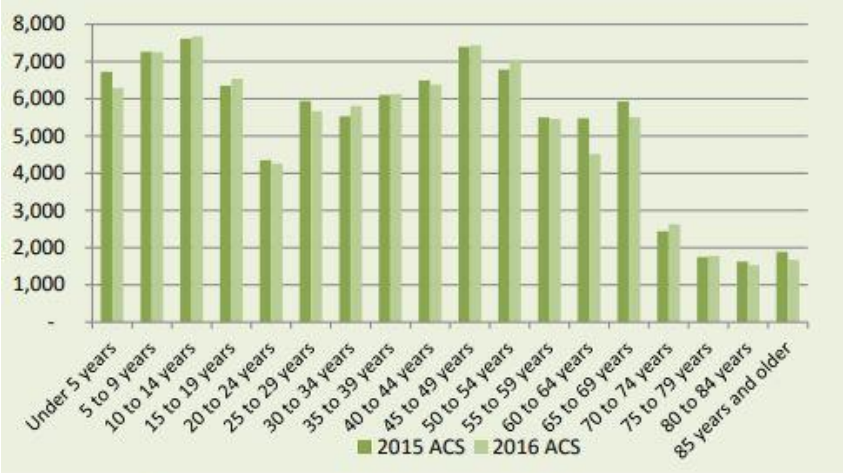


Community Demographic Features

Like many suburban communities across the United States, Lee's Summit began to experience its transformation from a rural, mostly agrarian community to a suburban community in the decades after the Second World War. As the city grew, its population nearly doubled every decade. In 1980, the population was approximately 28,000. By 1990, the population had reached 46,500. From 1990 to 2000, the city experienced a 53% increase in population and another 29% increase from 2000 to 2010. Today, the population is 98,469. The median age of Lee's Summit residents is 38, the median household income is $80,494, and 85% of high school students attend college.

Taking a closer look at the data indicates the City of Lee's Summit is 51.7% female and 48.3% male. The city has a largely diversified age population, with the average age of a resident being 38.2 years. The smallest age groups are those 70 years of age and older. On the opposite end of the spectrum, the largest population in the city are those aged 10 to 14. This demographic distribution provides valuable information related to risk assessments and emergency service trends for the department and the elected officials relative to planning.

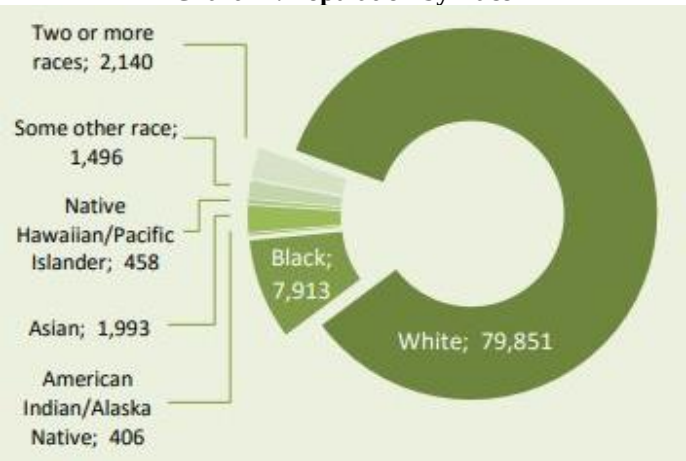
Chart 11: Population by Age



COMMUNITY RISK ASSESSMENT-STANDARDS OF COVER

Lee's Summit continues to slowly diversify its population. The city can be broken down as follows, 84.7% white, 8.4% black, 2.1% Asian, 1.5% Hispanic/Latino, 0.5% Native Hawaiian, 0.5% Native American, and 2.3% were two or more races. Comparatively, this signifies a small change since 2010. Some of the noticeable differences being the white population has decreased by 1.37%, while Asian and Native Hawaiian have each increased by roughly 0.4%. These changes are due to a steady decline of Hispanic/Latino immigration and a steady increase in Asian immigration. If Lee's Summit continues to follow the trends of the rest of the nation, in the next 20 years the population of Lee's Summit will be vastly different and continue to diversify.

Chart 12: Population by Race



Lee's Summit has one of the higher median household incomes in the Mid-America Regional Council (MARC) region. Lee's Summit has an average median household income of $80,494 when compared to the MARC regional average of $61,599. Not only does the city have a higher median household income, but it also has a lower vacant housing rate of 5.4% versus the MARC vacant housing rate of 9.5%. Lee's Summit also has a higher percentage of homeowners at 76.4% versus 23.6% who rent. All these factors are positive correlators when measured against community risk for Lee's Summit.

Table 1: Household and Family Income

Household Income	Number of Households	Percent
Less than $10,000	1,136	3.3%
$10,000 to $14,999	863	2.5%
$15,000 to $24,999	2,255	6.5%
$25,000 to $34,999	2,113	6.1%
$35,000 to $49,999	3,685	10.6%
$50,000 to $74,999	5,899	17.0%
$75,000 to $99,999	5,751	16.6%
$100,000 to $149,999	7,312	21.1%
$150,000 to $199,999	3,180	9.2%
$200,000 or more	2,471	7.1%
Median Household Income	$80,494	

Family Income	Number of Families	Percent
Less than $10,000	527	2.1%
$10,000 to $14,999	190	0.7%
$15,000 to $24,999	933	3.6%
$25,000 to $34,999	1,093	4.3%
$35,000 to $49,999	2,140	8.3%
$50,000 to $74,999	4,219	16.4%
$75,000 to $99,999	4,697	18.3%
$100,000 to $149,999	6,555	25.5%
$150,000 to $199,999	3,014	11.7%
$200,000 or more	2,327	9.1%
Median Family Income	$93,879	

B. History of the Agency

Major Historical Milestones of the Department

1951

The department purchased a 1951 Howe fire truck built on a Chevrolet chassis. At the time, this truck was state of the art in firefighting. Thanks to the efforts of the department's union members, it still plays an active role in parades today.

1933

The fire department purchased their second fire engine, led by a volunteer fire chief named Joe Cox.

1924

The fire department purchased their first gasoline internal combustion fire engine, affectionately dubbed "Old Liz."

1909

Downtown burned again when the six-man fire pump owned by the city failed, leaving the firefighters powerless to stop the growth of the fire. After burning for 3.5 hours, Kansas City Fire arrived with their apparatus on a rail car and extinguished the blaze.

1885

A downtown fire destroyed the largest and most prosperous part of the Lee's Summit business district. In response, the city invested in a larger, six-man pump that provided superior firefighting capabilities for the volunteer force.

1875

City founders established a volunteer fire department whose equipment was inside City Hall next to the jail. Firefighters had a four-person pump that was pulled by firefighters or horses to a fire, where they would begin pumping operations and form a "bucket brigade" to protect the city from fires. In the downtown district, there were strategically placed cisterns that provided a water supply.

COMMUNITY RISK ASSESSMENT-STANDARDS OF COVER

In **1960**, ending almost a century as a completely volunteer fire department, Fire Chief William Kenagy became the first paid fire chief of Lee's Summit. That same year, the department built a new four-bay fire station located on Market Street.

1967 - The department was led by the second paid fire chief, Robert Morrison, and consisted of eight full-time and eleven volunteer firemen.

1969

Station 2 opened on Colbern Road.

1971 – Station 3 opened on Pryor Road.

October 12, **1971** - the Board of Alderman of the City of Lee's Summit ordained that the Code of Ordinances of the City of Lee's Summit be amended by adding a Chapter to be numbered 16 ½ to read as follows:

"The purpose of this Chapter is to provide a modern efficient Fire Department for the City of Lee's Summit, Missouri and to vest responsibility for the direction and control of the department to the Chief.

The office of Fire Chief shall be in the unclassified service of the City and shall not be subject to Civil Service of Merit Laws which may affect the City"

In this same year, the LSFD became responsible for the emergency medical services for the city. The department's ambulance service was staffed by six cross-trained firefighters. The act of combining fire and EMS was a fairly new concept and was widely regarded as a bold move. Lee's Summit was the first fire department in Missouri to adopt this modern concept and became a model for many departments to follow.

1975

A new headquarters and communications center and four major pieces of equipment were added. An open house for the newly reorganized fire department was held at the end of the year with over 2,000 people in attendance.

COMMUNITY RISK ASSESSMENT-STANDARDS OF COVER

In **1995**, a bond issue was passed to open Station 6 on the eastern boundary of Lee's Summit.

By **1992**, the department added four new firefighters, bringing the total to 71 uniformed career firefighters supported by five trained dispatchers and supported by three clerical positions. The fleet also gained another fire engine and ambulance, handling more than 3,500 calls.

October 17, **1986** - three downtown buildings were destroyed in a five-alarm fire that turned parts of two city blocks into an inferno. The fire was located at 3rd and Douglas and involved 89 area firefighters and 11 chief officers from nine surrounding departments who fought for hours to control and extinguish the fire. During the most intense period, over 8,000 gallons per minute of water was being directed on the fire from three aerial ladders and multiple large diameter hose lines.

In **1988**, the department assumed fire protection responsibility for the City of Greenwood from the Prairie Township Fire Protection District. The department had been providing ambulance services to the City of Greenwood since 1986.

In **1984**, the department's last red fire truck was replaced. This was part of a program to change vehicle color from red to yellow that had begun several years earlier.

1980 marked the opening of fire station five. The station, located in the southern boundary of the city, was opened with a two-person crew, a fire truck and the department's third ambulance. At the time, the department consisted of 54 full-time employees, and had just introduced the 911 system for Lee's Summit residents through a signed contract with the Southwestern Bell Telephone Company.

1977 - Station 4 opened on Woods Chapel Road. At this point, the Lee's Summit Fire Department consisted of 33 full-time and 26 part-time firefighters. There were 20 vehicles, which included five pumpers and two ambulances.

COMMUNITY RISK ASSESSMENT-STANDARDS OF COVER

In May **1996**, Lee's Summit experienced a microburst, something that, until then, was unheard of outside of the meteorological community. This event was the most extensive natural disaster ever experienced in Lee's Summit, with 116 homes damaged or destroyed.

1996 was also the year the department took possession of three new rescue pumpers. These new vehicles were designed to carry advanced life support equipment similar to the equipment carried on the department's ambulances. The pumpers also came equipped with a pre-piped, 50-gallon foam tank for suppression of hazardous material spills and fires.

1998 marked the year Station 6 was dedicated. It housed one pumper and one ambulance, staffed with a minimum crew of five personnel. Eighteen additional personnel were hired to staff the new station.

July 15, **1999** - Lee's Summit Fire Department experienced a tragic loss. Bryan Pottberg lost his life in a dive training exercise; he was only 25 years old. His loss remains the only line of duty death the department has experienced.

In **2000**, Fire Chief Richard "Smokey" Dyer retired after thirteen years as fire chief. Tom Solberg, then became the sixth fire chief of the Lee's Summit Fire Department.

In **2007**, the department expanded again with the dedication of fire station seven. 21 firefighters were hired to staff the station, and it housed an aerial ladder truck, ambulance, and battalion chief. Included in the station construction was a classroom area and three-story training tower facility.

At the end of **2008**, Chief Solberg retired after serving nine years as the department's fire chief.

In **2019**, Fire Chief Rick Poeschl retired and Assistant Chief Dan Manley was appointed Interim Chief.

Another expansion occurred in **2017**, as the department received and staffed its sixth front line ambulance with nine additional firefighters/paramedics and expanded its administration staff by creating positions for a captain of Training and the reclassification of a captain in Support Services.

In **2017**, the department improved to a Class 2 ISO rating.

In **2016**, the department achieved accredited status through the Commission on Fire Accreditation International (CFAI).

Fire Chief Rick Poeschl was officially appointed as the city's eighth fire chief in **2015**.

In **2014**, Fire Chief Martin retired.

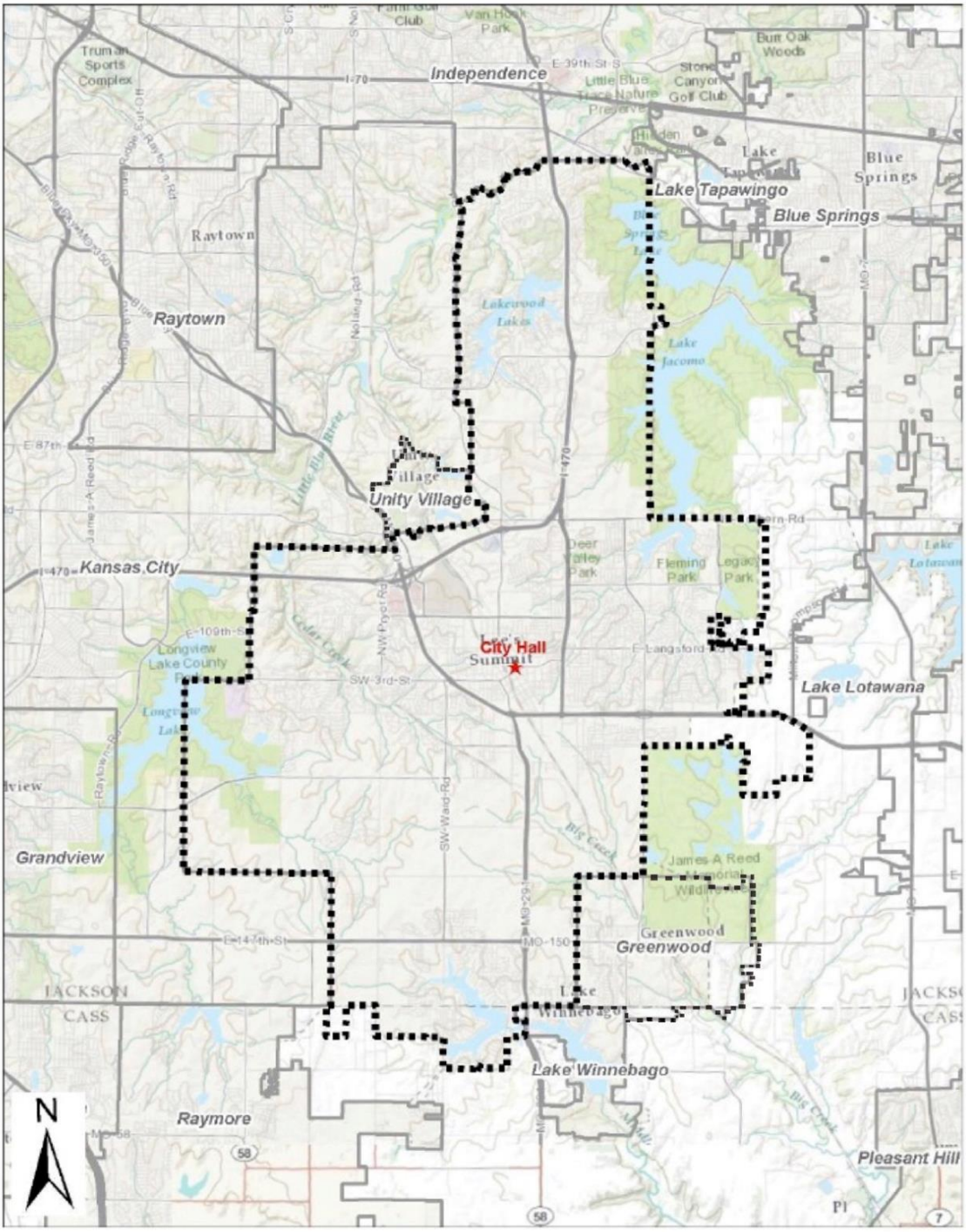
In **2009**, Keith Martin was appointed as the department's seventh fire chief.

In **2011**, the department dedicated new fire station two. The department had outgrown the current station, which had been built in 1970. This new building, designed to meet the current and future growth of the department, was constructed closer to freeway access. The station houses one of the department's two 105-foot aerial ladder trucks, an ambulance, grass rig, and rescue boat.

Current Legal Boundary of Service Area

The legal boundary of the service area for the department is contained within the jurisdictional city limits of the City of Lee's Summit as established by city ordinance, as well as the contractual legal obligation to provide fire suppression and emergency medical services to the cities of Unity Village and Greenwood, Missouri.

Map 14: Lee's Summit, Missouri



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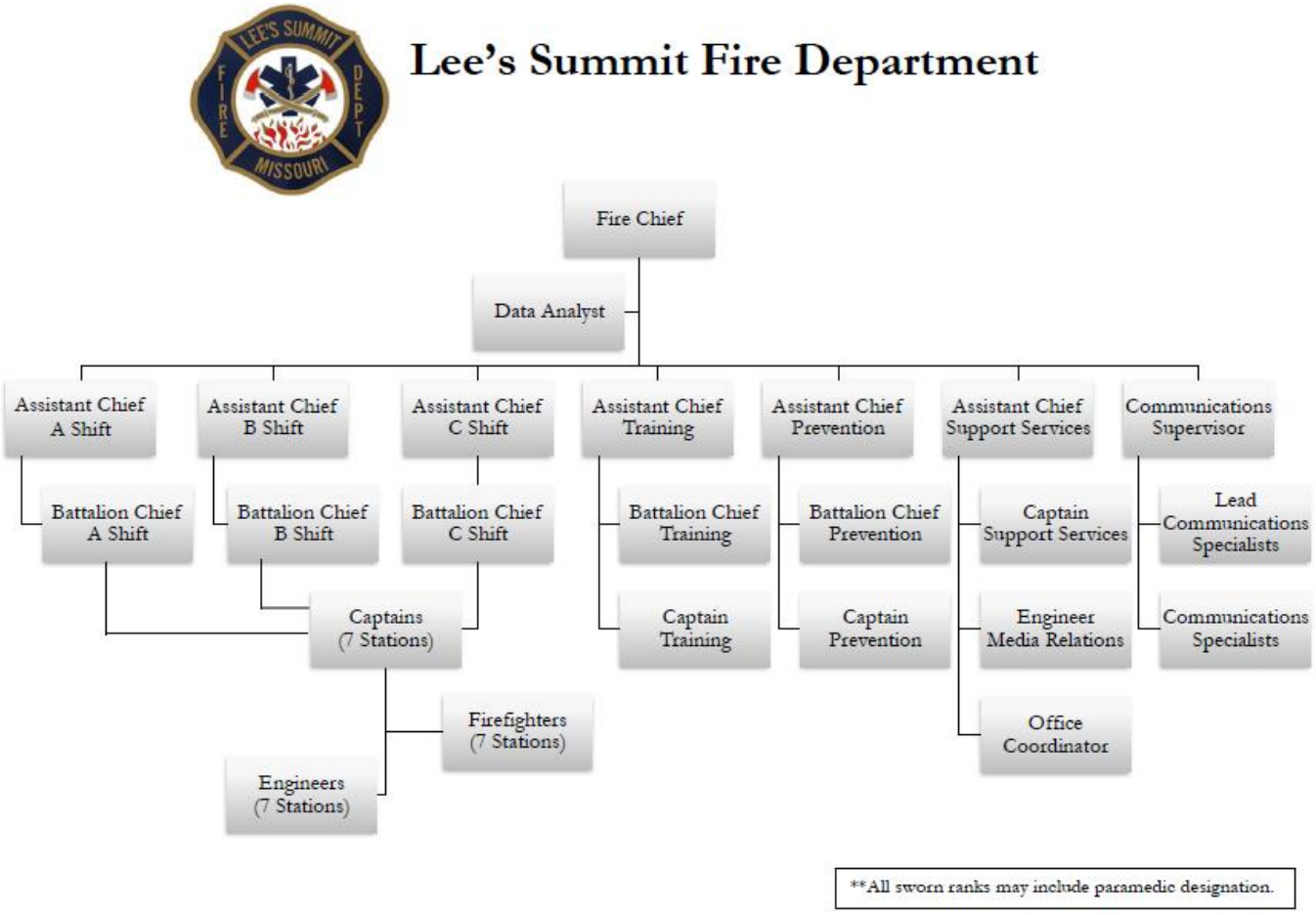
COMMUNITY RISK ASSESSMENT-STANDARDS OF COVER

Current Organization, Divisions, Programs and Services



The fire department, overseen by the fire chief, has an office coordinator and a data analyst to fulfill all the administrative functions of the department. The department consists of six divisions: Administration, Emergency Services (Operations), Training, Communications Center, Support Services, and Fire Prevention.

Emergency Services (Operations) is overseen by an assistant chief and battalion chief for each shift. Fire station operations have been structured on a three-shift (A, B, and C) system, with a daily shift change at 0800. Personnel work on a fixed (no rotation) plan in three teams working 24-hour shifts to provide 24/7 coverage. Each team repeats the following sequence over a 63-day period: 1 day on, 1 day off, 1 day on, 1 day off, 1 day on, 4 days off.

In 2019, Local 2195 and the city ratified a new labor agreement that authorized a seven-month trial period for the 48/96 work schedule. This schedule began in May 2019 and will continue for the remainder of the year. This schedule consists of 48 hours of continuous duty, followed by 96 hours off.

COMMUNITY RISK ASSESSMENT-STANDARDS OF COVER

The department staffs seven fire stations and thirteen front-line emergency response apparatus, with all fire suppression apparatus overseen by a company officer at the fire captain or acting-captain rank. Department-wide operational staffing consists of 21 fire captains and 105 engineers and firefighters. Operations are responsible for emergency medical services, fire suppression, rescue, and mitigation of both natural and man-made disasters. Operations personnel also perform a wide range of services to the community, through business inspections, public education, and station and apparatus tours. All members of Operations have been trained to the awareness and operations level for hazardous materials and technical rescue.

The Training Division, overseen by an assistant chief, battalion chief, and captain, provides initial and in-service training in all areas of service provided by the department. The training division is supported by department members with Fire Instructor I certifications who act as recruit academy drill masters and apparatus certification instructors. Additional annual training required for ALS and BLS recertification is also performed by the division.

The Communications Center, overseen by a communications supervisor, has 12 communication specialists. They work 12-hour shifts with a shift change at 0700 and 1900 daily. The Communications Center has four lead communication specialists that have a different level of responsibility than a communication specialist. The center provides dispatching services for seven contract agencies in addition to Lee's Summit and is located in the basement of fire headquarters.

The Support Services Division, led by an assistant chief, has a captain, fire specialist, and office coordinator providing support. Budget formulation, record retention, facility construction, facility repair, and apparatus procurement and maintenance are the responsibility of the members of this division.

The Fire Prevention Division, overseen by an assistant chief, has a battalion chief, and captain providing support. Community risk reduction coordination is the responsibility of the division, including plan review, business and sprinkler inspections, public education, and station tours.

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

Photo 5: Headquarters (Station 1)

Fire Headquarters (Station 1) is located at 207 SE Douglas and was dedicated in October of 1975. Pumper 1, Rescue 1, shift assistant chief, and Squad 1 (which is an unstaffed asset) all deploy from this station. The department's administrative, fire prevention, and training divisions, communications center, and multiple reserve apparatus are also housed at this station. Fire headquarters is staffed by a minimum of six personnel, located in the heart of downtown Lee's Summit. This diverse district consists of historical downtown, elementary and high schools, historic residential housing and high-density apartments, a passenger and freight railroad that bisects downtown, commercial shops and industrial areas, and is bordered by three highways. Headquarters has traditionally been one of the busiest stations in the city, responding to 9,396 incidents from 2014-2018.

Photo 6: Station 1 District

Photo 7: Station 2

Station 2 is located at 2000 NE Rice Road and was dedicated in July 2011. Truck 2, Rescue 2, Grass 2, and Boat 2 (Grass 2 and Boat 2 are unstaffed assets) all deploy from this station. This district is located in the northern portion of the city with elementary and middle schools, lakes and woodland areas, residential and senior living housing, an airport, and two highways located near commercial and industrial areas. District 2 also protects a contract city with a large campus called Unity Village. With all this diversity, Station 2 is becoming one of the busiest districts for the department, responding to 9,146 incidents from 2014-2018.

Photo 8: Station 2 District (Unity Village)

Photo 9: Station 3

Station 3 is located at 210 SW Pryor Road and was dedicated in January of 1971. It houses Pumper 3 and Grass 3 (Grass 3 is an unstaffed asset). Located in the city's core on the western boundary, the district consists of a 300-acre senior living complex, elementary and middle schools, single family residential, high-density apartments, a large commercial district, and two highways. District 3 has become the busiest in the city, generating 11,417 incidents from 2014-2018.

Photo 10: Station 3 District

Photo 11: Station 4

Station 4 is located at 404 NE Woods Chapel Road and was dedicated in February of 1977. Pumper 4 and Rescue 4 deploy from this station, while Squad 4 is an unstaffed asset that is housed inside the subterranean Space Center located in that district. This district is in the northern boundary of Lee's Summit and protects a large senior living complex, single-family residential housing, several large lakes, elementary, middle and high schools, the airport, a 1.5 million square foot subterranean complex, and a major highway. District 4 responded on 6,619 incidents from 2014-2018.

Photo 12: Station 4 District

Photo 13: Station 5

Station 5 is located at 3650 SW Windemere Drive and was dedicated in September of 1980. Pumper 5 and Rescue 5 deploy out of this station. This district protects single-family residential and high-density apartments, commercial centers, lakes, elementary, middle and high schools, as well as two highways and the contract area of Greenwood. District 5 responded on 4,999 incidents from 2014-2018.

Photo 14: Station 5 District

Photo 15: Station 6

Station 6 is located at 101 NE Blackwell Road and was dedicated in April of 1998. Pumper 6 and Rescue 6 deploy out of this station. This district is located on the eastern boundary of Lee's Summit and protects single-family residential, an elementary school, a senior living complex, lakes, and the city parks system, as well as a highway. District 6 responded to 6,472 incidents from 2014-2018.

Photo 16: Station 6 District

Photo 17: Station 7

Station 7 is located at 2150 SW Scherer Road and was dedicated in March of 2007. The shift battalion chief, Truck 7, and Rescue 7 deploy from this station. The station includes a three-story training facility for practical training sessions that encompass all service delivery areas of the department. This district is located on the western boundary of the city and protects single-family residential and an elementary school while responding to 1,685 incidents from 2014-2018.

Photo 18: Station 7 District

C. Current Descriptions of Levels of Service with Delivery Programs

Fire Suppression

The Lee's Summit Fire Department (LSFD) responds to fire incidents within the city and contract areas, Greenwood and Unity Village, and provide mutual aid when requested. The department does not provide automatic aid by the current agreement. LSFD has seven stations, staffed for 24-hour daily shifts by a minimum of 35 career personnel. Fire operations are managed by an assistant chief and a battalion chief assigned to each shift.

All front-line pumpers and reserves carry 500 gallons of water and 25 gallons of class A foam. All front-line pumpers have a pumping capacity of 1,500 gallons per minute while both ladder trucks have rear mount 105-foot ladders, carry 500 gallons of water (no foam), and have a pumping capacity of 1,250 gallons per minute.

In Lee's Summit, each front-line fire company is equipped to meet or exceed the recommendations of ISO and NFPA 1901, standard for fire department apparatus equipment assemblies. Each pumper/ladder truck carries a minimum of 800 feet of 4-inch supply line and 400 feet of pre-connected 1.75-inch fire hose. All pumpers carry 400 feet of pre-connected 2.5-inch fire hose and have 100 feet of pre-connected 1.75-inch fire hose in the front bumper. Additional fire hose is carried in various lengths; 1-inch forestry line, 1.75-inch fire hose, 2.5-inch fire hose and 4-inch supply line. Each pumper/ladder truck carries four self-contained breathing apparatus (SCBA), two of which have thermal imaging capability in the mask, and one hand-held thermal imaging camera (TIC), along with air monitoring equipment, and a multitude of various hand tools.

Each pumper and ladder truck's minimum staffing is three personnel. The department has six front line ambulances cross-staffed with two additional firefighters. All personnel are trained and certified, at a minimum, to the Missouri Division of Fire Safety (IFSAC) certification of Firefighter I and II.

Stations 1, 3, 4, 5, and 6 house front-line pumpers and Stations 2 and 7 house front-line ladder trucks. With the exception of Station 3, all stations have an

ambulance. Station 1 houses two pumpers that are in reserve status. Stations 2 and 3 house two wildland fire apparatus.

The wildland fire apparatus have been structurally retrofitted in 2018 on new flatbeds holding booster reels, 250-gallon water tanks and new fire pumps with pre-piping to the front bumper for remote pumping operations. The wildland fire apparatus are staffed with two personnel from a pumper/ladder truck when the situation arises and may be staffed during high-fire hazard days with overtime personnel. Lee's Summit is also home to a subterranean business complex.

To address the hazards that the subterranean business complex present, the department houses a John Deere UTV equipped with 200 feet of 2.5-inch attack line and 400 feet of 1.75-inch attack line for connections to the standpipe system, four SCBA, a gas-powered fan, and various hand tools. The UTV is staffed by the first arriving company for initial investigation.

Emergency Medical Services

The LSFD is staffed and equipped to respond to any medical incident within the city, its contract areas, and is capable of providing mutual aid when requested.

The department has six ground transport ambulances that are identified as rescues. These units are located at stations 1, 2, 4, 5, 6 and 7. Station 1 also has three reserve rescues that are staffed on an as-needed basis. These reserves also supplement the frontline units when maintenance is needed allowing the department to always have six units in service.

The state of Missouri licenses Emergency Medical Technicians at both the basic level (EMT-B) and the Paramedic level (EMT-P). Each rescue is staffed with an EMT-B and EMT-P as minimum staffing. Currently, the department has 139 sworn members. Of these members, 73 are licensed at the EMT-B level and 66 at the EMT-P level. Six of the EMT-B's are currently enrolled in Paramedic training. All members have and maintain licensing at the EMT-B level as a minimum, and the department staffs a minimum of 12 paramedics per shift. In total, A-shift has 22 paramedics, B-shift has 18 paramedics, and C-shift has 22 paramedics assigned.

While state licensure is the minimum standard for either level, a number of members maintain certification through The National Registry of Emergency Medical Technicians (NREMT). This agency has strict requirements for certification, as well as a shorter certification cycle than the state. Currently, 26 members are NREMT certified at the EMT-B level and 42 at the paramedic level.

Three paramedic members have also begun training as community paramedics, a certification that focuses on non-acute care to prevent patients with chronic medical issues from numerous hospital visits.

Staffing levels at each station allow for paramedic level care at all times when fully staffed.

All rescues, pumpers and ladder trucks carry an assortment of BLS/ALS medical equipment (Lifepak 15 cardiac monitor/defibrillators, cardiac and respiratory medications, basic and advanced airway adjuncts, oxygen and various splints and bandages including tourniquets). These items can be utilized in many different applications depending on the medical emergency encountered.

Technical Rescue

The Lee's Summit Fire Department is equipped and staffed to respond to rescue incidents within the city, contract areas and mutual aid responses when requested. Each pumper and ladder truck carries equipment that can be utilized and deployed in the initial phase of a rescue. All firefighters are trained to the minimum of the awareness level. Depending on the complexity of the rescue, the department may be able to mitigate or stabilize the incident until Regional Technical Mutual aid units arrive to perform the rescue. Technical rescue mutual aid would be provided from neighboring Central Jackson County Fire Protection District, Olathe Fire, or Kansas City Fire Department.

Equipment carried by pumper and ladder trucks consists of high angle equipment, swift water rescue gear, ice rescue equipment, and auto extrication equipment.

Squad 1 and Pumper 1, both located at fire headquarters, carry a complement of specialty stabilization struts that are used for vehicle stabilization, and trench or structural collapse wall support. Pumper 1 also carries an assortment of high-pressure airbags used for vehicle stabilization during auto extrication. All front-line pumpers carry treated lumber for cribbing, and a Holmatro portable power unit featuring CORE line technology with quick connect couplings and are light enough to be carried by a single firefighter. This system improves the efficiency of deploying essential extrication equipment at the incident location.

Squad 1 is a triple use apparatus with additional rescue equipment to support the incidents of high angle, swift water, ice, trench, and confined space rescue. This vehicle also contains equipment to help mitigate hazardous materials incidents and the technological capabilities to serve as a mobile command post.

Hazardous Materials

The Lee's Summit Fire Department is staffed and equipped to respond to hazardous material incidents within the city, its contracted response areas, and mutual aid when requested.

All firefighters at the department are trained to the Hazardous Materials Awareness and Operations levels. All pumpers/ladder trucks/rescues/command vehicles carry air monitoring equipment, isolation and decontamination equipment, and/or supplies for damming, diking, and diverting.

The department has a Hazardous Materials team consisting of 15 members spread across the three shifts that are trained to the Technician level. This team can respond to incidents within the city and is one of several in the area available to respond for mutual aid to other departments. The Hazardous Materials team utilizes Squad 1, an unstaffed command vehicle stationed at Headquarters, which carries air monitors, hazardous materials suits, decontamination supplies, research computers, and equipment to identify and contain/isolate hazardous material spills.

The LSFD is also one of three departments to house a Regional Weapons of Mass Destruction trailer supplied by the Mid-America Regional Council. The trailer is supplied with equipment to respond to biological, nuclear, incendiary, chemical and explosive incidents in the region.

Specialized Services

The LSFD is staffed and equipped to respond to limited specialized services within the city, its contracted response areas, and mutual aid when requested.

Water Rescue

The department has an 18' Triton Boat that has been retrofitted for fire department operations. This water response unit is trailered at Station 2 and cross-staffed by on-duty crews. Boat 2 can also be manned with personnel from other responding apparatus, or by recalled personnel. The boat is designed to be utilized for surface water rescue and personnel transport for medical calls on the water, not firefighting. The department carries Rapid Deployment Crafts (RDC) on four front line pumpers with large bodies of water in their response districts. These RDC's can be assembled and deployed for emergency response by the first arriving apparatus for emergent water and ice rescue events. All boat operational training is facilitated by the department.

Subterranean Space

The department also has a 1.5 million square foot subterranean space (cave system) that is occupied by multiple businesses. The department has an unmanned apparatus (Squad 4) stationed inside the subterranean space. This apparatus is a John Deere Gator with a trailer that carries self-contained breathing apparatus, hose, ventilation fan, and extinguishers. This response vehicle is utilized on fire incidents inside the subterranean space by the first arriving units on scene. The department has developed standard operational guidelines for all operations within the subterranean space due to the specialized operations and the communication challenges the cave system presents. The department responds to all incidents in the subterranean space covering all mission programs.

Tactical Medic

The department also has a Tactical Medic Team used within the Lee's Summit Police Department's Emergency Service Squad. The team is committed to providing ALS support at the request of law enforcement and acts as a liaison with LSFD personnel. The team is comprised of a minimum of six personnel, with one Tactical Medic Team Coordinator and all others as Tactical Medic Operators. All members of the team must be veteran paramedics and be able to pass rigorous physical agility tests. The team is trained to assist in a variety of scenarios ranging from mass casualty incidents and K-9 operations to operations involving hostage situations.

Community Risk Reduction

The Fire Prevention Division of the LSFD is responsible for the Community Risk Reduction programs. This division is also responsible for the department's loss prevention programs, Fire Investigation Unit, a youth and adult fire education program, fireworks inspections, building plan reviews, and inspections of new construction as well as annual inspections of existing businesses. Three personnel are assigned to this division, led by the assistant chief of Prevention who is assisted by a battalion chief and a captain.

Education programs created by the Prevention Division are delivered to adult and youth classes by the Public Education Team. This team consists of various personnel from the department that have received training in this discipline with most being Fire Instructor 1 certified. Youth classes include, but are not limited to, elementary school fire safety classes presented to 1st, 3rd, and 5th-grade students, as well as station tours and fire safety for youth groups within the city. Adult education classes delivered jointly by the prevention and training division include CPR classes and home safety classes, as well as career days for high school age and up.

The Prevention Division is responsible for doing all inspections on new construction. Existing building inspections are done annually by personnel in the Operations Division. Annual building inspections are distributed between the three shifts and stations to allocate resources efficiently.

D. Current Deployment and Coverage Areas

Points of Service Delivery

Station response districts are another geographical division within the city. These districts are based on the station and apparatus that are first due to this area. This is based on current 2018 deployment locations within the city and does not include automatic vehicle location (AVL) which is expected to be going live in 2019. Analyzing data based on station response districts such as total response time and effective response force will aid in future decision making as it pertains to placement, staffing, and additional resources.

There are currently seven fire response districts within the city. Inside each response district is a deployment location for emergency operations: a fire station. These deployment locations are the primary response areas for the community, as well as Greenwood and Unity Village through contractual agreements. Frequently units will respond from different areas throughout the community. This frequently occurs while performing non-emergent functions, such as training, business fire inspections, public education events, refueling, and maintenance transitions. Travel time capability indicated is from fire station locations.

Map 15: Seven Stations within Lee's Summit
(including contract cities of Unity Village and Greenwood)

Map 16: Response Times within City Boundaries
(dark blue = 0-4 minutes; light blue = 4-6 minutes; green = 6-8 minutes)

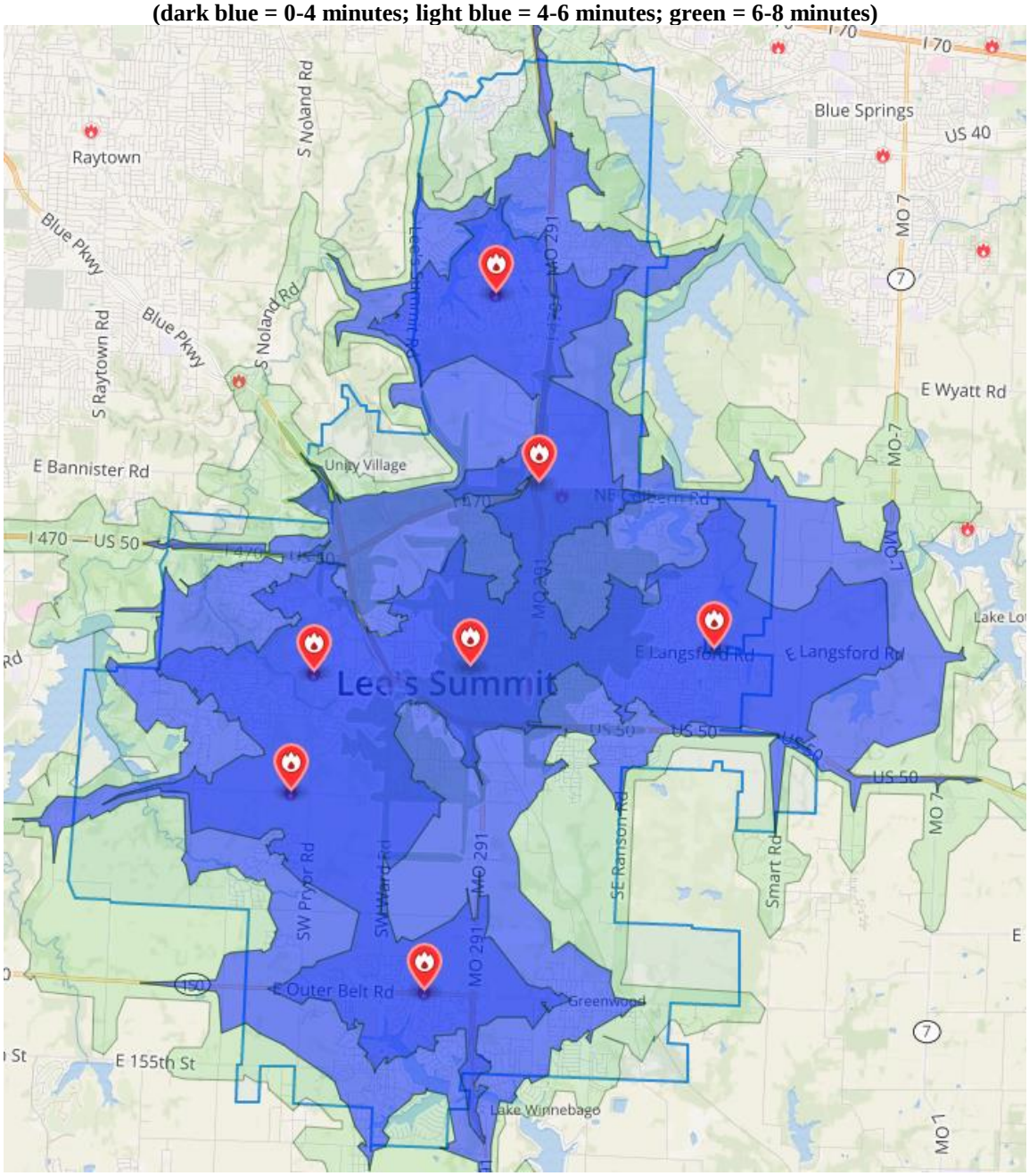


Photo 19: LSFD Station 1 Headquarters

Fire Department Headquarters (Station 1) is located at 207 SE Douglas and was dedicated in October of 1975. The station is home to an assistant chief of Operations and the duty crews for Pumper 1 and Rescue 1. Squad 1 is deployed from this station, in addition to two reserve pumpers and three reserve rescues. The department's 40-hour administrative staff and the communications center are also located at Fire Department Headquarters.

Map 17: District 1 Response Times
(dark blue = 0-4 minutes; light blue = 4-6 minutes; green = 6-8 minutes)

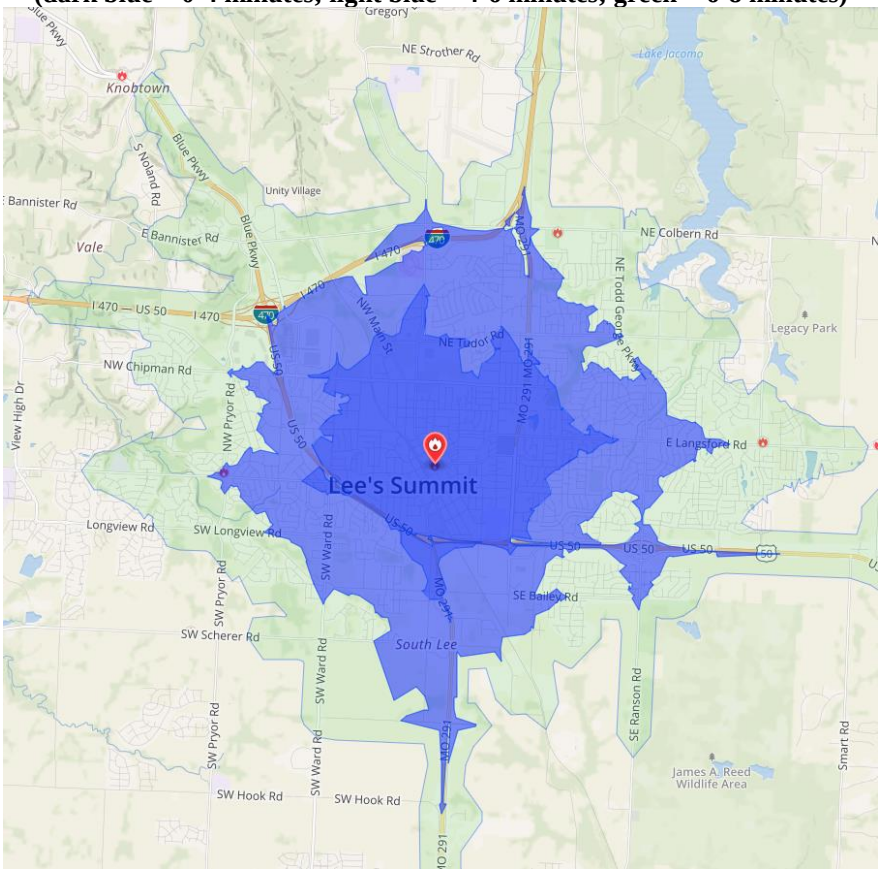


Photo 20: LSFD Station 2

Station 2 is located at 2000 NE Rice Road and was dedicated in July 2011. Truck 2 and Rescue 2 deploy from this station. Grass 2 and Boat 2 are stationed here and are cross-staffed as needed.

Map 18: District 2 Response Times
(dark blue = 0-4 minutes; light blue = 4-6 minutes; green = 6-8 minutes)

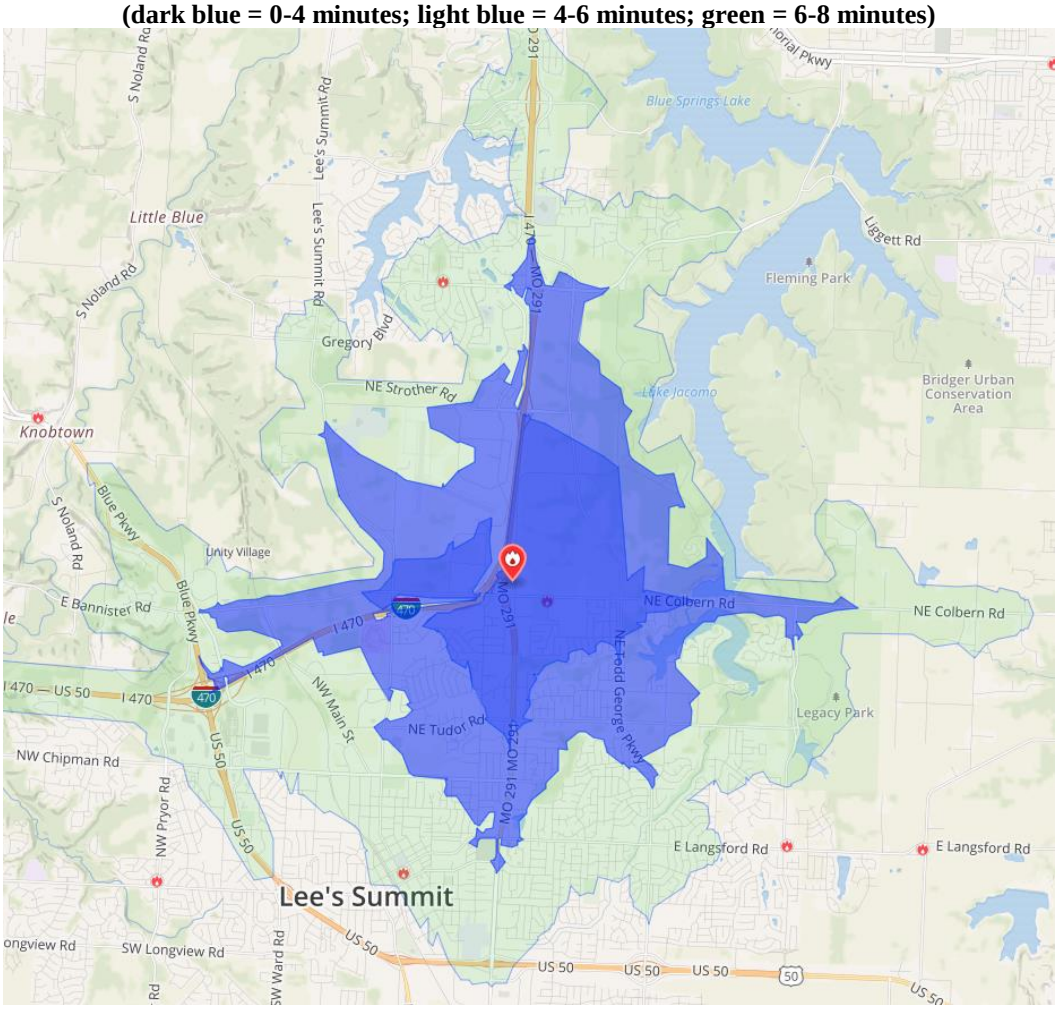


Photo 21: LSFD Station 3

Station 3 is located at 210 SW Pryor Road and was dedicated in January of 1971. It houses Pumper 3 and Grass 3. Grass 3 is cross-staffed as needed. Construction began in 2019 on a new 16,000 square foot, six-bay fire station that will replace Station 3. Construction is scheduled to be completed in 2020.

Map 19: District 3 Response Times
(dark blue = 0-4 minutes; light blue = 4-6 minutes; green = 6-8 minutes)

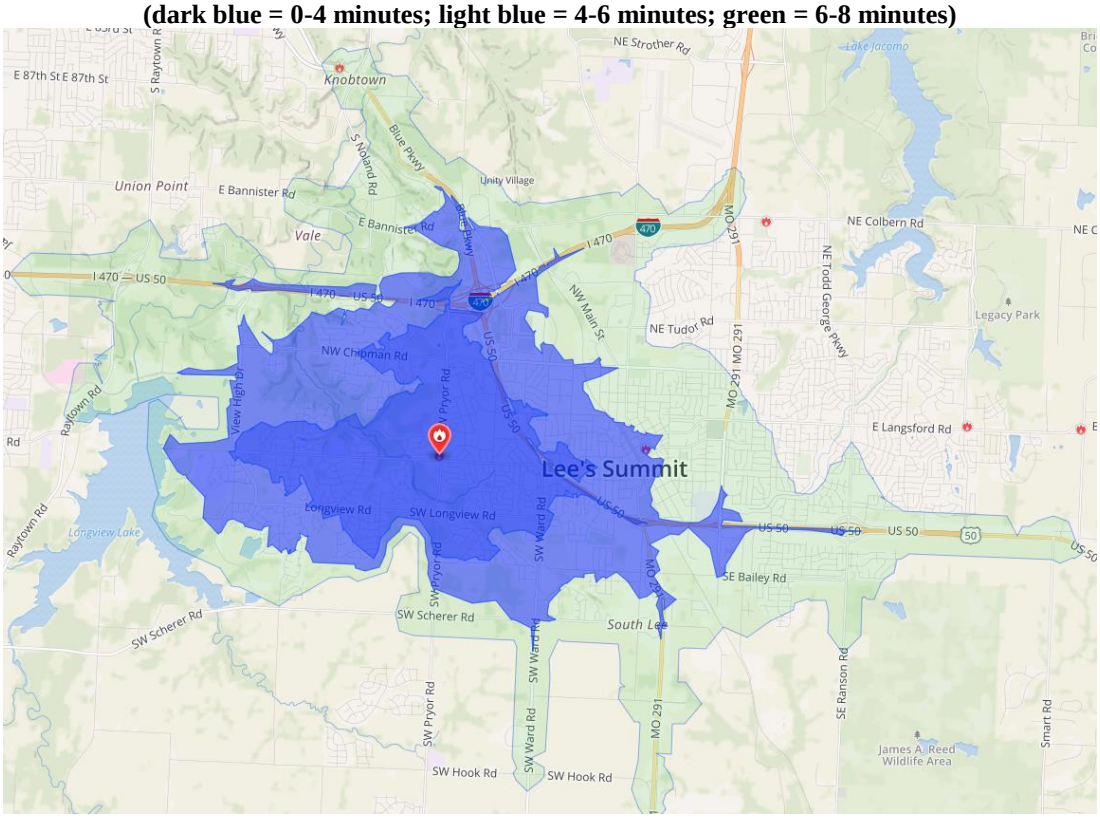


Photo 22: LSFD Station 4

Station 4 is located at 404 NE Woods Chapel Road and was dedicated in February of 1977. Pumper 4 and Rescue 4 deploy from this station.

