City of Leawood, Kansas
Fire Department

Standards of Cover

2015

Leawood Fire Department

Fire Chief H. David Williams

Accreditation Manager

Training Chief Colin Fitzgerald

LFD Accreditation Team

Deputy Chief Wayne Harder
Battalion Chief Jarrett Hawley
Captain Jeremy Jones
Captain Scott Rutherford
Master Firefighter III Derek Boggs
Master Firefighter III Joe Ostermann
Firefighter III Austin Berry
Firefighter III Aaron Ogilvie
Firefighter III Andrew Harper

Introduction

The following report serves as the Leawood Fire Department's "Integrated Risk Management Plan: Standards of Cover" document. The Commission on Fire Accreditation International (CFAI) defines the process, known as "deployment analysis," as a written procedure which determines the distribution and concentration of fixed and mobile resources of an organization. The purpose for completing such a document is to assist the agency in ensuring a safe and effective response force for fire suppression, emergency medical services, and specialty response situations in addition to homeland security issues.

This report is based upon the methodology founded by the Commission on Fire Accreditation International (CFAI) in the *CFAI Fire and Emergency Services Self-Assessment Manual*, 8th Edition, and the *CFAI Standards of Cover*, 5th Edition.

The report contains an overview of the City of Leawood and its fire department along with a hazard/risk assessment for the community, analysis of critical tasking and effective response force determinations, historical performance with distribution, concentration and reliability evaluations, establishment of baseline and benchmark performance objectives, compliance methodology, and an overall evaluation of findings with recommendations.

Table of Contents

Executive Summary

The City of Leawood is a prosperous and vibrant suburban community located in Johnson County, Kansas, part of the greater Kansas City metropolitan area. Leawood is generally characterized as an upscale residential community with a growing commercial presence, mainly dedicated to the service industry such as health care, restaurants, shopping centers, and entertainment. For example, the headquarters of AMC Theatres and the American Academy of Family Physicians can be found here. Leawood is home to the wealthiest zip code in the State of Kansas, 66211. Leawood is bordered to the east by Kansas City, Missouri with the state line setting the eastern border. Leawood is bordered to the north by Prairie Village and to the west and south by Overland Park. The city covers approximately 15.7 square miles, resembling an elongated rectangle running north/south with an estimated 2013 population of 33,566. The city is currently 75 percent built out.

The Leawood Fire Department is a progressive emergency response agency and an integral part of the city's public safety mission. The department currently has 55 members operating out of three strategically located fire stations, dedicated to compassionate service and professionalism. The department enjoys an extremely positive reputation within the community. Besides emergency response, the department pursues an aggressive fire and life safety mission through prevention and education.

The department performed an in depth study identifying risk, analyzing incident data and system performance, and revealing overall strengths and weaknesses in the emergency response system. This study was used to determine baseline performance standards and establish future benchmark goals for improvement. The study revealed that the department provides a strong response capability for the majority of emergency calls for service with some opportunities for improvement with the addition of a fourth fire station in the busy commercial heart of the city.

The standards of cover process provided the framework for a data driven organizational analysis of performance strengths and weaknesses as well as an overall evaluation of risk. This process will assist in achieving the department's goal for continuous organizational improvement. It will also help determine future efficient and cost effective methods of providing quality services as the city continues to grow and develop.

Section 1 - Description of the Community Served

Legal Basis and Governance

The City of Leawood was the first of the suburban cities in northeastern Johnson County to incorporate and was originally incorporated as a city of the third class in 1948. It became a city of the second class in 1959. On December 31, 1998, Leawood became a city of the first class. Leawood operates under a mayor-council form of government with a city administrator. The council is comprised of eight members elected on a non-partisan basis from four wards presided over by a separately elected mayor who holds the tie-breaking vote on equally divided questions. The mayor has superintending control of all appointed officers and department heads with supervising control delegated to the city administrator as chief administrative officer of the city.

The Leawood Fire Department is officially and legally established by Leawood City Code: Chapter VII Fire Protection, Article 1 Fire Department, Section 7-101 - Fire Department Established, and Section 7-102 - Membership.

Additionally, the legal enforcement of fire and life safety codes is officially and legally designated to the Leawood Fire Marshal under the direction of the Leawood Fire Chief as the authority charged with the duties of administration and enforcement of the Fire Code of the City of Leawood by Chapter VII Fire Protection, Article 2 Fire Prevention, Section 7.203 - International Fire Code, and Section 101.6 - "Code Official Designated".