Map 20: District 4 Response Times
(dark blue = 0-4 minutes; light blue = 4-6 minutes; green = 6-8 minutes)

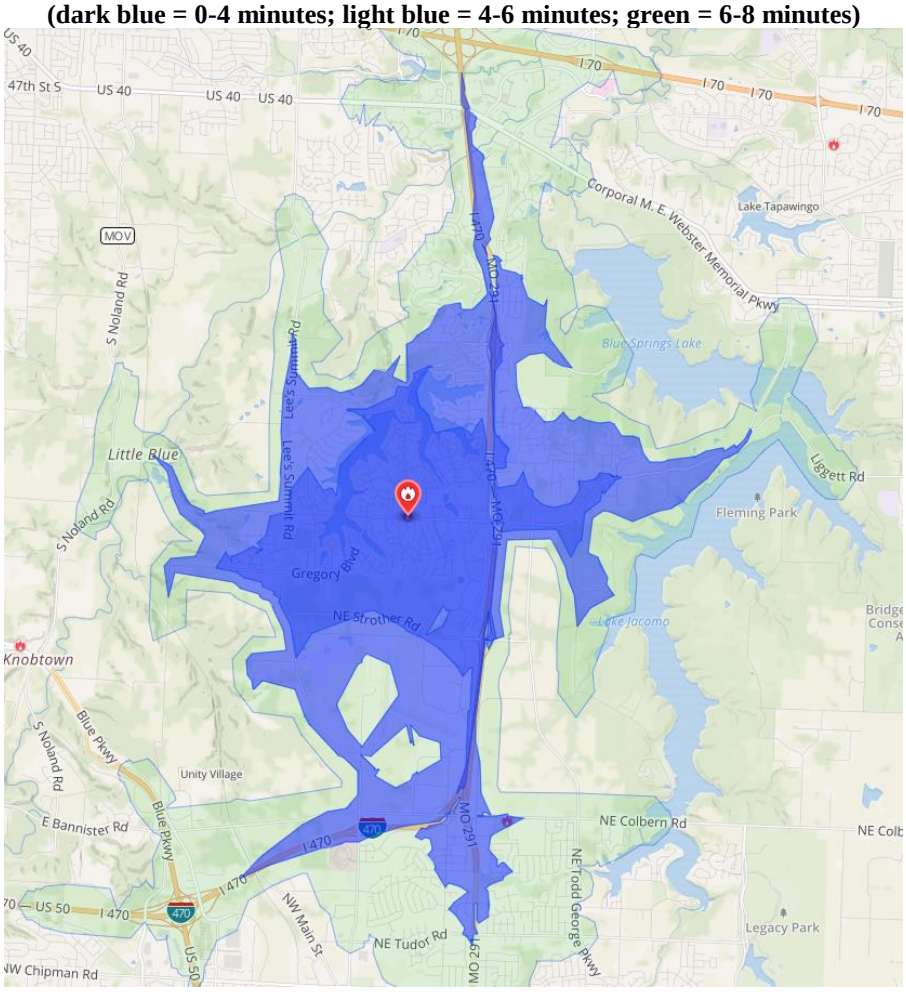


Photo 23: LSFD Station 5

Station 5 is located at 3650 SW Windemere Drive and was dedicated in September of 1980. Pumper 5 and Rescue 5 deploy from this station.

Map 21: District 5 Response Times
(dark blue = 0-4 minutes; light blue = 4-6 minutes; green = 6-8 minutes)

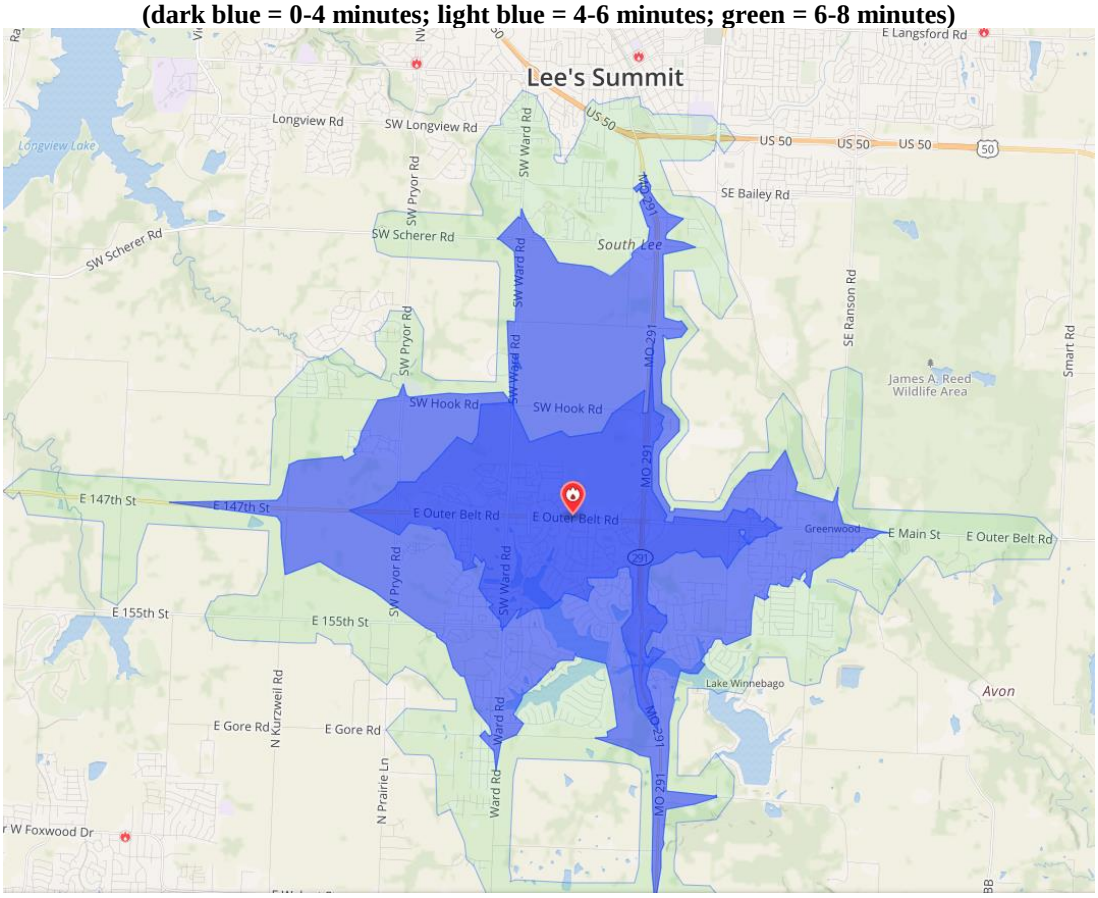


Photo 24: LSFD Station 6

Station 6 is located at 101 NE Blackwell Road and was dedicated in April of 1998. Pumper 6 and Rescue 6 deploy from this station.

Map 22: District 6 Response Times
(dark blue = 0-4 minutes; light blue = 4-6 minutes; green = 6-8 minutes)

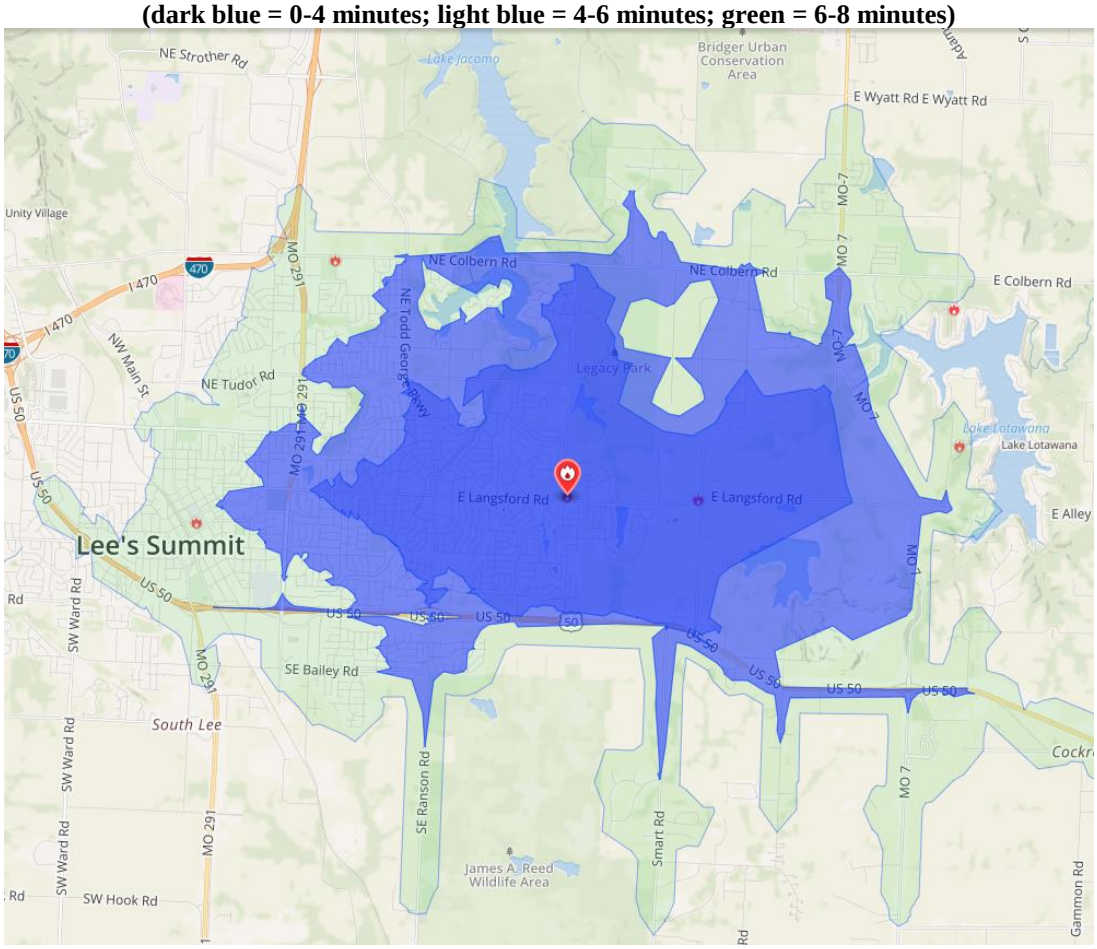
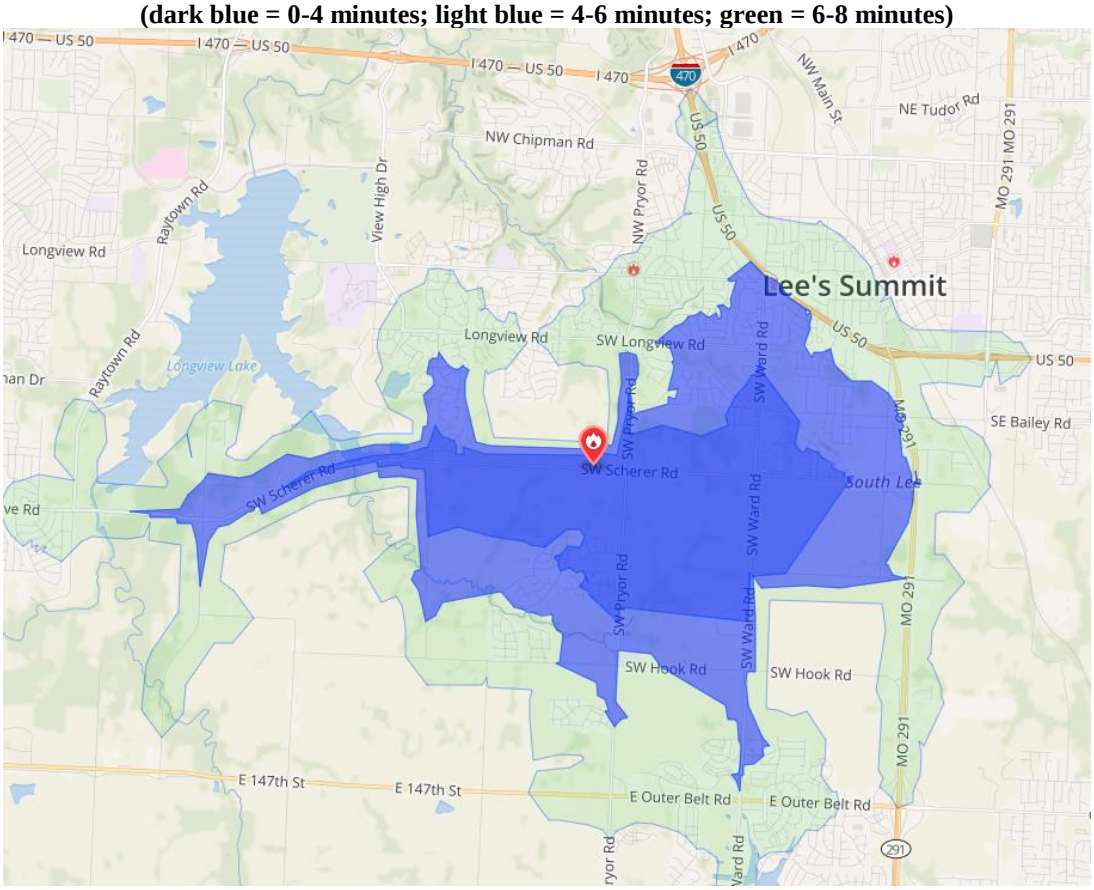


Photo 25: LSFD Station 7

Station 7 is located at 2150 SW Scherer Road and was dedicated in March of 2007. The shift battalion chief, Truck 7, and Rescue 7 deploy from this station. The station was constructed to include a three-story training facility for practical training sessions that encompass all service delivery areas of the department.

Map 23: District 7 Response Times
(dark blue = 0-4 minutes; light blue = 4-6 minutes; green = 6-8 minutes)



Minimum Deployment Resources

Table 2: Deployment Resources by Station

	Fire Station 1	Fire Station 2	Fire Station 3	Fire Station 4	Fire Station 5	Fire Station 6	Fire Station 7
Personnel Per Shift	6	5	3	5	5	5	6
Chief Vehicles	11						
Command Vehicles	2						1
Pumpers	1		1	1	1	1	
105' Aerial Trucks		1					1
Ambulances	1	1		1	1	1	1
Grass Rig		1	1				
Squad/Haz-Mat	1						
18' Triton Boat		1					
Rapid Deploy Craft			1	1	1	1	
Reserve Pumper	2						
Reserve Ambulance	3						
Utility Vehicle	3						
Gator				1*			1

*Gator at Station 4 is located in the subterranean space in Station 4's district

Response Areas

There are currently seven fire response districts within the city. Inside each response district is a deployment location for emergency operations: a fire station. These deployment locations are the primary response areas for the community. Frequently, units will respond from different areas throughout the community. This occurs while performing both emergent and non-emergent functions, such as training, business fire inspections, public education events, refueling, or maintenance transitions. These mobile, location-based assignments are expected to increase with the implementation of AVL. Planning areas are evaluated using four factors: population served, road miles, miles protected, and assessed value.

Table 3: Area Protected by Fire Response District

Fire Response District	Area Protected in Miles
District 1	6.08
District 2 (includes Unity Village)	9.40
District 3	8.66
District 4	11.43
District 5 (includes Greenwood)	15.70
District 6	10.71
District 7	10.47

Table 4: Road Miles Protected by Fire Response District

Fire Response District	Area Protected in Road Miles
District 1	93.78 (+7.53 miles since 2014)
District 2 (includes Unity Village)	86.95 (+17.91 miles since 2014)
District 3	111.33 (+1.68 miles since 2014)
District 4	125.42 (+19.88 miles since 2014)
District 5 (includes Greenwood)	119.10 (+3.46 miles since 2014)
District 6	123.19 (+12.74 miles since 2014)
District 7	55.91 (+1.24 miles since 2014)

Table 5: Population Served by Fire Response District

Fire Response District	Population Served
District 1	14,670 (-3,655 since 2014)
District 2 (includes Unity Village)	9,937 (+74 since 2014)
District 3	17,802 (+480 since 2014)
District 4	16,639 (+2,364 since 2014)
District 5 (includes Greenwood)	16,572 (+2,262 since 2014)
District 6	20,193 (+2,424 since 2014)
District 7	7,701 (+653 since 2014)

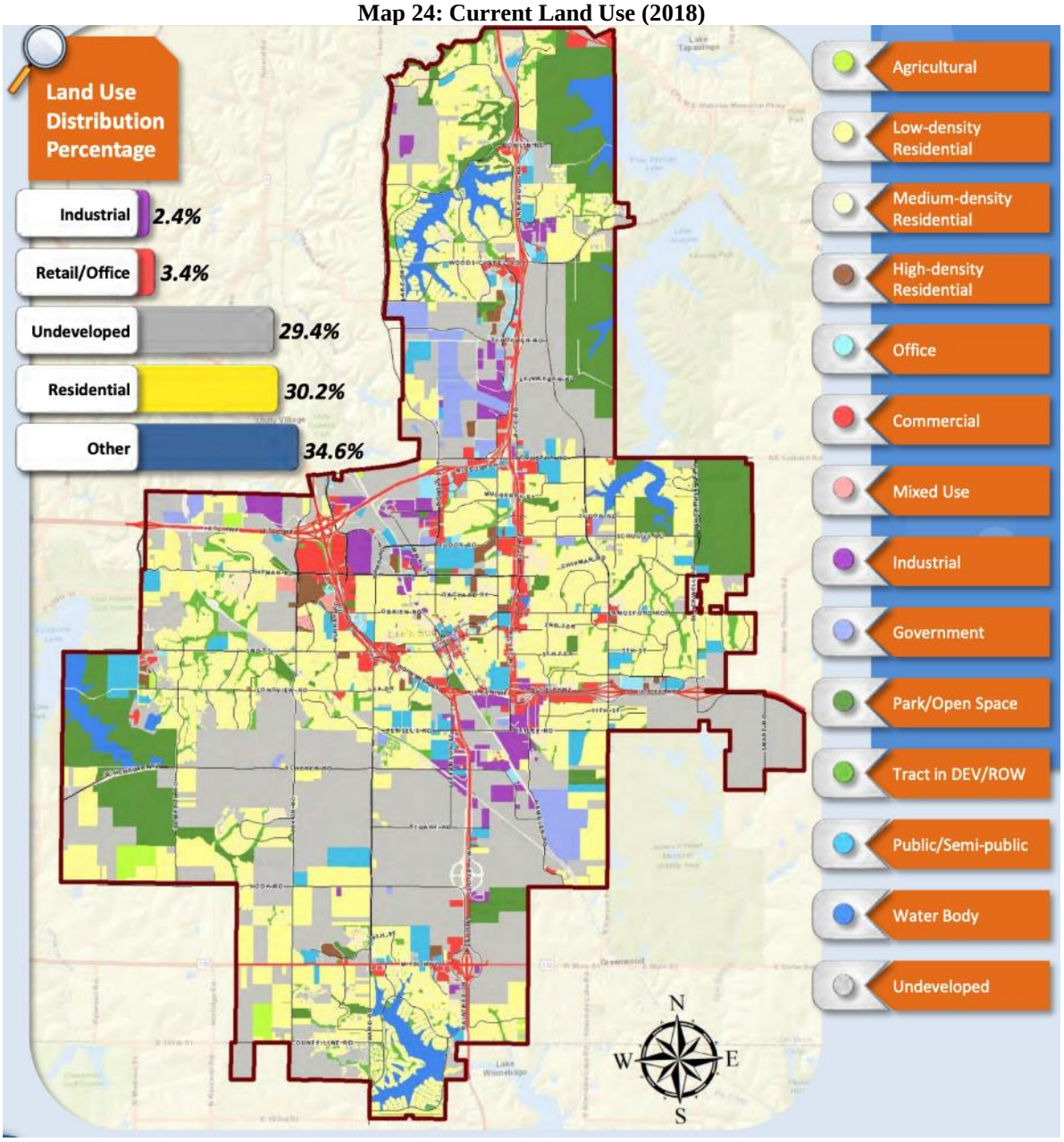
Table 6: Assessed Value (2018) by Fire Response District

Response District	Total Assessed Value (2014)	Total Assessed Value (2018)	4-year value Increase	Residential Assessed Value (2014)	Residential Assessed Value (2018)	4-year value Increase
District 1	$367,165,431	$405,595,954	$38,430,523	$239,317,453	$241,753,260	$2,435,807
District 2	$166,564,559	$304,769,539	$138,204,980	$75,481,862	$157,944,935	$82,463,073
District 3	$307,893,407	$358,561,633	$50,668,226	$194,301,980	$221,428,749	$27,126,769
District 4	$315,716,805	$373,999,058	$58,282,253	$242,683,888	$302,276,595	$59,592,707
District 5	$255,200,055	$319,696,784	$64,496,729	$213,194,392	$268,112,041	$54,917,649
District 6	$290,980,691	$339,018,063	$48,037,372	$246,366,848	$283,476,705	$37,109,857
District 7	$129,806,839	$158,574,131	$28,767,292	$122,753,733	$150,404,657	$27,650,924

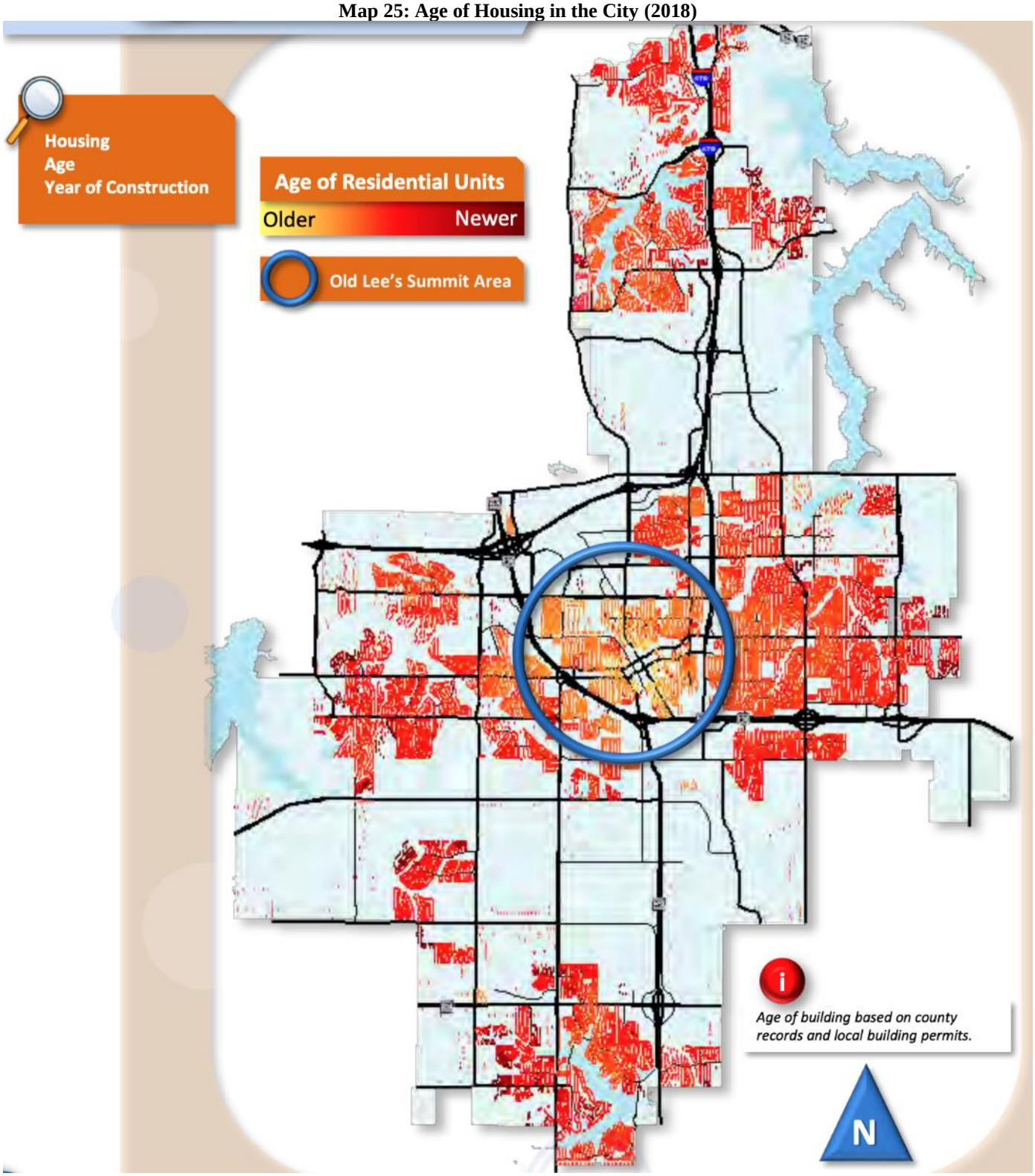
Table 7: Assessed Value (2018) by Fire Response District

Response District	Commercial Assessed Value (2014)	Commercial Assessed Value (2018)	4-year value change	Agricultural Assessed Value (2014)	Agricultural Assessed Value (2018)	4-year value change
District 1	$127,649,162	$163,779,274	$36,130,112	$198,908	$63,358	-$135,550
District 2	$90,934,560	$146,635,173	$55,700,613	$148,239	$189,398	$41,159
District 3	$113,297,187	$136,899,448	$23,602,261	$294,133	$233,406	-$60,727
District 4	$72,883,367	$71,573,621	-$1,309,746	$149,595	$149,021	-$574
District 5	$39,330,574	$48,529,547	$9,198,973	$402,792	$433,460	$30,668
District 6	$44,430,784	$55,346,659	$10,915,875	$183,086	$194,558	$11,472
District 7	$6,799,430	$7,898,443	$1,099,013	$253,589	$271,009	$17,420

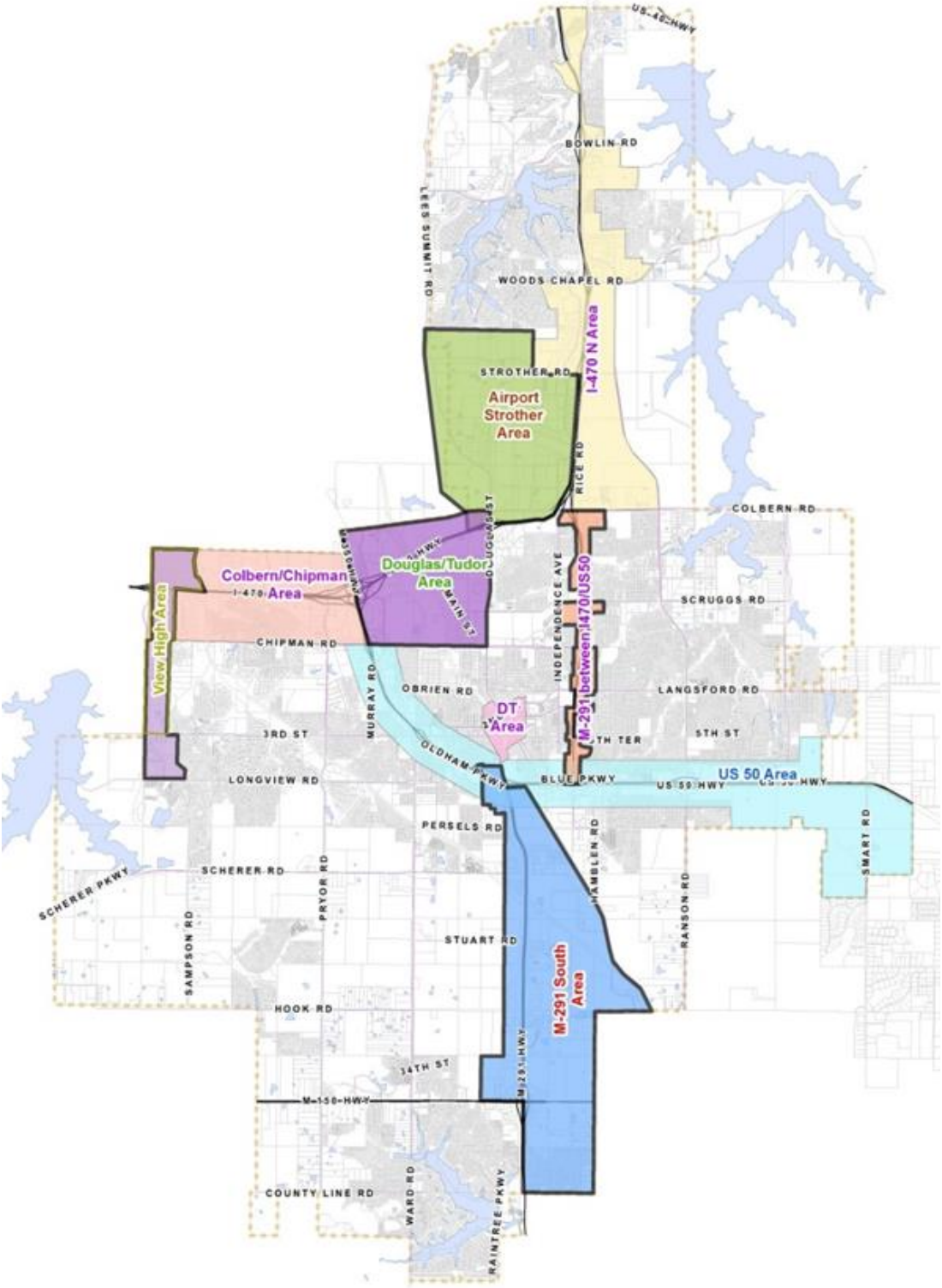
Map 24: Current Land Use (2018)



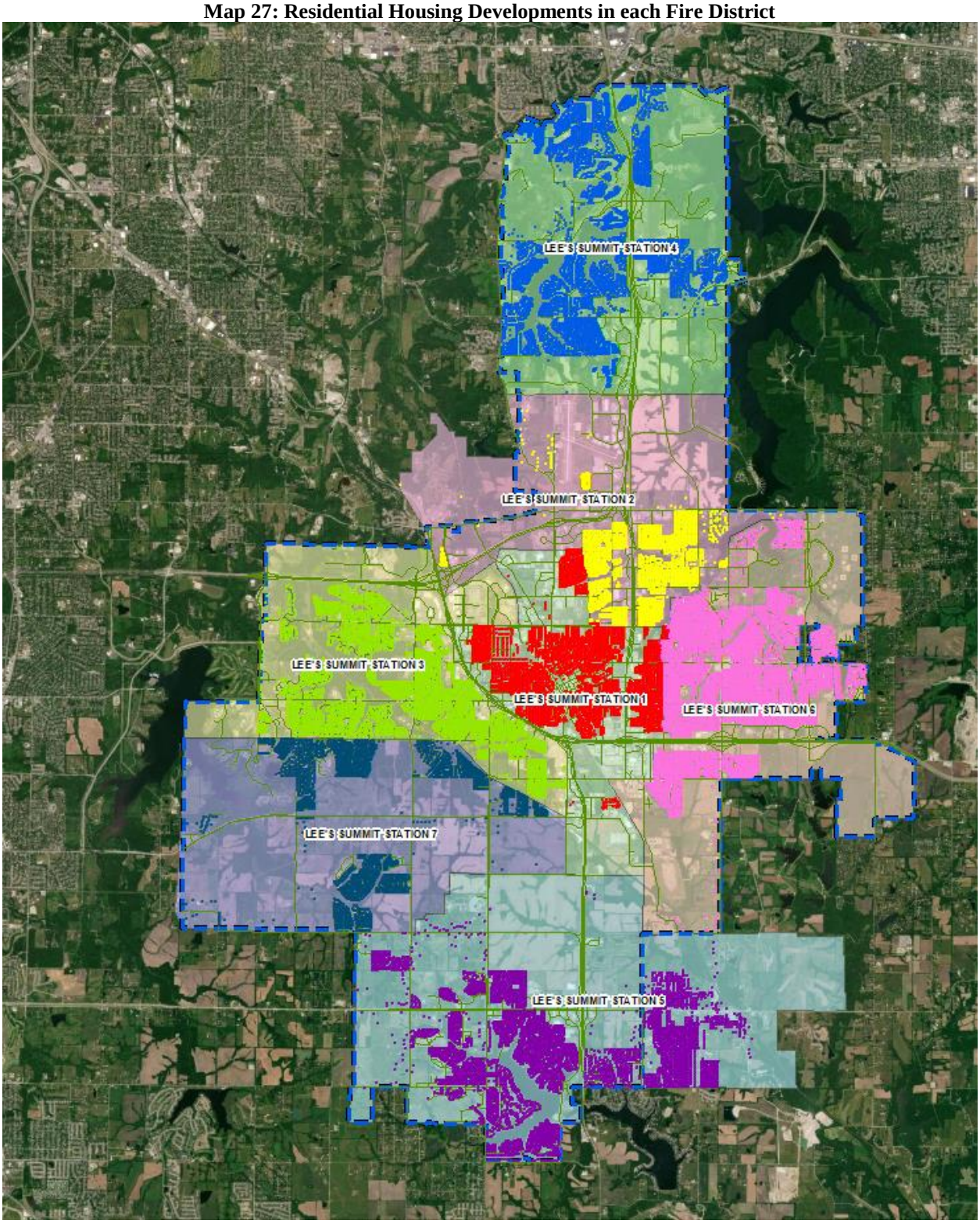
Map 25: Age of Housing in the City (2018)



Map 26: Economic Development Corridors in Lee's Summit



Map 27: Residential Housing Developments in each Fire District



*Color dots represent residential units. Each color represents one fire response zone.

E. Summary of Community Response History

The following table depicts the service demand in the jurisdiction by incident type. The categories are established based on the dispatch information received rather than on the type of incident found at the scene. EMS incidents include emergency medical calls and non-emergency patient transfers. Fire incident examples include car and structure fires as well as smoke alarms. Hazardous Materials/Conditions would be fuel spills, carbon monoxide, gas line breaks, or other hazardous materials related incidents. Rescue incidents include all motor vehicle collisions and other technical rescue events.

Table 8: Call Types by Station District (as Dispatched)

		2014	2015	2016	2017	2018	
Station 1	EMS	1190	1136	1239	1388	1360	9,450
	Fire	332	426	335	454	404	
	Hazmat	84	96	72	78	93	
	Rescue	127	145	151	174	166	
Station 2	EMS	1201	1367	1473	1471	1543	9,146
	Fire	211	210	266	261	288	
	Hazmat	46	66	50	34	28	
	Rescue	95	78	128	163	167	
Station 3	EMS	1622	1794	1583	1470	1611	11.417
	Fire	393	462	442	445	471	
	Hazmat	98	97	73	76	77	
	Rescue	129	136	131	160	147	
Station 4	EMS	785	848	874	947	896	6,619
	Fire	305	315	268	291	319	
	Hazmat	67	96	55	44	63	
	Rescue	83	99	70	88	106	
Station 5	EMS	557	581	584	642	752	4,998
	Fire	240	247	284	298	238	
	Hazmat	45	68	61	62	52	
	Rescue	53	54	55	59	66	
Station 6	EMS	768	882	900	970	1046	6,472
	Fire	248	252	233	294	304	
	Hazmat	48	94	54	51	53	
	Rescue	45	52	60	56	62	
Station 7	EMS	140	200	208	217	208	1,685
	Fire	92	97	95	127	105	
	Hazmat	17	31	26	19	27	
	Rescue	9	13	13	20	21	

F. Community Priorities, Expectations, and Performance Goals

Mission Statement

The Lee's Summit Fire Department is dedicated to meet the increasing needs of the community by providing safe, progressive, and efficient services, while honoring our values and traditions.

In 2013, the department published a mission statement during the 2013-2018 strategic planning process. In 2018, during another strategic planning process, the department revisited the existing statement and updated it through internal stakeholder consensus. The department felt that this revised mission statement accurately reflected the commitment of the department to the community and was current, relevant, and accurately reflected the motivation of the sworn personnel in this department.

Community Service Priorities

In 2018, the department conducted a strategic planning process with assistance from the Center for Public Safety Excellence (CPSE) Technical Advisor Program (TAP). This process engaged the community through an external stakeholder group that provided insight into their expectations of the services provided by the Lee's Summit Fire Department. The external stakeholder group consisted of 63 members of the community from the areas of business, education, non-profit, faith-based, health care, city departments and governance, and area residents.

Participants were asked to prioritize the programs offered by the department, using a matrix to rank how important each service was to them via a direct comparison to the other services that are provided by the department. The individual responses were then totaled, and the results of the comparison were as follows:

Table 9: Community Service Priorities

Programs	Ranking
Emergency Medical Services	1
Fire Suppression	2
Rescue – Basic and Technical	3
Hazardous Materials Mitigation	4
Domestic Preparedness Planning and Response	5
Community Risk Reduction	6
Public Fire and Life Safety Education	7
Fire Investigation	8

Community Service Expectations

Understanding what the community expects of its fire and emergency services organization is critically important to developing a long-range perspective. In 2018, the external stakeholders provided a total of 40 expectations of the Lee's Summit Fire Department and its personnel. The top ten expectations received are listed verbatim and in priority order below.

1. Fast and effective fire and emergency response. Timely, professional response when called. Immediate and confusion-free response to the address and location. Prompt response time. Prompt response to calls. To arrive at any emergency within 5 minutes or less.
2. Training employees and trainers to "practice" as part of training. Well-trained paramedics, as well as firefighter response. Knowledge. Well trained in all aspects of safety and rescue. Adequate training to interact with the people they serve including mental illness, substance use, etc.
3. Ability to do quality initial medical-related response. Ability to bring to bear any training and equipment required in the course of an EMT call or fire emergency. Assessing the situation quickly and implementing the plan swiftly. Provide medical assistance until EMTs arrive. Quality. Maintain your superior services. Provide reliable EMT and ambulance service.
4. Up-to-date equipment - in good repair, latest technology. Updated and "best in class" technology, equipment, and tools. Adequate equipment to do the job effectively. Up-to-date equipment and fire apparatus.
5. Community education. Educating the public on fire safety. Offer CPR training to organizations (Boy Scouts of America, churches, etc.). Community education participation (fire prevention, CPR training, etc.). Provide classes in safety for the public.
6. Community outreach to make citizens aware of services other than firefighting. Public education on fire safety - schools, fire detectors, etc. High level of community engagement - prevention efforts. Community relations and involvement. Involved in community events.
7. Reduction of risks - new codes to address new needs and enforcement of codes. More inspections of businesses. Prevention resources. Fire code inspection, fire prevention, etc. Positive/consulting relationship with safety inspections.
8. Treat all citizens with respect and kindness. Responders are compassionate and caring. Respect to all. They are sympathetic and personable to those they assist (emotionally intelligent). Friendly, approachable staff. Compassionate, understanding, and respectful. Polite. Empathy. Be a positive influence on the community but in particular, our growth.
9. Professionalism. Professional. Professionalism in service(s). Professional ethics and standards.
10. Community emergency management. Strong coordination of activity around emergency preparedness.

Historical Performance Goals

Prior to becoming accredited, Lee's Summit Fire utilized a goal of five-minute emergency response travel time for the first arriving unit at the scene of an emergency incident. This goal was unwritten, but has been expressed during council meetings and discussions with the public as the department's benchmark.

Through the department's involvement with the CPSE, it became apparent that basing performance goals on travel time alone did not include all the information necessary to make informed decisions on areas in which improvement was indicated and achievable. Travel time alone was but one component of a more accurate and detailed process for measuring performance.

A fundamental element of the Standards of Cover is total response time reporting. This includes benchmarks for alarm handling, turnout time, travel time, and travel time for an effective response force, resulting in a benchmark for total response time and total response time for an effective response force.

As a result, the department set and published performance goals in 2015 as recommended by CPSE and in compliance with the *CFAI Standards of Cover 5th Edition*. In order to provide the community with the best service possible, the department chose to adopt the performance goal standards established in the National Fire Protection Association (NFPA) 1710. The response time standards identified within NFPA 1710 set service delivery objectives (benchmarks), including specific time objectives for each major service category (Fire Suppression, EMS, Tech Rescue, and HazMat). There are four components of response time identified and benchmarked; alarm handling, turnout time, travel time for the first arriving unit, and total response time for an effective response force to mitigate the incident. Alarm handling refers to the time interval from the receipt of the alarm to dispatching the responding units and is benchmarked at 60 seconds. Turnout time refers to the time interval from the dispatch information to responding with the assigned apparatus and is benchmarked at 60 seconds for EMS calls and 80 seconds for all other response types. Travel time refers to the time interval from en-route to the emergency incident and ends with the unit's arrival on-scene. Total response time refers to the time interval from receipt of the alarm at the secondary public safety access point (PSAP) to when the first emergency unit is initiating an action or intervening to control the incident. There is a primary PSAP time value that has not been included in this analysis due to our inability to accurately capture that information from the Mid-America Regional Council (MARC).

G. Community Risk Assessment and Risk Levels

Risk Assessment Methodology

Methodology (Probability/Consequence/Impact of Event Risk)

The Lee's Summit Fire Department elected to continue to evaluate risk using a tri-axial measurement approach consisting of Probability (Y-Axis), Consequence (X-Axis), and Impact (Z-Axis). This tri-axial measurement utilized Heron's Formula, modified for tetrahedrons, to produce a quantifiable value to risk based on numerical values representing each axis in the formula. The decision to continue to evaluate the impact (Z-axis) on the department's resources was based on call volume data. Consistent call volume increases, without adding resources, has been proven to have an adverse impact on emergency response times.

Probability refers to the likelihood of an event to occur in the community and is based upon the National Fire Incident Reporting System (NFIRS) data for the past five years (2014-2018).

Consequence assesses how a specific type of incident would affect the community by evaluating the financial loss, loss of life, and the emotional impact of the event on the community.

The impact is related to the "drain effect" on fire department resources to mitigate each specific incident and the reliability of the resources remaining to continue to deliver services to the community.

Probability, Consequence, and Impact were each scored with an assigned value from 2 to 10, with the 2 value representing a low risk and the 10 value representing a maximum risk. Each value was represented as a point on the axis of a Cartesian coordinate system, which when combined, formed a tetrahedron that could be measured to determine the overall risk score of the event.

All emergency incident types were evaluated and scored for each program classification by members of the Standards of Cover (SOC) team. The SOC team consisted of the three assistant chiefs, one battalion chief, three captains from the Operations Division, the accreditation manager, and data analyst.

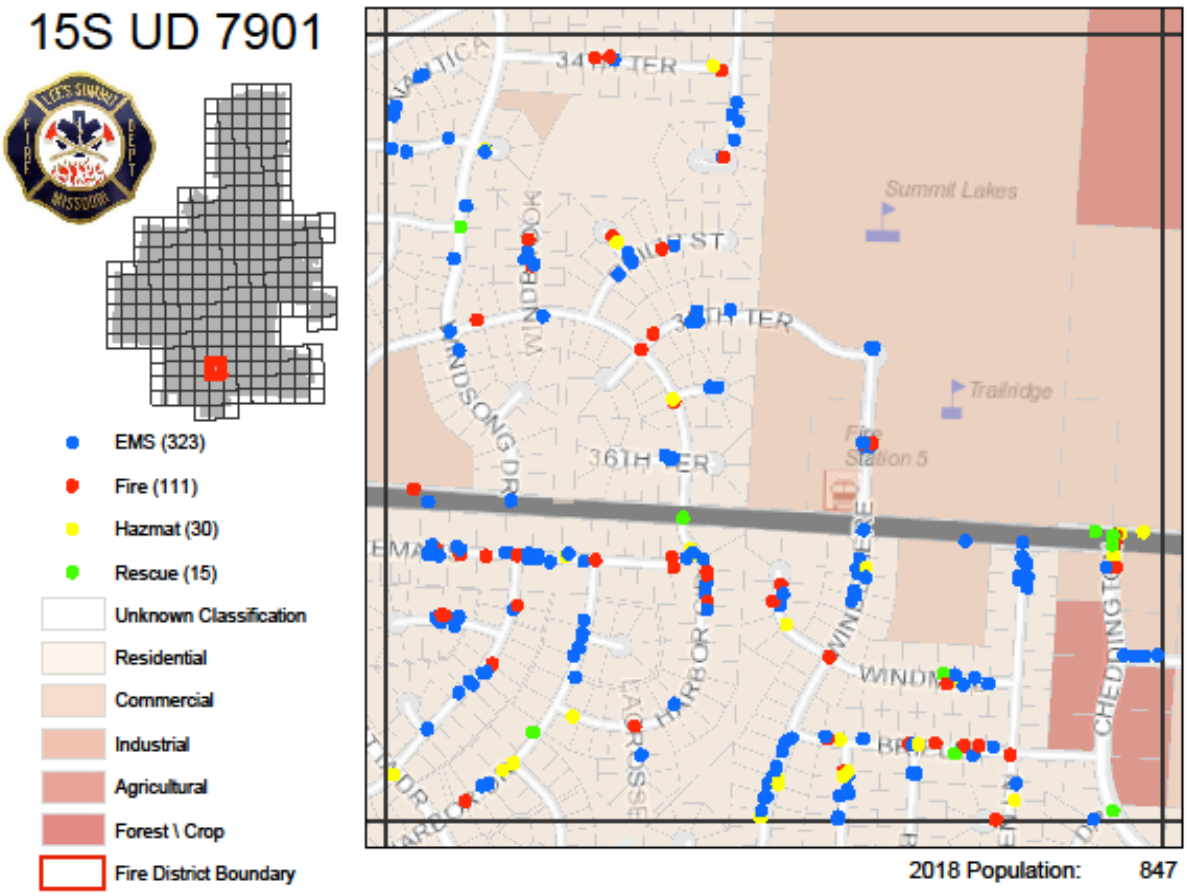
Planning Areas/Zones

The department utilizes two geographical components to analyze risk and incident response data, Emergency Service Zones (ESZ's) and station response districts.

Emergency Service Zones

ESZ's are a map layer determined by the United States National Grid (USNG) system. The USNG standard provides a nationally consistent reference that delineates the departments' jurisdictional boundaries into one-kilometer square grids. The department transitioned to the national grid system in 2019 from the previous ESZ

determination, which was based on the Gallup map book grid system. As a result, there are now 230 ESZ's that were assessed for risk during the development of this document. An example of a single ESZ is provided here, while all 230 ESZ's are available in Appendix B.



2018 Assessed Value

National Grid	Total Assessed Value	Assessed Residential Value	Assessed Commercial Value	Assessed Agricultural Value
15S UD 7901	$20,940,105.00	$14,106,892.00	$6,831,559.00	$1,650.00

Demand History

Number of incidents	2014	2015	2016	2017	2018
EMS	56	69	63	47	88
Fire	25	27	15	26	18
HazMat	2	13	6	6	3
Rescue	1	1	5	5	3
Total	84	110	89	84	112

ESZ Characteristics

This ESZ is comprised of dense residential, an elementary school, a middle school, and some business. The two schools create a heavy influx of traffic every morning and afternoon on Windemere, the same road that the LSFD must access to respond to incidents during those times. 150 Highway is a major thoroughfare which runs east/west through the ESZ, with multiple signaled intersections. The demographics of the area contribute to the high volume of emergency medical responses. The majority of the ESZ's housing stock is single-family residences, although there are several multi-family apartments and fourplex townhomes. Although the population is identified as 847, the inclusion of the school population and highway traffic makes this ESZ heavily populated during school hours.

Highest Fire Risk Location

Lemans Lane is a narrow street with fourplex townhomes that are unprotected by a fire suppression system or monitored fire detection system. These units pose a threat to rapid fire propagation with multiple residents affected.

Highest EMS Risk Location

Lemans Lane is again the area that drives a large number of emergency medical responses in this ESZ. Due to the demographics and socioeconomic makeup, these residences will continue to generate a large volume of responses in the future.

Highest HazMat Risk Location

Due to the composition of this ESZ being primarily residential and retail, the highest risk probability for a hazardous material incident would be a carbon monoxide event in a residential or commercial structure.

Highest Rescue Risk Location

The intersections along 150 Highway pose the greatest rescue risk for motor vehicle collisions within this ESZ.

Station Response Districts

Station response districts are another geographical division within the city traditionally utilized to measure response performance. At the time of this publication, these station response districts are also being altered with the department's transition to Automatic Vehicle Location (AVL). Prior to 2019, the department established station response districts that distributed the call load evenly in the city's core area. As a component of transitioning to AVL, in 2019 the department developed new Closest Unit Response (CUR) districts using ArcGIS technology to improve departmental awareness of new response areas. Continuing to analyze data based on station response districts will aid in future decision making as it pertains to station and apparatus placement, staffing, and identifying additional resources required to meet the department's mission.

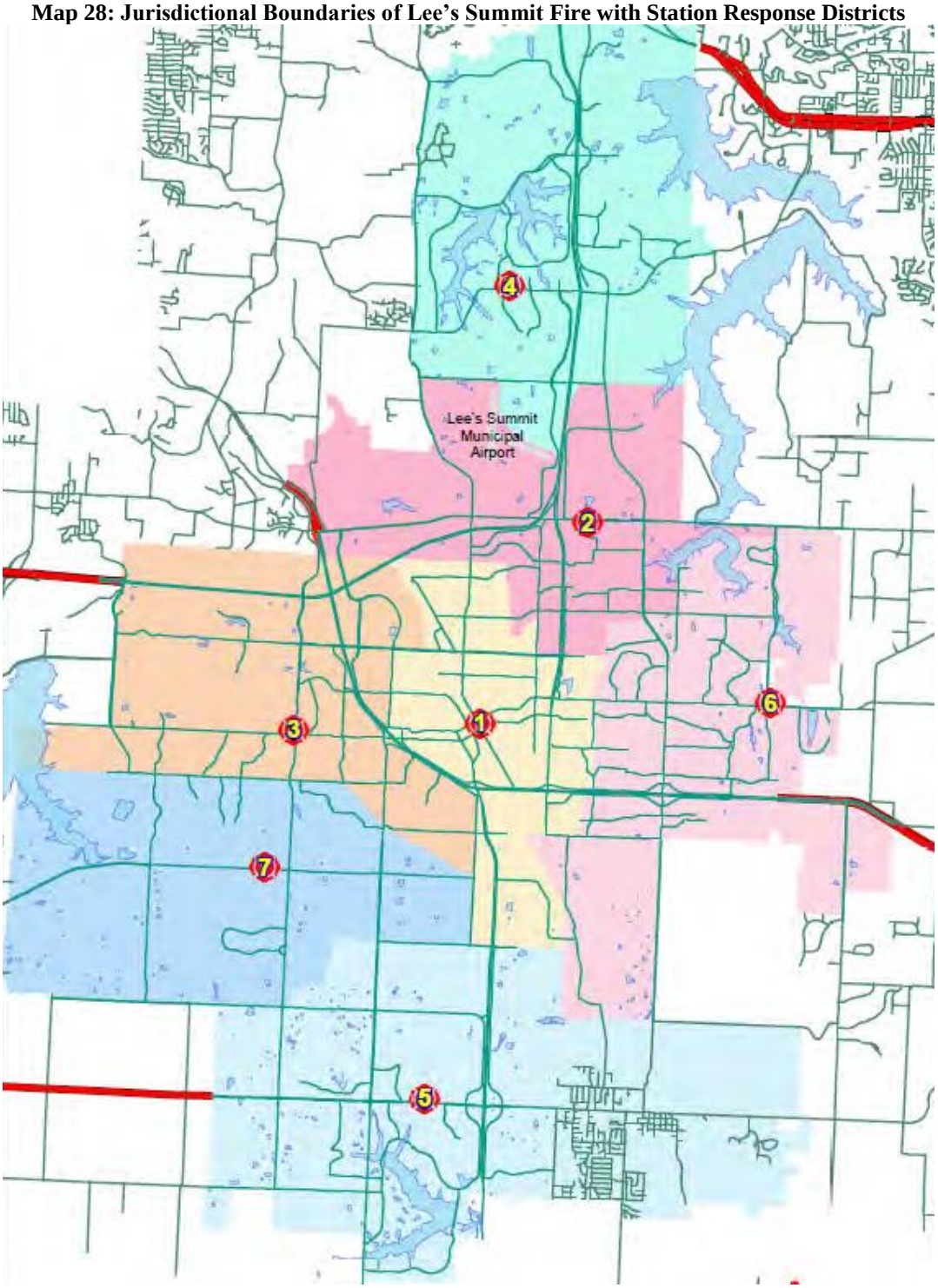
There are currently seven fire response districts within the city. Inside each response district is a deployment location for emergency operations: a fire station. These deployment locations are the primary response areas

for the community. Frequently units will respond from different areas throughout the community. This occurs while performing both emergent and non-emergent functions, such as training, business fire inspections, public education events, refueling, or maintenance transitions, and these mobile, location-based assignments have increased since AVL was implemented.

Table 10: Call Types by Station District (as Dispatched)

		2014	2015	2016	2017	2018
Station 1	EMS	1190	1136	1239	1388	1360
	Fire	332	426	335	454	404
	Hazmat	84	96	72	78	93
	Rescue	127	145	151	174	166
Station 2	EMS	1201	1367	1473	1471	1543
	Fire	211	210	266	261	288
	Hazmat	46	66	50	34	28
	Rescue	95	78	128	163	167
Station 3	EMS	1622	1794	1583	1470	1611
	Fire	393	462	442	445	471
	Hazmat	98	97	73	76	77
	Rescue	129	136	131	160	147
Station 4	EMS	785	848	874	947	896
	Fire	305	315	268	291	319
	Hazmat	67	96	55	44	63
	Rescue	83	99	70	88	106
Station 5	EMS	557	581	584	642	752
	Fire	240	247	284	298	238
	Hazmat	45	68	61	62	52
	Rescue	53	54	55	59	66
Station 6	EMS	768	882	900	970	1046
	Fire	248	252	233	294	304
	Hazmat	48	94	54	51	53
	Rescue	45	52	60	56	62
Station 7	EMS	140	200	208	217	208
	Fire	92	97	95	127	105
	Hazmat	17	31	26	19	27
	Rescue	9	13	13	20	21

Map 28: Jurisdictional Boundaries of Lee's Summit Fire with Station Response Districts



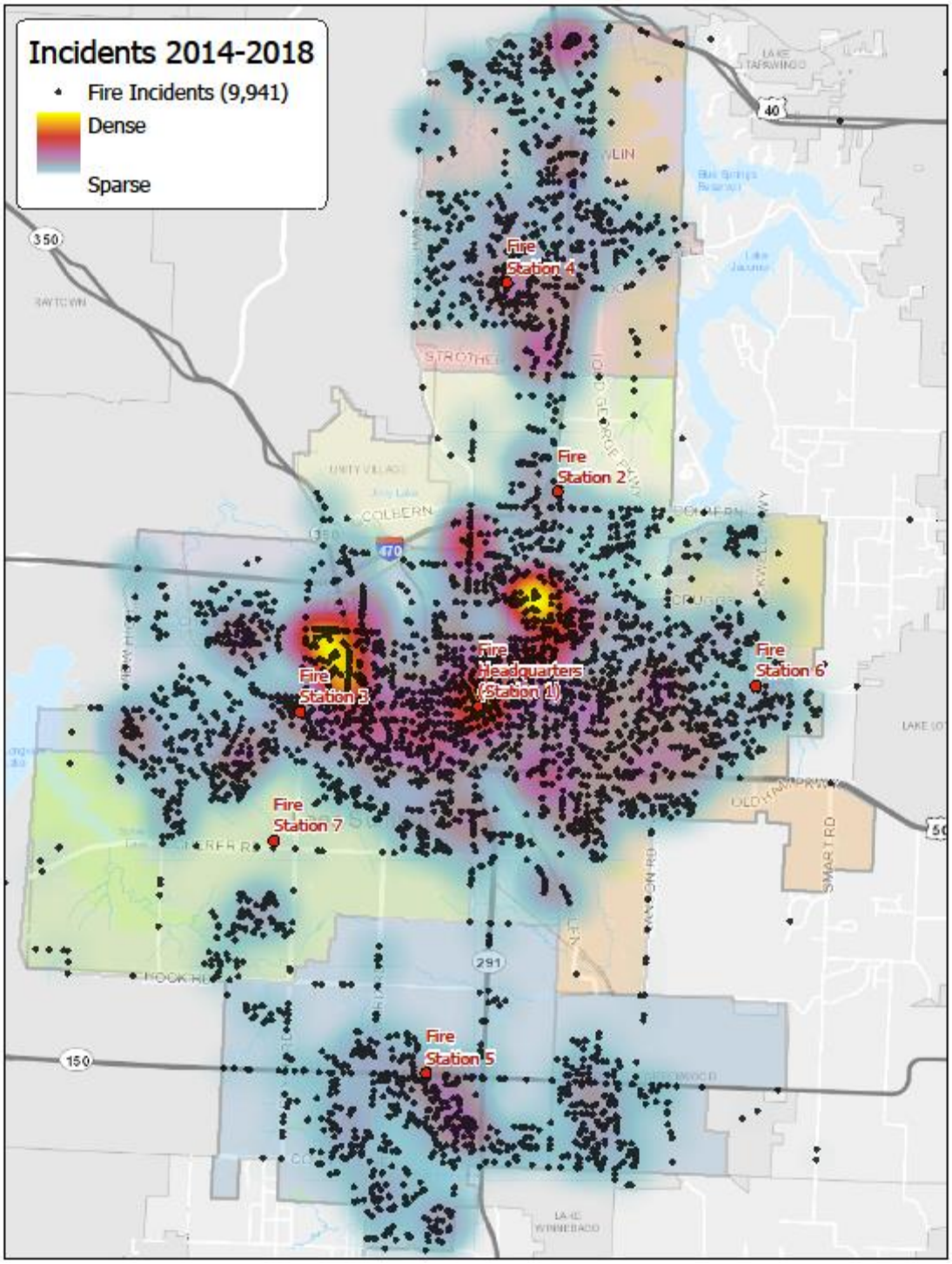
Risk Assessment

Fire Suppression Services

A heat map can be an excellent tool for data analysis and hazard interpretation for any department that is attempting to identify areas of high risk. The nature of a heat map is to cluster all incidents within 25 feet of each other into a density representation. It is not a representation of the number of incidents, only the density,

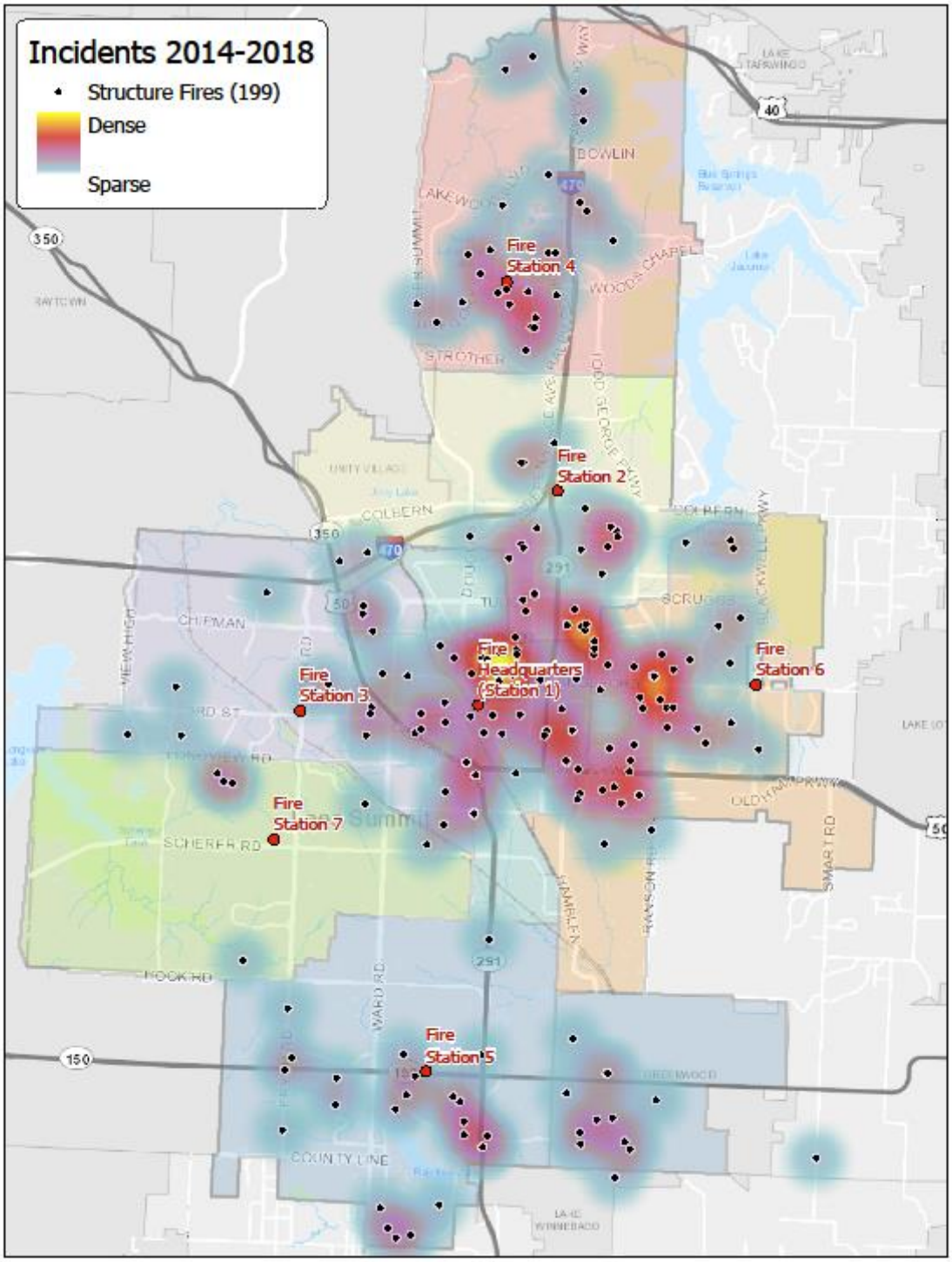
and intensity. In order to better analyze the data, it is helpful to add another layer onto the heat map that pinpoints the location of each incident. For that reason, both layers have been included on all the following incident heat maps. In the Fire Incidents heat map, which includes all fire incidents, it is evident that fires have occurred throughout the city and do not always correspond with high-density population areas.

Map 29: Fire Incidents Heat Map (2014-2018)



For additional clarity, incident data for structure fire incidents were mapped separately.

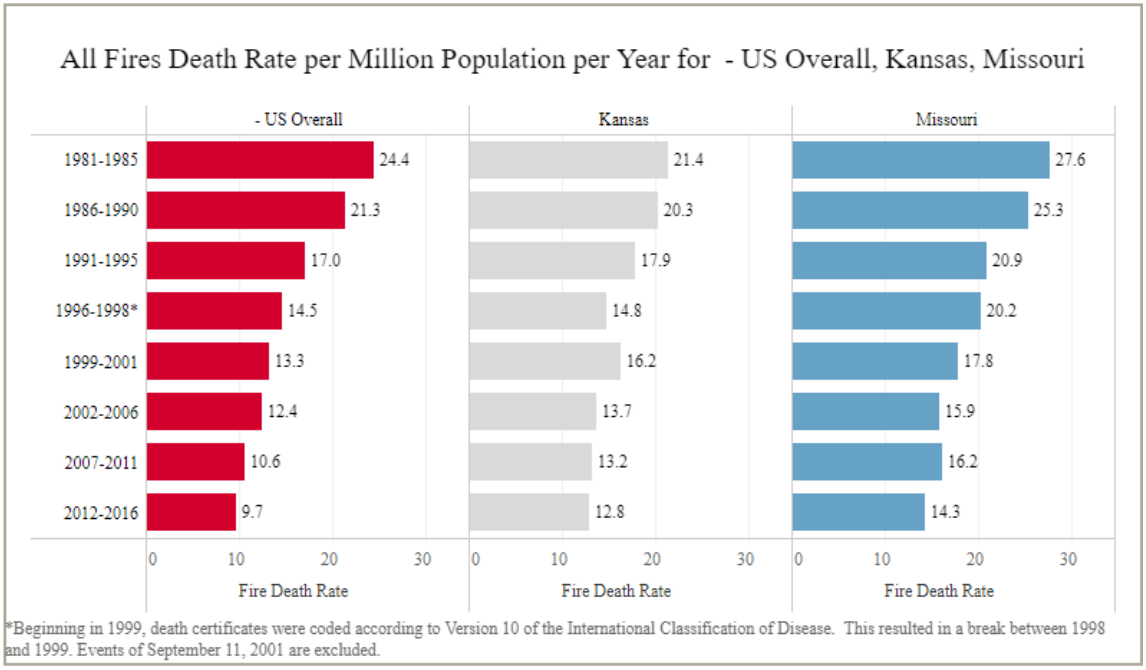
Map 30: Structure Fires Heat Map (2014-2018)



Nationally, the fire risk in the United States has been declining due to improved code enforcement and inspections, legislation, and other prevention efforts. The National Fire Protection Association (NFPA) published a 2017 report which stated that only 4% of all fire department responses were to fires. Since the year 2000, vehicle fires and "unclassified" fires have reduced more than structure fires, and yet structure fires still cause the majority of civilian fire deaths, civilian injuries, and property loss. Compared nationally, Missouri

has a greater fire risk than most states –ranking in the top ten with the highest overall fire death rates, and in 2012-2016 home fire deaths.

Chart 13: Fire Death Rate per Million per Year - US Overall / Kansas / Missouri



Those national statistics from NFPA, coupled with the National Institute of Science and Technology (NIST) 2012 report on modern construction materials and fire behavior validates the need for additional focus on fire risk for the LSFD.

The community was assessed to evaluate what the fire risks are and where they are located, geographically. Three major considerations were evaluated for fire risk, they are as follows:

1. The probability of the event occurring or likelihood on the incident based on historical data documented in the past five years.

Score	Probability
2	One to two times a year (rare)
4	Quarterly (unlikely)
6	Monthly (possible)
8	Weekly (likely)
10	Daily (almost certain)

2. The consequence to the community, which is based on the loss of life or debilitating injury, financial loss to the community, and the impact on community infrastructure.

	Consequence		
Score	Financial	Life Loss	Emotional/Historical/ Social/Environmental
2	No loss	No loss	No impact
4	Minor loss	Potential/loss of single life	Low impact
6	Moderate loss	Loss of a single life with the potential for multiple	Moderate impact
8	Significant/Substantial loss	Potential for multiple life loss	Significant/Substantial impact
10	Extraordinary loss	High probability of multiple life loss	Extraordinary impact

3. The impact to the operational fleet, which is based on the critical tasks associated with the incident.

Score	Impact (Number of Resources)
2	1-2 units (still)
4	3-4 units (still/special)
6	5-6 units (special)
8	7-10 units (first)
10	11 or more units (second)

Low Risk (Still Alarm):	1-13.0
Moderate Risk (Special Alarm):	13.1-30.0
High Risk (First Alarm):	30.1-50.0
Maximum Risk (Second Alarm):	50.1-65.00

Initially, all fire suppression incidents underwent a critical task analysis to ascertain their impact values; afterward, the incidents were evaluated, scored, and ranked, creating the four distinct risk categories listed.

These three factors were scored from low to maximum depending on the hazard against the incident type, facility, or location. Scores ranged from low to maximum based on loss of life potential, the presence of fire suppression or detection systems, building height, and the occupant types within a dwelling.

Emergency Medical Services (EMS)

Areas of incident distribution and concentration are plotted into a thermal density map showing incidents in reference to deployment locations. Due to the volume of EMS incidents, the total incident concentration map is closely matching the Emergency Medical Services (EMS) density map. The other program maps show the distribution of their occurrences.

The community was assessed to evaluate what the emergency medical risks are and where they are located, geographically. Three major considerations were assessed when evaluating emergency medical risk, they are as follows:

1. The probability of the event occurring, or the likelihood of the incident based on historical data documented in the past five years.

Score	Probability
2	One to two times a year (rare)
4	Quarterly (unlikely)
6	Monthly (possible)
8	Weekly (likely)
10	Daily (almost certain)

2. The consequence to the community, which is based on the loss of life or debilitating injury, financial loss to the community, and the impact on community infrastructure. Most EMS events are tragic and serious in nature; however, the effect is usually on the patient and their family alone and not any other part of the community. This resulted in most of the scoring consequence to be low or moderate.

	Consequence		
Score	Financial	Life Loss	Emotional/Historical/ Social/Environmental
2	No loss	No loss	No impact
4	Minor loss	Potential/loss of single life	Low impact
6	Moderate loss	Loss of a single life with the potential for multiple	Moderate impact
8	Significant/Substantial loss	Potential for multiple life loss	Significant/Substantial impact
10	Extraordinary loss	High probability of multiple life loss	Extraordinary impact

3. The impact the incident has against the operational forces of the department is based on the critical tasks associated with the incident.

Score	Impact (Number of Resources)
2	1-2 units (still)
4	3-4 units (still/special)
6	5-6 units (special)
8	7-10 units (first)
10	11 or more units (second)

Low Risk (Still Alarm-single unit):	1-19.0
Low Risk (Still Alarm):	19.1-22.0
Moderate Risk (Special Alarm):	22.1-35.0
High Risk (First Alarm):	35.1-50.0
Maximum Risk (Second Alarm):	50.1-70.00

These three factors were scored from low to maximum depending on the hazard or hazards against the incident type, facility, or location. Scores ranged from low to maximum based on probability, consequence, and impact.

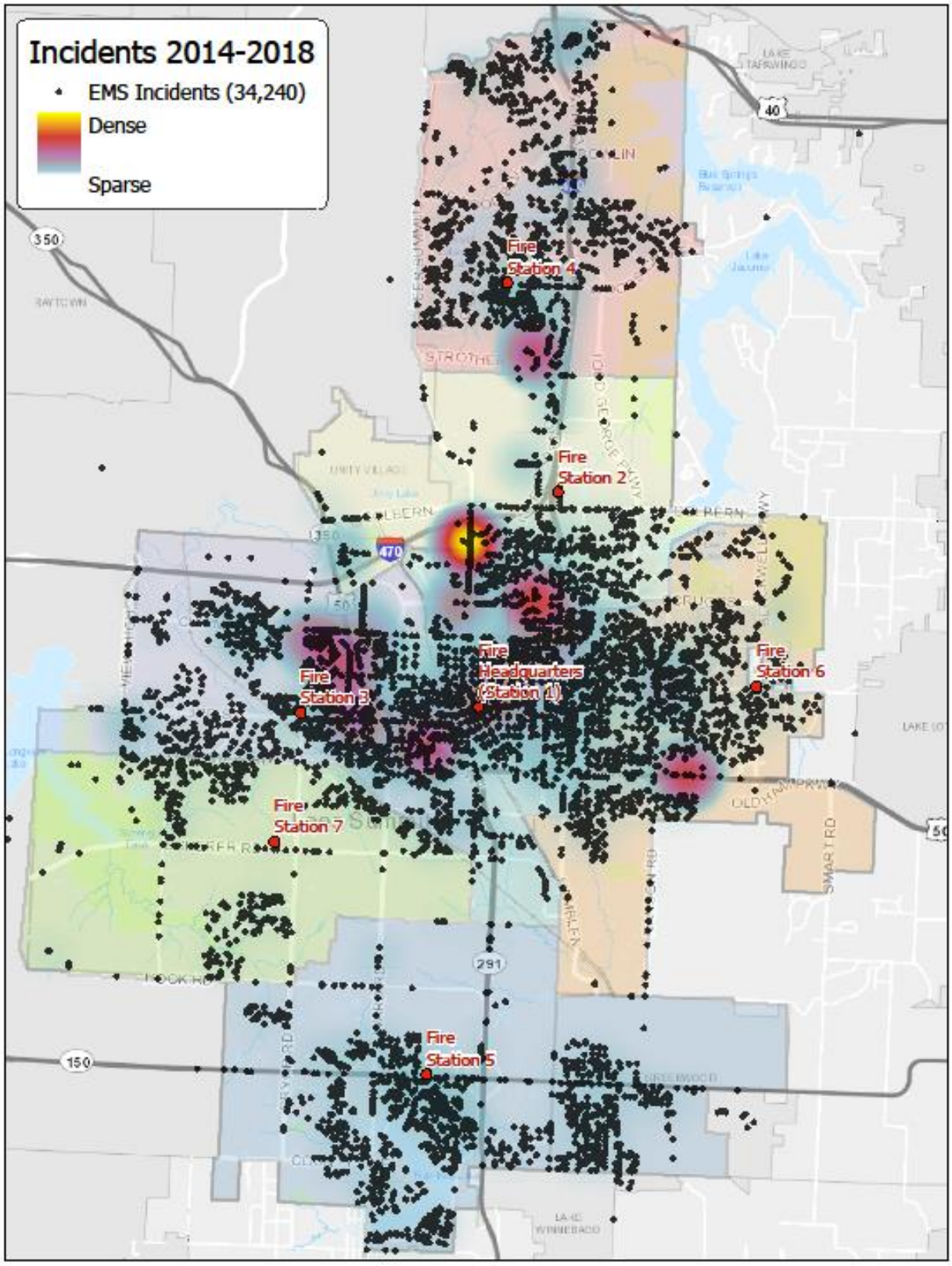
Initially all emergency medical incidents underwent a critical task analysis to ascertain their impact value; afterward, the incidents were evaluated, scored, and ranked, creating the five distinct risk categories listed. When looking at impact for this risk profile, two specific factors play into the risk scoring; the medical equipment needed based on the incident type and the number of patients involved.

Regarding the moderate risk EMS incidents, the impact score is higher due to an additional resource as part of a critical task being an automated compression device for the task of consistent and highly effective CPR. Due to the low number and placement of this particular piece of equipment, a chief officer is added to the incident with the LUCAS® device on their vehicle, thus increasing the effective response force to a moderate risk due to an increasing impact to the risk scoring.

The risk level is determined in this program due to the complaint of the patient or patients, regardless of their location. If the patient is located in a compromised location, adding an additional hazard, it changes the risk type to a different risk program. For example, if the patient is trapped in a car, it becomes a rescue response. If the patient is trapped in a building on fire, it becomes a fire response.

A heat map can be an excellent tool for data analysis and hazard interpretation for any department that is attempting to identify areas of high risk. The nature of a heat map is to cluster all incidents within 25 feet of each other into a density representation. It is not a representation of the number of incidents, only the density, and intensity. In the EMS incidents heat map, this creates some challenges when there are certain locations that are traditional emergency response generators; specifically, hospitals and senior living facilities. The hotspots created on the EMS incidents heat map clearly indicate either hospitals or senior living facilities within the city, while making the remainder of the city appear to have no significant emergency medical response. In order to better analyze the data, it is helpful to add another layer onto the heat map that pinpoints the location of each incident. For that reason, both layers have been included on the following incident heat map.

Map 31: EMS Incidents Heat Map (2014-2018)



Technical Rescue Services

The community was assessed to evaluate what the rescue risks are and where they are located, geographically. Three major considerations were evaluated for rescue risk, they are as follows:

1. The probability of the event occurring, or the likelihood of the incident based on historical data documented in the past five years. Based on historical probability, the highest probability rescue event type is a motor vehicle collision.

Score	Probability
2	One to two times a year (rare)
4	Quarterly (unlikely)
6	Monthly (possible)
8	Weekly (likely)
10	Daily (almost certain)

2. The consequence to the community, which is based on the loss of life or debilitating injury, financial loss to the community, and the impact on community infrastructure.

   Technical rescue incidents are broad spectrum response types. The consequence can vary in severity, given the location of a rescue event, possibly involving a road or highway affecting a large number of people. These incidents can also involve large groups of people.

	Consequence		
Score	Financial	Life Loss	Emotional/Historical/ Social/Environmental
2	No loss	No loss	No impact
4	Minor loss	Potential/loss of single life	Low impact
6	Moderate loss	Loss of a single life with the potential for multiple	Moderate impact
8	Significant/Substantial loss	Potential for multiple life loss	Significant/Substantial impact
10	Extraordinary loss	High probability of multiple life loss	Extraordinary impact

3. The impact the incident has against the operational forces of the department based on the critical tasks associated with the incident.

Score	Impact (Number of Resources)
2	1-2 units (still)
4	3-4 units (still/special)
6	5-6 units (special)
8	7-10 units (first)
10	11 or more units (second)

Low Risk (Still Alarm):	1-19.0
Moderate Risk (Special Alarm):	19.1-35.0
High Risk (First Alarm):	35.1-50.0
Maximum Risk (Second Alarm):	50.1-75.00

COMMUNITY RISK ASSESSMENT-STANDARDS OF COVER

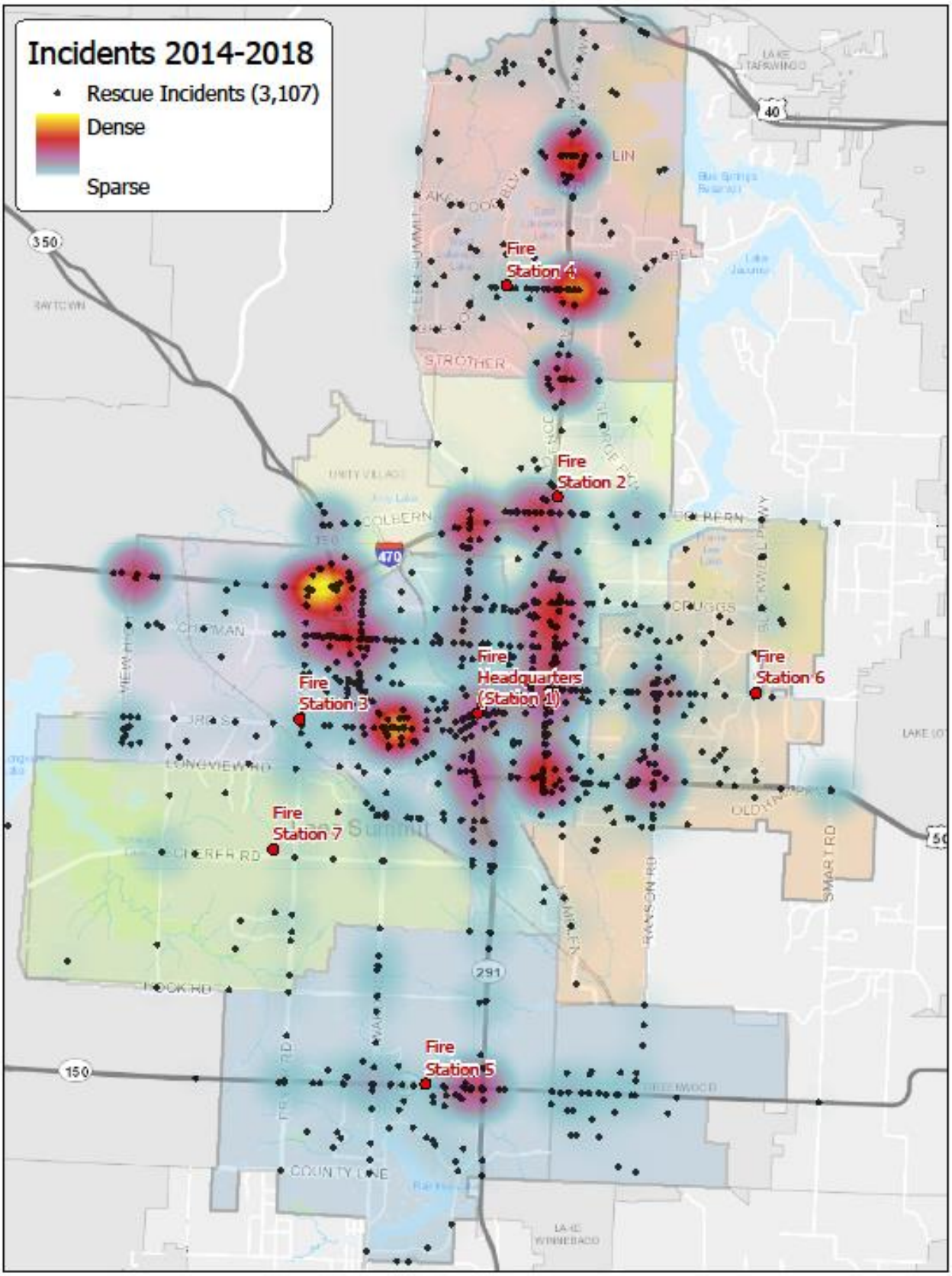
Initially, all technical rescue incidents underwent a critical task analysis to ascertain their impact values; afterward, the incidents were evaluated, scored, and ranked, creating the four distinct risk categories listed.

The risk level is determined in this program due to the location or position of a victim. The at-risk individual is considered a victim, while the location of the entrapped victim determines the hazard type. For example, if the patient is trapped in a car it becomes a rescue response. If the patient is trapped in a building on fire, it becomes a fire response.

These three factors were scored from low to maximum depending on the hazard against the incident type, facility, or location. Scores ranged from low to maximum based on probability, consequence, and impact.

A heat map can be an excellent tool for data analysis and hazard interpretation for any department that is attempting to identify areas of high risk. The nature of a heat map is to cluster all incidents within 25 feet of each other into a density representation. It is not a representation of the number of incidents, only the density, and intensity. In order to better analyze the data, it is helpful to add another layer onto the heat map that pinpoints the location of each incident. For that reason, both layers have been included on the following technical rescue heat map. In an examination of the Rescue Incidents heat map, it becomes clear that the most common areas of occurrence are on the highway systems that divide the city, and more specifically, the intersections along with the highway system.

Map 32: Rescue Incidents Heat Mat (2014-2018)



Hazardous Materials Services

The community was assessed to evaluate what the hazardous material risks are and where they are located, geographically. Three major considerations were evaluated when evaluating for hazardous material risk, they are as follows:

1. The probability of the event occurring, or the likelihood of the incident based on historical data documented in the past five years. Due to the relatively low frequency of these events, they were scored low in probability.

Score	Probability
2	One to two times a year (rare)
4	Quarterly (unlikely)
6	Monthly (possible)
8	Weekly (likely)
10	Daily (almost certain)

2. The consequence to the community, which is based on the loss of life or debilitating injury, financial loss to the community, and the impact on community infrastructure. Hazardous materials events affect the community in several ways. Not only are they dangerous to health and react to other materials in the area, but they can affect the community infrastructure by roadway and/or water systems. Fortunately, these events are usually infrequent, but the risk is present. These types of events can have a great impact on the community.

	Consequence		
Score	Financial	Life Loss	Emotional/Historical/ Social/Environmental
2	No loss	No loss	No impact
4	Minor loss	Potential/loss of single life	Low impact
6	Moderate loss	Loss of a single life with the potential for multiple	Moderate impact
8	Significant/Substantial loss	Potential for multiple life loss	Significant/Substantial impact
10	Extraordinary loss	High probability of multiple life loss	Extraordinary impact

3. The impact the incident has against the operational forces of the department based on the critical tasks associated with the incident, given the location of the hazard.

Score	Impact (Number of Resources)
2	1-2 units (still)
4	3-4 units (still/special)
6	5-6 units (special)
8	7-10 units (first)
10	11 or more units (second)

Low Risk (Still Alarm):	1-16.5
Moderate Risk (Special Alarm):	16.6-27.0
High Risk (First Alarm):	27.1-40.0
Maximum Risk (Second Alarm):	40.1-75.00

COMMUNITY RISK ASSESSMENT-STANDARDS OF COVER

Initially, all hazardous material incidents underwent a critical task analysis to ascertain their impact values; afterward, the incidents were evaluated, scored, and ranked, creating the four distinct risk categories listed.

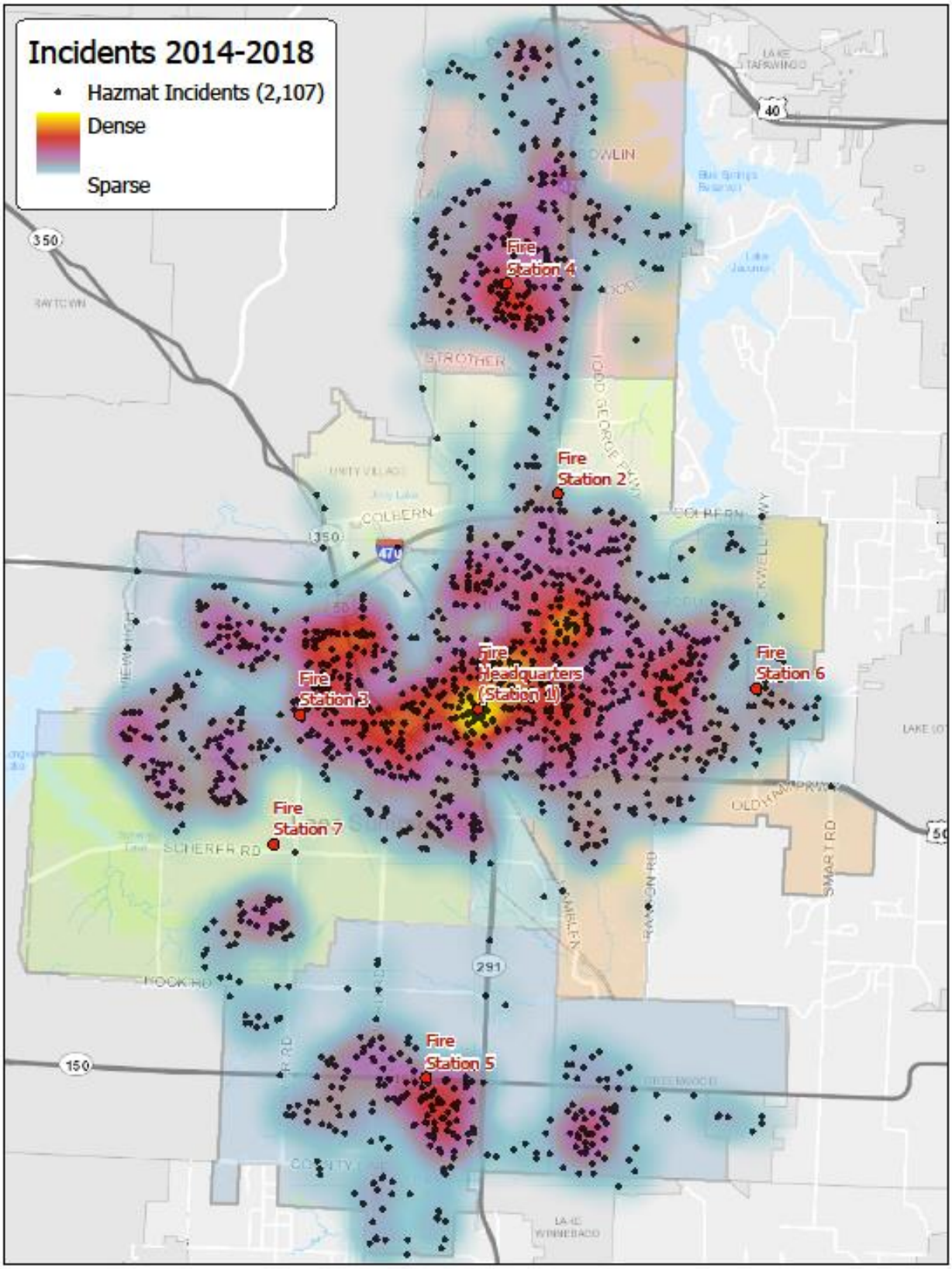
The risk level is determined in this program due to the volume or type of hazardous material and if patients are present. These factors affect the number of critical tasks needed to mitigate the risk, thus changing the risk level.

These three factors were scored from low to maximum depending on the hazard against the incident type, facility, or location. Scores ranged from low to maximum based on probability, consequence, and impact.

A heat map can be an excellent tool for data analysis and hazard interpretation for any department that is attempting to identify areas of high risk. The nature of a heat map is to cluster all incidents within 25 feet of each other into a density representation. It is not a representation of the number of incidents, only the density, and intensity. In order to better analyze the data, it is helpful to add another layer onto the heat map that pinpoints the location of each incident. For that reason, both layers have been included on the following hazardous material heat map.

Analysis of the hazardous materials heat map indicates that hazardous material incidents align with population density within the city, but are not limited to it.

Map 33: HazMat Incidents Heat Map (2014-2018)



Critical Task Analysis

Apparatus in the department are dispatched based on the type of incident, and each incident has a set alarm assignment. Each incident type in the Computer Aided Dispatch (CAD) system is assigned an alarm assignment of either still, special, first, or second. If additional staffing is needed, these alarm assignments can be upgraded to a second, third, or fourth alarm by the incident commander or the first due unit. These assignments are found in Standard Operating Guideline (SOG) Section 14, Incident Assignments. A more complete list of call types, incident descriptions, and the amount and type of units to be dispatched on the initial alarm are also found in SOG 14. All dispatched alarm levels are based on the information provided to the communications center by the caller.

Fire Suppression

Critical tasks and staffing associated which are needed to mitigate a low-level fire risk incident are listed in the table below. Examples of these types of incidents are passenger vehicle fires, unknown type fires, dumpster fires, and hazard checks. The risk level assignment determines the effective response force deployment necessary to mitigate the reported incident.

Table 11: Critical Tasks - Fire Risk - Low

Critical Task	Number of Personnel
Command / Safety	1
Pump Operations	1
Fire Attack	1
Total	**3**

Critical tasks and staffing needed to mitigate a moderate level fire risk incident are listed in the table below. Examples of these types of incidents are natural cover fires, a lightning strike on a structure, commercial vehicle fires, and detached outbuilding fires. The risk level assignment determines the effective response force deployment necessary to mitigate the reported incident.

Table 12: Critical Tasks - Fire Risk - Moderate

Critical Task	Number of Personnel
Command / Safety	1
Pump Operations	1
Fire Attack	2
Back Up Line / Exposure	2
Ventilation / Utility Control / Search	2
Total	**8**

Critical tasks and staffing needed to mitigate a high-level fire risk incident are listed in the table below. Examples of these types of incidents are residential structure fires and commercial (non-target hazard) structure fires. The risk level assignment determines the effective response force deployment necessary to mitigate the reported incident.

Table 13: Critical Tasks - Fire Risk - High

Critical Task	Number of Personnel
Command	1
Safety	1
Pump Operations / Water Supply	1
Fire Attack	2
Back Up Line	2
Search	2
Ventilation	2
Medical / Rehab	2
Rapid Intervention Crew (RIC)	3
Aerial Operations / Utility / Exposures	2
Total	**18**

Critical tasks and staffing needed to mitigate a maximum level fire risk incident are listed in the table below. Examples of these types of incidents are target hazard structure fires and commercial aircraft fires/crashes. The risk level assignment determines the effective response force deployment necessary to mitigate the reported incident.

Table 14: Critical Tasks - Fire Risk - Maximum

Critical Task	Number of Personnel
Command	1
Operations Chief	1
Safety	1
Pump Operations/Water Supply	2
Fire Attack	4
Search	6
Ventilation	3
Medical	4
Rehab	2
Rapid Intervention Crew (RIC)	3
Aerial Operations/ Utility/ Exposures	4
Total	**31**

Emergency Medical Services

Certain assignments are dispatched with higher or lower amounts of personnel based on the type of call and the level of risk associated. An example of this would be a pumper/truck and an ambulance for lower risk EMS calls instead of just an ambulance. Internal discussions have identified the need to develop a lower level response (single unit) for basic life support (BLS) incidents, in the future. However, until the communications center staffing levels increase there is limited capability to perform a complete emergency medical dispatch (EMD) protocol card set consistently. Once the communications center's staffing levels allow, the department plans to evaluate the benefits of implementing tiered response for low-risk EMS calls based on a priority dispatch formula.

Critical tasks and staffing needed to mitigate a low-level EMS risk incident are listed in the table below. Examples of these types of incidents are a medical alarm or a single-patient emergency medical request. The risk level assignment determines the effective response force deployment necessary to mitigate the reported incident.

Table 15: Critical Tasks - EMS Risk - Low

Critical Task	Number of Personnel
Command / Documentation	1
Patient Care/ Transportation	2
Additional Patient Care Providers	2
Total	**5**

Critical tasks and staffing needed to mitigate a moderate level EMS risk incident are listed in the table below. Examples of these types of incidents are cardiac arrest or assist the police on a SWAT/ESS operation. The risk level assignment determines the effective response force deployment necessary to mitigate the reported incident.

Table 16: Critical Tasks - EMS Risk - Moderate

Critical Task	Number of Personnel
Command Documentation	1
Patient Care / Transport	2
Additional Patient Care Providers	3
Total	**6**

Critical tasks and staffing needed to mitigate a high-level EMS risk incident are listed in the table below. An example of this type of incident is an EMS incident with 5-7 patients. The risk level assignment determines the effective response force deployment necessary to mitigate the reported incident.

Table 17: Critical Tasks - EMS Risk - High

Critical Task	Number of Personnel
Command	1
Safety	1
Triage Officer	1
Treatment Officer	1
Transport Officer	1
Patient Care / Transport	8
Additional Patient Care Providers	6
Total	**19**

Critical tasks and staffing needed to mitigate a maximum level EMS risk incident are listed in the table below. An example of this type of incident is an EMS incident with 8 or more patients. The risk level assignment determines the effective response force deployment necessary to mitigate the reported incident.

Table 18: Critical Tasks - EMS Risk - Maximum

Critical Task	Number of Personnel
Command	1
Safety	1
Triage Officer	1
Treatment Officer	1
Transport Officer	1
Patient Care/ Transport	12
Additional Patient Care Providers	13
Total	**30**

Technical Rescue

Critical tasks and staffing needed to mitigate a low-level rescue risk incident are listed in the table below. Examples of this type of incident is a subject locked in a vehicle or a reported minor injury motor vehicle collision. The risk level assignment determines the effective response force deployment necessary to mitigate the reported incident.

Table 19: Critical Tasks - Rescue Risk - Low

Critical Task	Number of Personnel
Command/Safety	1
Patient Care/Transport	2
Additional Patient Care Providers/ Hazard Mitigation	2
Total	**5**

Critical tasks and staffing needed to mitigate a moderate level rescue risk incident are listed in the table below. Examples of this type of incident is a piece of machinery, industrial, or elevator rescue. The risk level assignment determines the effective response force deployment necessary to mitigate the reported incident.

Table 20: Critical Tasks - Rescue Risk - Moderate

Critical Task	Number of Personnel
Command/Safety	1
Patient Care/ Transport	4
Extrication/ Additional Patient Care Providers/ Hazard Mitigation	6
Total	**11**

Critical tasks and staffing needed to mitigate a high-level rescue risk incident are listed in the table below. Examples of this type of incident is a structural collapse or motor vehicle collision with 5-7 patients. The risk level assignment determines the effective response force deployment necessary to mitigate the reported incident.

Table 21: Critical Tasks - Rescue Risk - High

Critical Task	Number of Personnel
Command	1
Safety	1
Patient Care Providers / Hazard Mitigation	3
Rescuers / Extrication	6
Transport/ Rehab/ Additional Patient Care	8
Total	**19**

Critical tasks and staffing needed to mitigate a maximum tier I or tier II level rescue risk incident are listed in the table below. Examples of these types of incident are motor vehicle collisions with 8 or more patients or natural/manmade disasters. The risk level and type incident assignment determine the effective response force deployment necessary to mitigate the reported incident.

Table 22: Critical Tasks - Rescue Risk - Maximum Tier I (MVC)

Critical Task	Number of Personnel
Command	1
Safety	1
Patient Care Providers / Hazard Mitigation	6
Rescuers/ Extrication	8
Transport/ Rehab/ Additional Patient Care	14
Total	**30**

Table 23: Critical Tasks - Rescue Risk - Maximum Tier II (Disaster)

Critical Task	Number of Personnel
Command	1
Safety	1
Rescue Group Supervisors	3
Rescue Operations	9
Support Operations	9
Medical/ Rehab	4
Transport	4
Total	**31**

Hazardous Materials

Critical tasks and staffing needed to mitigate a low-level hazardous material risk incident are listed in the table below. Examples of these types of incidents are fuel spills under 20 gallons or carbon monoxide alarms with no symptoms. The risk level assignment determines the effective response force deployment necessary to mitigate the reported incident.

Table 24: Critical Tasks - HazMat Risk - Low

Critical Task	Number of Personnel
Command/Safety	1
Investigation/ Mitigation	2
Total	**3**

Critical tasks and staffing needed to mitigate a moderate level hazardous material risk incident are listed in the table below. Examples of these types of incidents are fuel spills between 20-55 gallons or carbon monoxide alarms with symptoms. The risk level assignment determines the effective response force deployment necessary to mitigate the reported incident.

Table 25: Critical Tasks - HazMat Risk - Moderate

Critical Task	Number of Personnel
Command/Safety	1
HazMat Group Supervisor	1
HazMat Operations	7
Medical/Rehab	2
Total	**11**

Critical tasks and staffing needed to mitigate a high-level hazardous material risk incident are listed in the table below. Examples of these types of incidents are fuel spills greater than 55 gallons or industrial/chemical spills. The risk level assignment determines the effective response force deployment necessary to mitigate the reported incident.

Table 26: Critical Tasks - HazMat Risk - High

Critical Task	Number of Personnel
Command	1
Safety	1
HazMat Group Supervisor	1
HazMat Operations	8
Support Operations	6
Medical/ Rehab	2
Total	**19**

Critical tasks and staffing needed to mitigate a maximum level hazardous material risk incident are listed in the table below. Examples of these types of incidents are mass casualty hazardous material incidents or weapons of mass destruction incidents. The risk level assignment determines the effective response force deployment necessary to mitigate the reported incident.