Organizational History

Although Leawood is a young city, it has a rich and vibrant history dating back to the Native American peoples that first lived in this area. In fact, the state name "Kansas" is derived from the Kanza tribe, the original inhabitants of the area that would become Leawood. An influx of French and American traders in the 1700s, including the legendary Daniel Boone, explored this land. After the Louisiana Purchase in 1803, the area directly east of what would become State Line Road opened for settlement. The Santa Fe Trail, which crossed into the territory at 123rd and State Line, also hastened early development in the Leawood area. The Border Ruffian War, 1855-1857, had a brief negative impact on the local economy - bands of men, on political pretext, robbed settlers and traders, leading to a curtailment of activities along the Santa Fe Trail. However, early in 1857, economic conditions rebounded as the town of Oxford, Kansas, was founded. Leawood's predecessor by a little less than a century, Oxford became a trade center for a large part of the surrounding area. Unfortunately, Oxford was one of the casualties of the Civil War -- after 1865, little remained but the boundaries of the township.

In 1922, Oscar G. Lee, a retired police officer from Oklahoma, purchased 600 acres of land between what is now 79th and 103rd Streets and State Line and Belinder Roads. Mr. Lee, the namesake of Leawood, built his home just north of where the original Leawood City Hall and Fire Station #1 still stands. Mr. Lee provided the first public road through his property, Lee Boulevard, from 83rd Street to 103rd Street.

On December 1, 1948, the City of Leawood became an incorporated city of the third class. One of the major reasons for incorporation was to improve city services, especially fire and police protection. At that time, those services were provided by the Overland Park Volunteer Fire Department and the Sheriff's Department in Olathe, Kansas. As activity and response times were increasing for the 832 residents of Leawood, a small group of men decided that Leawood needed its own fire department. Those men formed a fire department committee and set out to organize the Leawood Fire Department.

Since there were no funds available for the new city until the next tax year, a campaign was launched to raise donations from Leawood homeowners for the purchase of a fire engine and firefighting equipment. By November 1949, sufficient funds had been obtained to purchase a fully equipped 1949 Ford Central 500 GPM pumper. Brook Beatty, who was the owner of a plastics company in Kansas City, Missouri and a Leawood resident, was appointed to the position of volunteer Fire Chief. Chief Beatty is pictured below in the white coat and fire helmet next to the 1949 Ford which has been restored and is currently on display at Station 31. (Note - In August 1966, a park located at 86th and Lee Blvd. was renamed Brook Beatty Memorial Park in honor of Chief Beatty's dedicated service to the citizens of Leawood.)

Initially, the new fire engine was stored in a barn owned by Kroh Brothers Development near 96th & Lee Boulevard. However, a new fire station was soon built next to the barn on land donated by the Kroh Brothers. The original station at 9609 Lee Boulevard, which can be seen in both pictures above and below, was built at a cost of $19,245.47 and was financed through the City's first bond issue. While the station has undergone several additions and upgrades over the years, the building is still in use today as Station 31.

In 1951, the City purchased another Ford Central 500 GPM pumper to add to its fleet. Chief Beatty also determined that there was a need for specialized equipment such as a 1954 Jeep that was needed to go off-road to fight grass fires. The jeep was built and equipped by Chief Beatty and affectionately nick-named "Junior". In addition, Chief Beatty saw a critical need for some type of ambulance service in Leawood, since it typically took 30 to 45 minutes or longer to get an ambulance for an emergency. That being the case, Chief Beatty purchased a 1956 Ford panel truck and skillfully converted it into a rescue vehicle, the first of its kind in the area.

By 1957, the Leawood Fire Department had grown to a fleet of four (Pictured above). In 1959, the Ford panel truck was replaced by a Cadillac Superior Royal Rescuer ambulance that was the pride of the Fire Department. As the City continued to grow, it became necessary to increase the pumping capacity of the fire apparatus so the two Ford pumpers were replaced by a 1957 American LaFrance 750 GPM Invader and a 1961 American LaFrance 1000 GPM Spartan. The first paid firefighters on record were hired in September 1958. Those firefighters worked from 8:30 am to 5:30 pm every other day except Sunday, while volunteers continued to provide the majority of the emergency response capability. In January 1961, in order to provide coverage around the clock, the Leawood Fire Department began to schedule paid firefighters to work 24 hours a day, seven days a week. In 1966, Leawood hired its first paid fire chief. Like many fire departments across the country, the volunteer ranks in Leawood continued to dwindle over the years with the last volunteer retiring in 2013. Today, the Leawood Fire Department is a fully staffed, paid department with no volunteers.

Over the years, the Fire Department continued to expand with both state-of-the-art equipment and paid firefighters. In 1970, female volunteers were trained in first aid and added to the volunteer staff to assist with ambulance calls during the day. Those female volunteers were affectionately known as "Rescuettes". In 1973, the 1959 Cadillac ambulance was replaced by a new Cadillac Miller Meteor ambulance and the department purchased its first diesel powered fire engine, a 1974 American LaFrance 1,500 GPM Dominion pumper.