Table 27: Critical Tasks - HazMat Risk - Maximum

Critical Task	Number of Personnel
Command	1
Safety	1
HazMat Group Supervisor	1
HazMat Operations	11
Support Operations	9
Medical/ Rehab	4
Transport	4
Total	**31**

Risk Classification and Categories

Fire Suppression

Table 28: Risk Classification – Fire Suppression

Low Risk (Still)	Moderate Risk (Special)
• Appliance fire contained • Boat fire • Unknown type of fire • Gas grill fire no exposures • Rubbish fire • Dumpster/trash fire • Residential auto alarm • Passenger vehicle fire • Power lines down/transformer fire • Natural cover /mulch fire • Commercial auto alarm (non-target hazard) • *Smoke detector sounding (no smoke) • *Citizen/PD assist • *Hazards check • *Helicopter standby • *Odor investigation	• Outbuilding/shed/detached garage fire • Transport/commercial vehicle fire • Aircraft fire • Flue fire • Automatic alarm with sprinkler flow • Automatic alarm at a target hazard • Lightning strike • The odor of smoke in a structure
High Risk (First)	**Maximum Risk (Second)**
• Fire with structural exposures • Residential structure fire • Commercial structure fire (non-target hazard) • In-flight aircraft emergency	• Target hazard structure fire • Commercial aircraft fire/crash • Structure fire in known hydrant deficient area

* Denotes non-emergency response

Table 29: Risk Scoring – Fire Suppression

Fire Incidents	Impact	Probability	Consequence	Score
Gas grill - no exposures	2	2	2	4.8990
Helicopter standby	2	2	2	4.8990
Boat fire	4	2	2	8.4853
Dumpster/trash fire	2	5	2	10.3923
Rubbish fire	2	6	2	12.3288
Odor of smoke in structure - single family	2	6	2	12.3288
Appliance fire contained	2	6	2	12.3288
Natural/cover mulch	2	6	2	12.3288
Odor investigation	2	8	1	12.7279
Smoke detector sounding	2	8	1	12.7279
Outbuilding/shed/detached garage	4	4	2	13.8564
Flue fire	4	4	2	13.8564
Automatic alarm at target hazard	4	4	2	13.8564
Lightning strike	4	2	4	13.8564
*Unknown type of fire	2	7	2	14.2829
Aircraft fire	4	1	5	14.8492
*Passenger vehicle	2	8	2	16.2481
*Residential auto alarm	2	9	2	18.2209
*Hazards check	2	9	2	18.2209
Odor of smoke in structure - multi-family/comm	4	6	2	19.7990
*Commercial auto alarm/non-target hazard	2	10	2	20.1990
*Citizen/PD assist	2	10	2	20.1990
*Power line down/transformer fire	2	8	3	20.8327
Transport/commercial vehicle	4	5	4	22.9783
Automatic alarm with sprinkler water flow	4	8	3	29.5296
In-flight aircraft emergency	8	1	6	34.6699
Fire with structure exposures	8	5	4	38.8844
*Residential structure fire	8	8	2	48.0000
*Commercial structure fire (non-target hazard)	8	7	4	49.7192
Structure fire in known hydrant deficient area	10	6	4	53.7401
Commercial aircraft fire/crash	10	1	8	57.2887
Structure fire (target hazard)	10	2	8	59.3970

*Denotes risks that exceed the low-risk threshold due to high probability values but do not have a significant impact on operational resources based on a critical task analysis; as a result, these incidents are dispatched as low risk (Still) alarms.

Low Risk (Still Alarm):	1-13.0
Moderate Risk (Special Alarm):	13.1-30.0
High Risk (First Alarm):	30.1-50.0
Maximum Risk (Second Alarm):	50.1-65.00

Emergency Medical Services

Table 30: Risk Classification - EMS

Low Risk (Still)	Moderate Risk (Special)
• Emergency EMS alarm - single patient • Medical alarm • Patient transfer (emergency) • * Rescue standby (non-emergency) • * Patient transfer (non-emergency)	• Cardiac arrest • *SWAT/ESS police assist
High Risk (First)	**Maximum Risk (Second)**
• EMS alarm with 5-7 patients	• EMS alarm with 8 or more patients (MCI EMS)

* Denotes non-emergency response

Table 31: Risk Scoring - EMS

EMS Incidents	Impact	Probability	Consequence	Score
Rescue stand-by	2	7	2	14.2829
Non-emergency transfer	2	10	2	20.1990
Emergency EMS alarm (single patient)	2	10	2	20.1990
Assist PD on SWAT/ESS operation	3	6	4	22.8473
Cardiac arrest	3	9	4	32.9317
EMS incident with 5 to 7 patients	8	2	8	48.0000
EMS incident with 8 or more patients	10	2	8	59.3970

Low Risk (Still Alarm-single unit):	1-19.0
Low Risk (Still Alarm):	19.1-22.0
Moderate Risk (Special Alarm):	22.1-35.0
High Risk (First Alarm):	35.1-50.0
Maximum Risk (Second Alarm):	50.1-70.00

Technical Rescue

Table 32: Risk Classification – Rescue

Low Risk (Still)	Moderate Risk (Special)
• Subject locked in a vehicle/room • Unknown injury MVC • Minor injury MVC • Pedestrian struck • *Minor entrapment • *Subject locked out of a structure	• MVC with extrication • MVC with 1-4 patients • Vehicle into a building • Elevator rescue • Machinery/industrial rescue • Swimming pool rescue
High Risk (First)	**Maximum Risk (Second)**
• MVC with 5-7 patients • MVC involving a bus • Boat accident • Swift water rescue • High angle rescue • Water/ice rescue • Confined space rescue • Trench rescue • Structure collapse	• MVC with 8 or more patients (Max Tier I) • Natural or manmade disaster (Max Tier II)

* Denotes non-emergency response

Table 33: Risk Scoring - Rescue

Technical Rescue Incidents	Impact	Probability	Consequence	Score
Subject locked out of a structure	2	4	2	8.4853
Minor entrapment	2	6	2	12.3288
Swimming pool rescue	4	2	4	13.8564
Subject locked in a vehicle or room	2	8	2	16.2481
Pedestrian struck (single patient)	2	5	4	16.7929
Unknown injury MVC	2	9	2	18.2209
Minor injury MVC with 1 patient	2	9	2	18.2209
Elevator rescue	4	6	2	19.7990
Machinery/industrial rescue	6	2	4	19.7990
Pedestrian struck (2 or more patients)	6	2	5	23.9165
Vehicle into building	6	4	4	26.5330
MVC with 2 to 4 patients	6	7	2	32.4345
MVC with extrication required	6	6	4	34.9857
Swift water rescue	8	2	6	36.7696
Water/ice rescue	8	2	6	36.7696
High angle rescue	8	2	6	36.7696
Boat accident	8	2	6	36.7696
Trench rescue	8	2	6	36.7696
Confined space rescue	8	2	6	36.7696
MVC involving a bus	8	2	8	48.0000
Structure collapse	8	2	8	48.0000
MVC with 5 to 7 patients	8	2	8	48.0000
MVC with 8 or more patients	10	2	8	59.3970
Natural or manmade disaster	10	2	10	73.4847

Low Risk (Still Alarm):	1-19.0
Moderate Risk (Special Alarm):	19.1-35.0
High Risk (First Alarm):	35.1-50.0
Maximum Risk (Second Alarm):	50.1-75.00

Hazardous Materials

Table 34: Risk Classification - HazMat

Low Risk (Still)	Moderate Risk (Special)
• Electrical wiring/equipment problem • *Fuel spill < 20 gallons • *Non-injury MVC hazard check • *Unknown odor investigation • *CO alarm (no symptoms) • *Odor of natural gas outside	• The odor of natural gas inside a structure • Fuel spill 20-55 gallons • Gas line break • Automatic gas alarm • CO alarm with symptoms • EOD threat
High Risk (First)	**Maximum Risk (Second)**
• Chemical spill or release in transit • Industrial chemical spill or release • Fuel spill > 55 gallons • Radiological incident	• Mass casualty hazmat event • Weapons of mass destruction incident • Hazmat event with significant community impact

* Denotes non-emergency response

Table 35: Risk Scoring - HazMat

Hazardous Material Incidents	Impact	Probability	Consequence	Score
Non-injury MVC hazards check	2	4	2	8.4853
Fuel spill < 20 gallons	2	6	2	12.3288
EOD threat	2	2	6	12.3288
Electrical wiring/equipment problem	2	6	2	12.3288
Odor of natural gas outside	2	8	2	16.2481
CO alarm with no symptoms	2	8	2	16.2481
Unknown odor investigation	2	8	2	16.2481
Fuel spill (20 to 55 gallons)	4	2	5	16.7929
Odor of natural gas inside a structure	4	6	2	19.7990
CO alarm with symptoms	2	6	4	19.7990
Radiological incident	6	1	6	26.1534
Gas line break	4	6	4	26.5330
Fuel spill > 55 gallons	6	2	6	28.1425
Industrial chemical spill or release in transit	6	2	6	28.1425
Haz-Mat with significant community impact	10	2	8	59.3970
WMD incident	10	2	10	73.4847
Mass casualty haz-mat incident	10	2	10	73.4847

Low Risk (Still Alarm):	1-16.5
Moderate Risk (Special Alarm):	16.6-27.0
High Risk (First Alarm):	27.1-40.0
Maximum Risk (Second Alarm):	40.1-75.00

H. Historical Perspective and Summary of System Performance

The appropriate deployment of resources is critical to the ability of any fire department to fulfill its core public safety and fire protection mission effectively, efficiently, and safely. In determining an acceptable level of risk, fire officials, city staff, and elected officials in every community must ask questions about the fire and emergency medical service (EMS) resources, such as:

1) What level of protection do we need?

2) What level of protection can we afford?

To provide maximum benefit to the community, fire departments must assess station locations and apparatus deployment methodologies.

These are never easy decisions, especially when virtually any decision on emergency service deployment that involves moving and/or relocating a resource, even for the considerable benefit of the community as a whole, may have a negative impact on at least a small percentage of the population.

From the perspective of stations and apparatus, three main factors are evaluated to determine the optimum deployment of resources: response time, travel distance, and call volume.

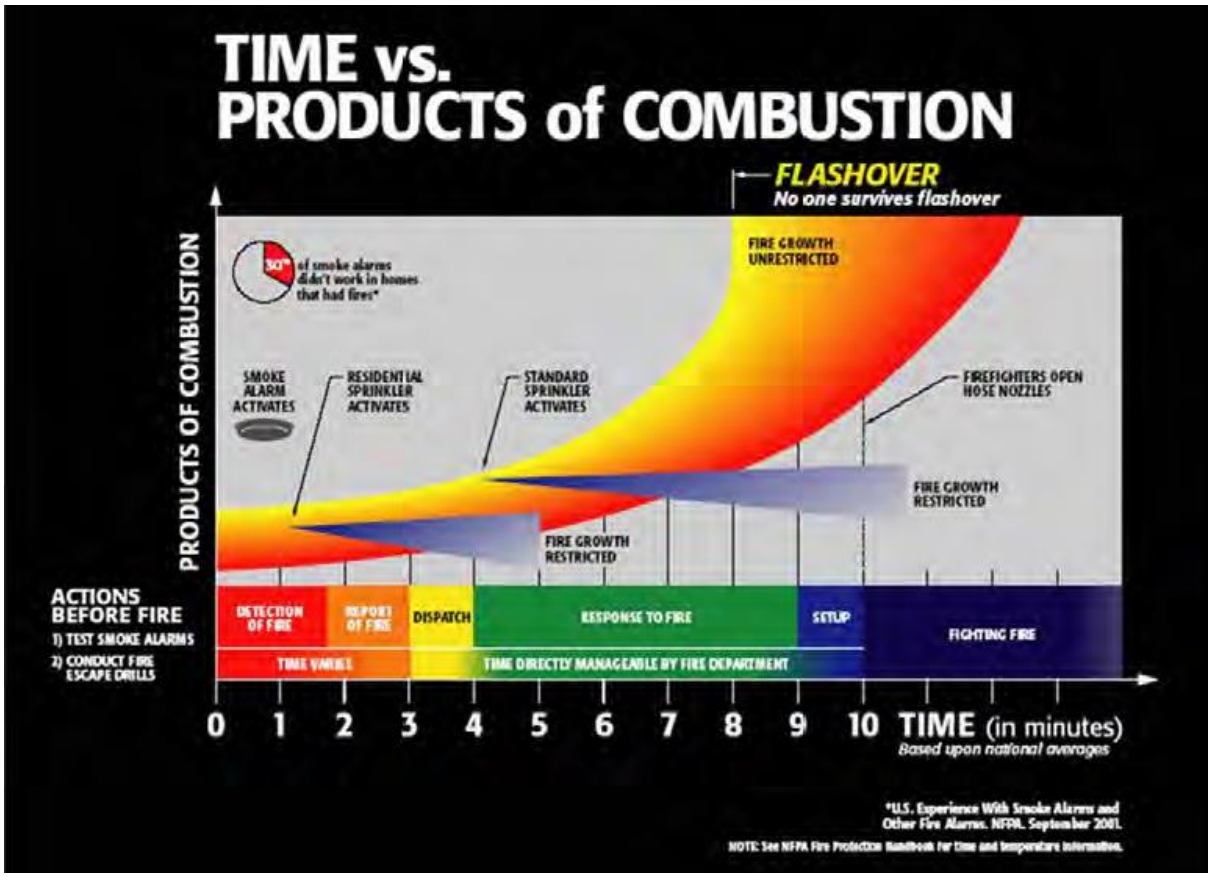
For most evaluations, response time is the most critical factor for both structure fires and emergency medical incidents. Heart attack and stroke victims require rapid intervention, care, and transport to a medical facility. The longer the time duration without care, the less likely the patient is to recover fully. Numerous studies have shown that irreversible brain damage can occur if the brain is deprived of oxygen for more than four minutes. In addition, the potential for successful resuscitation during cardiac arrest decreases exponentially with each passing minute that CPR or cardiac defibrillation is delayed.

Structural firefighting has become far more challenging and dangerous in the last 30 years with the introduction of significant quantities of plastic and foam-based products into homes and businesses, both in their furnishings and their structural components. These materials ignite and burn quickly producing extreme heat and toxic smoke, and can easily double in size and intensity every 30 seconds. If firefighters cannot arrive in a timely manner and attack the fire quickly, a strong possibility exists that a dangerous flashover (simultaneous ignition of all combustible materials in a room) will occur. Depending on the conditions present, flashover can occur in as little as five to seven minutes after fire ignition and is one of the most dangerous events that a firefighter can face. Once a flashover occurs, initial firefighting forces are generally overwhelmed and will require significantly more resources to affect fire control and extinguishment.

It is also important to keep in mind that once units arrive on the scene, they will need to get set up to commence operations. The National Fire Protection Association (NFPA) recommends that units be able to commence an initial attack within two minutes of arrival, 90% of the time. Fire departments are accountable for their response

times and the consequences of extended or inadequate responses, so it is imperative that department resources are available and in position to respond when called.

To underscore the relationship between response time and improved outcomes, the United States Fire Administration's (USFA) report, Structure Fire Response Times, has a useful framework for total emergency incident response time, including definitions and components that demonstrates the importance of a quick response and effective fire ground actions. The report notes that about half of structure fires confined to the room of origin (51%) and confined to the floor of origin (51%) had a travel time of fewer than five minutes. Additionally, more than half of fires confined to the building of origin (54%) and nearly half of fires beyond the building of origin (49%) had a travel time of fewer than six minutes.



NFPA Standard 1710 – *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments* (2016 Edition), is the nationally recognized consensus standard on staffing and deployment by career fire departments.

> *The first arriving engine company shall arrive at the scene of a fire suppression incident within four minutes or less and/or the entire full first alarm response should arrive on scene within eight minutes. For EMS incidents, a unit with first responder or higher-level trained personnel should arrive within four minutes, and an Advanced Life Support (ALS) unit should arrive on scene within eight minutes.*
>
> *Paragraph 4.1.2.2 requires the establishment of a 90% performance objective for these response times.*

In addition to NFPA 1710, the Insurance Services Office (ISO) Fire Suppression Rating Scale also provides direction on the appropriate deployment and allocation of resources. ISO awards points in their Fire Suppression Rating Schedule for engine companies located with a maximum first due response area of 1.5 road miles and ladder companies with a maximum first due response area of 2.5 road miles. During the agency's last ISO evaluation, effective on June 1, 2017, the department improved from an ISO 3 rating to an ISO 2 rating.

Distribution Factors

For Lee's Summit Fire Department, station response districts provide the geographical division within the city that are utilized to measure response performance. These station response districts have been altered when the department transitioned to automatic vehicle location (AVL) based dispatching. Prior to AVL, the department established station response districts that distributed the call load evenly in the city's core area. As a component of transitioning to AVL, the department has developed new closest unit response (CUR) districts using ArcGIS technology to improve departmental awareness of response areas where units will be assigned first due using AVL. Continuing to analyze data based on historical station response districts and closest unit response data will aid strategic planning for placement, staffing, and additional resources required to ensure the department is effectively fulfilling its mission.

There are currently seven fire response districts within the city. Inside each response district is a deployment location for emergency operations: a fire station. These deployment locations are the primary response areas for the community. Frequently, units will respond from different areas throughout the community. This occurs while performing emergent and non-emergent functions, such as training, business fire inspections, public education events, refueling, or maintenance transitions. These mobile, location-based assignments are becoming the norm rather than the exception since AVL has been implemented.

At six of the seven fire stations, there is a minimum of two fire apparatus within the deployment location. The exception is Station 3, which currently only has one front line apparatus assigned. Each station location represents a district planning area, with all areas evaluated in terms of population, road miles, the area in miles, and assessed value. All travel time values are determined by fire station locations.

Table 36: Area Protected by Fire Response District

Fire Response District	Area Protected in Miles
District 1	6.08
District 2 (includes Unity Village)	9.40
District 3	8.66
District 4	11.43
District 5 (includes Greenwood)	15.70
District 6	10.71
District 7	10.47

Table 37: Road Miles Protected by Fire Response District

Fire Response District	Area Protected in Road Miles
District 1	93.78 (+7.53 miles since 2014)
District 2 (includes Unity Village)	86.95 (+17.91 miles since 2014)
District 3	111.33 (+1.68 miles since 2014)
District 4	125.42 (+19.88 miles since 2014)
District 5 (includes Greenwood)	119.10 (+3.46 miles since 2014)
District 6	123.19 (+12.74 miles since 2014)
District 7	55.91 (+1.24 miles since 2014)

Map 34: Population by National Grid (2018)

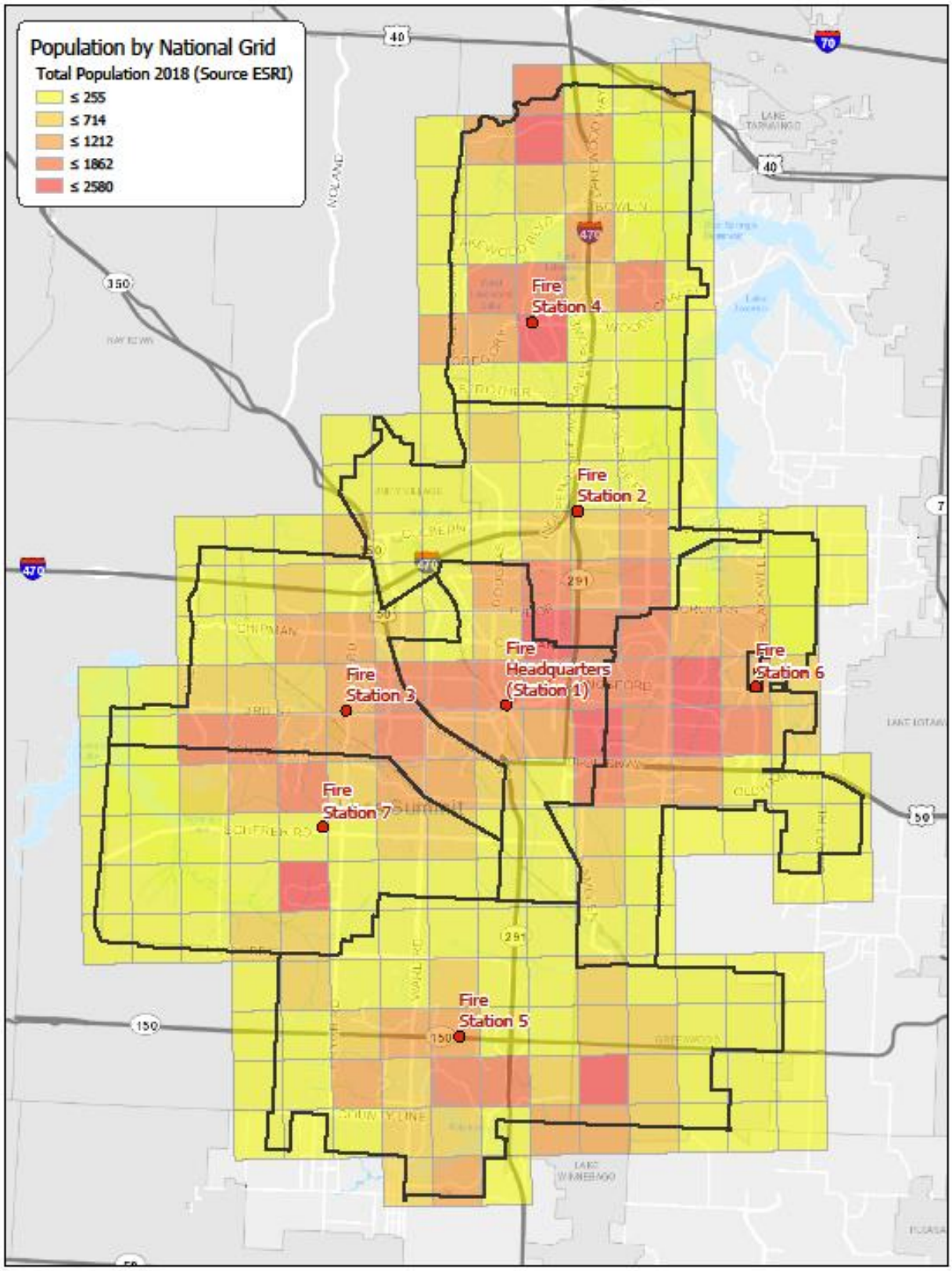


Table 38: Population Served by Fire Response District

Fire Response District	Population Served
District 1	14,670 (-3,655 since 2014)
District 2 (includes Unity Village)	9,937 (+74 since 2014)
District 3	17,802 (+480 since 2014)
District 4	16,639 (+2,364 since 2014)
District 5 (includes Greenwood)	16,572 (+2,262 since 2014)
District 6	20,193 (+2,424 since 2014)
District 7	7,701 (+653 since 2014)

Table 39: Assessed Value – Total and Residential (2018) by Fire Response District

Response District	Total Assessed Value (2014)	Total Assessed Value (2018)	4-year value increase	Residential Assessed Value (2014)	Residential Assessed Value (2018)	4-year value increase
District 1	$367,165,431	$405,595,954	$38,430,523	$239,317,453	$241,753,260	$2,435,807
District 2	$166,564,559	$304,769,539	$138,204,980	$75,481,862	$157,944,935	$82,463,073
District 3	$307,893,407	$358,561,633	$50,668,226	$194,301,980	$221,428,749	$27,126,769
District 4	$315,716,805	$373,999,058	$58,282,253	$242,683,888	$302,276,595	$59,592,707
District 5	$255,200,055	$319,696,784	$64,496,729	$213,194,392	$268,112,041	$54,917,649
District 6	$290,980,691	$339,018,063	$48,037,372	$246,366,848	$283,476,705	$37,109,857
District 7	$129,806,839	$158,574,131	$28,767,292	$122,753,733	$150,404,657	$27,650,924

Table 40: Assessed Value – Commercial and Agricultural (2018) by Fire Response District

Response District	Commercial Assessed Value (2014)	Commercial Assessed Value (2018)	4-year value change	Agricultural Assessed Value (2014)	Agricultural Assessed Value (2018)	4-year value change
District 1	$127,649,162	$163,779,274	$36,130,112	$198,908	$63,358	-$135,550
District 2	$90,934,560	$146,635,173	$55,700,613	$148,239	$189,398	$41,159
District 3	$113,297,187	$136,899,448	$23,602,261	$294,133	$233,406	-$60,727
District 4	$72,883,367	$71,573,621	-$1,309,746	$149,595	$149,021	-$574
District 5	$39,330,574	$48,529,547	$9,198,973	$402,792	$433,460	$30,668
District 6	$44,430,784	$55,346,659	$10,915,875	$183,086	$194,558	$11,472
District 7	$6,799,430	$7,898,443	$1,099,013	$253,589	$271,009	$17,420

Chart 14: Call Demand by Hour of the Day (2014-2018)

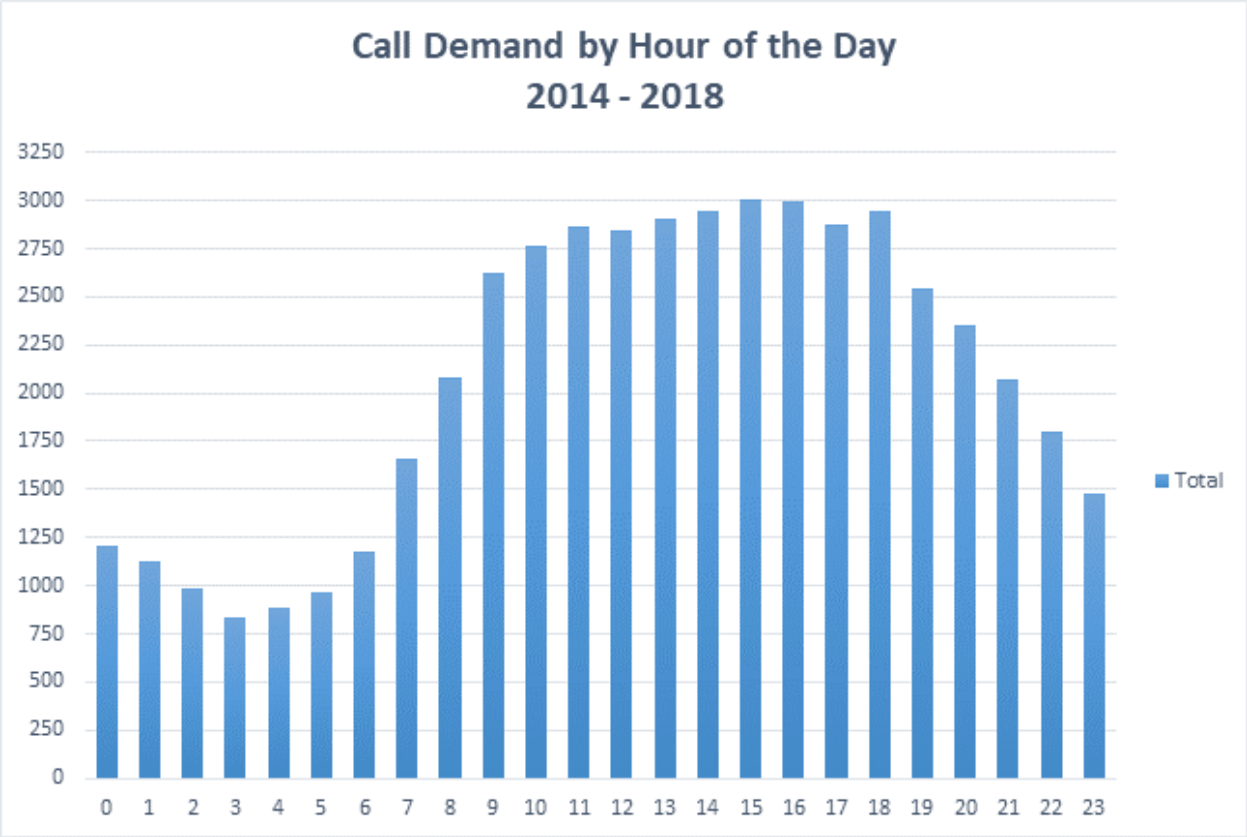
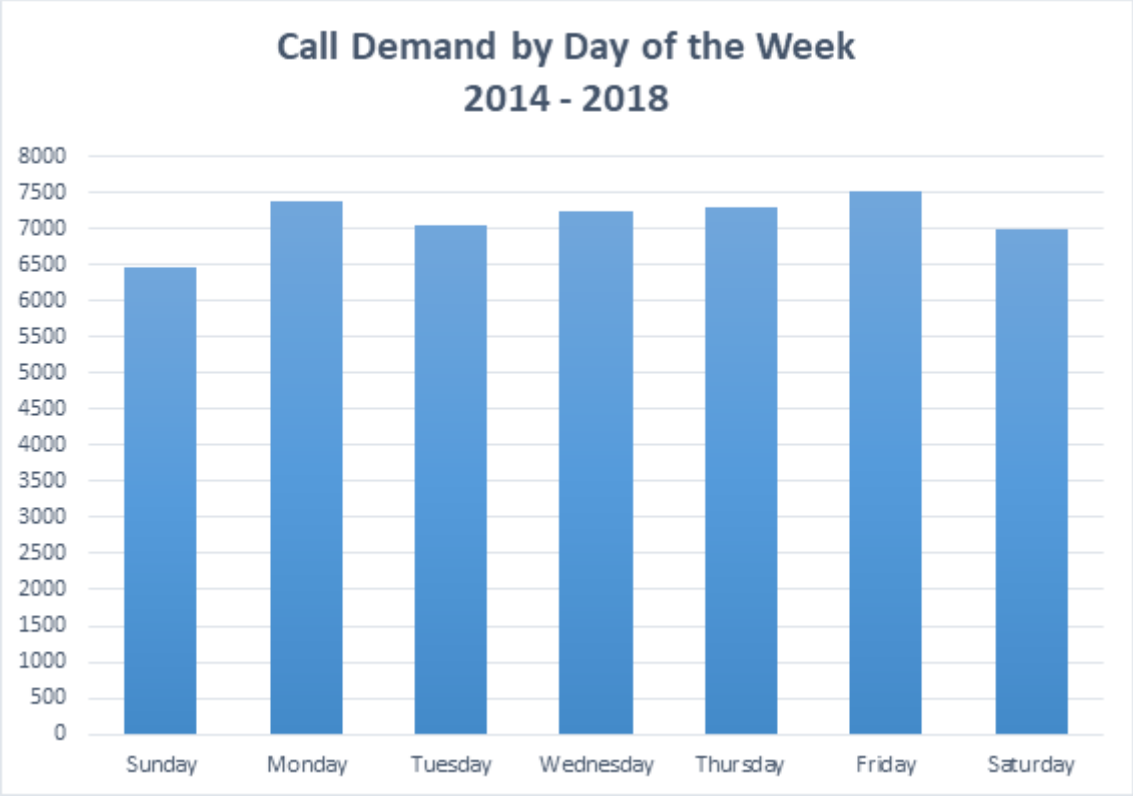


Chart 15: Call Demand by Day of the Week (2014-2018)

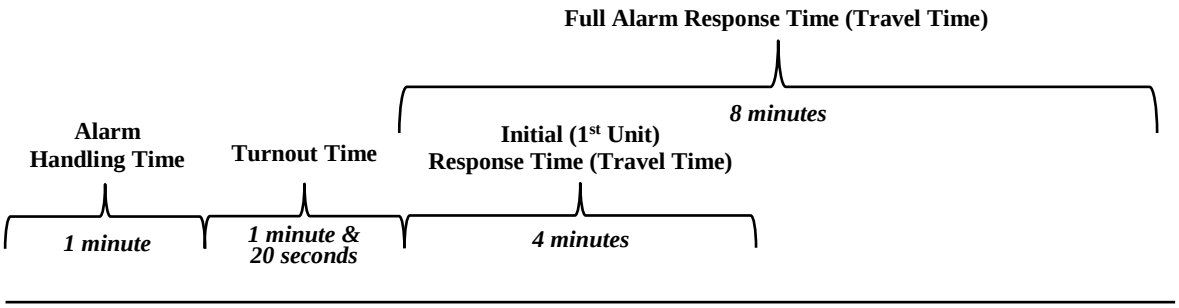


Travel Time Potential

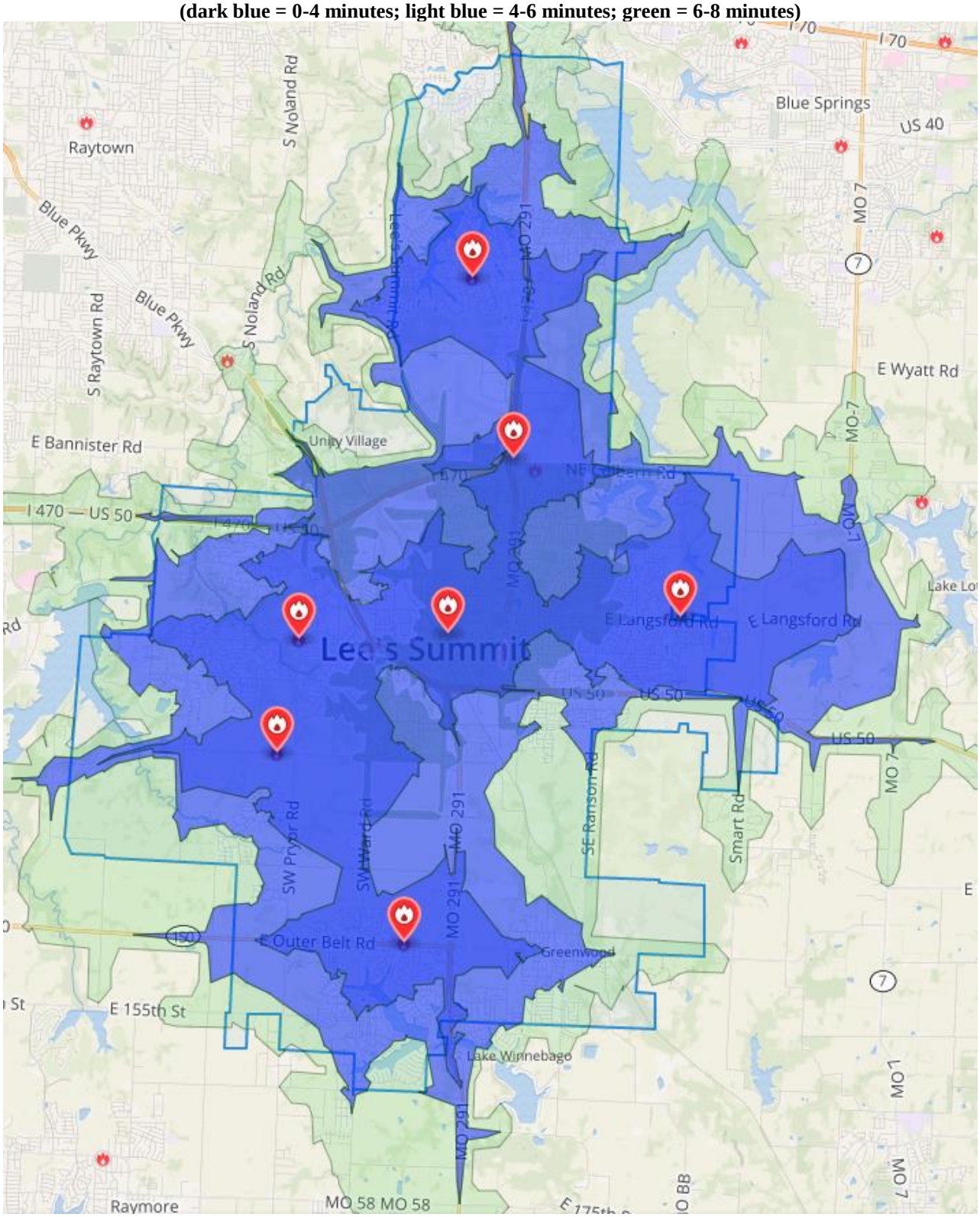
In order to evaluate deployment capability against industry benchmarks, it is necessary to evaluate travel time polygons from fire stations. Fire-Community Assessment/Response Evaluation System (FireCARES) developed these polygons, which indicate the amount of area traveled in a specific amount of time utilizing current city infrastructure. This information can show coverage capabilities and identify coverage gaps against the industry benchmarks outlined in NFPA Standard 1710 – *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments* (2016 Edition).

Travel time from stations at 4 minutes for the first arriving unit and 8 minutes for effective response force (CFAI urban density standard)

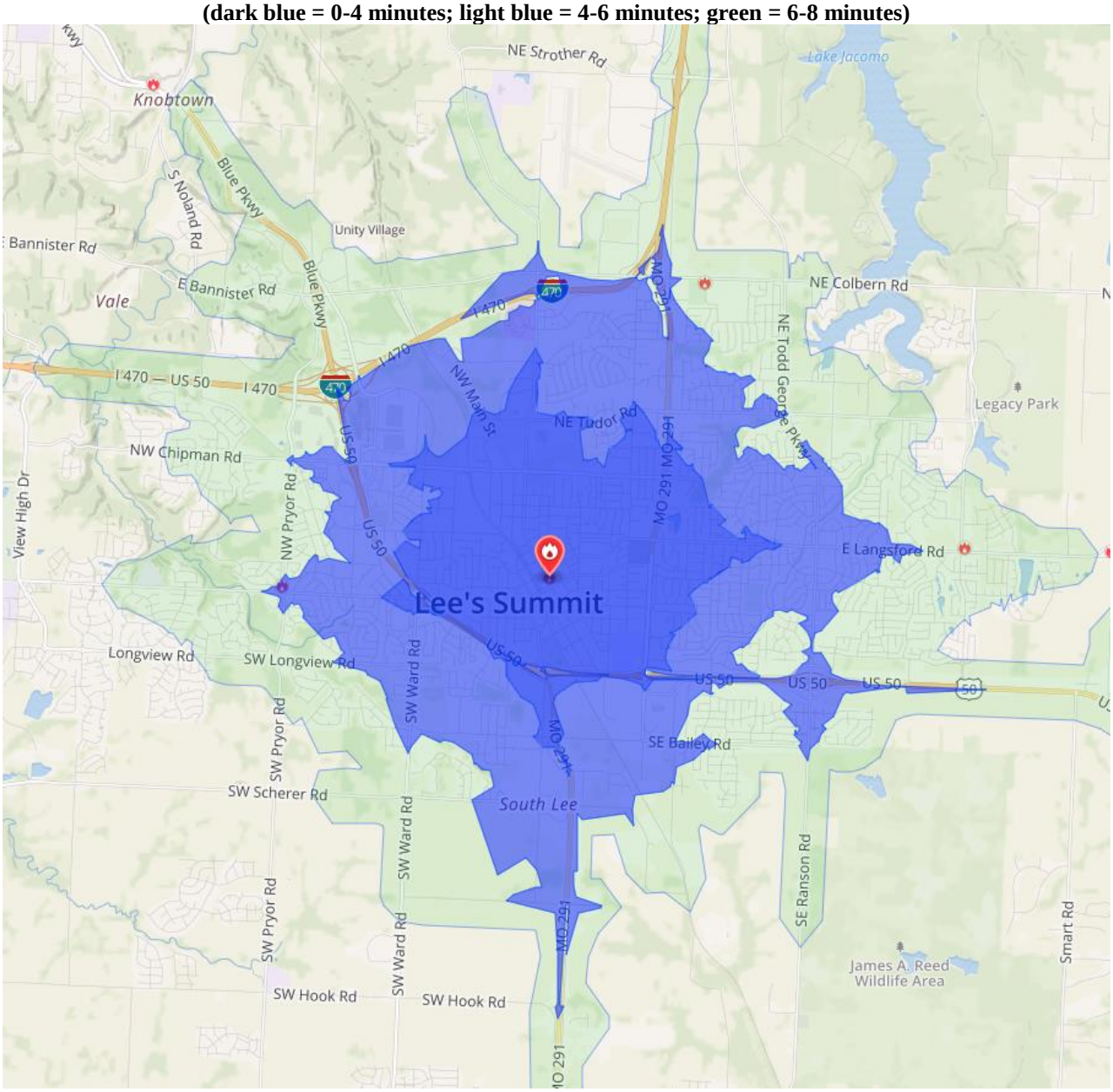
The following map shows the travel capabilities within four minutes from all current deployment locations. This is the benchmark standard for a first arriving resource at the 90th percentile of responses within urban density emergency service zones. From each fire station, the 0-4 minute travel time is dark blue, the 4-6 minute travel time is light blue, and the 6-8 minute travel time is light green. Lee's Summit's jurisdictional boundary and the contract cities served have a light blue outline identifying them.



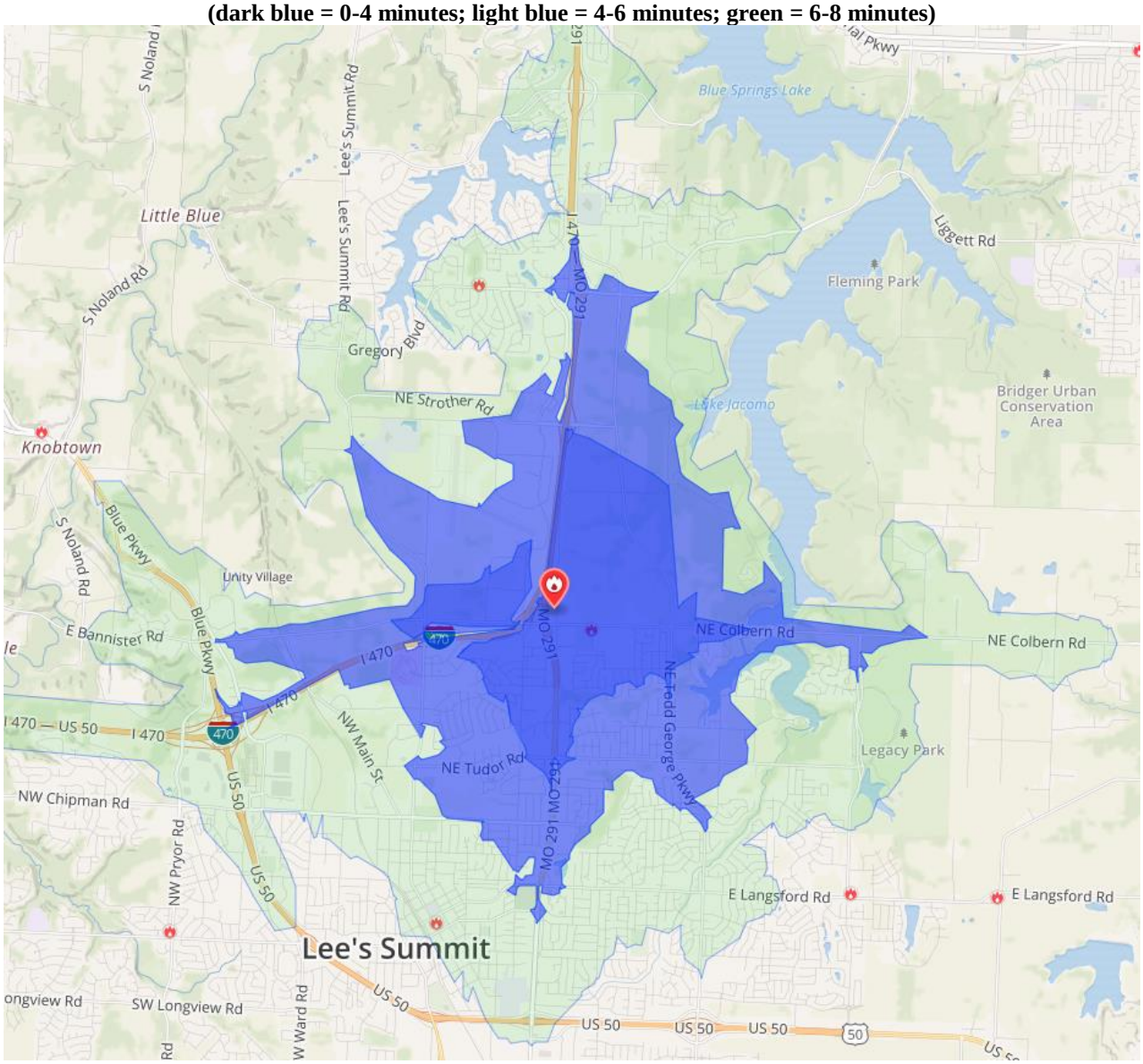
Map 35: Response within City Boundaries and Contract Cities
(dark blue = 0-4 minutes; light blue = 4-6 minutes; green = 6-8 minutes)



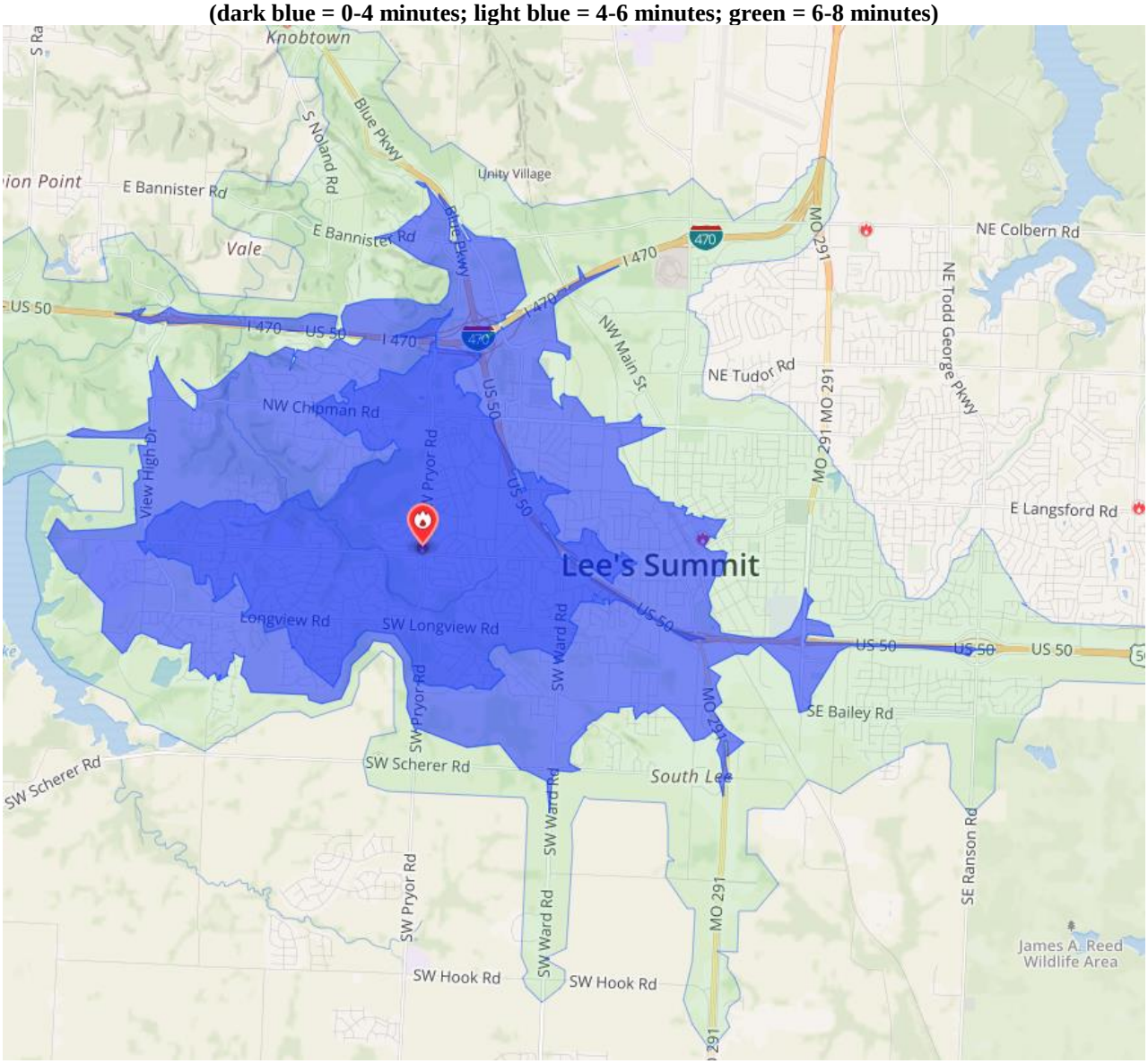
Map 36: District 1 Response Times
(dark blue = 0-4 minutes; light blue = 4-6 minutes; green = 6-8 minutes)



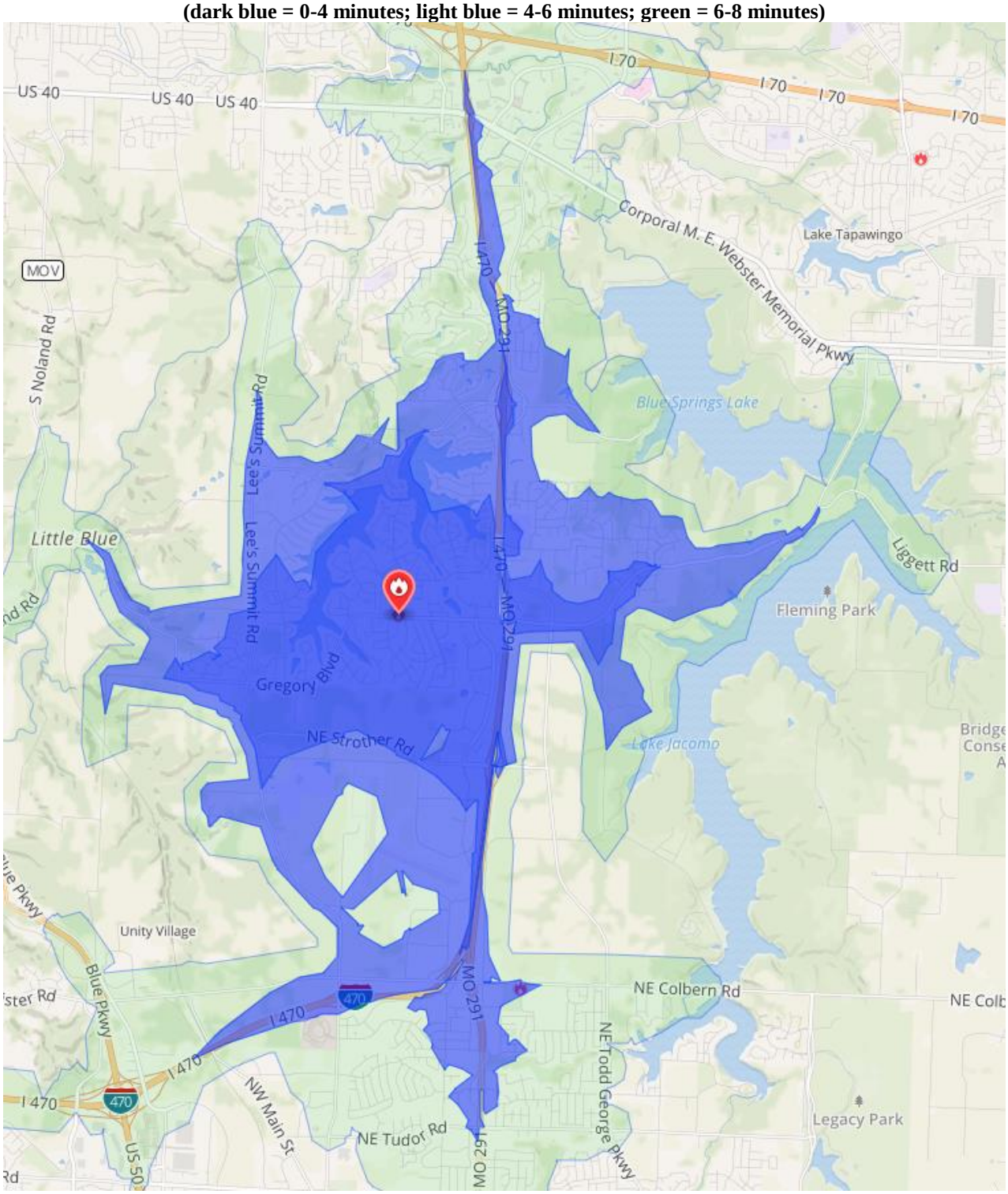
Map 37: District 2 Response Times
(dark blue = 0-4 minutes; light blue = 4-6 minutes; green = 6-8 minutes)



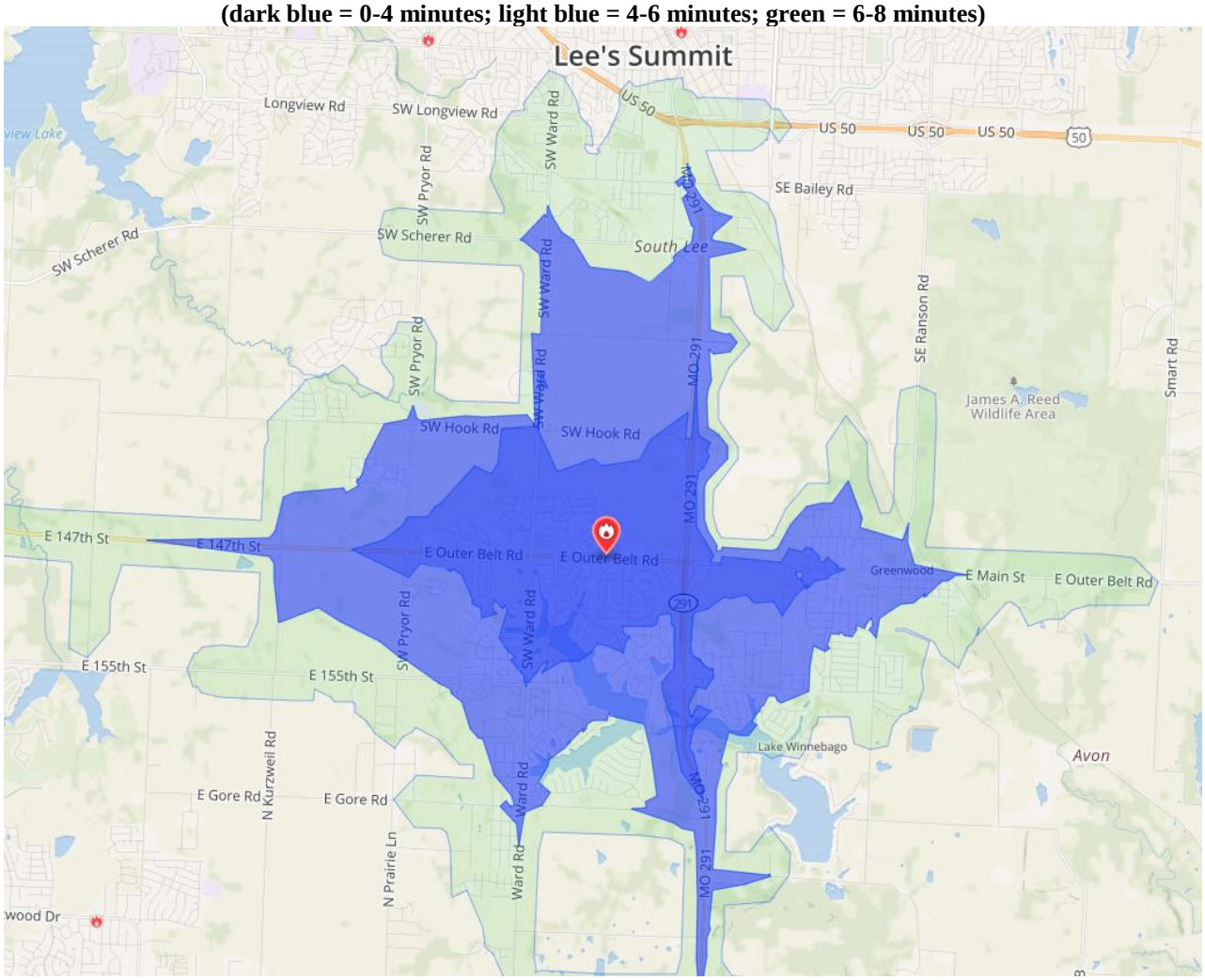
Map 38: District 3 Response Times
(dark blue = 0-4 minutes; light blue = 4-6 minutes; green = 6-8 minutes)



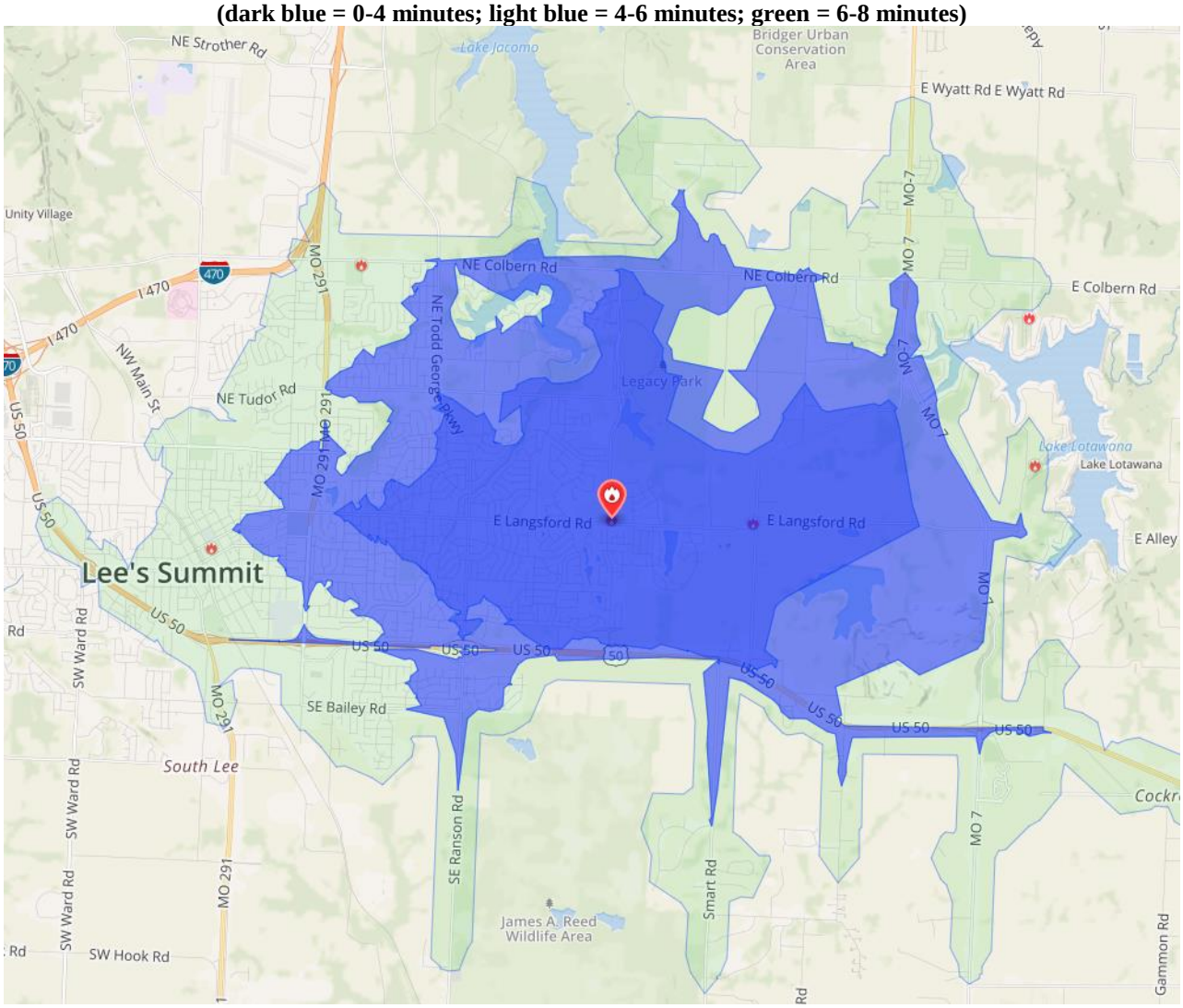
Map 39: District 4 Response Times
(dark blue = 0-4 minutes; light blue = 4-6 minutes; green = 6-8 minutes)



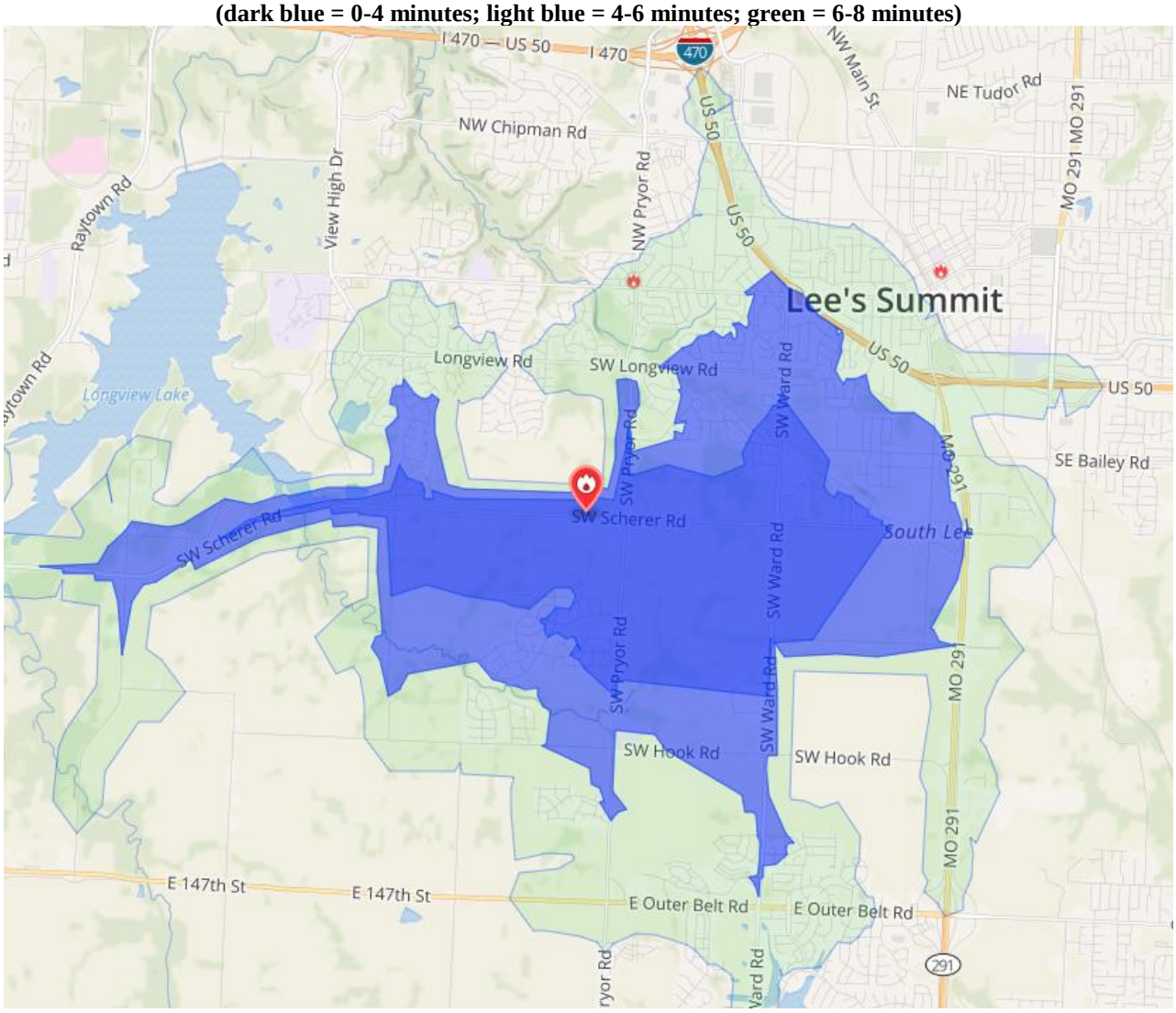
Map 40: District 5 Response Times
(dark blue = 0-4 minutes; light blue = 4-6 minutes; green = 6-8 minutes)



Map 41: District 6 Response Times
(dark blue = 0-4 minutes; light blue = 4-6 minutes; green = 6-8 minutes)

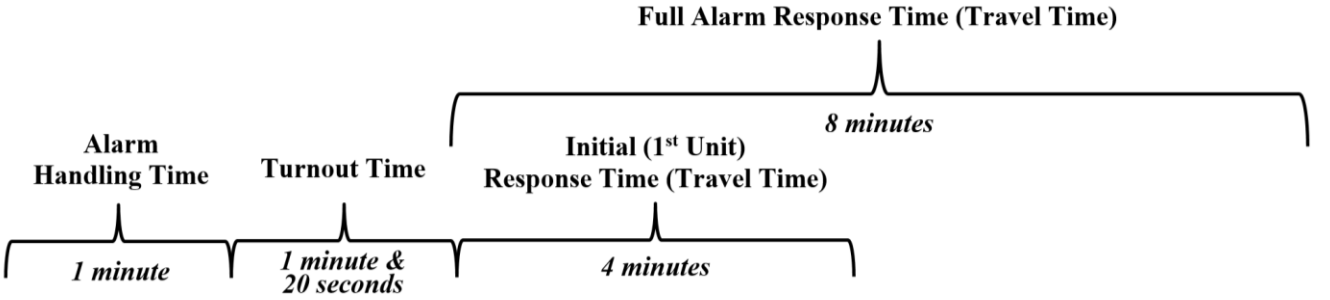


Map 42: District 7 Response Times
(dark blue = 0-4 minutes; light blue = 4-6 minutes; green = 6-8 minutes)

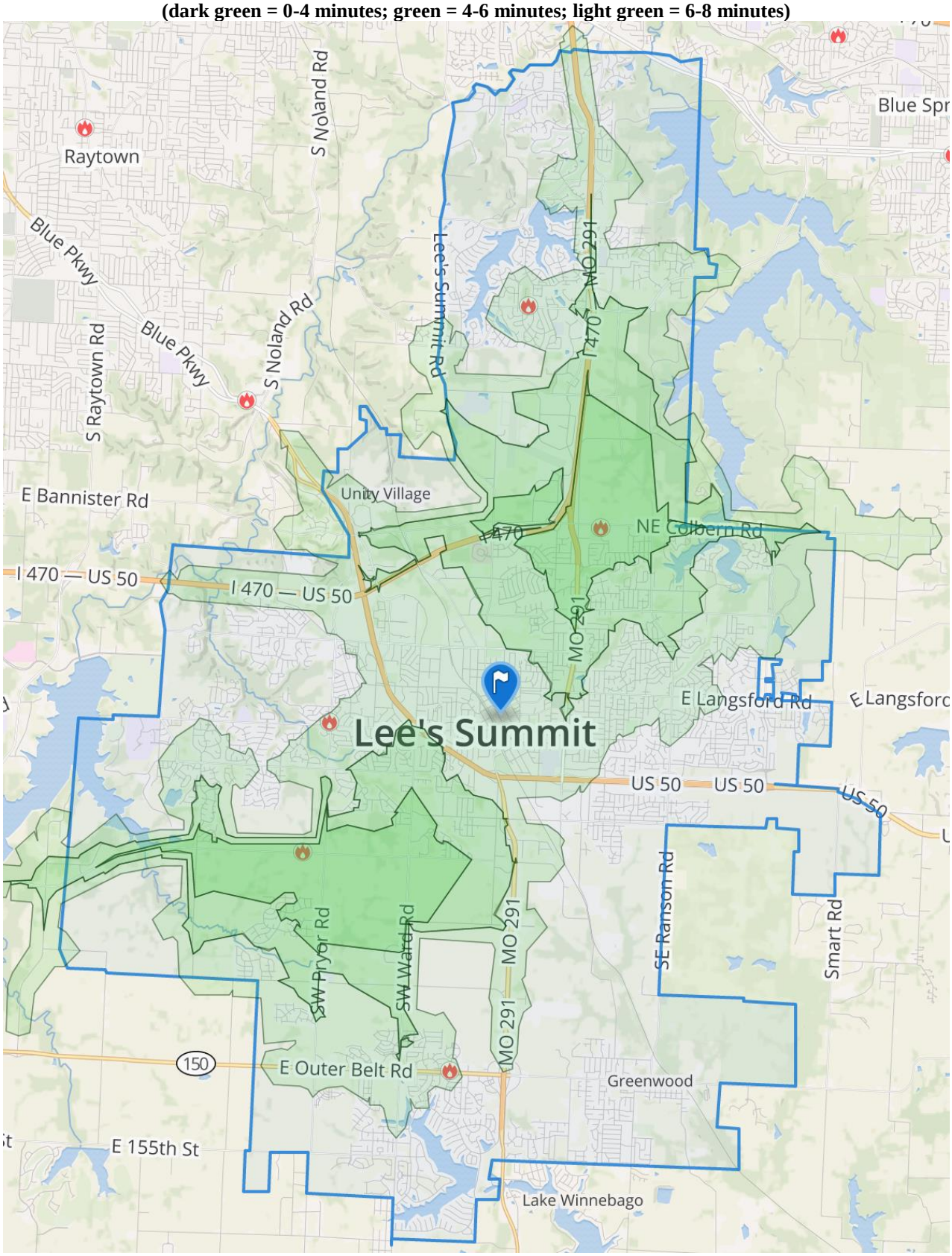


Travel time from stations at 8 minutes (NFPA 1710 effective response force standard)

This map shows the travel capabilities within 8 minutes from each of the current ladder truck deployment locations, Station 2 and Station 7. This is the benchmark standard for the arrival of the entire effective response force (ERF), based on the department's deployment model, at the 90th percent of responses within metro and urban density emergency service zones.



Map 43: Response Times for Ladder Trucks from Station 2 and Station 7
(dark green = 0-4 minutes; green = 4-6 minutes; light green = 6-8 minutes)



Concentration Factors

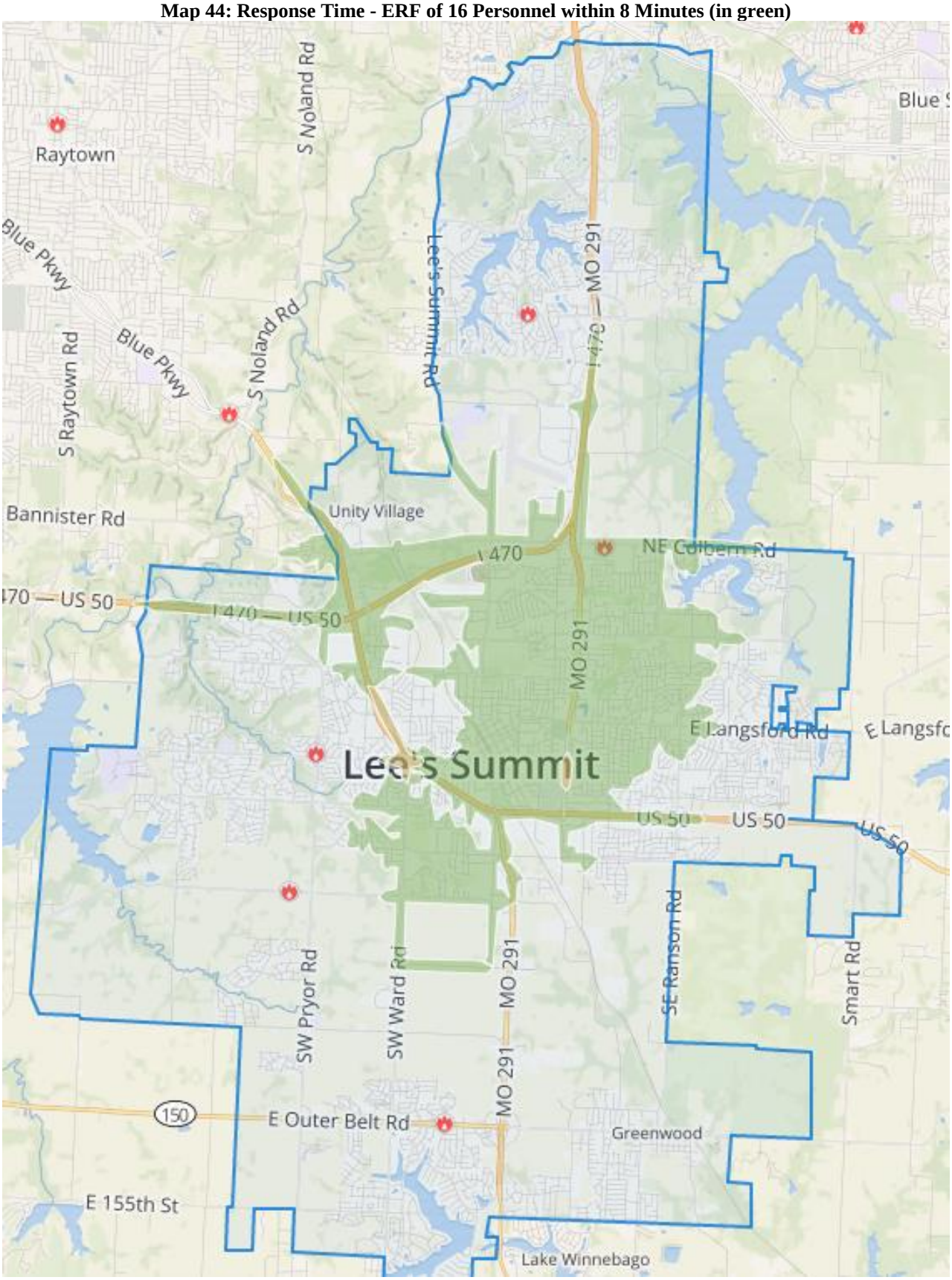
Concentration Travel Time

The fourth component collected as part of the total response time is the arrival of all the resources assigned to the incident, also known as the effective response force (ERF), which is referred to as concentration. This time begins when the first unit assigned is recorded en-route, until the last unit assigned arrives on-scene.

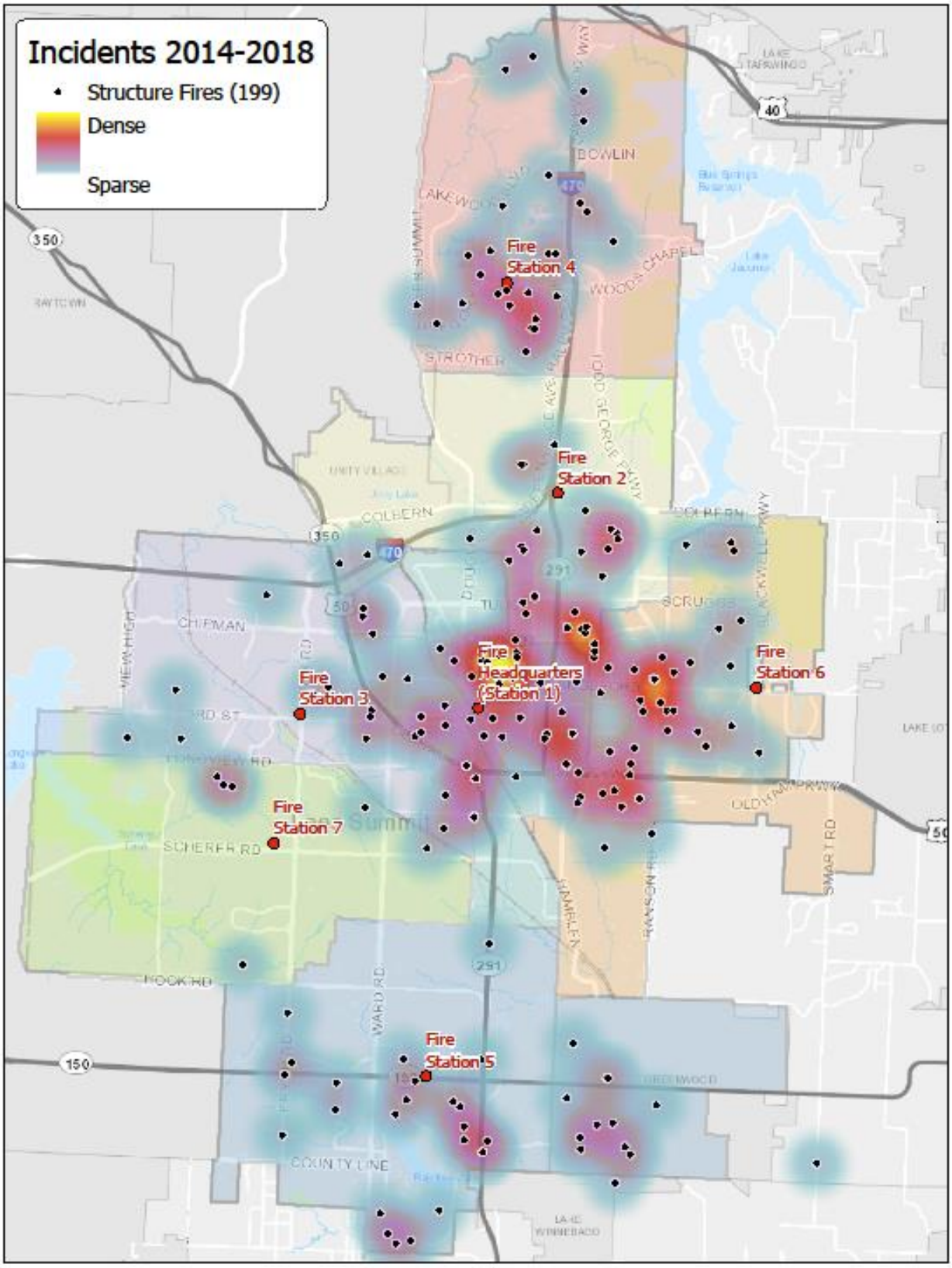
The same factors that affect distribution have an impact on concentration. Due to the departments' critical task analysis, there have been several changes made to ERF deployments in the development of this document and its predecessor. However, the following map indicates the departments' response performance challenges related to meeting the industry benchmarks for assembling an ERF as defined in NFPA 1710.

When responding to structure fires, the department must deploy from a minimum of four stations to a single location that is experiencing a fire event. The deployment for a structure fire in a single-family residence is three pumpers, one truck, two rescues, and two chief officers. Due to the distribution of fire stations in the city, the time it takes for these apparatus to arrive on scene exceeds our adopted response time benchmarks to any areas other than those shown in the graphic below.

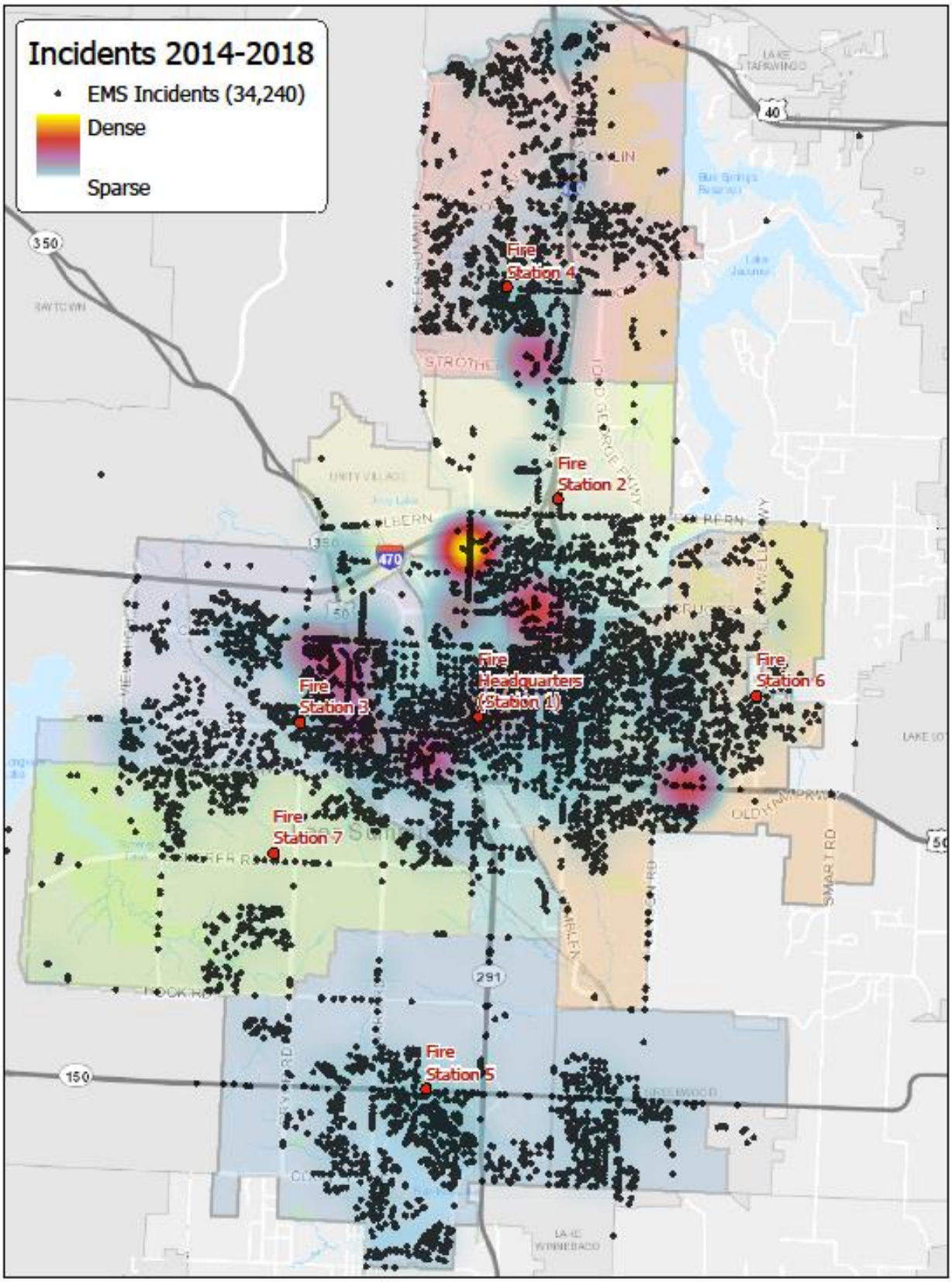
Map 44: Response Time - ERF of 16 Personnel within 8 Minutes (in green)



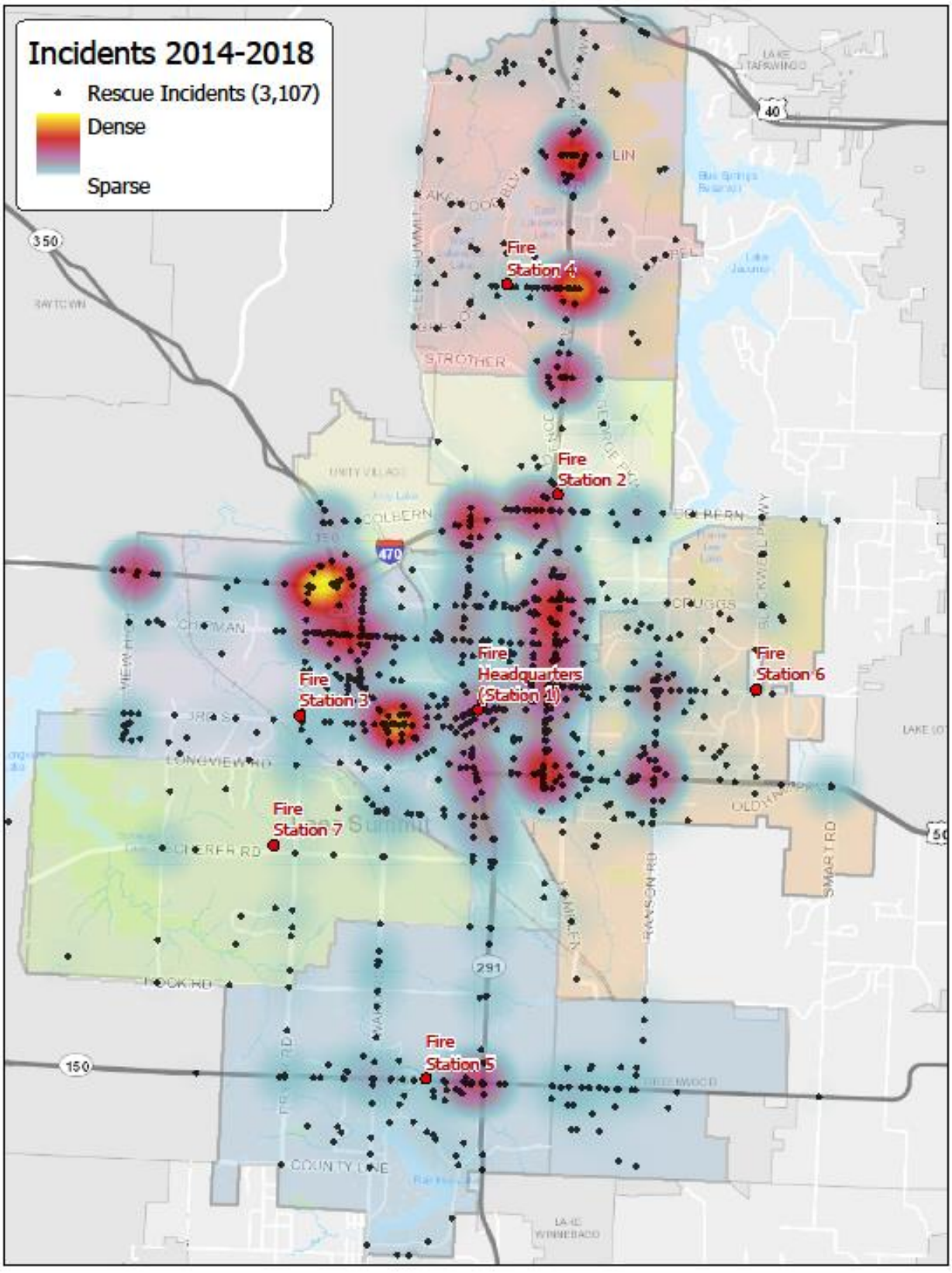
Map 45: Structure Fire Incidents (2014-2018)



Map 46: EMS Incidents (2014-2018)



Map 47: Rescue Incidents (2014-2018)



Map 48: HazMat Incidents (2014-2018)

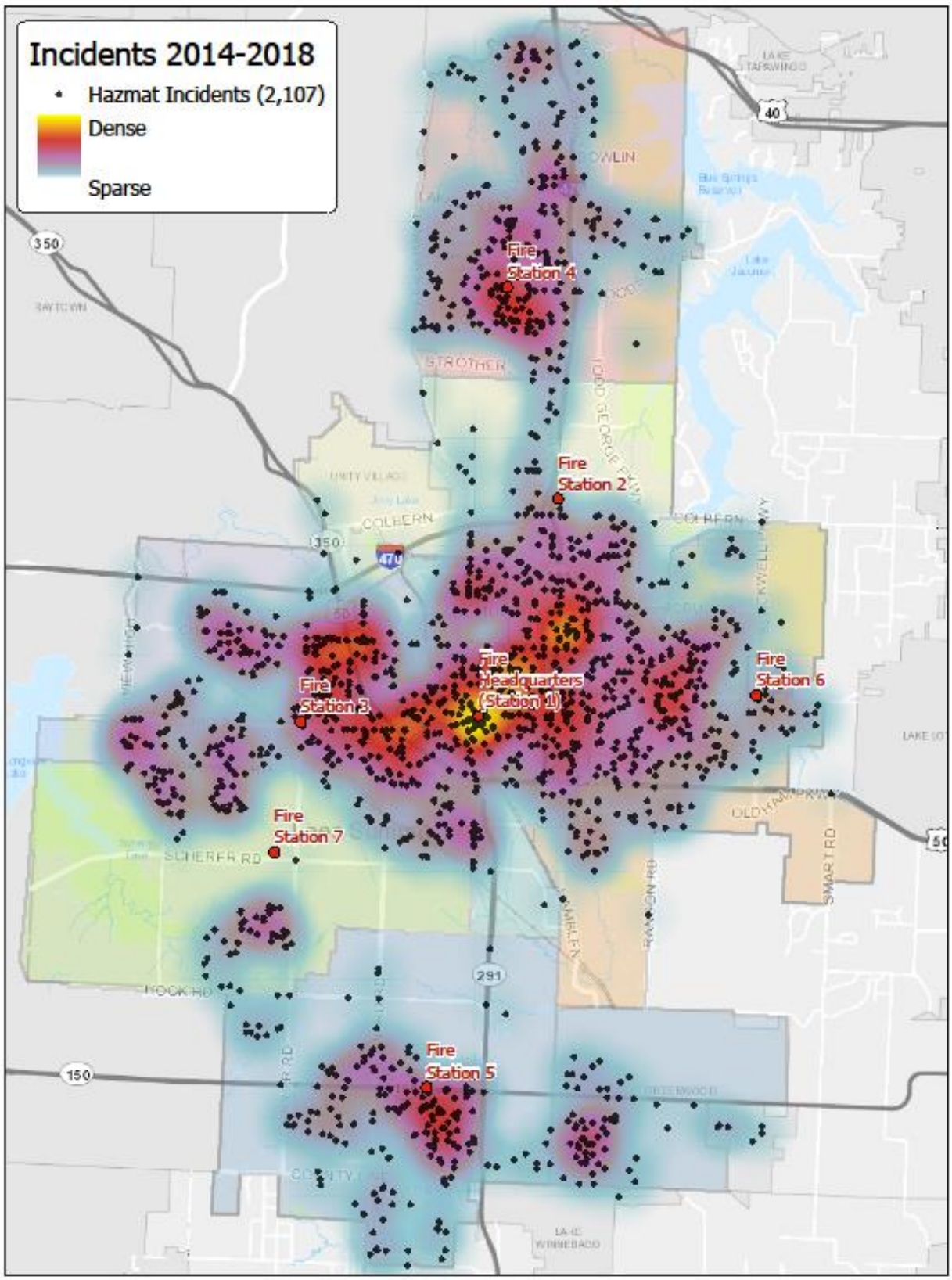


Chart 16: Operational Demand - Pumper 1 and Rescue 1 (2014-2018)

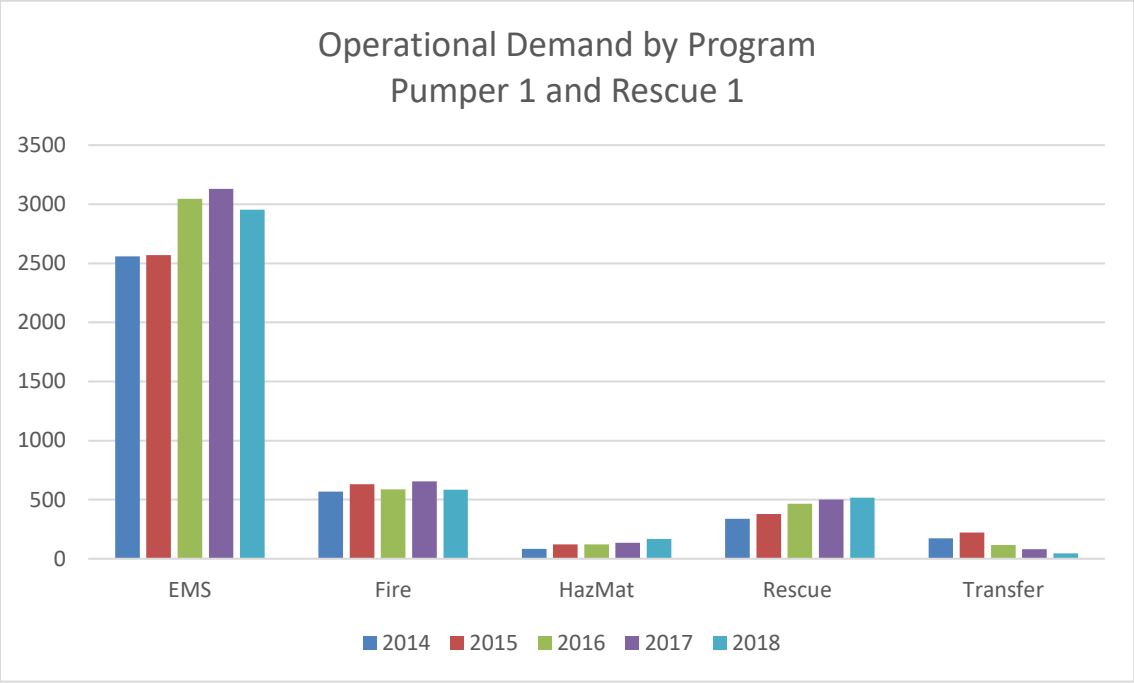


Chart 17: Operational Demand - Truck 2 and Rescue 2 (2014-2018)

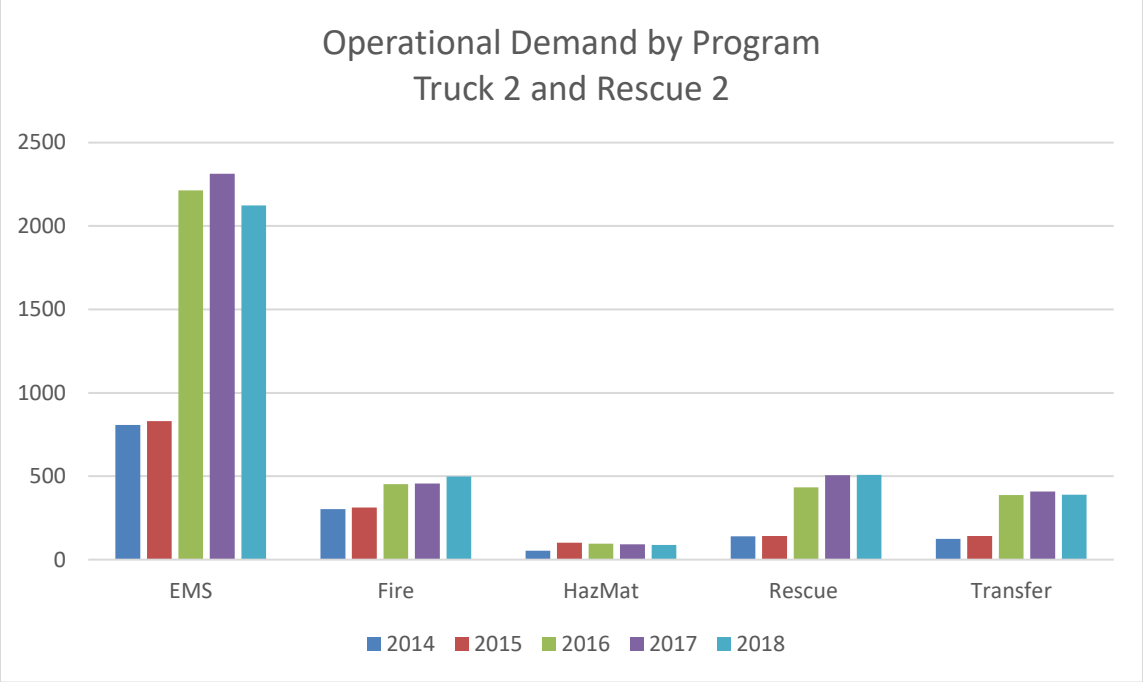


Chart 18: Operational Demand - Pumper 3 (2014-2018)

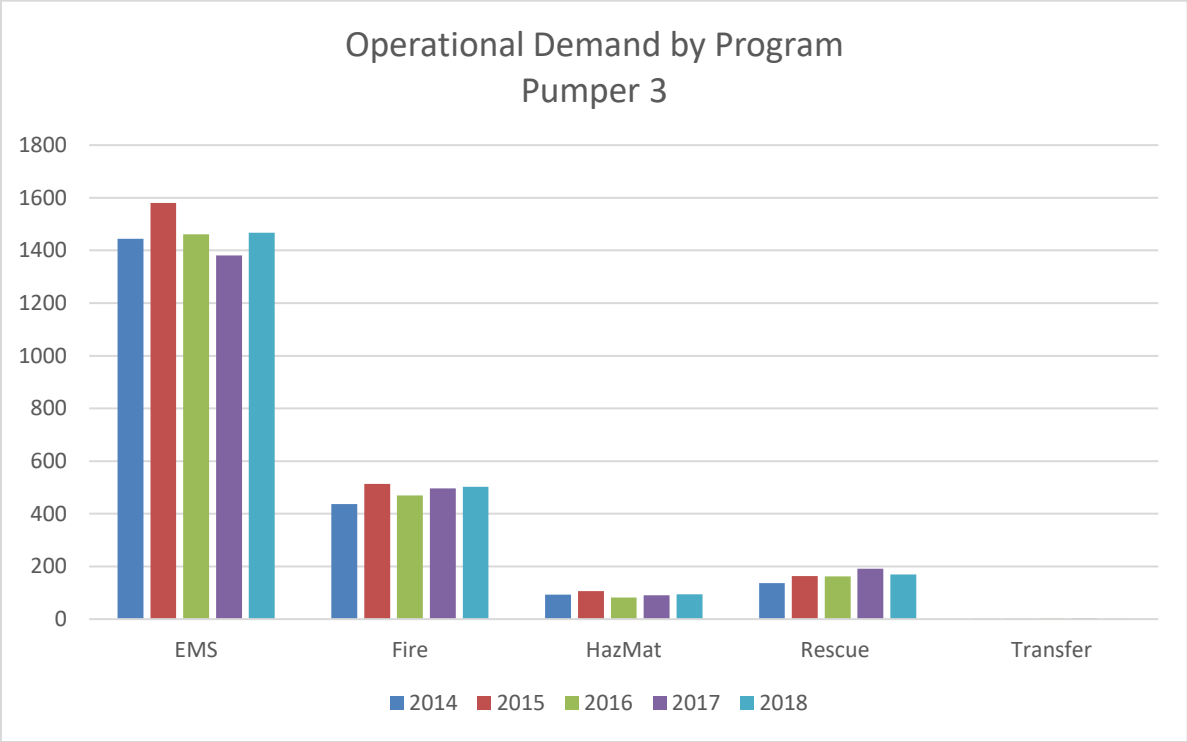


Chart 19: Operational Demand - Pumper 4 and Rescue 4 (2014-2018)

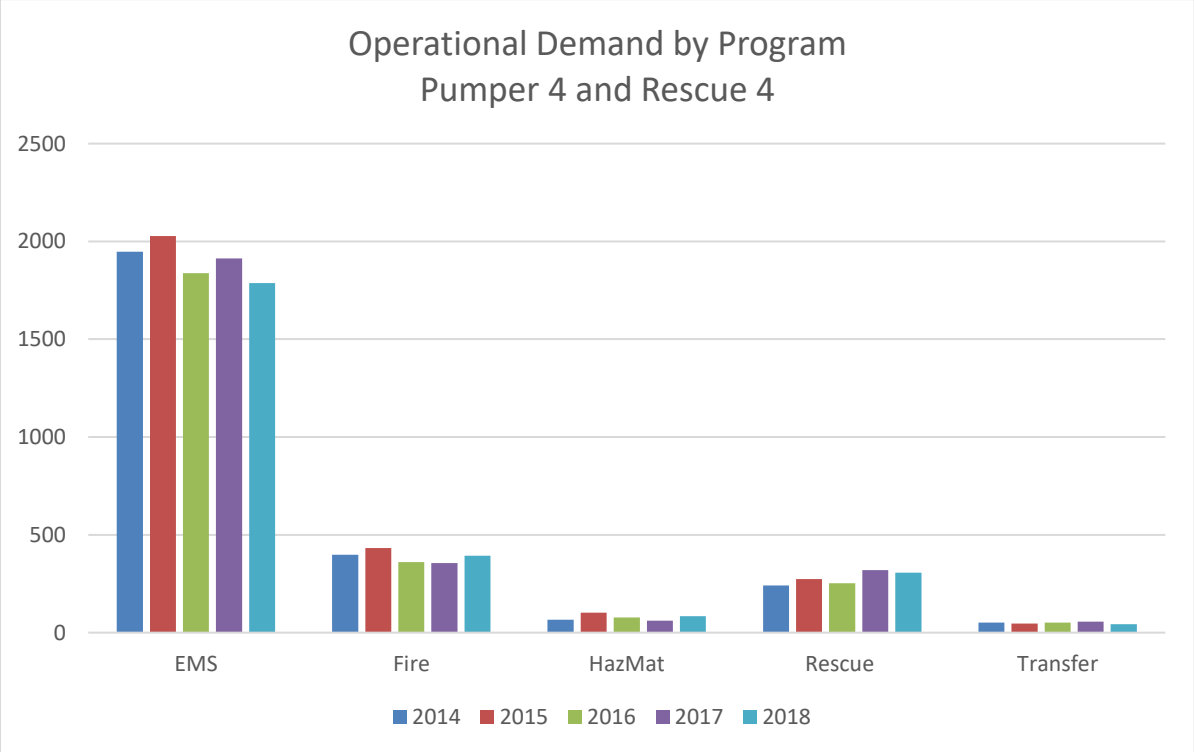


Chart 20: Operational Demand - Pumper 5 and Rescue 5 (2014-2018)

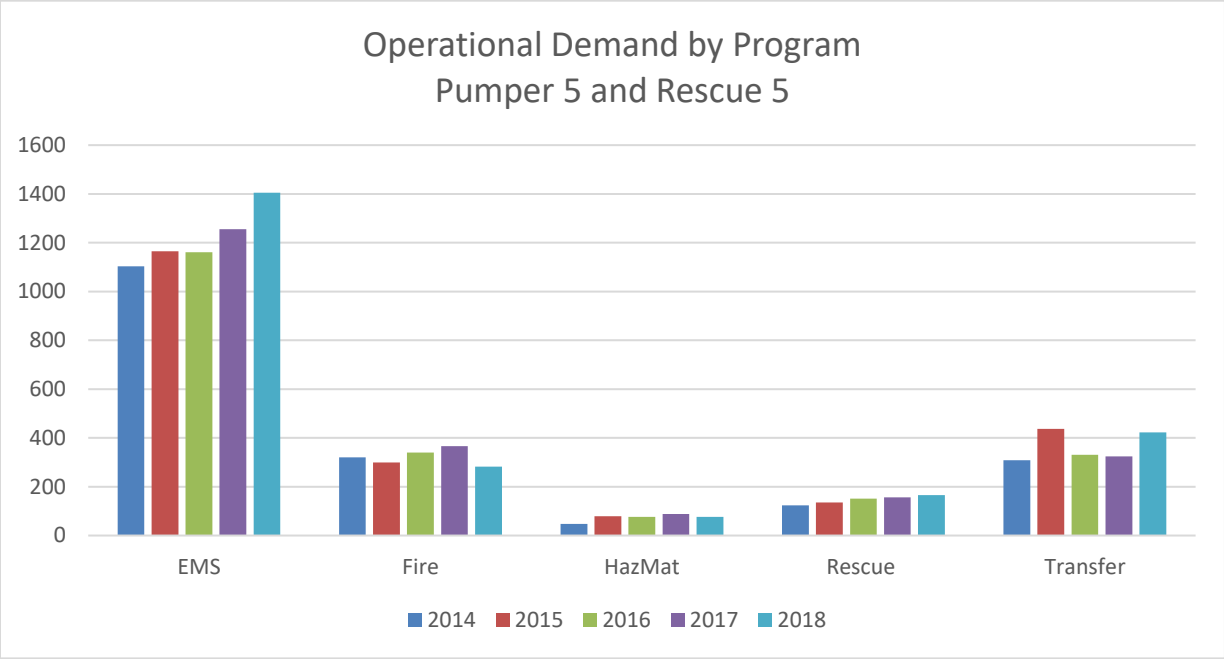


Chart 21: Operational Demand - Pumper 6 and Rescue 6 (2014-2018)

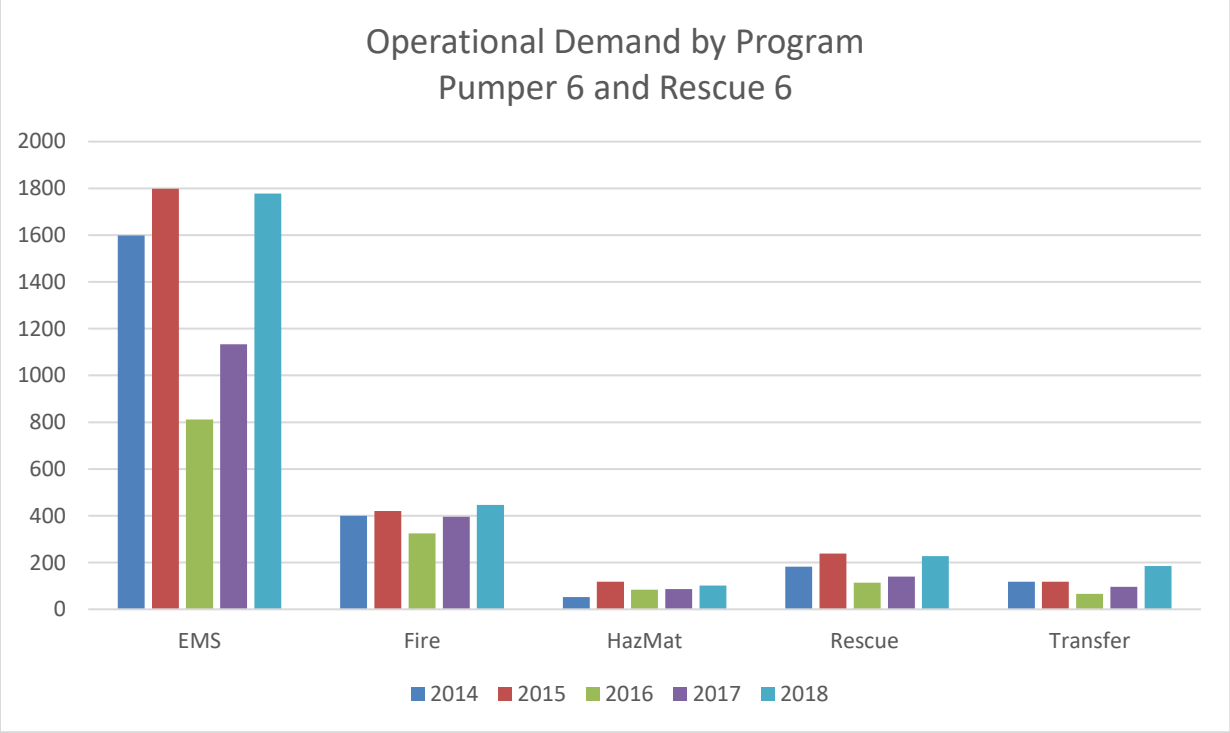


Chart 22: Operational Demand - Truck 7 and Rescue 7 (2014-2018)

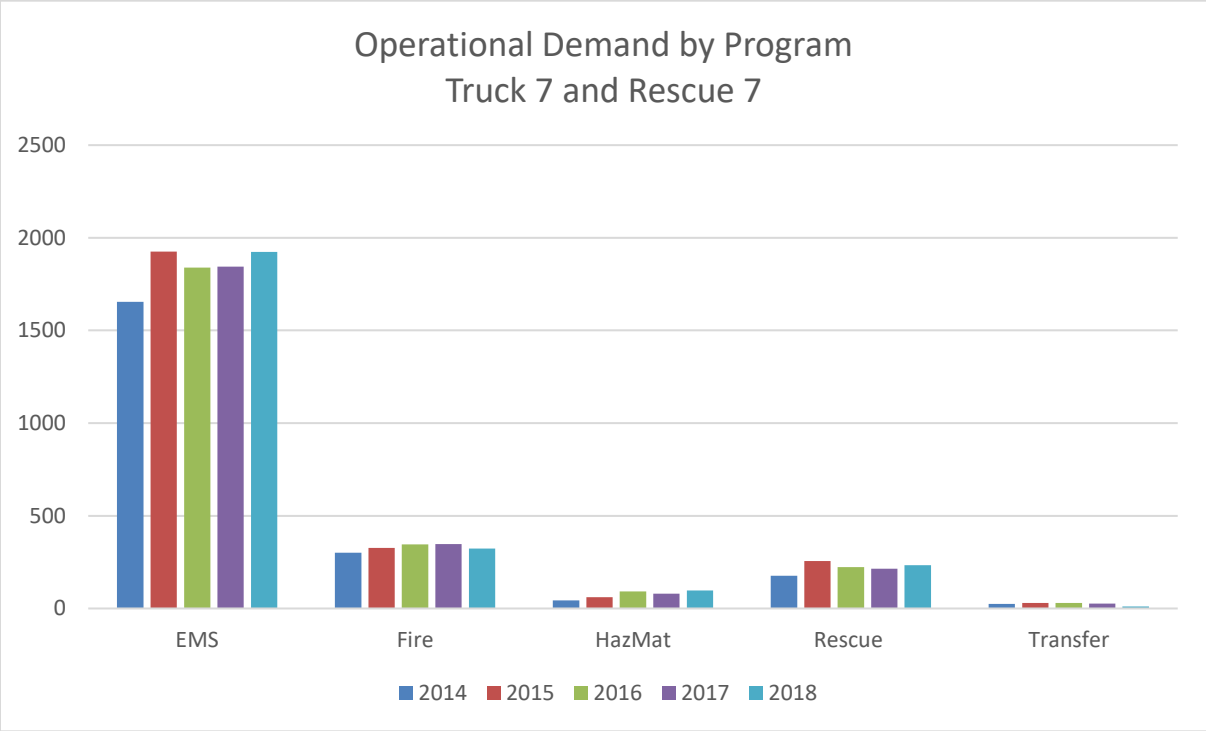


Chart 23: Operational Demand - Frontline Apparatus (2014-2018)

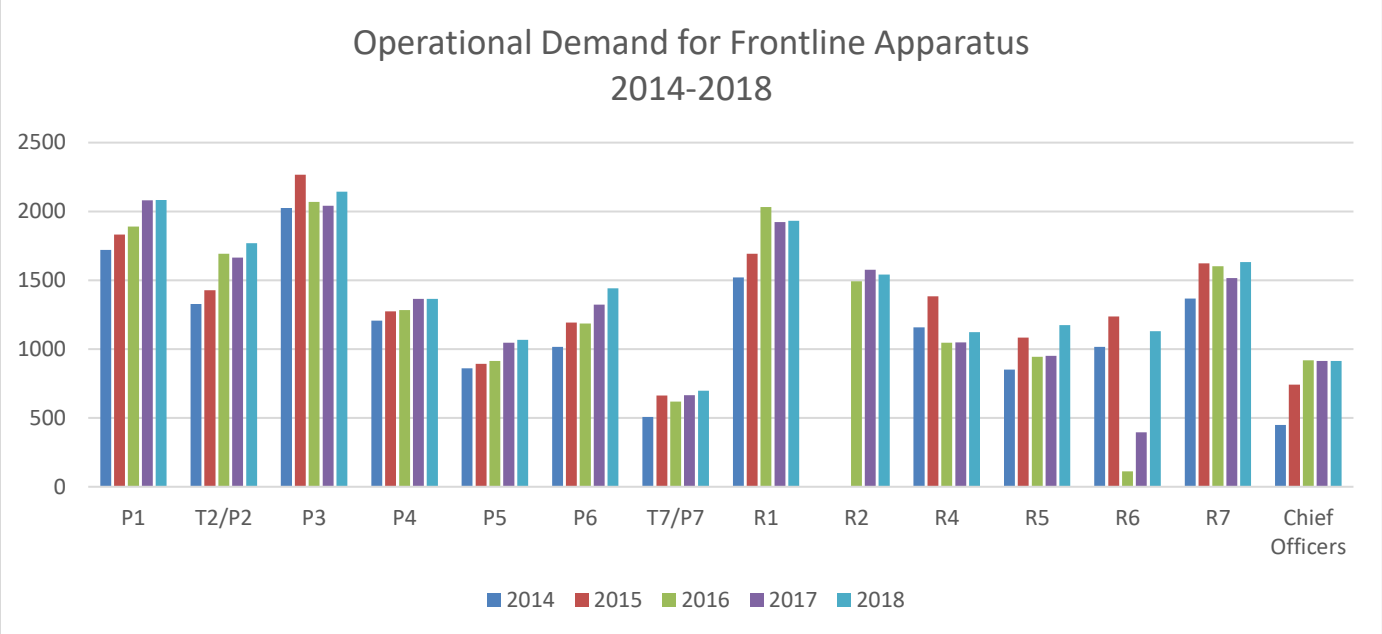
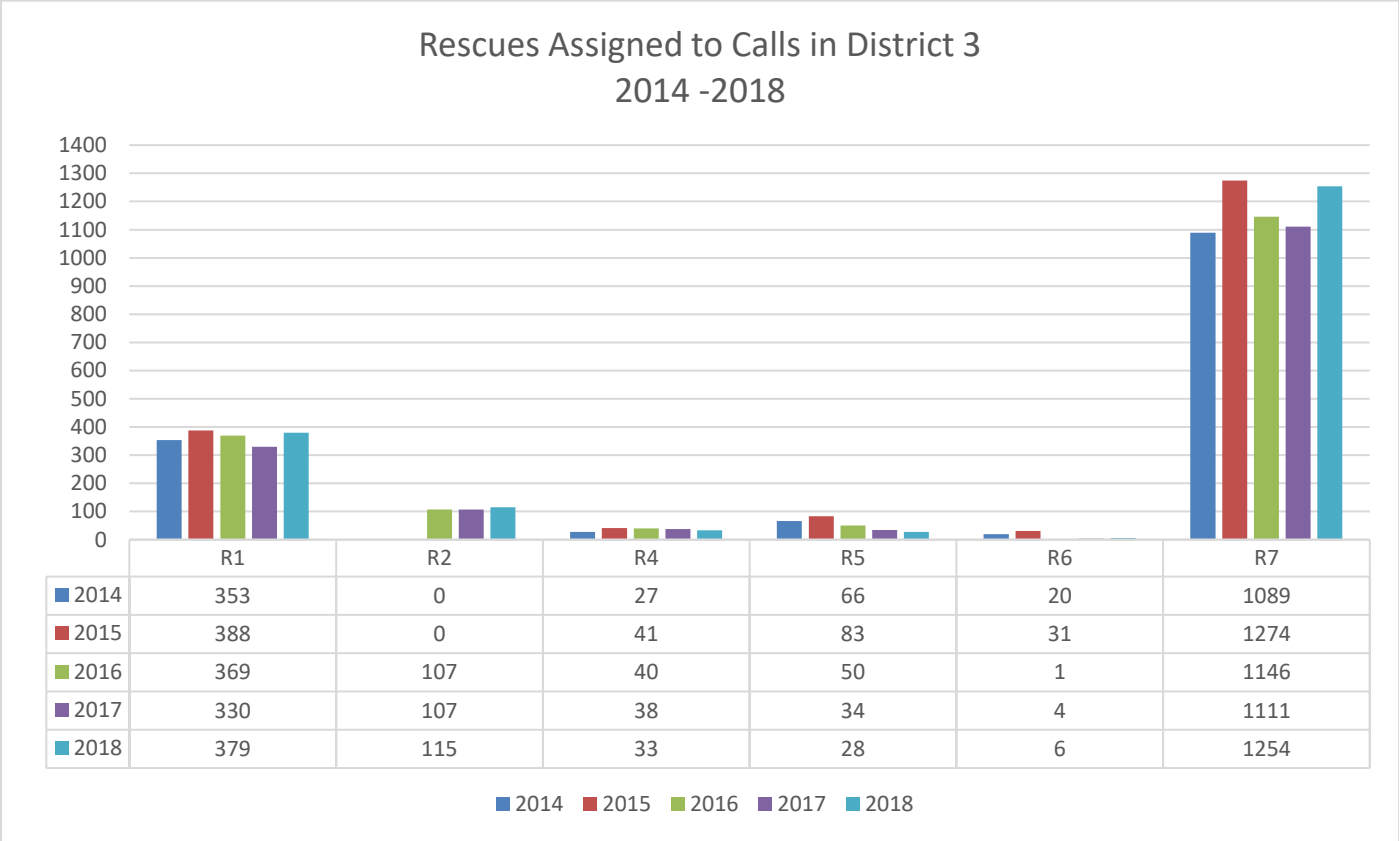
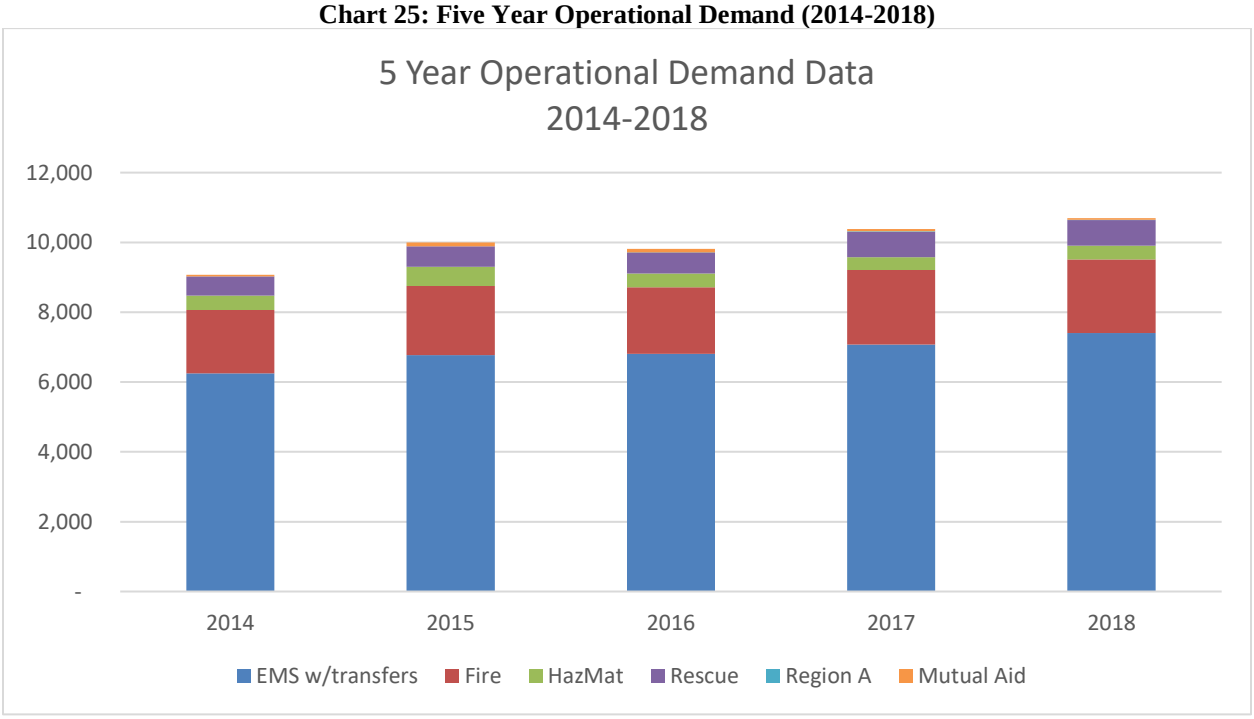


Chart 24: Rescues Assigned to Calls in District 3 (2014-2018)



	R1	R2	R4	R5	R6	R7
2014	353	0	27	66	20	1089
2015	388	0	41	83	31	1274
2016	369	107	40	50	1	1146
2017	330	107	38	34	4	1111
2018	379	115	33	28	6	1254

Chart 25: Five Year Operational Demand (2014-2018)



Reliability Factors

Reliability factors considered in the assessment of system performance include time, distance, and availability of the appropriate resources. Assessing the reliability of fire stations, accomplished through an evaluation of the ability of the station apparatus to respond to incidents within their district, provides insight into the capacity of the department to meet its mission.

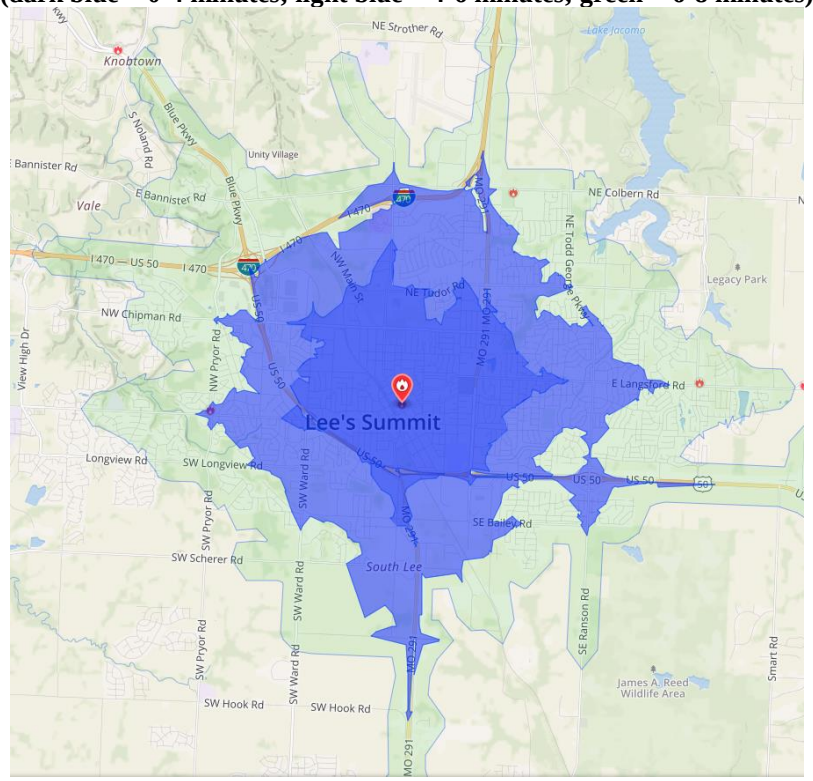
Included in this assessment is incident volume, incident type, and the number and percentage of times there are simultaneous or overlapping incidents that require another district apparatus to respond. Every emergency service organization periodically experiences simultaneous or overlapping incidents, commonly referred to as surges. The resource management strategies available to manage surge capacity for Lee's Summit are mutual aid agreements, limited emergency recall of personnel to fill specific apparatus needs, or multi-major recalls for all off-duty personnel.

Several responsibilities have a direct impact on the reliability or availability of fire department resources, including, but not limited to: operational incidents, training, and administrative duties, prevention, and education activities, and maintenance issues.

The following tables used five years of the department's historical Records Management System (RMS) data, from 2014-2018, to quantify two values: the number of times primary units responded to incidents within their district and the percentage of time primary units spent responding to emergency incidents within their district. The percentages do not necessarily reflect the percentage of time a unit was available within the city, but what percent of the time they responded to incidents within their district.

District 1

Map 49: District 1 Response Times
(dark blue = 0-4 minutes; light blue = 4-6 minutes; green = 6-8 minutes)



District 1 has a pumper and rescue assigned as primary response units. Both units deploy out of Station 1. The following table represents the number of times the primary units responded to incidents within District 1:

	2014	2015	2016	2017	2018	TOTAL
P1	87.1%	83.1%	84.0%	81.6%	82.6%	83.6%
R1	55.0%	60.0%	56.4%	56.2%	70.2%	59.7%

*R2 went in service in February of 2016, and R6 went into service in August 2017. Both changes had a direct impact on R1's reliability data.

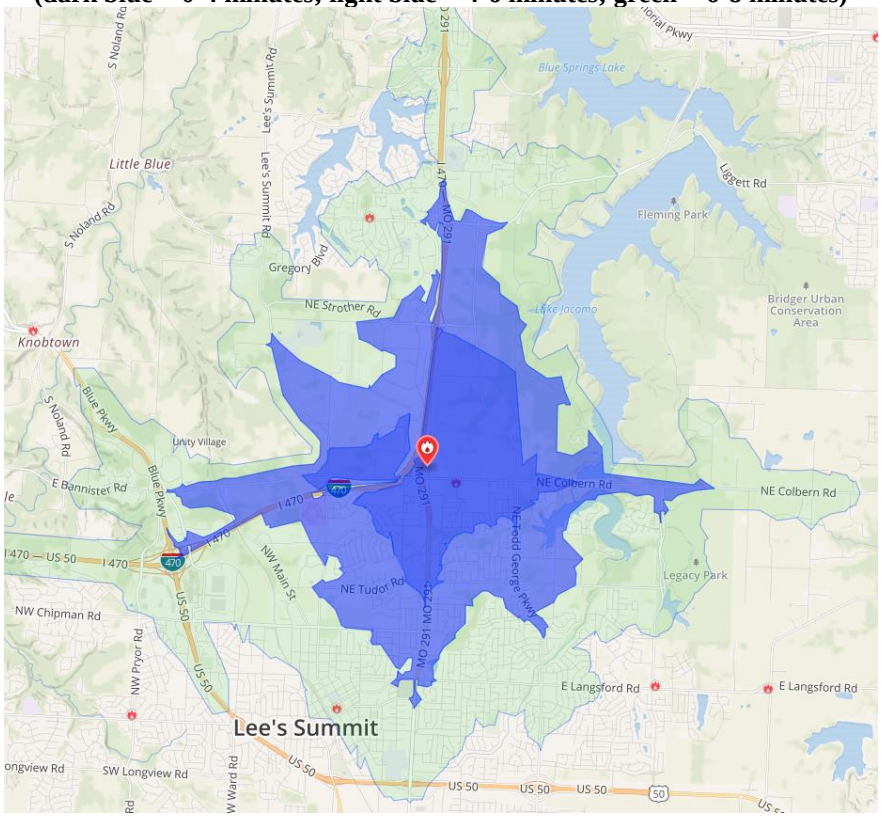
The percentage of time the primary units were committed to incidents within District 1 and the percentage of time these units were committed to incidents outside of District 1 are as follows:

	2014	2015	2016	2017	2018	TOTAL
P1 In district	80.9%	73.3%	72.2%	72.2%	75.3%	74.6%
P1 Out of district	19.1%	26.7%	27.8%	27.8%	24.7%	25.4%
R1 In district	48.1%	44.1%	43.1%	51.2%	61.5%	49.1%
R1 Out of district	51.9%	55.9%	56.9%	48.8%	38.5%	50.9%

*R2 went in service in February of 2016, and R6 went into service in August of 2017. Both changes had a direct impact on R1's reliability data.

District 2

Map 50: District 2 Response Times
(dark blue = 0-4 minutes; light blue = 4-6 minutes; green = 6-8 minutes)



District 2 has a ladder truck and rescue assigned as primary response units. Both units deploy out of Station 2. The following table represents the number of times the primary units responded to incidents within District 2:

	2014	2015	2016	2017	2018	TOTAL
T2	73.6%	66.6%	76.1%	72.9%	70.7%	72.0%
R2	NA	NA	47.9%	52.9%	58.4%	34.4%

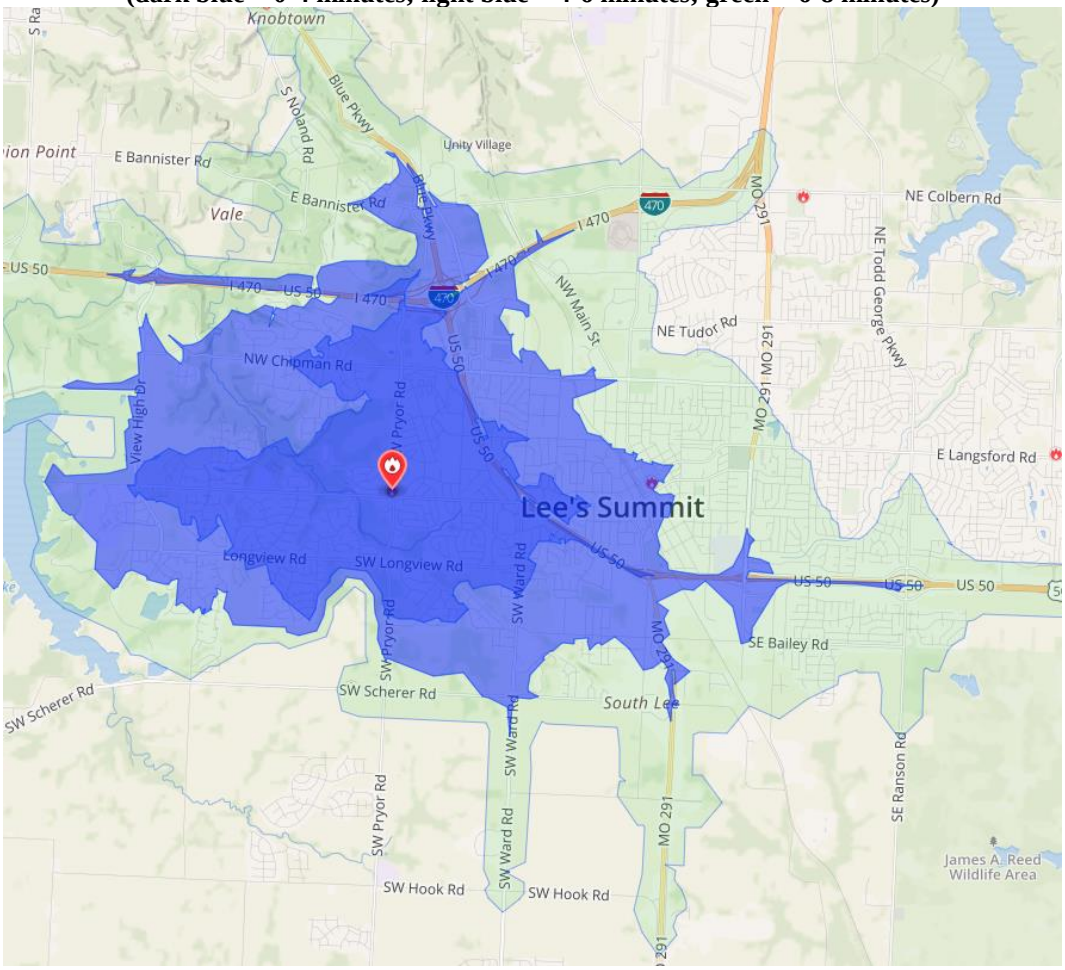
The percentage of time the primary units were committed to incidents within District 2 and the percentage of time these units were committed to incidents outside of District 2 are as follows:

	2014	2015	2016	2017	2018	TOTAL
T2 In district	77.7%	71.0%	78.1%	76.2%	74.0%	75.4%
T2 Out of district	22.3%	29.0%	21.9%	23.8%	26.0%	24.6%
R2 In district	NA	NA	64.0%	65.7%	77.2%	68.7%
R2 Out of district	NA	NA	36.0%	34.3%	22.8%	31.3%

*R2 went in service on February 1, 2016, and R6 went into service on August 1, 2017. Both changes had a direct impact on R2's reliability data.

District 3

Map 51: District 3 Response Times
(dark blue = 0-4 minutes; light blue = 4-6 minutes; green = 6-8 minutes)



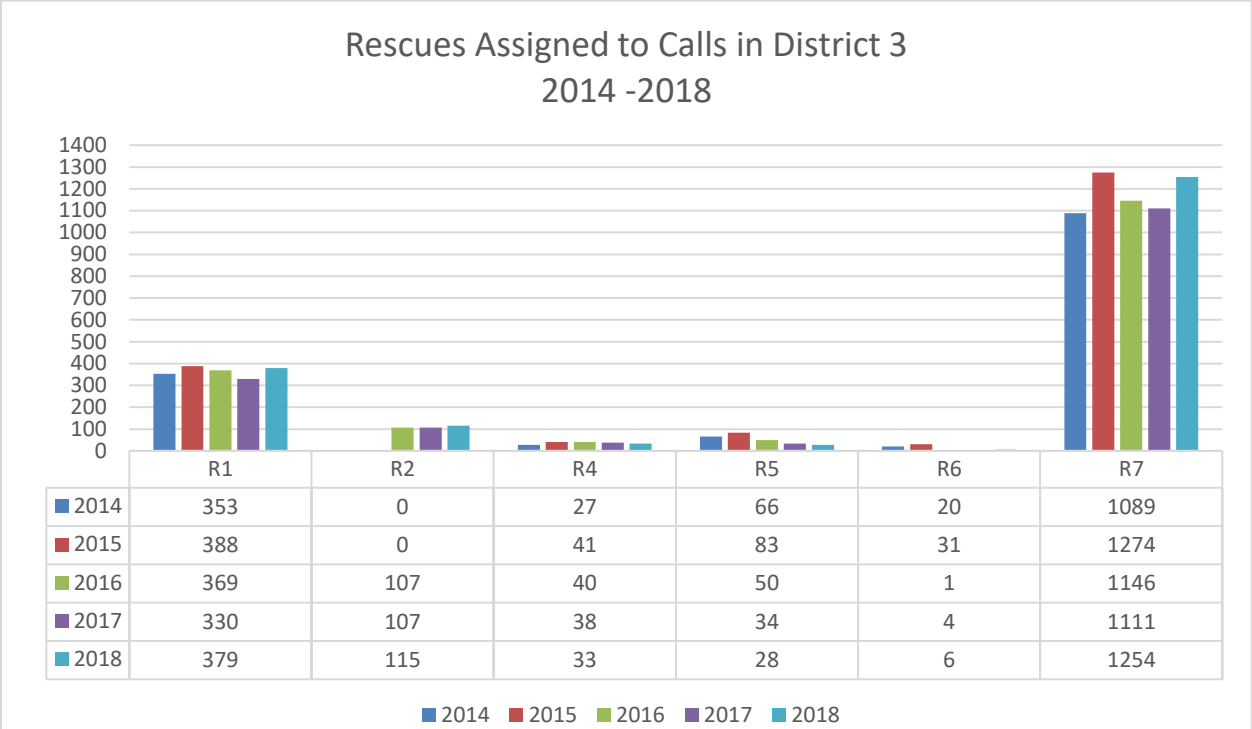
District 3 has a pumper and two rescues which split the district as primary response units. The pumper deploys out of Station 3. Rescue 7 and Rescue 1 are the two rescues which respond into District 3 but do not deploy from Station 3, instead, they are typically deployed from Stations 7 and 1 respectively. The following table represents the number of time Pumper 3 responded to incidents within District 3:

	2014	2015	2016	2017	2018	TOTAL
P3	86.3%	84.6%	84.4%	85.1%	84.1%	84.9%

The percentage of time the primary unit was committed to incidents within District 3 and the percentage of time the unit was committed to incidents outside of District 3 are as follows:

	2014	2015	2016	2017	2018	TOTAL
P3 In district	92.1%	88.0%	85.1%	87.4%	86.3%	87.7%
P3 Out of district	7.9%	12.0%	14.9%	12.8%	13.6%	12.3%

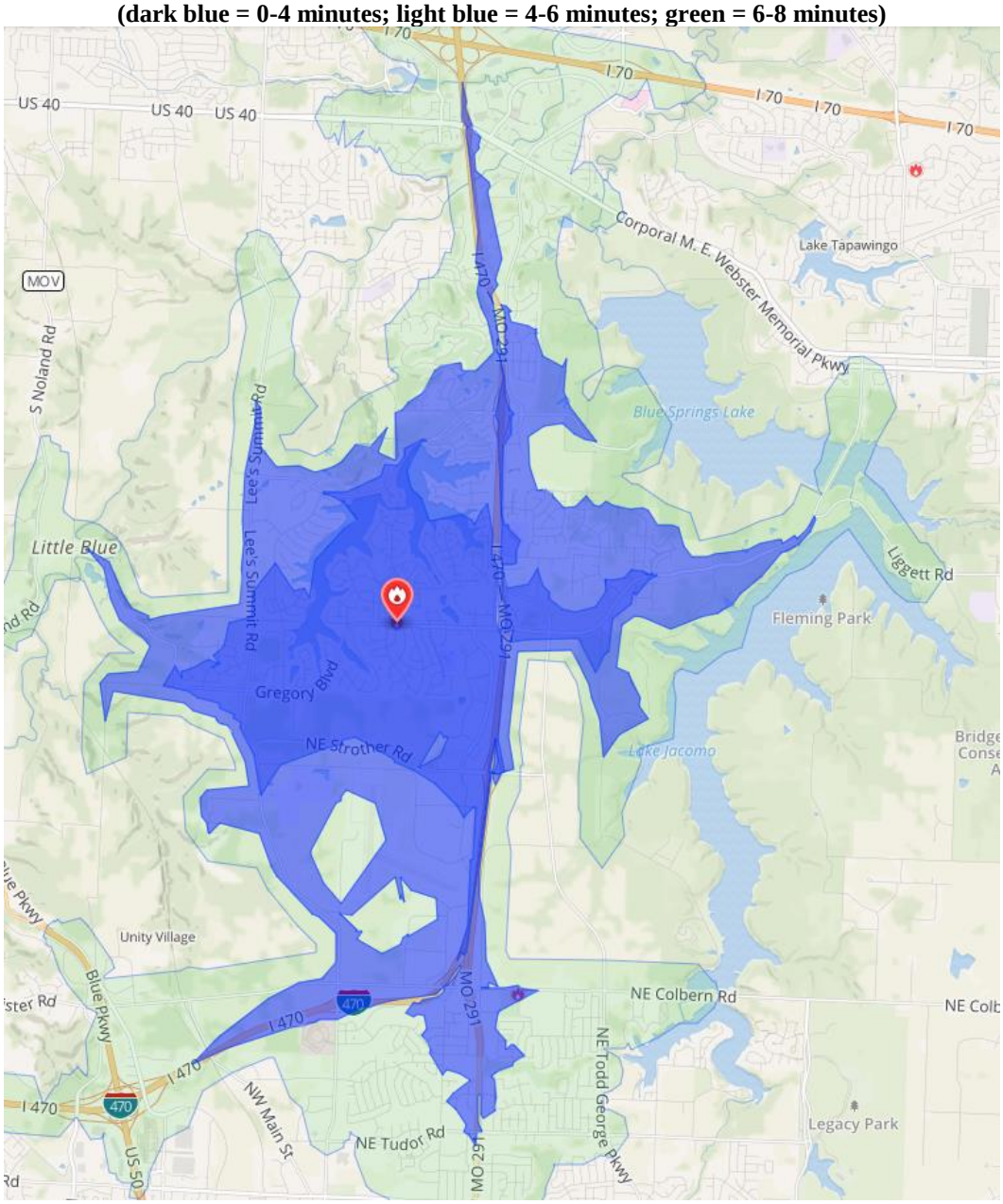
Chart 26: Rescues Assigned to Calls in District 3 (2014-2018)



	R1	R2	R4	R5	R6	R7
2014	353	0	27	66	20	1089
2015	388	0	41	83	31	1274
2016	369	107	40	50	1	1146
2017	330	107	38	34	4	1111
2018	379	115	33	28	6	1254

District 4

Map 52: District 4 Response Times
(dark blue = 0-4 minutes; light blue = 4-6 minutes; green = 6-8 minutes)



District 4 has a pumper and rescue assigned as primary response units. Both units deploy out of station 4. The following table represents the number of times the primary units responded to incidents within District 4:

	2014	2015	2016	2017	2018	TOTAL
P4	90.7%	87.5%	90.9%	89.2%	89.3%	89.5%
R4	56.9%	63.7%	66.2%	64.8%	75.4%	65.7%

COMMUNITY RISK ASSESSMENT-STANDARDS OF COVER

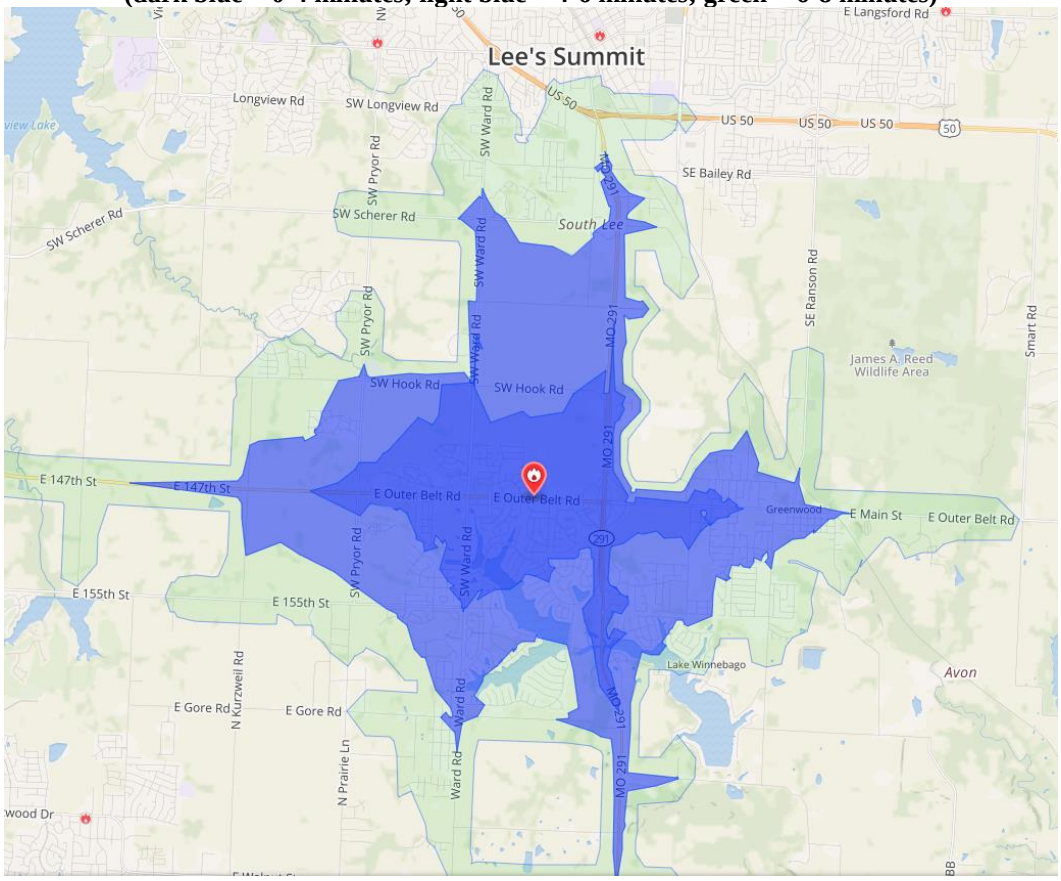
The percentage of time the primary units were committed to incidents within District 4 and the percentage of time these units were committed to incidents outside of District 4 are as follows:

	2014	2015	2016	2017	2018	TOTAL
P4 In district	91.3%	87.4%	81.1%	85.2%	87.4%	86.4%
P4 Out of district	8.7%	12.6%	18.9%	14.8%	12.6%	13.6%
R4 In district	53.8%	51.4%	68.3%	74.7%	78.9%	64.0%
R4 Out of district	46.2%	48.6%	31.7%	25.3%	21.1%	36.0%

*R2 went in service on February 1, 2016, and R6 went into service on August 1, 2017. Both changes had a direct impact on R4's reliability data.

District 5

Map 53: District 5 Response Times
(dark blue = 0-4 minutes; light blue = 4-6 minutes; green = 6-8 minutes)



District 5 has a pumper and rescue assigned as primary response units. Both units deploy out of Station 5. The following table represents the number of times the primary units responded to incidents within District 5:

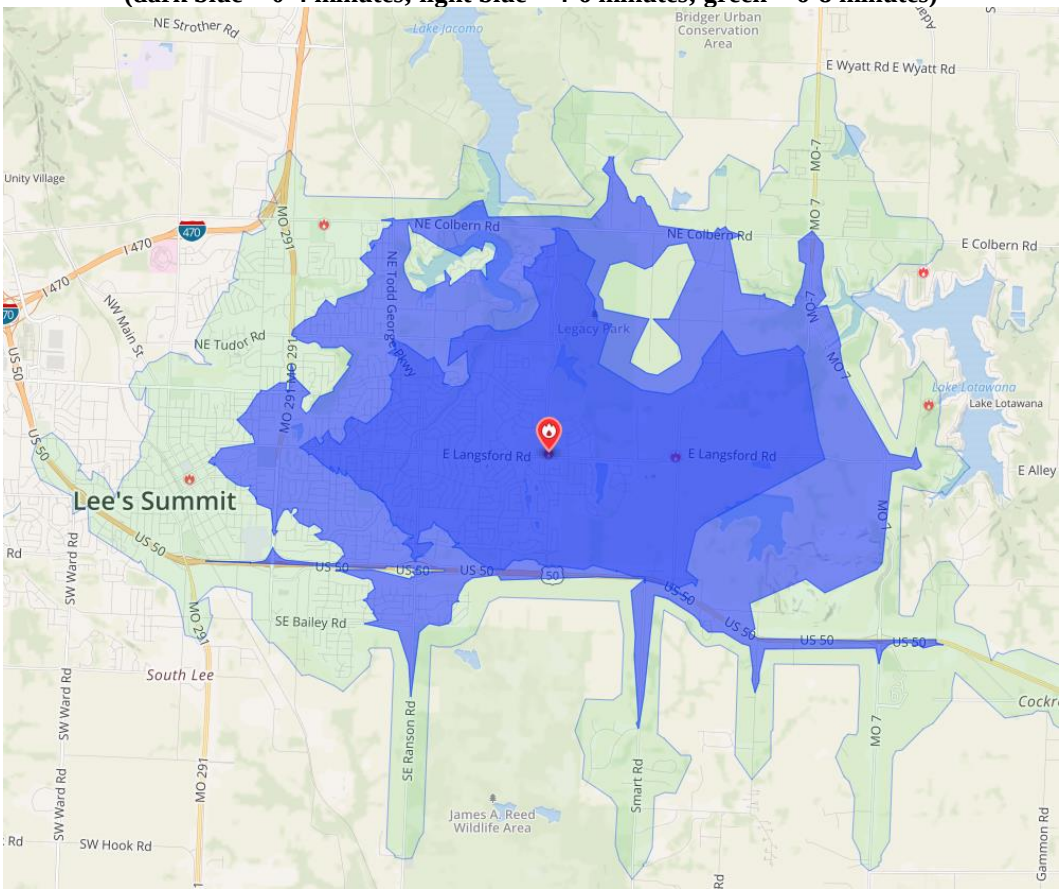
	2014	2015	2016	2017	2018	TOTAL
P5	93.1%	88.4%	87.0%	91.7%	91.0%	90.2%
R5	62.0%	64.4%	59.1%	62.1%	70.0%	63.8%

The percentage of time the primary units were committed to incidents within District 5 and the percentage of time these units were committed to incidents outside of District 5 are as follows:

	2014	2015	2016	2017	2018	TOTAL
P5 In district	95.1%	84.9%	85.6%	84.0%	89.7%	87.5%
P5 Out of district	4.9%	15.1%	14.4%	16.0%	10.3%	12.5%
R5 In district	40.5%	33.6%	41.8%	44.7%	41.6%	40.3%
R5 Out of district	59.5%	66.4%	58.2%	55.3%	58.4%	59.7%

District 6

Map 54: District 6 Response Times
(dark blue = 0-4 minutes; light blue = 4-6 minutes; green = 6-8 minutes)



District 6 has a pumper and rescue assigned as primary response units. Both units deploy out of Station 6. The following table represents the number of times the primary units responded to incidents within District 6:

	2014	2015	2016	2017	2018	TOTAL
P6	82.4%	79.8%	79.4%	79.2%	80.7%	80.2%
R6	56.2%	61.5%	4.6%	25.4%	68.5%	43.2%

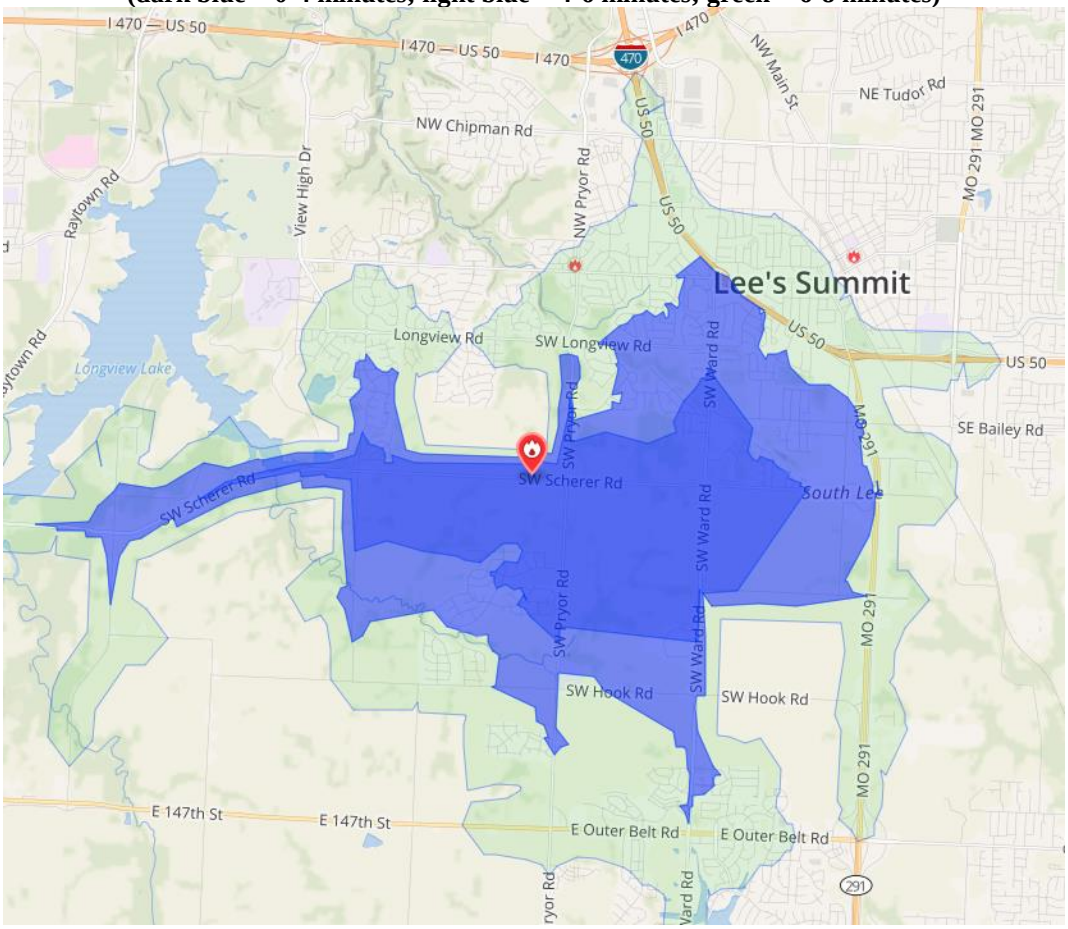
The percentage of time the primary units were committed to incidents within District 6 and the percentage of time these units were committed to incidents outside of District 6 are as follows:

	2014	2015	2016	2017	2018	TOTAL
P6 In district	83.7%	76.6%	73.8%	78.5%	78.2%	77.9%
P6 Out of district	16.3%	23.4%	26.2%	21.5%	21.8%	22.1%
R6 In district	48.6%	52.2%	43.0%	77.6%	77.2%	60.4%
R6 Out of district	51.4%	47.8%	57.0%	22.4%	22.8%	39.6%

*R2 went into service on February 1, 2016, and R6 went into service on August 1, 2017.

District 7

Map 55: District 7 Response Times
(dark blue = 0-4 minutes; light blue = 4-6 minutes; green = 6-8 minutes)



District 7 has a ladder truck and rescue assigned as primary response units. Both units deploy out of Station 7. The following table represents the number of times the primary units responded to incidents within District 7:

	2014	2015	2016	2017	2018	TOTAL
T7	91.4%	82.9%	84.8%	88.0%	88.7%	87.0%
R7	72.4%	61.7%	66.5%	62.2%	70.7%	66.3%

The percentage of time the primary units were committed to incidents within District 7 and the percentage of time these units were committed to incidents outside of District 7 are as follows:

	2014	2015	2016	2017	2018	TOTAL
T7 In district	40.7%	36.5%	42.6%	41.5%	40.7%	40.4%
T7 Out of district	59.3%	63.5%	57.4%	58.5%	59.3%	59.6%
R7 In district	10.2%	10.1%	12.4%	13.6%	13.1%	11.9%
R7 Out of district	89.8%	89.9%	87.6%	86.4%	86.9%	88.1%

Dataset Qualification

Total Response Time

This is the total time from receiving the call to arriving on the scene with the first unit and an ERF. This is calculated by adding several components of response performance. The sum of alarm handling, turn out and travel time. This is tracked for the travel time of the first arriving unit and the ERF. All data is aggregated by program type and risk level. The values documented in the performance tables are the performance at the 90th fractal. This value represents the actual response at the 90th percent of the responses.

Alarm Handling Time

This is the first component collected as a value contributing to the total response time. Alarm handling time begins when a call is received within the fire department communications center or Public Safety Answering Point (PSAP) until the emergency units are notified to deploy to an emergency.

In the City of Lee's Summit, the fire department communications center is a secondary PSAP and the police department is the primary PSAP. Currently, there is no process in place to collect the handling time between the primary and secondary PSAP.

Turnout Time

This is the second component collected as a value contributing to the total response time. Turnout time begins with the station notification tone from the communications center and ends when each resource begins driving and is recorded en-route via radio or in the mobile data terminal (MDT) of each unit.

Distribution Travel Time

This is the third component collected as part of the total response time. Distribution begins when the dispatched unit is recorded en-route via radio or in the MDT and ends when the unit is recorded on the scene in the MDT. The distribution travel time is the travel time of the first arriving resource to an incident. Not all resources are considered equal, as not all units dispatched can be considered associated with the distribution data, specifically with the programs of fire, rescue, and hazmat risk. As per guidance in the *CFAI Standards of Cover 6th Ed.*, the first arriving unit documented in the response performance data cannot be a chief officer, rather it is the first unit that can intercede in the emergency event.

Below are the rules for distribution data, specific to each service delivery program:

<u>Fire Incidents</u>

The first arriving unit documented in the response performance data cannot be a chief officer or an ambulance. The first arriving unit must be a pumper, ladder truck, or grass rig.

The reason for this distinction is that chief officers and rescues (ambulances) can establish command, safety, and medical support but cannot directly bring the mitigating effort to the event.

EMS Incidents

A rescue (ambulance), pumper, or ladder truck can count as the first arriving unit in the service program. Any of these resources that are deployed except a chief officer count as the first arriving unit.

The reason for this distinction is that chief officers can establish command, safety, and medical support but cannot directly bring the mitigating effort to the event.

HazMat Incidents

The first arriving unit documented in the response performance data cannot be a chief officer or a rescue (ambulance). The first arriving unit must be a pumper, ladder truck, or squad.

The reason for this distinction is that chief officers and rescues (ambulances) can establish command, safety, and medical support but cannot directly bring the mitigating effort to the event.

Rescue Incidents

The first arriving unit documented in the response performance data cannot be a chief officer or an ambulance. The first arriving unit must be a pumper or a ladder.

The reason for this distinction is that chief officers and rescues (ambulances) can establish command, safety, and medical support but cannot directly bring the mitigating effort to the event.

Outlier Qualifications

Outlier values are defined in Policy 44, Response Performance Compliance, Section I.3.g.i-iv. The department collects, interprets, and assesses all response time values to ensure compliance with emergency response performance goals. As a component of this process, the department has established outlier criteria that allow for the exclusion and review of data that falls outside of the department-defined time limits. This exclusion and review process has been established since response times exceeding these limits are considered errors in data and anomalous of the department's normal response threshold.

Time criteria and outlier limits for components of TRT

i. Handling
    1. Lower limit: 00:00:00 (0 seconds)
    2. Upper limit: 00:10:00 (10 minutes)

ii. Turnout
    1. Lower limit: 00:00:00 (0 seconds)
    2. Upper limit: 00:10:00 (10 minutes)

iii. Travel
    1. Lower limit: 00:00:00 (0 seconds)
    2. Upper limit: 01:00:00 (1 hour)

iv. Response
    1. Lower limit: 00:00:00 (0 seconds)
    2. Upper limit: 01:00:00 (1 hour)

CPSE determines that risk classifications and categories that had fewer than 10 incidents in a reporting period be excluded as those datasets are not statistically relevant.

Concentration Travel Time

The fourth component collected as part of the total response time is the arrival of all the resources assigned to the incident, also known as the ERF, which is referred to as concentration. This time begins when the first unit is recorded as en-route and ends when the last unit associated with the ERF is recorded on-scene.

Composition of the ERF is relative to the risk level and its critical task analysis, as documented in Standard Operating Guideline (SOG) 14.

The same factors that affect distribution have an impact on concentration. Prior to the accreditation model, planning processes were not focused on the ERF but on the arrival of the first unit. Current strategic planning involves elements of distribution, concentration, and reliability as considerations.

Baseline Performance Tables

Baseline Performance Tables – unqualified data (2014-August 2, 2015)

The following baseline tables show response performance in each program category and risk level classification. On August 3, 2015, the department initiated several response improvement strategies that have affected LSFD's response tables for this document.

One change of note was the inclusion of a response performance flag system within the RMS to enhance the emergency response queries. In response to documentation challenges, the department developed two record flags designed to differentiate between emergency and non-emergency response deployments that qualified for ERF concentration specifically by definition. Prior to the development of these flags, all data was included

in the response data sets. Including units that may have been reduced to a non-emergency response, or units that may have not responded emergency to the incident.

The most significant change included a new deployment model with different resources in several risk levels, which would skew the performances data shown previously. In response to these changes, in each performance table, all 2014 data and all data prior to August 3, 2015, has been excluded.

Baseline Performance Tables – qualified data (August 3, 2015-2018)

The final factor affecting the 2015 data included in these qualified tables was our transition from metro-urban, suburban, and rural population qualifiers into a single category: urban. These identifiers each represent specific response time benchmarks based on population density. In 2016, the department adopted the strictest interpretation of NFPA 1710 by merging all responses, regardless of the population, into the urban response time benchmarks. This decision, influenced by the community expectations identified in the department's 2013 and 2018 strategic plans, reflects the department's commitment to the community.

Low-Risk Fire Suppression 90th Percentile Times Baseline Performance			2015 - 2018	2018	2017	2016	2015	Target (Agency Benchmark)
Alarm Handling	Pick-up to Dispatch	Urban	01:26	01:11	01:26	01:28	01:27	01:00
Turnout Time	Turnout Time 1st Unit	Urban	02:13	02:09	02:04	02:19	02:12	01:20
Travel Time	Travel Time 1st Unit **Distribution**	Urban	06:41	06:30	07:08	06:21	06:10	04:00
	Travel Time ERF **Concentration**	Urban	06:41	06:30	07:08	06:21	06:10	04:00
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	09:12	09:00	09:48	08:56	09:03	06:20
			n=1356	n=375	n=403	n=375	n=203	
	Total Response Time ERF **Concentration**	Urban	09:12	09:00	09:48	08:56	09:03	06:20
			n=1356	n=375	n=403	n=375	n=203	

Moderate Risk Fire Suppression 90th Percentile Times Baseline Performance			2015 - 2018	2018	2017	2016	2015	Target (Agency Benchmark)
Alarm Handling	Pick-up to Dispatch	Urban	01:22	01:18	01:22	01:38	01:22	01:00
Turnout Time	Turnout Time 1st Unit	Urban	02:06	02:17	02:08	01:51	02:03	01:20
Travel Time	Travel Time 1st Unit **Distribution**	Urban	05:21	04:58	06:08	05:18	06:03	04:00
	Travel Time ERF **Concentration**	Urban	13:57	14:28	11:46	13:57	16:10	08:00
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	08:37	08:12	09:36	08:37	08:03	06:20
			n=175	n=57	n=49	n=52	n=17	
	Total Response Time ERF **Concentration**	Urban	16:10	17:00	14:28	17:00	18:20	10:20
			n=120	n=50	n=36	n=28	n=6	

High-Risk Fire Suppression 90th Percentile Times Baseline Performance			2015 - 2018	2018	2017	2016	2015	Target (Agency Benchmark)
Alarm Handling	Pick-up to Dispatch	Urban	01:34	01:23	01:33	01:42	01:42	01:00
Turnout Time	Turnout Time 1st Unit	Urban	01:59	01:53	01:54	02:02	02:12	01:20
Travel Time	Travel Time 1st Unit **Distribution**	Urban	04:58	04:53	05:03	05:06	04:23	04:00
	Travel Time ERF **Concentration**	Urban	14:56	17:10	13:11	14:56	14:20	08:00
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	08:09	08:03	08:38	08:15	07:24	06:20
			n=211	n=53	n=55	n=80	n=23	
	Total Response Time ERF **Concentration**	Urban	19:22	21:03	17:02	22:38	18:25	10:20
			n=102	n=32	n=30	n=29	n=11	

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Low-Risk EMS 90th Percentile Times Baseline Performance			2015 - 2018	2018	2017	2016	2015	Target (Agency Benchmark)
Alarm Handling	Pick-up to Dispatch	Urban	00:55	00:52	00:53	00:57	01:03	01:00
Turnout Time	Turnout Time 1st Unit	Urban	01:58	01:52	01:53	02:06	02:07	01:00
Travel Time	Travel Time 1st Unit **Distribution**	Urban	05:35	05:29	05:43	05:35	05:28	04:00
	Travel Time ERF **Concentration**	Urban	08:01	07:40	07:59	08:28	07:49	08:00
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	07:41	07:30	07:43	07:49	07:46	06:00
			n=18980	n=5755	n=5602	n=5395	n=2228	
	Total Response Time ERF **Concentration**	Urban	10:21	09:48	10:14	10:56	10:16	10:00
			n=16418	n=5375	n=4667	n=4555	n=1821	

Moderate Risk EMS 90th Percentile Times Baseline Performance			2015 - 2018	2018	2017	2016	2015	Target (Agency Benchmark)
Alarm Handling	Pick-up to Dispatch	Urban	00:58	00:54	00:53	01:02	01:09	01:00
Turnout Time	Turnout Time 1st Unit	Urban	01:50	01:47	01:46	01:54	02:06	01:00
Travel Time	Travel Time 1st Unit **Distribution**	Urban	05:04	04:53	05:32	04:48	04:55	04:00
	Travel Time ERF **Concentration**	Urban	10:57	10:57	12:55	10:44	10:09	08:00
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	07:09	06:54	07:23	07:26	07:14	06:00
			n=421	n=128	n=133	n=121	n=39	
	Total Response Time ERF **Concentration**	Urban	17:19	17:22	18:23	15:23	13:48	10:00
			n=273	n=84	n=84	n=79	n=26	

*No High or Maximum Risk EMS events occurred from August 3, 2015-2018.

Low-Risk Technical Rescue 90th Percentile Times Baseline Performance			2015 - 2018	2018	2017	2016	2015	Target (Agency Benchmark)
Alarm Handling	Pick-up to Dispatch	Urban	01:31	01:19	01:29	01:43	01:36	01:00
Turnout Time	Turnout Time 1st Unit	Urban	02:05	02:04	02:04	02:07	02:09	01:20
Travel Time	Travel Time 1st Unit **Distribution**	Urban	06:15	06:09	06:44	06:07	06:01	04:00
	Travel Time ERF **Concentration**	Urban	08:50	09:06	08:50	08:10	08:46	08:00
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	09:19	09:03	09:29	09:09	09:12	06:20
			n=750	n=212	n=234	n=222	n=82	
	Total Response Time ERF **Concentration**	Urban	12:03	12:02	12:49	11:13	11:56	10:20
			n=774	n=271	n=245	n=194	n=64	

Moderate Risk Technical Rescue 90th Percentile Times Baseline Performance			2015 - 2018	2018	2017	2016	2015	Target (Agency Benchmark)
Alarm Handling	Pick-up to Dispatch	Urban	01:42	01:34	01:39	01:55	01:40	01:00
Turnout Time	Turnout Time 1st Unit	Urban	01:52	01:43	01:52	01:58	01:56	01:20
Travel Time	Travel Time 1st Unit **Distribution**	Urban	05:53	05:10	06:16	06:02	05:53	04:00
	Travel Time ERF **Concentration**	Urban	15:02	15:59	17:27	15:02	11:54	08:00
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	08:57	08:12	09:20	09:11	08:38	06:20
			n=401	n=108	n=92	n=119	n=82	
	Total Response Time ERF **Concentration**	Urban	19:02	18:49	21:27	18:47	20:52	10:20
			n=233	n=90	n=57	n=56	n=30	

Low-Risk Hazardous Conditions 90th Percentile Times Baseline Performance			2015 - 2018	2018	2017	2016	2015	Target (Agency Benchmark)
Alarm Handling	Pick-up to Dispatch	Urban	01:44	01:12	01:33	01:50	02:58	01:00
Turnout Time	Turnout Time 1st Unit	Urban	01:57	01:57	02:02	01:54	03:17	01:20
Travel Time	Travel Time 1st Unit **Distribution**	Urban	06:28	07:17	06:28	05:51	06:25	04:00
	Travel Time ERF **Concentration**	Urban	06:28	07:17	06:28	05:51	06:25	04:00
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	09:01	10:25	08:41	07:21	10:51	06:20
			n=49	n=18	n=13	n=11	n=7	
	Total Response Time ERF **Concentration**	Urban	09:01	10:25	08:41	07:21	10:51	06:20
			n=49	n=18	n=13	n=11	n=7	

Moderate Risk Hazardous Conditions 90th Percentile Times Baseline Performance			2015 - 2018	2018	2017	2016	2015	Target (Agency Benchmark)
Alarm Handling	Pick-up to Dispatch	Urban	01:15	01:12	01:26	01:10	01:18	01:00
Turnout Time	Turnout Time 1st Unit	Urban	01:54	01:54	01:45	02:04	01:55	01:20
Travel Time	Travel Time 1st Unit **Distribution**	Urban	05:23	04:58	06:33	05:26	06:33	04:00
	Travel Time ERF **Concentration**	Urban	11:02	11:12	10:43	10:13	11:06	08:00
Total Response Time	Total Response Time 1st Unit on Scene **Distribution**	Urban	08:13	07:18	09:01	07:51	08:46	06:20
			n=252	n=84	n=68	n=72	n=28	
	Total Response Time ERF **Concentration**	Urban	13:59	14:33	13:39	12:39	15:09	10:20
			n=174	n=76	n=34	n=39	n=25	

I. Evaluation of Service Delivery

Performance Objectives – Benchmarks

Benchmarking is a process for obtaining a measure, or benchmark. The term benchmark refers to the process of comparing an organization's performance to some defined standard. Simply put, benchmarks represent the desired performance.

Specific to emergency response time performance, the fire service has historically utilized the National Fire Protection Association (NFPA) standards, as they define industry best practices. In 2015, the department and authority having jurisdiction (AHJ) adopted the response performance standards defined in NFPA 1710 as the benchmark for response performance.

Fire Suppression Services Program

Distribution:

For 90 percent of all fire suppression incidents, the total response time for the arrival of the first due unit, staffed with 2 firefighters and 1 officer, shall be 6 minutes and 20 seconds in all areas The first-due unit shall be capable of: providing 500 gallons of water and 1,500 gallons per minute (GPM) pumping capacity; initiating command; requesting additional resources; establishing and advancing an attack line flowing a minimum of 150 gpm; establishing an uninterrupted water supply; containing the fire; rescuing at-risk victims; and performing salvage operations. These operations shall be done in accordance with departmental standard operating guidelines while providing for the safety of responders and the general public.

Concentration:

For 90 percent of all *low*-risk fires, the total response time for the arrival of the effective response force (ERF), staffed with 3 firefighters and officers, shall be 6 minutes and 20 seconds in all areas. The ERF for low-risk fires shall be capable of: establishing an uninterrupted water supply; hoisting a ground ladder; performing forcible entry, and advancing an attack line. These operations shall be done in accordance with departmental standard operating guidelines while providing for the safety of responders and the general public.

For 90 percent of all *moderate* risk fires, the total response time for the arrival of the ERF, staffed with 9 firefighters and officers, shall be 10 minutes and 20 seconds in all areas. The ERF for moderate risk fires shall be capable of: establishing command; providing an uninterrupted water supply; advancing an attack line and back up line for fire control; complying with Occupational Safety and Health Administration (OSHA) requirements of two-in and two-out; performing search and rescue; controlling utilities; and establishing an advanced life support (ALS) medical group capable of transportation of a patient to the hospital. These operations shall be done in accordance with

departmental standard operating guidelines while providing for the safety of responders and the general public.

For 90 percent of all *high*-risk fires, the total response time for the arrival of the ERF, staffed with 18 firefighters and officers, shall be 10 minutes and 20 seconds in all areas. The ERF for high-risk fires shall be capable of: establishing command; appointing a site safety officer; establishing a rapid intervention crew; providing an uninterrupted water supply; advancing an attack line and a backup line for fire control; complying OSHA requirements of two-in and two-out; completing forcible entry; searching and rescuing at-risk victims; ventilating the structure; controlling utilities; establishing an ALS medical group capable of transportation of a patient to the hospital; operating an aerial fire apparatus; and performing salvage and overhaul. These operations shall be done in accordance with departmental standard operating guidelines while providing for the safety of responders and the general public.

For 90 percent of all *maximum* risk fires, the total response time for the arrival of the ERF, staffed with 27 firefighters and officers, shall be 10 minutes and 20 seconds in all areas. The ERF for maximum risk fires shall also be capable of: establishing incident command; appointing an operations division officer; appointing a site safety officer; providing an uninterrupted water supply; advancing an attack line and a backup line for fire control; complying with OSHA two-in and two-out; completing forcible entry; searching and rescuing at-risk victims; ventilating the structure, controlling utilities; establishing a ALS medical group capable of transporting multiple patients to the hospital; establishing an ALS rehabilitation group; establishing a rapid intervention group; controlling utilities; and establishing two elevated streams into service from aerial ladders. These operations shall be done in accordance with departmental standard operating guidelines while providing for the safety of responders and the general public.

Emergency Medical Services Program

Distribution:

For 90 percent of all emergency medical services (EMS) responses, the total response time for the arrival of the first-due unit, staffed with 2 firefighters, shall be 6 minutes in all areas. The first-due unit for all risk levels shall be capable of: initiating command; providing basic life support (BLS) tasks; performing a patient assessment; initiating oxygen therapy; monitoring blood glucose; applying an Automated External Defibrillator (AED); controlling bleeding, and performing cardio-pulmonary resuscitation (CPR). These operations shall be done in accordance with departmental standard operating guidelines while providing for the safety of responders and the general public.

Concentration:

For 90 percent of all *low*-risk EMS response incidents, the total response time for the arrival of the ERF, staffed with 5 firefighters and officers, shall be 10 minutes in all areas. The ERF shall be capable of: establishing incident command; appointing a site safety officer; performing a patient assessment; performing advanced airway maneuvers; applying advanced airway adjuncts; operating a mechanical ventilator; performing and interpreting 4, 12, and 15 lead electrocardiograms; performing synchronized cardioversion; performing defibrillation; monitoring carbon dioxide waveforms; administering nasal, oral, mucosal, venous, sublingual, subcutaneous, intramuscular, and intraosseous medication; performing drug dose calculations; operating a mechanical medication infusion pump; monitoring body temperature; monitoring blood glucose; applying traction, rigid and semi-rigid splints; assessing blood pressure and pulse rate; establishing venous or intraosseous access; contacting all regional hospital emergency departments by radio; and transporting a patient on a secured wheeled cot to a hospital. These operations shall be done in accordance with departmental standard operating guidelines while providing for the safety of responders and the general public.

For 90 percent of all *moderate* risk EMS response incidents, the total response time for the arrival of the ERF, staffed with 6 firefighters and officers, shall be 10 minutes in all areas. The ERF shall be capable of: establishing incident command; performing a patient assessment; performing advanced airway maneuvers; applying advanced airway adjuncts; operating a mechanical ventilator; performing and interpreting 4, 12, and 15 lead electrocardiograms; performing synchronized cardioversion; performing defibrillation; monitoring carbon dioxide waveforms; administering nasal, oral, mucosal, venous, sublingual, subcutaneous, intramuscular, and intraosseous medication; performing drug dose calculations; operating a mechanical medication infusion pump; monitoring body temperature; monitoring blood glucose; applying traction, rigid and semi-rigid splints; assessing blood pressure and pulse rate; establishing venous or intraosseous access; contacting all regional hospital emergency departments by radio; applying the LUCAS® compression device; and transporting a patient on a secured wheeled cot to a hospital. These operations shall be done in accordance with departmental standard operating guidelines while providing for the safety of responders and the general public.

For 90 percent of all *high*-risk EMS response incidents, the total response time for the arrival of the ERF, staffed with 19 firefighters and officers, shall be 10 minutes in all areas. The ERF shall be capable of: establishing incident command; establishing a safety officer; establishing a triage officer; establishing a transport officer; establishing a treatment officer; performing a patient assessments; performing advanced airway maneuvers; applying advanced airway adjuncts; operating mechanical ventilators; performing and interpreting 4, 12, and 15 lead electrocardiograms; performing synchronized cardioversion; performing defibrillation; monitoring carbon dioxide waveforms; administering nasal,

oral, mucosal, venous, sublingual, subcutaneous, intramuscular, and intraosseous medications; performing drug dose calculations; operating mechanical medication infusion pumps; monitoring body temperature; monitoring blood glucose; applying traction, rigid and semi-rigid splints; assessing blood pressure and pulse rates; establishing venous or intraosseous access; contacting all regional hospital emergency departments by radio; applying the LUCAS® compression device; and begin treatment and transport for a minimum of 5 to 7 patients to a hospital. These operations shall be done in accordance with departmental standard operating guidelines while providing for the safety of responders and the general public.

For 90 percent of all *maximum* risk EMS response incidents, the total response time for the arrival of the ERF, staffed with 30 firefighters and officers, shall be 10 minutes in all areas. The ERF shall be capable of: establishing incident command; establishing a safety officer; establishing a triage officer; establishing a transport officer; establishing a treatment officer; performing a patient assessments; performing advanced airway maneuvers; applying advanced airway adjuncts; operating mechanical ventilators; performing and interpreting 4, 12, and 15 lead electrocardiograms; performing synchronized cardioversion; performing defibrillation; monitoring carbon dioxide waveforms; administering nasal, oral, mucosal, venous, sublingual, subcutaneous, intramuscular, and intraosseous medications; performing drug dose calculations; operating mechanical medication infusion pumps; monitoring body temperature; monitoring blood glucose; applying traction, rigid and semi-rigid splints; assessing blood pressure and pulse rates; establishing venous or intraosseous access; contacting all regional hospital emergency departments by radio; applying the LUCAS® compression device; and begin treatment and transport for a minimum of 8 or more patients to a hospital. These operations shall be done in accordance with departmental standard operating guidelines while providing for the safety of responders and the general public.

Technical Rescue Services Program

Distribution:

For 90 percent of all technical rescue incidents, the total response time for the arrival of the first-due unit, staffed with 2 firefighters and 1 officer, shall be 6 minutes and 20 seconds in all areas. The first-due unit shall be capable of: establishing command; sizing up to determine if a technical rescue response is required; requesting additional resources, and providing basic life support to any victim without endangering response personnel in accordance with department standard operating guidelines.

Concentration:

For 90 percent of all *low*-risk technical rescue incidents, the total response time for the arrival of the ERF, staffed with 4 firefighters and 1 officer, shall be 6 minutes and 20 seconds in all areas. The ERF shall be capable of: establishing command; sizing up to determine if a technical rescue response is

required; requesting additional resources; force entry into a vehicle, and providing ALS care to a victim in accordance with department standard operating guidelines.

For 90 percent of all *moderate* risk technical rescue incidents, the total response time for the arrival of the ERF including the technical response team, staffed with 11 firefighters and officers, shall be 10 minutes and 20 seconds in all areas. The ERF shall be capable of: appointing a site safety officer; establishing incident command; establishing patient contact; staging and apparatus set up; providing technical expertise, knowledge, skills, and abilities during technical rescue incidents; and providing ALS medical care and transportation for up to 4 victims in accordance with department standard operating guidelines.

For 90 percent of all *high*-risk technical rescue incidents, the total response time for the arrival of the ERF including the technical response team, staffed with 19 firefighters and officers, shall be 10 minutes and 20 seconds in all areas. The ERF shall be capable of: appointing a site safety officer; establishing incident command; establishing a site safety officer; establishing patient contact; staging and apparatus set up; providing technical expertise, knowledge, skills, and abilities during technical rescue incidents; and providing ALS medical care and transportation for up to 7 victims involved in a motor vehicle collision (MVC) in accordance with department standard operating guidelines.

For 90 percent of all *maximum Tier I* risk technical rescue incidents, the total response time for the arrival of the ERF including the technical response team, staffed with 30 firefighters and officers, shall be 10 minutes and 20 seconds in all areas. The ERF shall be capable of: appointing a site safety officer; establishing incident command; establishing patient contact; staging and apparatus set up; providing technical expertise, knowledge, skills, and abilities during technical rescue incidents; and providing ALS medical care and transportation for 8 or more victims involved in a MVC in accordance with department standard operating guidelines.

For 90 percent of all *maximum Tier II* risk technical rescue incidents, the total response time for the arrival of the ERF including the technical response team, staffed with 31 firefighters and officers, shall be 10 minutes and 20 seconds in all areas. The ERF shall be capable of: appointing a site safety officer; establishing a rescue group supervisor; staffing rescue and support group operations; establishing an ALS medical group; establishing an ALS rehab group; establishing an ALS transportation group; staging and apparatus set up; providing technical expertise, knowledge, skills, and abilities during technical rescue incident involving a natural or man-made disaster in accordance with department standard operating guidelines.

Hazardous Conditions Services Program

Distribution:

For 90 percent of all hazardous conditions response incidents, the total response time for the arrival of the first-due unit, staffed with 2 firefighters and 1 officer, shall be 6 minutes and 20 seconds in all areas. The first-due unit shall be capable of: establishing command; sizing up and assessing the situation to determine the presence of a potentially hazardous material or explosive device; determining the need for additional resources; estimating the potential harm without intervention; and begin establishing a hot, warm, and cold zone. These operations shall be done in accordance with departmental standard operating guidelines while providing for the safety of responders and the general public.

Concentration:

For 90 percent of all *low*-risk hazardous conditions response incidents, the total response time for the arrival of the ERF including the hazardous materials response team, staffed with 3 firefighters and officers, shall be 10 minutes and 20 seconds in all areas. The ERF shall be capable of providing the equipment, technical expertise, knowledge, skills, and abilities to mitigate a hazardous materials incident in accordance with department standard operating guidelines. For *low*-risk response that includes establishing command; sizing up and assessing the situation to determine the presence of potentially hazardous material; determining the need for additional resources; estimating the potential harm without intervention; and begin establishing hot, warm, and cold zones.

For 90 percent of all *moderate* risk hazardous conditions response incidents, the total response time for the arrival of the ERF including the hazardous materials response team, staffed with 9 firefighters and officers, shall be 10 minutes and 20 seconds in all areas. The ERF shall be capable of providing the equipment, technical expertise, knowledge, skills, and abilities to mitigate a hazardous materials incident in accordance with department standard operating guidelines. For *moderate* risk response that includes: establishing command; appointing a site safety officer; appointing a hazmat group supervisor; establishing a hazmat operations group; and establishing an ALS medical group.

For 90 percent of all *high*-risk hazardous conditions response incidents, the total response time for the arrival of the ERF including the hazardous materials response team, staffed with 19 firefighters and officers, shall be 10 minutes and 20 seconds in all areas. The ERF shall be capable of providing the equipment, technical expertise, knowledge, skills, and abilities to mitigate a hazardous materials incident in accordance with department standard operating guidelines. For *high*-risk response that includes establishing command; appointing a site safety officer; appointing a hazmat group supervisor; establishing an ALS medical group; establishing a hazmat operations group; and establishing a support operations group.

For 90 percent of all *maximum* risk hazardous condition response incidents, the total response time for the arrival of the ERF including the hazardous materials response team, staffed with 31 firefighters and officers, shall be 10 minutes and 20 seconds in all areas. The ERF shall be capable of providing the equipment, technical expertise, knowledge, skills, and abilities to mitigate a hazardous materials incident in accordance with department standard operating guidelines. For *maximum* risk response that includes establishing command; appointing a site safety officer; appointing a hazmat group supervisor; establishing an ALS medical group; establishing a hazmat operations group; establishing a support operations group; and establishing a transportation group.

Performance Objectives – Baselines

The following baseline statements, based on the qualified aggregated data from the previous three and a half years of qualified data identified in the response performance tables, indicate LSFD's current performance.

Fire Suppression Services Program

The department does not rely on the use of automatic aid but does rely on the use of mutual aid from neighboring fire departments to provide its effective response force complement of personnel when necessary. The department's actual baseline service level performance from August 3, 2015 to 2018 is as follows:

Distribution:

For 90 percent of all *low*-risk fires, the total response time for the arrival of the first-due unit, staffed with 2 firefighters and 1 officer, is 9 minutes and 12 seconds in all areas. The first-due unit for all risk levels is capable of: providing 500 gallons of water and 1,500 gpm pumping capacity; initiating command; requesting additional resources; establishing and advancing an attack line flowing a minimum of 150 gpm; establishing an uninterrupted water supply; containing the fire; rescuing at-risk victims; and performing salvage operations. These operations are done in accordance with departmental standard operating guidelines while providing for the safety of responders and the general public.

For 90 percent of all *moderate* risk fires, the total response time for the arrival of the first-due unit, staffed with 2 firefighters and 1 officer, is 8 minutes and 37 seconds in all areas. The first-due unit for all risk levels is capable of: providing 500 gallons of water and 1,500 gpm pumping capacity; initiating command; requesting additional resources; establishing and advancing an attack line flowing a minimum of 150 gpm; establishing an uninterrupted water supply; containing the fire; rescuing at-risk victims; and performing salvage operations. These operations are done in accordance with departmental standard operating guidelines while providing for the safety of responders and the general public.

For 90 percent of all *high*-risk fires, the total response time for the arrival of the first-due unit, staffed with 2 firefighters and 1 officer, is 8 minutes and 09 seconds in all areas. The first-due unit for all risk levels is capable of: providing 500 gallons of water and 1,500 gpm pumping capacity; initiating command; requesting additional resources; establishing and advancing an attack line flowing a minimum of 150 gpm; establishing an uninterrupted water supply; containing the fire; rescuing at-risk victims; and performing salvage operations. These operations are done in accordance with departmental standard operating guidelines while providing for the safety of responders and the general public.

For 90 percent of all *maximum* risk fires, the total response time for the arrival of the ERF, staffed with 29 firefighters and officers, is undetermined, as there is not sufficient historical data at this level of risk to identify a baseline.

Concentration:

For 90 percent of all *low*-risk fires, the total response time for the arrival of the ERF, staffed with 3 firefighters and officers, is 9 minutes and 12 seconds in all areas. The ERF is capable of: establishing an uninterrupted water supply; hoisting a ground ladder; performing forcible entry; and advancing an attack line. These operations shall be done in accordance with departmental standard operating guidelines while providing for the safety of responders and the general public.

For 90 percent of all *moderate* risk fires, the total response time for the arrival of the ERF, staffed with 9 firefighters and officers, is 16 minutes and 10 seconds in all areas. The ERF for *moderate* risk is capable of: establishing command; providing an uninterrupted water supply; advancing an attack line and a backup line for fire control; complying with the OSHA requirements of two in and two out; completing forcible entry; searching and rescuing at-risk victims; ventilating the structure; controlling utilities; performing salvage and overhaul, and establishing an ALS medical group capable of transportation of a patient to the hospital. These operations shall be done in accordance with departmental standard operating guidelines while providing for the safety of responders and the general public.

For 90 percent of all *high*-risk fires, the total response time for the arrival of the ERF, staffed with 18 firefighters and officers, is 19 minutes and 22 seconds in all areas. The ERF for *high*-risk fires is capable of: establishing command; appointing a site safety officer; establishing a rapid intervention crew; providing an uninterrupted water supply; advancing an attack line and a backup line for fire control; complying OSHA requirements of two-in and two-out; completing forcible entry; searching and rescuing at-risk victims; ventilating the structure; controlling utilities; establishing an ALS medical group capable of transportation of a patient to the hospital; operating an aerial fire apparatus; and performing salvage and overhaul. These operations shall be done in accordance with departmental standard operating guidelines while providing for the safety of responders and the general public.

For 90 percent of all *maximum* risk fires, the total response time for the arrival of the ERF, staffed with 29 firefighters and officers, is undetermined, as there is not sufficient historical data at this level of risk to identify a baseline.

Emergency Medical Services Program

The department does not rely on the use of automatic aid but does rely on mutual aid from neighboring fire departments to provide its effective response force complement of personnel when necessary. The department's actual baseline service level performance from August 3, 2015 to2018 is as follows:

Distribution:

For 90 percent of all *low*-risk EMS responses, the total response time for the arrival of the first-due unit, staffed with 2 firefighters, is 7 minutes and 41 seconds in all areas. The first-due unit for all risk levels shall be capable of: initiating command; providing BLS tasks; performing a patient assessment; initiating oxygen therapy; monitoring blood glucose; applying an AED; controlling bleeding, and performing CPR. These operations shall be done in accordance with departmental standard operating guidelines while providing for the safety of responders and the general public.

For 90 percent of all *moderate* risk EMS responses, the total response time for the arrival of the first-due unit, staffed with 2 firefighters, is 7 minutes and 09 seconds in all areas. The first-due unit for all risk levels shall be capable of: initiating command; providing basic life support BLS tasks; performing a patient assessment; initiating oxygen therapy; monitoring blood glucose; applying an AED; controlling bleeding, and performing CPR. These operations shall be done in accordance with departmental standard operating guidelines while providing for the safety of responders and the general public.

For 90 percent of all *high*-risk EMS responses, the total response time for the arrival of the first-due unit, staffed with 2 firefighters, is undetermined, as there is not sufficient historical data at this level of risk to identify a baseline.

For 90 percent of all *maximum* risk EMS responses, the total response time for the arrival of the first-due unit, staffed with 2 firefighters, is undetermined, as there is not sufficient historical data at this level of risk to identify a baseline.

Concentration:

For 90 percent of all *low*-risk EMS response incidents, the total response time for the arrival of the ERF, staffed with 5 firefighters and officers, is 10 minutes and 21 seconds in all areas. The ERF is capable of: establishing incident command; performing a patient assessment; performing advanced airway maneuvers; applying advanced airway adjuncts; operating a mechanical ventilator; performing and interpreting 4, 12, and 15 lead electrocardiograms; performing synchronized cardioversion; performing defibrillation; monitoring carbon dioxide waveforms; administering nasal, oral, mucosal, venous, sublingual, subcutaneous, intramuscular, and intraosseous medication; performing drug dose calculations; operating a mechanical medication infusion pump; monitoring body temperature; monitoring blood glucose; applying traction, rigid and semi-rigid splints; assessing blood pressure and pulse rate; establishing venous or intraosseous access; contacting all regional hospital emergency departments by radio; and transporting a patient on a secured wheeled cot with lights and sirens to a hospital. These operations were performed in accordance with departmental standard operating guidelines while providing for the safety of responders and the general public.

For 90 percent of all *moderate* risk EMS response incidents, the total response time for the arrival of the ERF, staffed with 6 firefighters and officers, is 17 minutes and 19 seconds in all areas. The ERF is capable of: establishing incident command; performing a patient assessment; performing advanced airway maneuvers; applying advanced airway adjuncts; operating a mechanical ventilator; performing and interpreting 4, 12, and 15 lead electrocardiograms; performing synchronized cardioversion; performing defibrillation; monitoring carbon dioxide waveforms; administering nasal, oral, mucosal, venous, sublingual, subcutaneous, intramuscular, and intraosseous medication; performing drug dose calculations; operating a mechanical medication infusion pump; monitoring body temperature; monitoring blood glucose; applying traction, rigid and semi-rigid splints; assessing blood pressure and pulse rate; establishing venous or intraosseous access; contacting all regional hospital emergency departments by radio; applying the Lucas compression device; and transporting a patient on a secured wheeled cot with lights and sirens to a hospital. These operations were performed in accordance with departmental standard operating guidelines while providing for the safety of responders and the general public.

For 90 percent of all *high*-risk EMS response incidents, the total response time for the arrival of the ERF, staffed with 19 firefighters and officers, is undetermined, as there is not sufficient historical data at this level of risk to identify a baseline.

For 90 percent of all maximum risk EMS response incidents, the total response time for the arrival of the ERF, staffed with 30 firefighters and officers, is undetermined, as there is not sufficient historical data at this level of risk to identify a baseline.

Technical Rescue Services Program

The department does not rely on the use of automatic aid but does rely on mutual aid from neighboring fire departments to provide its effective response force complement of personnel when necessary. The department's actual qualified baseline service level performance from August 3, 2015 to 2018 is as follows:

Distribution:

For 90 percent of all *low*-risk technical rescue incidents, the total response time for the arrival of the first-due unit, staffed with 2 firefighters and 1 officer, is 9 minutes and 19 seconds in all areas. The first-due unit is capable of: establishing incident command; sizing up to determine if a technical rescue response is required; requesting additional resources, and providing basic life support to any victim without endangering response personnel in accordance with department standard operating guidelines.

For 90 percent of all *moderate* risk technical rescue incidents, the total response time for the arrival of the first-due unit, staffed with 2 firefighters and 1 officer, is 8 minutes and 57 seconds in all areas. The first-due unit is capable of: establishing incident command; sizing up to determine if a technical rescue response is required; requesting additional resources, and providing basic life support to any victim without endangering response personnel in accordance with department standard operating guidelines.

For 90 percent of all *high*-risk technical rescue incidents, the total response time for the arrival of the first-due unit, staffed with 2 firefighters and 1 officer is undetermined, as there is not sufficient historical data at this level of risk to identify a baseline.

For 90 percent of all *maximum* Tier I risk technical rescue incidents, the total response time for the arrival of the first-due unit, staffed with 2 firefighters and 1 officer is undetermined, as there is not sufficient historical data at this level of risk to identify a baseline.

For 90 percent of all *maximum* Tier II risk technical rescue incidents, the total response time for the arrival of the first-due unit, staffed with 2 firefighters and 1 officer is undetermined, as there is not sufficient historical data at this level of risk to identify a baseline.

Concentration:

For 90 percent of all *low*-risk technical rescue incidents, the total response time for the arrival of the ERF, staffed with 5 firefighters and officers including the technical response team, is 12 minutes and 03 seconds in all areas. The ERF shall be capable of: establishing incident command; appointing a site safety officer; staging and apparatus set up; providing technical expertise, knowledge, skills, and abilities during technical rescue incidents sizing up to determine if a technical rescue response is

required; requesting additional resources; force entry into a vehicle; and providing ALS care to a victim in accordance with department standard operating guidelines.

For 90 percent of all *moderate* risk technical rescue incidents, the total response time for the arrival of the ERF, staffed with 11 firefighters and officers including the technical response team, is 19 minutes and 02 seconds in all areas. The ERF shall be capable of: establishing incident command; appointing a site safety officer; staging and apparatus set up; providing technical expertise, knowledge, skills, and abilities during technical rescue incidents sizing up to determine if a technical rescue response is required; requesting additional resources; force entry into a vehicle; and providing ALS care and transportation for up to 4 victims in accordance with department standard operating guidelines.

For 90 percent of all *high*-risk technical rescue incidents, the total response time for the arrival of the ERF, staffed with 19 firefighters and officers including the technical response team, is undetermined, as there is not sufficient historical data at this level of risk to identify a baseline.

For 90 percent of all *maximum* Tier I risk technical rescue incidents, the total response time for the arrival of the ERF, staffed with 30 firefighters and officers including the technical response team, is undetermined, as there is not sufficient historical data at this level of risk to identify a baseline.

For 90 percent of all *maximum* Tier II risk technical rescue incidents, the total response time for the arrival of the ERF, staffed with 31 firefighters and officers including the technical response team, is undetermined, as there is not sufficient historical data at this level of risk to identify a baseline.

Hazardous Conditions Services Program

The department does not rely on the use of automatic aid but does rely on mutual aid from neighboring fire departments to provide its effective response force complement of personnel when necessary. The department's actual baseline service level performance from August 3, 2015 to 2018 is as follows:

Distribution:

For 90 percent of all *low*-risk hazardous conditions response incidents, the total response time for the arrival of the first-due unit, staffed with 2 firefighters and 1 officer, is 9 minutes and 01 seconds in all areas. The first-due unit is capable of: establishing command; sizing up and assessing the situation to determine the presence of a potentially hazardous material or explosive device; determining the need for additional resources; estimating the potential harm without intervention; and establishing a hot, warm, and cold zone. These operations shall be done in accordance with departmental standard operating guidelines while providing for the safety of responders and the general public.

For 90 percent of all *moderate* risk hazardous materials response incidents, the total response time for the arrival of the first-due unit, staffed with 2 firefighters and 1 officer, is 8 minutes and 13 seconds in all areas. The first-due unit is capable of: establishing command; sizing up and assessing the situation

to determine the presence of a potentially hazardous material or explosive device; determining the need for additional resources; estimating the potential harm without intervention; and establishing a hot, warm, and cold zone. These operations shall be done in accordance with departmental standard operating guidelines while providing for the safety of responders and the general public.

For 90 percent of all *high*-risk hazardous materials response incidents, the total response time for the arrival of the first-due unit, staffed with 2 firefighters and 1 officer, is undetermined, as there is not sufficient historical data at this level of risk to identify a baseline.

For 90 percent of all *maximum* risk hazardous materials response incidents, the total response time for the arrival of the first-due unit, staffed with 2 firefighters and 1 officer is undetermined, as there is not sufficient historical data at this level of risk to identify a baseline.

Concentration:

For 90 percent of all *low*-risk hazardous materials response incidents, the total response time for the arrival of the ERF, staffed with 3 firefighters and officers including the hazardous materials response team is 9 minutes and 01 seconds in all areas. The ERF is capable of: establishing command; sizing up and assessing the situation to determine the presence of potentially hazardous material; determining the need for additional resources; estimating the potential harm without intervention; and establishing a hot, warm, and cold zone in accordance with department standard operating guidelines.

For 90 percent of all *moderate* risk hazardous materials response incidents, the total response time for the arrival of the ERF, staffed with 9 firefighters and officers including the hazardous materials response team is 13 minutes and 59 seconds in all areas. The ERF is capable of: establishing command; appointing a site safety officer; appointing a hazmat group supervisor; establishing a hazmat operations group; establishing an ALS medical group; and providing the equipment, technical expertise, knowledge, skills, and abilities to mitigate a hazardous materials incident in accordance with department standard operating guidelines.

For 90 percent of all *high*-risk hazardous materials response incidents, the total response time for the arrival of the ERF, staffed with 19 firefighters and officers including the hazardous materials response team is undetermined, as there is not sufficient historical data at this level of risk to identify a baseline.

For 90 percent of all *maximum* risk hazardous materials response incidents, the total response time for the arrival of the ERF, staffed with 31 firefighters and officers including the hazardous materials response team is undetermined, as there is not sufficient historical data at this level of risk to identify a baseline.

Performance Gaps – Baseline to Benchmark Time Gap

Fire Suppression Services Program

For all *low*-risk fire suppression responses, the department has recorded a performance gap of 2 minutes and 52 seconds over the benchmark goal for the initial arriving company, and 2 minutes and 52 seconds over the benchmark goal for the arrival of the ERF.

Low Risk: Fire Suppression	Benchmark	Baseline
Pick-up to Dispatch	1:00	1:26
Turnout Time 1st Unit	1:20	2:13
Travel Time 1st Unit **Distribution**	4:00	6:41
Travel Time ERF **Concentration**	4:00	6:41
Total Response Time 1st Unit on Scene **Distribution**	6:20	9:12
Total Response Time ERF **Concentration**	6:20	9:12

For all *moderate* risk fire responses, the department has recorded a performance gap of 2 minutes and 17 seconds over the benchmark goal for the initial arriving company, and 5 minutes and 50 seconds over the benchmark goal for the arrival of the ERF.

Moderate Risk: Fire Suppression	Benchmark	Baseline
Pick-up to Dispatch	1:00	1:22
Turnout Time 1st Unit	1:20	2:06
Travel Time 1st Unit **Distribution**	4:00	5:21
Travel Time ERF **Concentration**	8:00	13:57
Total Response Time 1st Unit on Scene **Distribution**	6:20	8:37
Total Response Time ERF **Concentration**	10:20	16:10

For all *high*-risk fire responses, the department has recorded a performance gap of 1 minute and 49 seconds over the benchmark goal for the initial arriving company, and 9 minutes and 02 seconds over the benchmark goal for the arrival of the ERF.

High Risk: Fire Suppression	Benchmark	Baseline
Pick-up to Dispatch	1:00	1:34
Turnout Time 1st Unit	1:20	1:59
Travel Time 1st Unit **Distribution**	4:00	4:58
Travel Time ERF **Concentration**	8:00	14:56
Total Response Time 1st Unit on Scene **Distribution**	6:20	8:09
Total Response Time ERF **Concentration**	10:20	19:22

For all *maximum* risk fire responses, the department has not recorded sufficient data to qualify for analysis.

Emergency Medical Services Program

For all *low*-risk EMS responses, the department has recorded a performance gap of 1 minute and 41 seconds over the benchmark goal for the initial arriving company, and 21 seconds over the benchmark goal for the arrival of the ERF.

Low Risk: EMS	Benchmark	Baseline
Pick-up to Dispatch	1:00	0:55
Turnout Time 1st Unit	1:00	1:58
Travel Time 1st Unit **Distribution**	4:00	5:35
Travel Time ERF **Concentration**	8:00	8:01
Total Response Time 1st Unit on Scene **Distribution**	6:00	7:41
Total Response Time ERF **Concentration**	10:00	10:21

For all *moderate* risk EMS responses, the department has recorded a performance gap of 1 minute and 09 seconds over the benchmark goal for the initial arriving company, and 7 minutes and 19 seconds over the benchmark goal for the arrival of the ERF.

Moderate Risk: EMS	Benchmark	Baseline
Pick-up to Dispatch	1:00	0:58
Turnout Time 1st Unit	1:00	1:50
Travel Time 1st Unit **Distribution**	4:00	5:04
Travel Time ERF **Concentration**	8:00	10:57
Total Response Time 1st Unit on Scene **Distribution**	6:00	7:09
Total Response Time ERF **Concentration**	10:00	17:19

For all *high*-risk emergency medical service EMS responses, the department has not recorded sufficient data to qualify for analysis.

Technical Rescue Services Program

For all *low*-risk technical rescue responses, the department has recorded a performance gap of 2 minutes and 59 seconds over the benchmark goal for the initial arriving company, and 1 minute and 43 seconds over the benchmark goal for the arrival of the ERF.

Low Risk: Technical Rescue	Benchmark	Baseline
Pick-up to Dispatch	1:00	1:31
Turnout Time 1st Unit	1:20	2:05
Travel Time 1st Unit **Distribution**	4:00	6:15
Travel Time ERF **Concentration**	8:00	8:50
Total Response Time 1st Unit on Scene **Distribution**	6:20	9:19
Total Response Time ERF **Concentration**	10:20	12:03

For all *moderate* risk technical rescue responses, the department has recorded a performance gap of 2 minutes and 37 seconds over the benchmark goal for the initial arriving company, and 8 minutes and 42 seconds over the benchmark goal for the arrival of the ERF.

Moderate Risk: Technical Rescue	Benchmark	Baseline
Pick-up to Dispatch	1:00	1:42
Turnout Time 1st Unit	1:20	1:52
Travel Time 1st Unit **Distribution**	4:00	5:53
Travel Time ERF **Concentration**	8:00	15:02
Total Response Time 1st Unit on Scene **Distribution**	6:20	8:57
Total Response Time ERF **Concentration**	10:20	19:02

For all *high*-risk technical rescue responses, the department has not recorded sufficient data to qualify for analysis.

For all *maximum* (Tier I and Tier II) risk technical rescue responses, the department has not recorded sufficient data to qualify for analysis.

Hazardous Conditions Services Program

For all *low*-risk hazardous conditions responses, the department has recorded a performance gap of 2 minutes and 41 seconds over the benchmark goal for the initial arriving company, and 2 minutes and 41 seconds over the benchmark goal for the arrival of the ERF.

Low Risk: HazMat	Benchmark	Baseline
Pick-up to Dispatch	1:00	1:44
Turnout Time 1st Unit	1:20	1:57
Travel Time 1st Unit **Distribution**	4:00	6:28
Travel Time ERF **Concentration**	4:00	6:28
Total Response Time 1st Unit on Scene **Distribution**	6:20	9:01
Total Response Time ERF **Concentration**	6:20	9:01

For all *moderate* risk hazardous conditions responses, the department has recorded a performance gap of 1 minute and 53 seconds over the benchmark goal for the initial arriving company, and 3 minutes and 39 seconds over the benchmark goal for the arrival of the ERF.

Moderate Risk: HazMat	Benchmark	Baseline
Pick-up to Dispatch	1:00	1:15
Turnout Time 1st Unit	1:20	1:54
Travel Time 1st Unit **Distribution**	4:00	5:23
Travel Time ERF **Concentration**	8:00	11:02
Total Response Time 1st Unit on Scene **Distribution**	6:20	8:13
Total Response Time ERF **Concentration**	10:20	13:59

For all *high*-risk hazardous conditions responses, the department has not recorded sufficient data to qualify for analysis.

For all *maximum* risk hazardous conditions responses, the department has not recorded sufficient data to qualify for analysis.

Community Areas for Program Delivery and Coverage Improvement

By design, this report functions as a planning tool for the department and city leaders. By identifying response performance gaps, this document will aid in the planning and decision-making process for future growth. Through analyzing the community risk, demographics and response performance data, the department has again been able to identify strengths, weaknesses, opportunities, and threats to providing the best service to the citizens and visitors to Lee's Summit.

Historical response performance data accurately measures the distribution and concentration-response capabilities for the community. The current placement of department resources reflects a historical focus on distribution, or the first arriving unit; rather than concentration, which represents the arrival of an effective response force. This level of response performance analysis, tracked since the department began complying with the accreditation model in 2013, has consistently identified challenges in both distribution and concentration travel time across all emergency service programs.

A travel time analysis determined areas of the community the department was capable of reaching in the four-minute standard recommended by NFPA 1710. The Insurance Services Office (ISO) uses a mileage standard of a 1.5-mile and 2.5-mile response radius for pumpers and trucks respectively, as a component of their fire suppression rating schedule. To provide the greatest cost benefit to the community, the department also evaluated the geographic distribution of the department's fixed facilities.

Additional travel time studies were conducted against travel times of eight minutes for the arrival of the multiple resources needed on an incident, defined in this document as the ERF. This time value is the standard recommended by NFPA 1710 for 16 personnel to arrive at the scene of an emergency incident with an eight-minute travel time.

Travel time performance gaps were identified throughout the city, affecting both the four-minute distribution travel time and the eight-minute concentration travel time. The limiting factor for four-minute travel time is distance. Each response district has been evaluated for the total area protected, and total road miles within the district.

Table 41: Square Miles Protected, by District

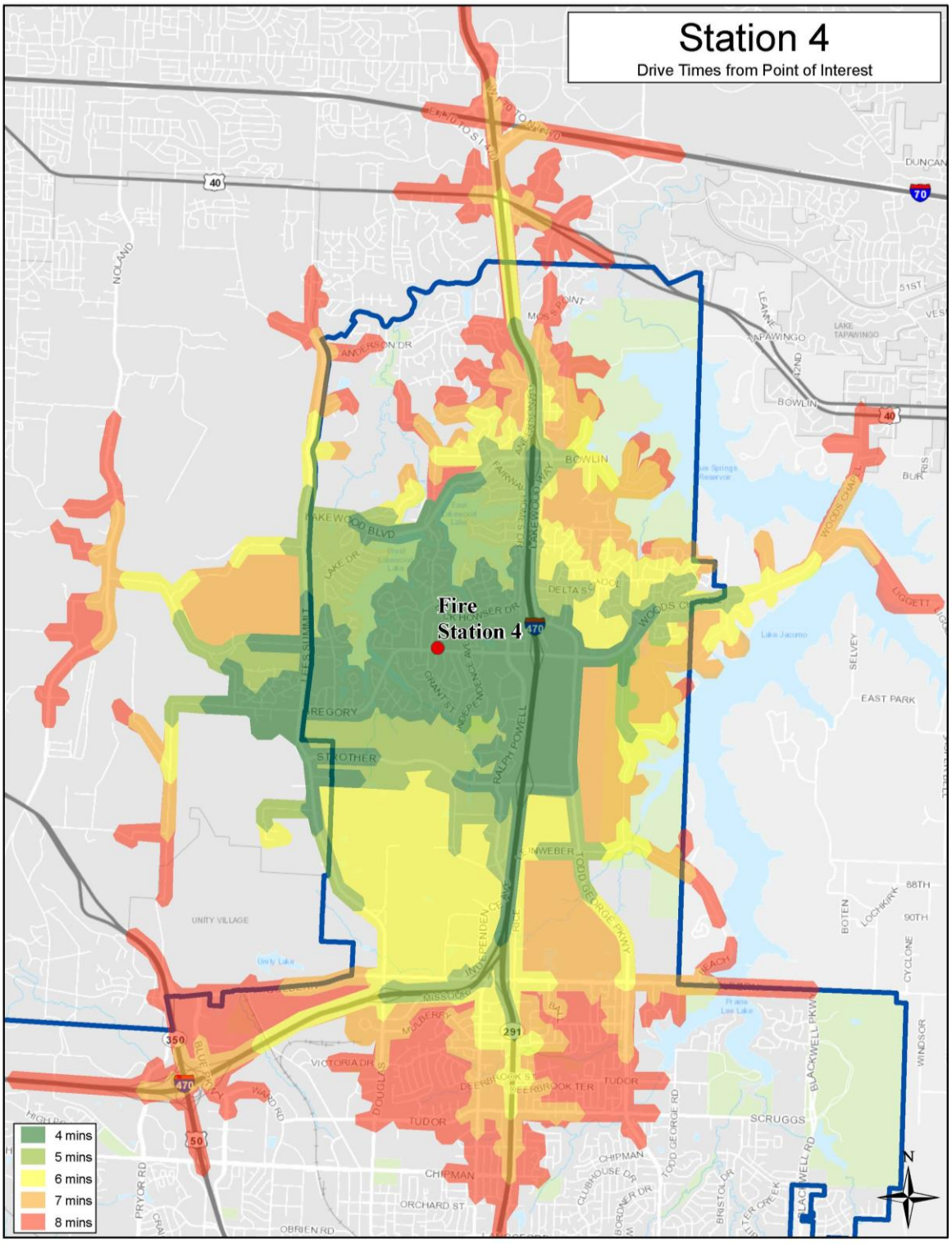
Fire Response District	Area Protected in Miles
District 1	6.08
District 2 (includes Unity Village)	9.40
District 3	8.66
District 4	11.43
District 5 (includes Greenwood)	15.70
District 6	10.71
District 7	10.47

Table 42: Road Miles Protected, by District

Fire Response District	Area Protected in Road Miles
District 1	93.78 (+7.53 miles since 2014)
District 2 (includes Unity Village)	86.95 (+17.91 miles since 2014)
District 3	111.33 (+1.68 miles since 2014)
District 4	125.42 (+19.88 miles since 2014)
District 5 (includes Greenwood)	119.10 (+3.46 miles since 2014)
District 6	123.19 (+12.74 miles since 2014)
District 7	55.91 (+1.24 miles since 2014)

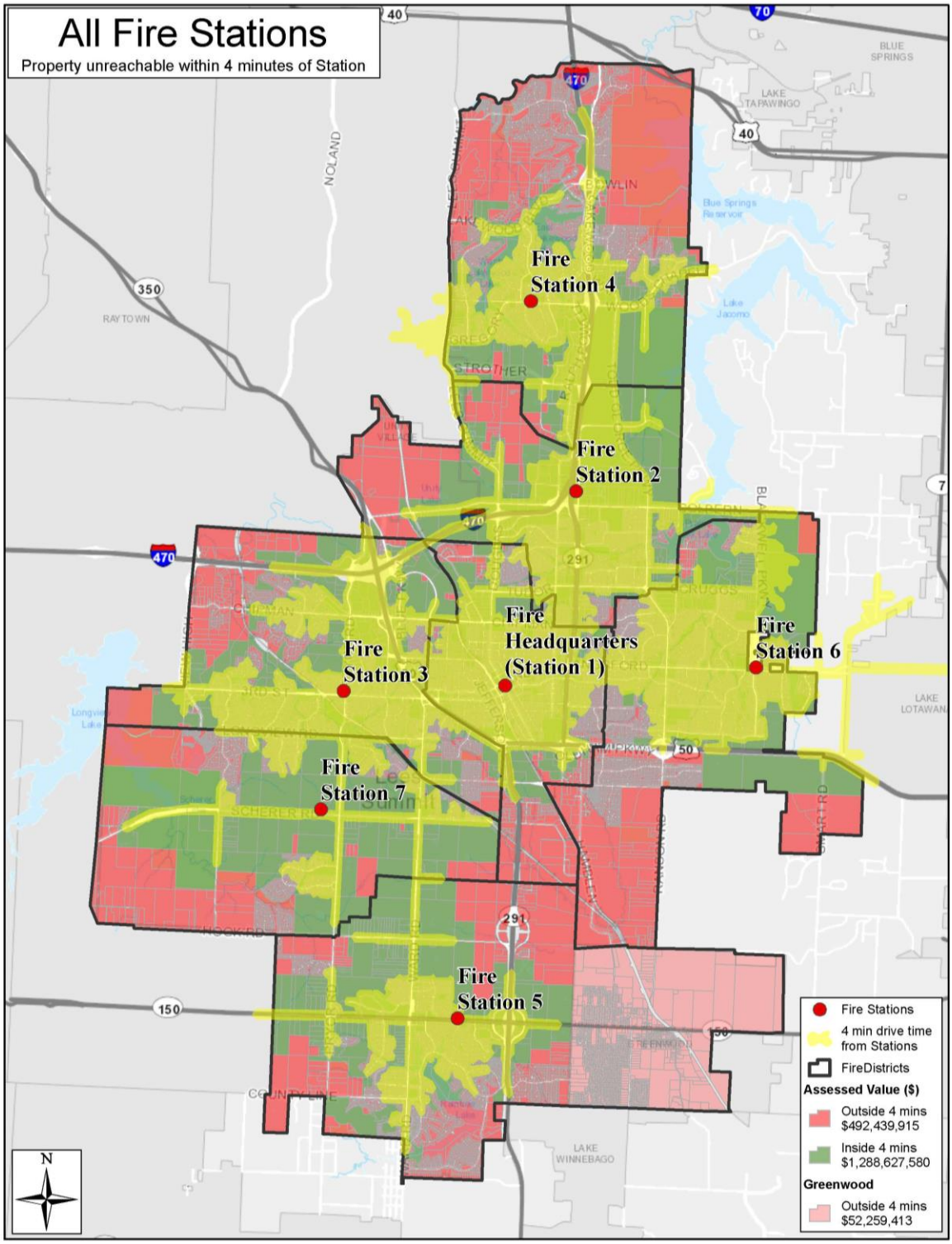
As a result of this analysis, it was identified that all districts are challenged to meet the four-minute response time benchmarks for the first arriving unit. Further analysis considers population protected across all areas with response time values that exceed response time benchmarks. That is where the vulnerability of the northern portion of the city becomes clearer.

Map 56: Travel Time for Units Deploying from Station 4



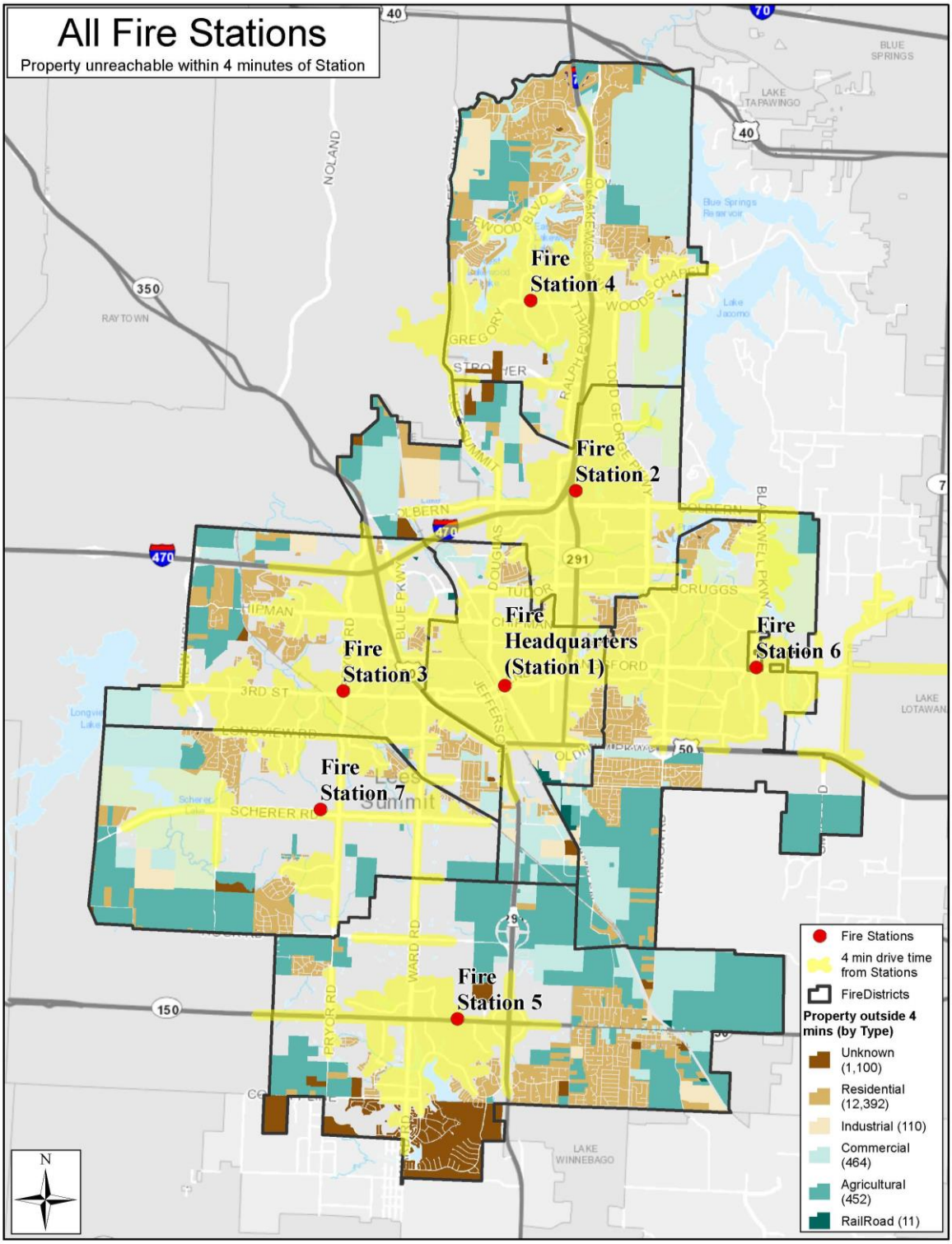
There is a significant portion of the response district that exceeds an eight-minute initial response time.

Map 57: Assessed Property Values Unreachable Within 4 Minutes of a Fire Station

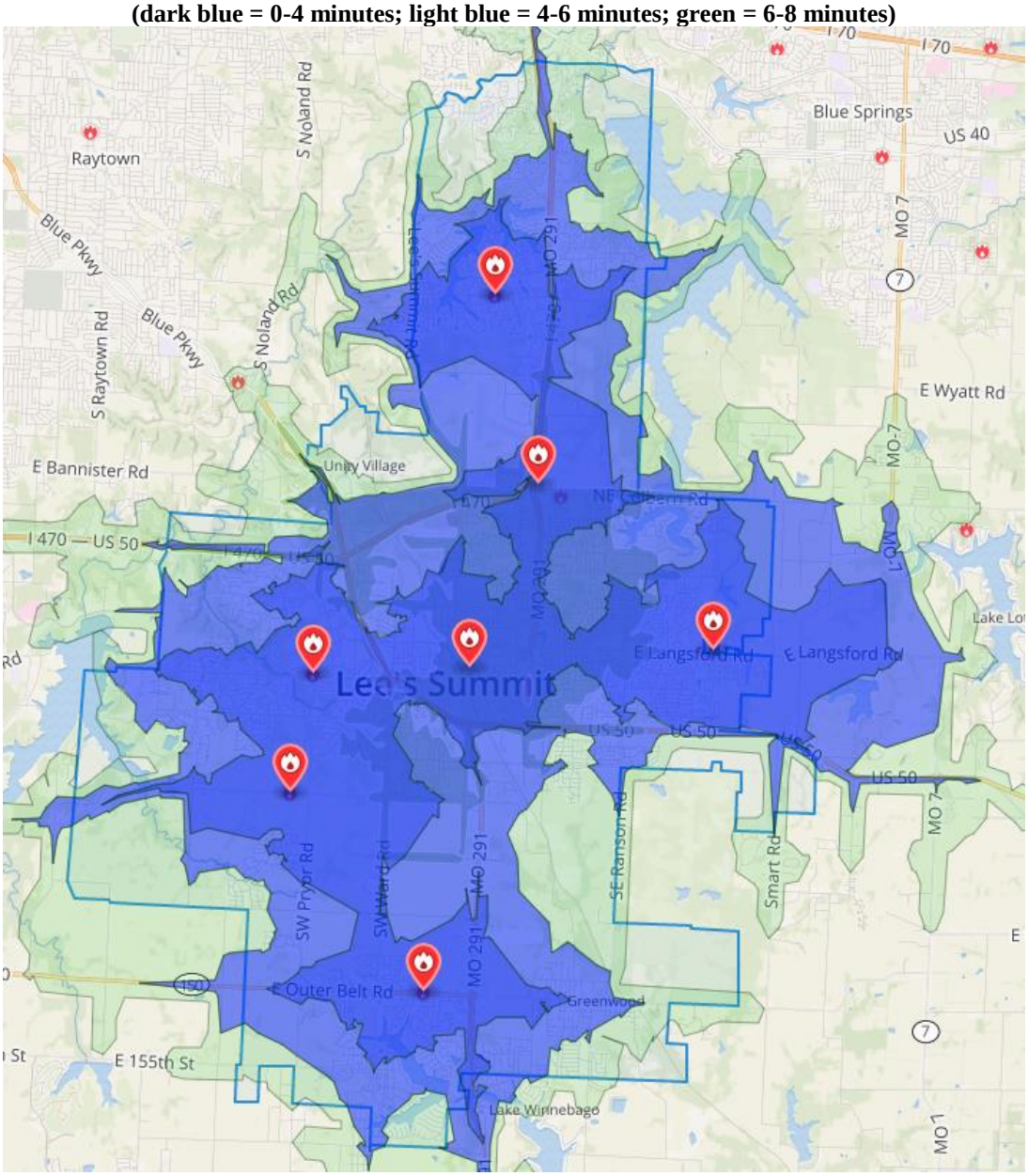


A holistic view of the department's current coverage across the city identifies clear response challenges, with 26% of Lee's Summit's property value (valued at over $492 million) exceeding a four-minute response time from a fire station. Greenwood has property values in excess of $52 million exceeding a four-minute response time from a fire station.

Map 58: Property Types Unreachable Within 4 Minutes of a Fire Station

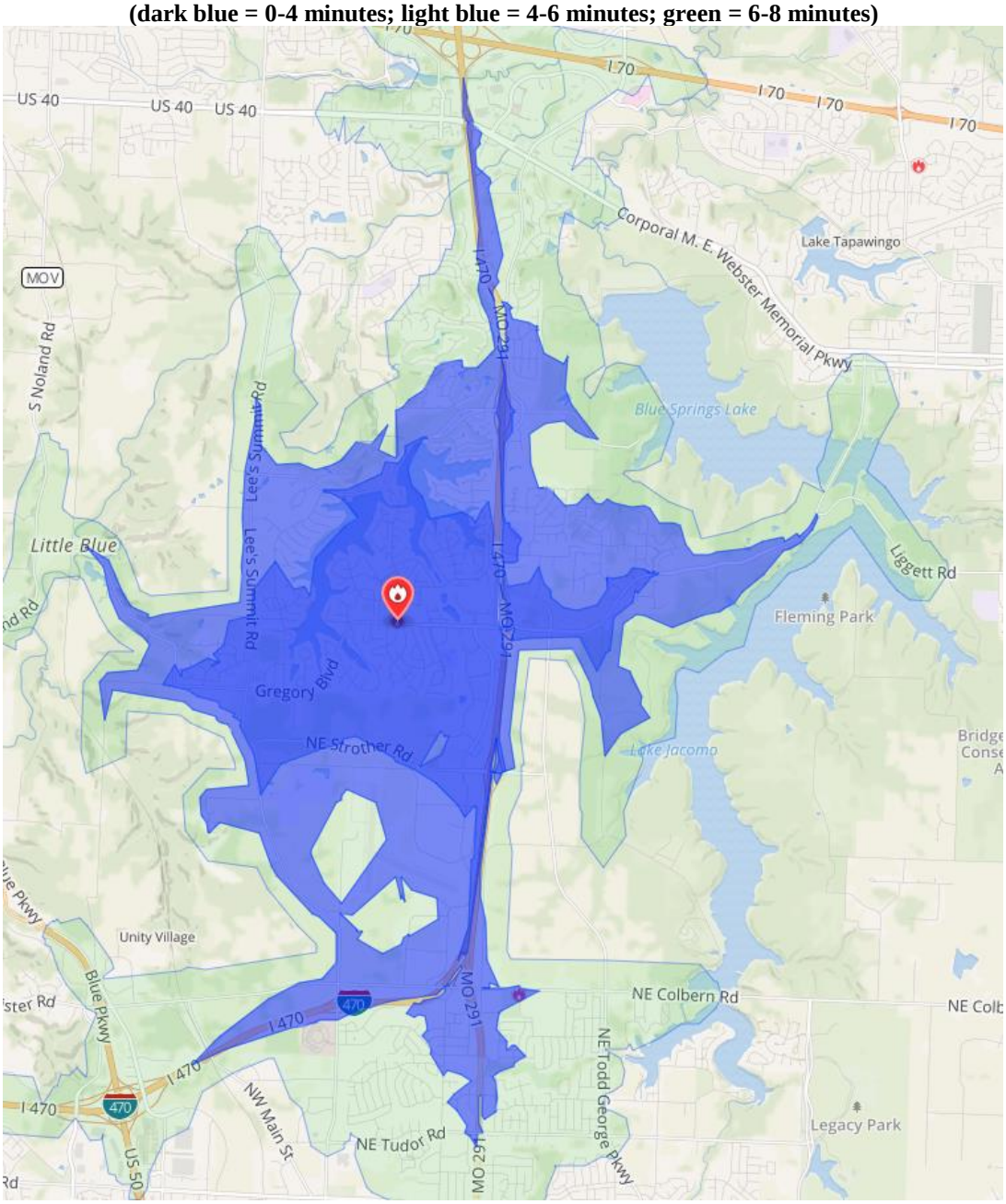


Map 59: Response Times within City Boundaries and Contract Cities
(dark blue = 0-4 minutes; light blue = 4-6 minutes; green = 6-8 minutes)

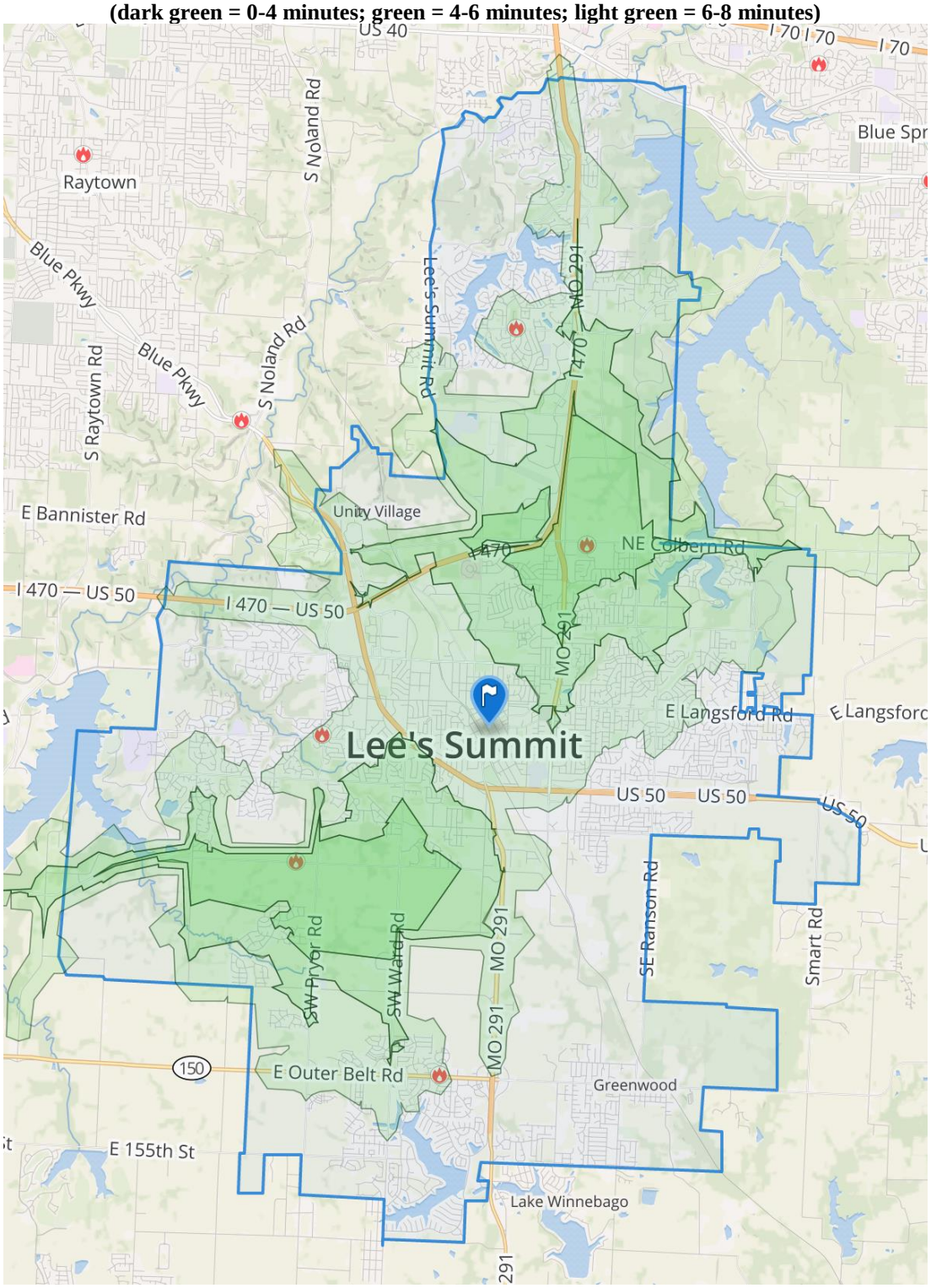


At both the four- and eight-minute standards for emergency response time, significant response time deviations exist to areas in the northern part of the city. It is recommended that the department aggressively seek to construct another fire station in the northern portion of the city to address this performance gap.

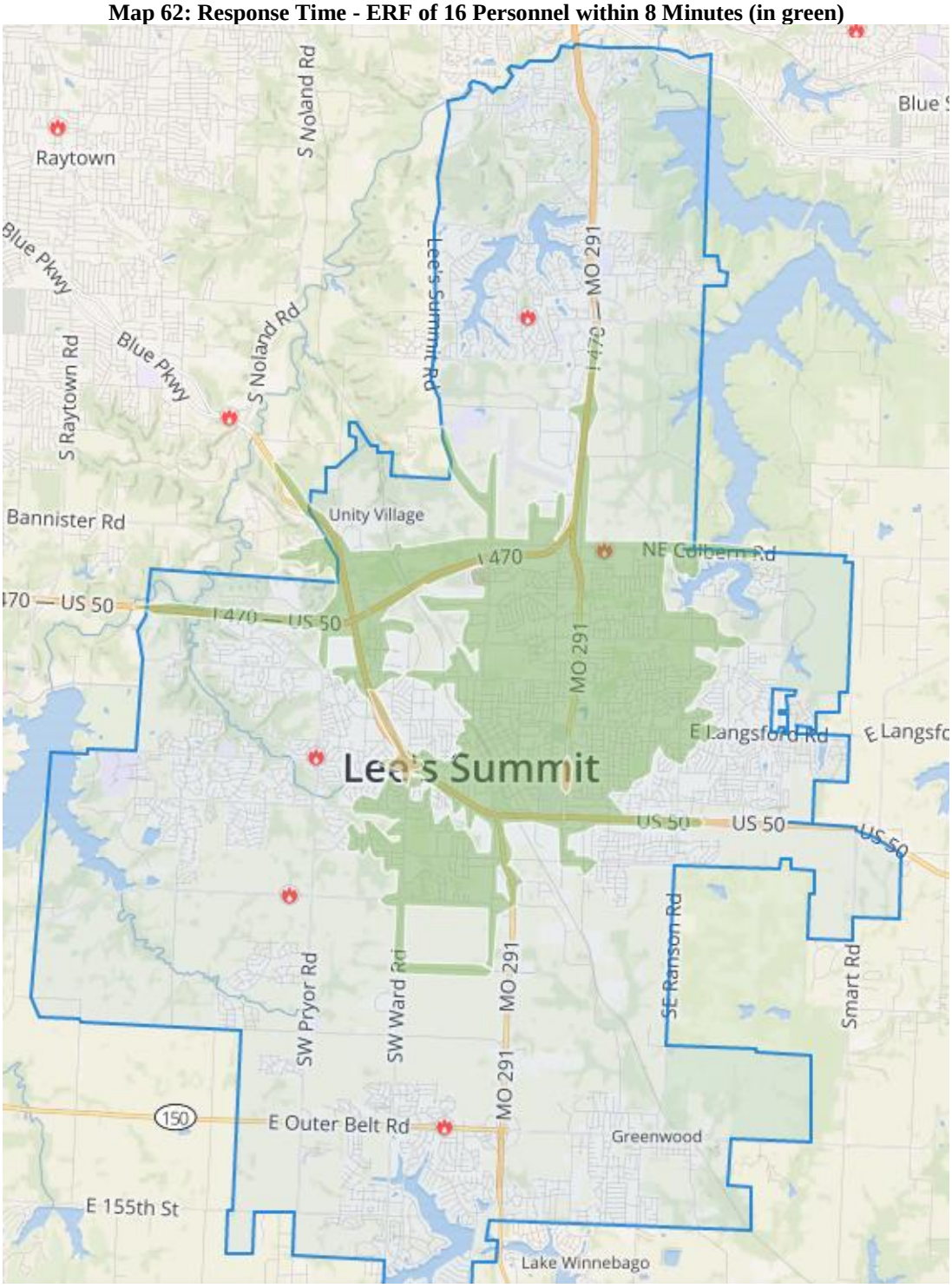
Map 60: District 4 Response Times
(dark blue = 0-4 minutes; light blue = 4-6 minutes; green = 6-8 minutes)



Map 61: Response Times for Ladder Trucks Deploying from Station 2 and Station 7 (dark green = 0-4 minutes; green = 4-6 minutes; light green = 6-8 minutes)



Map 62: Response Time - ERF of 16 Personnel within 8 Minutes (in green)



Recommendations for Improved Effectiveness in Deployment and Coverage

Immediate (within 12 months) Recommendations:

1. The analysis of this community risk assessment and current mitigation capabilities to deploy and respond to those risks indicates that the greatest immediate needs for the department are staffing increases for the communications center, operations division, and administration divisions. Therefore, it is recommended that the department leadership begin working with city leaders to identify sustainable revenue streams that can support these expansion needs.
2. To generate funding for these recommendations, the department should work collaboratively with other city resources to support the research, evaluation, and application process for grant funds that could potentially offset the costs associated with departmental expansion and continuous improvement strategies.
3. To become more proactive, it is recommended the department collaborate with city staff to identify and formalize expansion triggers for the department that adhere to the 4-minute travel time identified in NFPA 1710 and the 1.5-mile travel distance recommended by ISO. To continue to meet the needs of the community as it develops, ensure that these triggers are included in the city's comprehensive build-out plans for future development, and encourage the use of development incentives to fund new stations when proposed development exceeds deployment capabilities to meet NFPA 1710 response performance standards.
4. Conduct comprehensive strategic planning evaluation in anticipation of potential Station 4 and Station 5 relocation/reconstruction. These response districts are extremely vulnerable due to their existing gaps in coverage, and any relocation must consider NFPA 1710 response time recommendations and ISO travel distance recommendations. Without additional stations being constructed and staffed in these districts, the department must continue to provide the maximum protection to these districts from a single deployment location.
5. To address the community risk identified through this assessment, the department should add an additional rescue (ambulance) once Station 3 is constructed. District 3 has the highest EMS demand by district and currently relies on adjacent district rescues to respond. To improve response times and service delivery in the community, Station 3 needs a rescue.
6. If Rescue 3 and the associated staffing expansions are denied or delayed, the department should consider repositioning Rescue 7 to Station 3. District 3 has the highest EMS demand by district and currently relies on adjacent district rescues to respond. Given the geographical positioning of Station 3, the infrastructure in the immediate area may allow for greater resiliency against the demand to cover

other districts within the community. If Rescue 7 is repositioned to Station 3, evaluate the ability to replace a Rescue in District 7 as soon as possible.

7. Investigate available technology to assist in the compliance monitoring process and data analysis needed for accreditation and strategic planning identified in Goal 7 of the 2018-2023 Strategic Plan.
8. Continue to pursue opportunities to increase firefighter preparedness and safety through acquiring live fire training props for the department as identified in Goal 3 of the 2018-2023 Strategic Plan.
9. The department is encouraged to research and implement available information technologies as identified in Goal 2 and Goal 7 of the 2018-2023 Strategic Plan. These efforts will enhance department operations and improve its ability to serve the community.

Near Term (within 2-5 years) recommendations:

1. Evaluate the recommendations from the study of the Communications Center to ensure processing procedures and staffing levels comply with national standards. As soon as practicable, implement the staffing recommendations of the study in order to enhance operational effectiveness, safety, and efficiency.
2. Increase staffing levels in administration to efficiently and effectively manage departmental operations and plan for the needs of the community. When funding allows, add administration staffing consistent with the span of control recommendations of one administrator managing between three to seven operational personnel. To attain that goal, the administration should seek to increase staffing by a minimum of ten to twelve personnel over the next four years. Minimum staffing recommendations for all divisions:
    - Administrative assistants (2)
    - Prevention Division (2) - Captain of Prevention, Inspector/Fire Investigator
    - Training Division (4) - Battalion Chief of EMS, Captain of EMS, two Community Paramedics
    - Support Services Division (1) - Battalion Chief of Planning
    - Administration Division (1) - GIS analyst/ITS Support
    - Deputy Chiefs (2) – Deputy Chief of Operations, Deputy Chief of Administration
3. Construct an additional station (Station 8) in the northern portion of fire station District 4, which is located in Council District 3. Given the infrastructure in place and geographic information system (GIS) modeled travel times, resources deployed from Station 4 cannot physically get to several emergency service zones in that area to meet industry benchmarks.

4. Closely monitor the call volume and response times from Station 1 (headquarters), and if warranted, consider additional staffed resources at Station 1. An additional pumper or truck and rescue would address reliability issues identified within this high demand district, and the rest of the community.
5. Request an additional ladder truck for the city in order to reduce ERF times on high risk/high consequence incidents and address the documented ISO recommendations received in 2017. Ensure the ladder truck is in the best position to respond most efficiently to tactical related risk structures.
6. If approval for an additional ladder truck is denied or delayed, re-evaluate the positioning of the Station 7 ladder truck. Consideration of the community's fire risks and deployment modeling from Station 3 indicates that this apparatus would be more effective if assigned to a more centralized location. Ensure the ladder truck is in the best position to respond most efficiently to high-risk structures throughout the city.
7. Actively participate in the comprehensive planning processes for the city. Ensure that all development planning includes input and recommendations from fire personnel related to fire protection for the city.
8. The department should look closely at the organization's records management (*Fire Data Management* or "FDM") capabilities. If, after evaluation, the system is determined to be unable to meet the needs of the organization, evaluate other records management systems to ensure the department is using a system to efficiently and effectively meet its needs.
9. Evaluate the advantages and disadvantages of utilizing a new deployment model for EMS calls. Consider strategies that would reduce the volume on pumpers, trucks, and chief officers. Any evaluation must ensure that the quality of service for emergency medical incidents or the safety of the department's personnel is not compromised. Considerations should include the evaluation of additional devices or technology on apparatus that can assist with care and improve service delivery.

Long Term (within 5-10 years) recommendations:

1. Monitor and adjust staffing levels within the administration as necessary to ensure that the span of control between administration, the communications center, and operational staffing meets recommended levels as expansion takes place.

2. Evaluate the advantages and disadvantages of a staffing plan, which includes minimum staffing of four firefighters on every fire apparatus to become compliant with NFPA 1710 standards. This staffing would allow the ERF to arrive sooner with fewer physical resources to transport personnel to high-risk incidents. This staffing would also be consistent with the National Institute for Standards and Technology (NIST) Field Experiments Study findings documented in Appendix A.

3. Evaluate opportunities to construct an additional station in the area around the Bailey Road Bridge joining north and south 291 Highway. This location is a challenge to get to against the response benchmarks and will continue to develop with the 50 Highway/291 Highway interchange redevelopment. This station would have great mobility throughout the community given the major infrastructure in the immediate area and would also address the volume of emergency responses occurring in the core of the city.

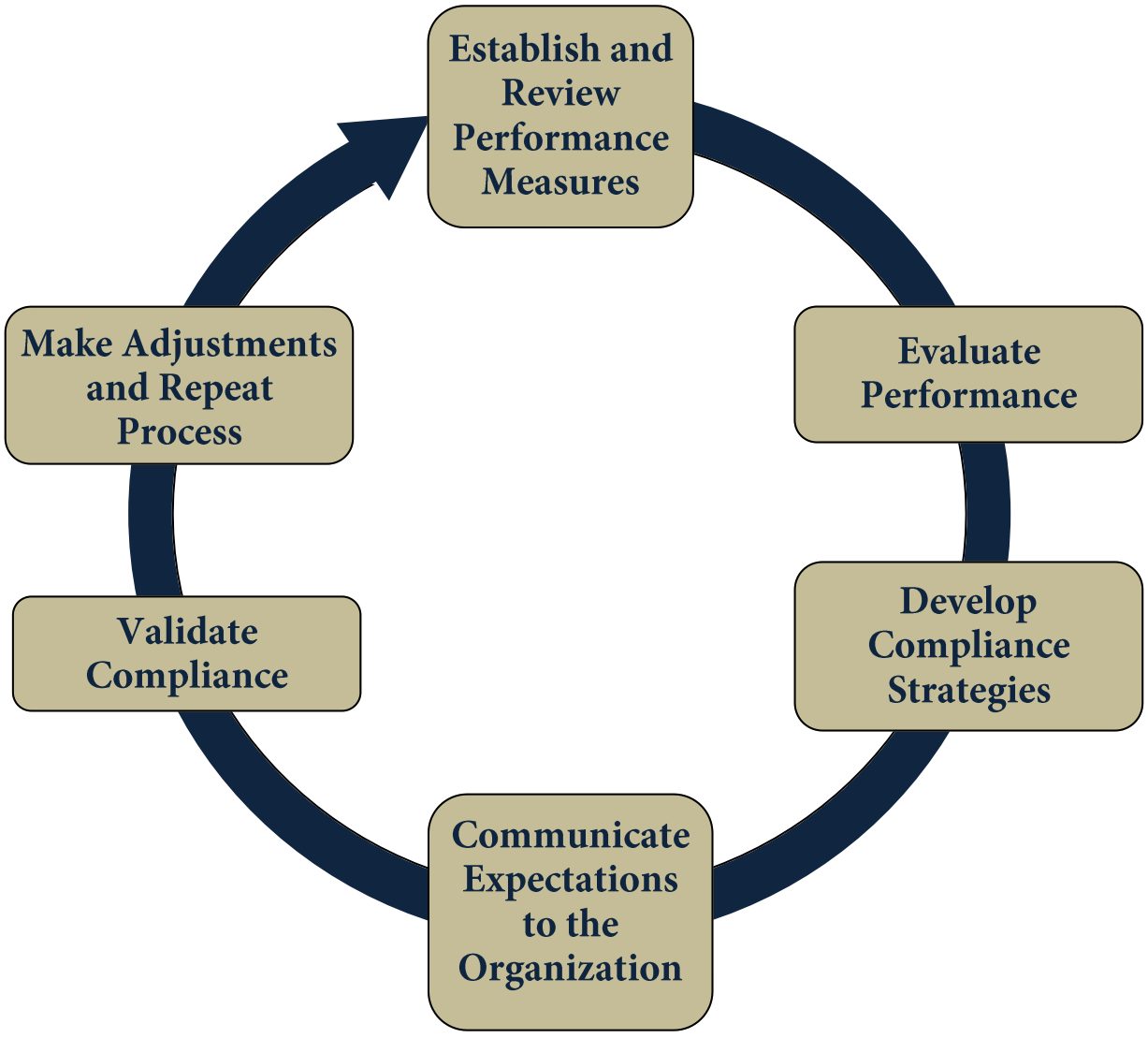
4. Closely monitor the development in the area of New Longview, View High, and Paragon Star. These locations, on the extreme western boundary of the city, exceed the four-minute travel time identified in NFPA 1710 and the 1.5-mile travel distance recommended by ISO. Consider constructing an additional station that can effectively cover the area or investigate the advantages and disadvantages of operating multiple fire apparatus out of Station 3 until a new fire station is constructed.

5. Develop plans to address the travel time issues identified for coverage areas that currently exceed NFPA 1710 response time recommendations. Strategically plan, using creative deployment concepts and progressive strategies to minimize the impact of elongated response times to the community. Active participation in the comprehensive planning processes for the city must ensure that all development planning includes input and recommendations from fire personnel related to fire protection for the city.

J. Performance Maintenance and Improvement Plans

The department will be following the Commission on Fire Accreditation International (CFAI) model for performance compliance as identified in *CFAI Standards of Cover 6th Edition*. In an internal control document, Policy 44, the department has formalized a performance compliance plan that addresses how, by whom, and how often the process will be evaluated.

Lee's Summit Fire Department
Performance Compliance Methodology Model



Phase 1.

Establish or Review Performance Measures:

- Identify what performance measure will be monitored and how often they will be reviewed internally vs. externally.

Phase 2.

Evaluate Performance:

- Evaluate performance as part of an ongoing quality assurance program to ensure organizational compliance against the performance measures.

Phase 3.

Develop Compliance Strategies:

- Immediate action items to close the gaps in particular areas.
- Resources that can be/should be reallocated.
- Alternative methods to provide service at the desired level.
- Budget estimates as necessary while considering the cost - benefit.
- Maximization of existing resources.
- Develop a plan of action.

Phase 4.

Communicate Expectations to the Organization:

- Provide appropriate levels of training/direction for all affected personnel.
- Explain the method of measuring compliance with personnel who are expected to perform the services.
- Provide feedback mechanisms.
- Communicate consequences for noncompliance.
- Empower personnel within the organization to identify the need to modify processes as necessary to comply should there be a conflict with new methods.

Phase 5.

Validate Compliance:

- Develop and deploy verification tools and or techniques which can be used by the organization on an ongoing basis to verify compliance of the measures.
- Review of the performance by company vs. overall performance.

Phase 6.

Make Adjustments and Repeat the Process:

- It is necessary to review changes to ensure service levels have been maintained or improved.
- Adjustments will be made as the need arises on a continuous basis.

Compliance Team / Responsibility

Compliance Team Composition

The compliance team is made up of the accreditation manager, data analyst, and the Emergency Response Performance and Outcomes (ERPO) Committee.

Monthly Compliance

To ensure the agency is meeting or exceeding current service level objectives, monthly monitoring of service level baselines must be conducted on a regular basis. The compliance team will review service level baselines on a monthly basis. Included in the review shall be a summary of the results of the service level objectives consisting of:

- Call processing times for all emergency incidents
- Department-wide turn-out times
- Operational demand by the program for the department
- Operational demand to incidents by unit
- Mutual Aid

In addition to the review of service level objectives, the compliance team will review the response demands within each zone and the identified risks within. The compliance team will determine if there have been any changes within a planning zone, changes to service demands or changes in standards or operations that impact the service level objectives or the SOC document. These reviews will be conducted monthly.

An analysis will be performed of current results with previous results and calculations of the performance gaps or improvements will be included.

To aid in the collection and presentation of this information, the compliance team will work as a group to assemble all required information and assist department administration in the interpretation of data and considerations for improvement towards closing the gap between the benchmark goal and the baseline performance. The final report will be presented to the fire chief every month. This report will be reviewed monthly at the fire department staff meeting and shared with the labor group in monthly labor/management meetings.

A report is also developed monthly and presented to the Public Safety Advisory Board (PSAB), which is an appointed board by City Council made up of Lee's Summit residents. A city council member attends all meetings as a liaison to the city council. The report contains demand by each service delivery program for the month and a trend from the previous year. It also includes demand for EMS transports and demand by station month to date and year to date.

Quarterly Compliance

To ensure the agency is meeting current service level objectives, quarterly monitoring of service level baselines must be conducted on a regular basis. The compliance team will review service level baselines on a quarterly basis. Included in the review shall be a summary of the results of the service level objectives consisting of:

- Turn-out times by shift and company
- Operational program demand by department
- Operational program demand by fire station district
- Outcomes by program

An analysis will be performed of current results with previous results, and calculations of the performance gaps or improvements will be included.

In addition to the review of service level objectives, the compliance team will review the response demands within each zone and the identified risks within. The compliance team will determine if there have been any changes within a planning zone, changes to service demands or changes in standards or operations that impact the service level objectives or the SOC document. These reviews will be conducted on a quarterly basis.

To aid in the collection and presentation of this information, the compliance team will work as a group to assemble all required information and assist department administration in the interpretation of data and considerations for improvement towards closing the gap between the benchmark goal and the baseline performance. The final report will be presented to the fire chief on a quarterly basis (January, April, July, and October).

This report, reviewed at the monthly labor/management meetings, and quarterly at staff meetings, provide awareness of emergency response performance gaps.

Annual Compliance

To ensure the agency is meeting current service level objectives, monitoring of service level baselines must be conducted on a regular basis. The compliance team will review service level baselines on an annual basis. Included in the review shall be a summary of the results of the service level objectives consisting of:

- Response performance report for all programs and risk levels (full performance tables)
    -Call processing, turnout, distribution, and concentration
- Turn-out times by each company
- Operational program demand by department
- Operational program demand by fire station district
- Operational demand by unit
- Outcomes by program
- Mutual Aid

An analysis will be performed of the results with previous year's results, and calculations of the performance gaps or improvements will be included.

In addition to the review of service level objectives, the compliance team will review the response demands within each zone and the identified risks within. The compliance team will determine if there have been any changes within a planning zone, changes to service demands or changes in standards or operations that impact the service level objectives or the SOC document. These reviews will be conducted on an annual basis.

To aid in the collection and presentation of this information, the compliance team will work as a group to assemble all required information and assist department administration in the interpretation of data and considerations for improvement towards closing the gap between the benchmark goal and the baseline performance. The final report will be presented to the fire chief by the end of the first quarter. This report, reviewed at the monthly labor/management meetings, and annually at staff meetings, provide awareness of emergency response performance gaps.

Standards of Cover Compliance

The SOC document will be completely rewritten every five years to match accreditation cycles. Prior to the fourth year in each accreditation cycle, a formal SOC team will be established for the development and writing of the next SOC. The next edition of the Lee's Summit Fire Department's SOC will be published no later than the year 2024.

The next SOC team will be established in the fall of 2022.

Performance Evaluation and Compliance Strategy

The value of an effective and accurate performance evaluation to the organization and to the community cannot be overstated. The department continually strives to achieve the benchmark goals established by the community, which requires a significant amount of evaluative effort on the part of the compliance team. The performance areas currently under evaluation will expand as the department begins to measure specific program and community outcomes in addition to the service level baselines outlined in Policy 44.

Whenever possible, new outcome measurements are developed and evaluated once the tracking methodology can be established and documented. All new service delivery measurements and outcomes will be included in the monthly compliance team meetings, at which point the committee can work to develop improvement strategies to departmental data collection processes and ultimately, the outcomes they measure.

Compliance Verification Reporting

Monthly External Performance Report

A report is developed monthly and presented to the Public Safety Advisory Board (PSAB), which is an appointed board by City Council made up of Lee's Summit residents. A city council member attends all meetings as a liaison to the city council. The report contains demand by each service delivery program for the

month and a trend from the previous year. It also includes demand for EMS transports and demand by station month to date and year to date.

Annual External Performance Reports

An annual compliance report will be generated and submitted to the Commission on Fire Accreditation International (CFAI) for review.

In compliance with CFAI performance indicators 2D.8 and 2D.9, the Fire Chief and the accreditation manager will deliver an annual report to the authority having jurisdiction (AHJ) in a council presentation. This report will serve to notify the AHJ of any gaps in the operational capabilities and capacity of its current delivery system to mitigate the identified risks within its service area (2D.8), and of any gaps between current capabilities, capacity, and the level of service approved by the AHJ (2D.9).

Continuous Improvement Strategy

The compliance team will assess the department's current deployment strategies for all emergency service operations against the community risks that are within its response area. Whenever deficiencies and/or inefficiencies appear, the compliance team will report them to the Fire Chief and work to develop strategies that address the performance gaps, which will improve the safety and quality of the service provided to the community. These performance evaluations, promulgated in Policy 44, will occur whenever gaps are identified and on the monthly, quarterly, and annual schedule.

Any inadequacies or negative trends that limit the service delivery capabilities of the organization will be reported to the AHJ and the community at least annually.