In 1978, the City's second fire station, Station 32, was built at 127th & Mission Road to accommodate the City's continued southward expansion. The City's third fire station, Station 33, was opened in 2002 at 148th & Mission Road, and includes the fire department administration offices. Future plans include the rebuilding of Station 31 and a new Station 34 in the commercial core of the city.

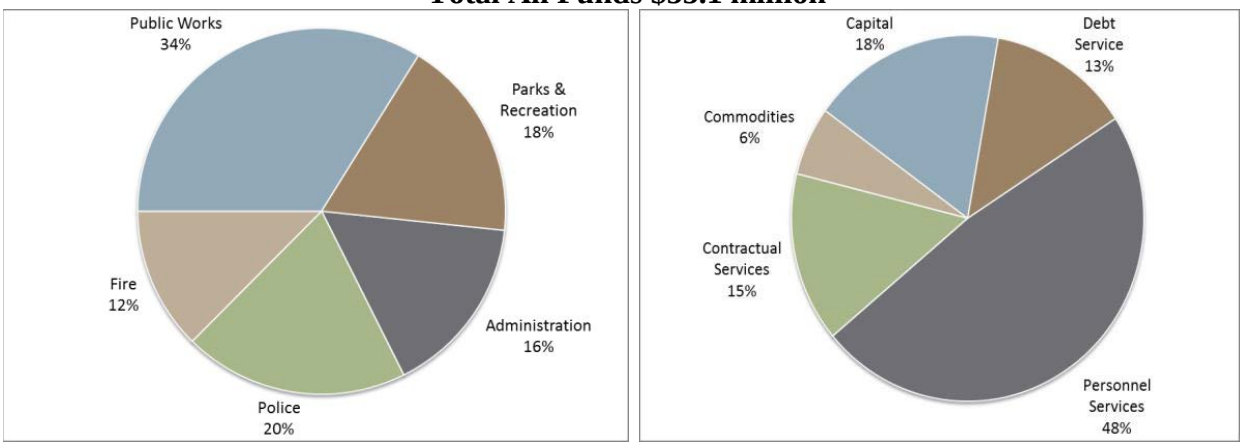
In October 2005, the City discontinued its ambulance service which was taken over by Johnson County Med-Act. The Fire Department continues to respond to emergency medical calls as first responders but no longer transports patients to area hospitals.

Today the Leawood Fire Department is 55 members strong and responds from three fire stations, twenty-four hours a day, seven days a week. Paid firefighters, directed by a Shift Commander, are divided into three battalions that rotate on a 24-hour basis to staff two engines, a quint, a heavy rescue, and a platform ladder truck. Other staff personnel include the Fire Chief, Deputy Fire Chief, Fire Marshal, Training Chief, Fire Prevention Specialist, and an Administrative Assistant. Additional support is also provided by on-call firefighters and off duty personnel. Automatic and mutual aid agreements enable the Fire Department to give and/or receive support from other fire departments in the Kansas City metropolitan area, as necessary.

Department Funding

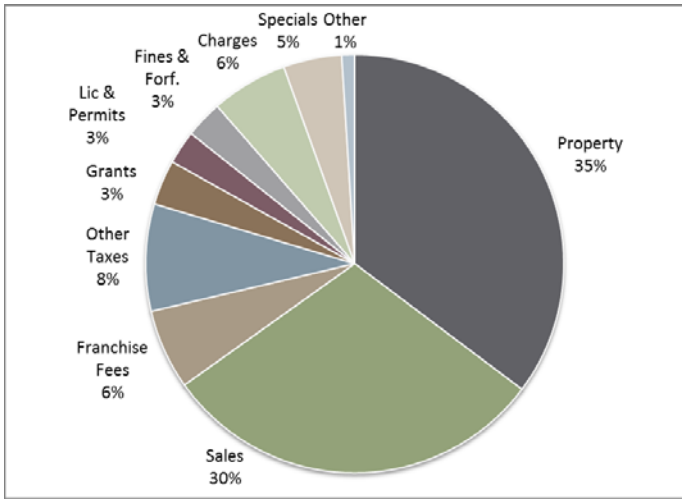
The Leawood Fire Department is funded through the City of Leawood's general fund. The Fire Department is one of five funded city departments including administration, police, public works, and parks & recreation. The 2014 budget for the fire department was $6,931,463. The overall budget for the City of Leawood in 2014 was $55,139,568. The fire department received 12.57 percent of the overall budget city budget. The City also has an approved 10 year capital replacement plan for vehicles and equipment with a 2014 total budget of $1,082,900.

2014 Budgeted Expenditures by Program
Total All Funds $55.1 million



Leawood receives revenue from property taxes, sales and use taxes, franchise fees, licenses and permits, fines and forfeitures, charges for service, special assessments, grants, and miscellaneous other taxes and sources.

2014 Budgeted Revenue by Source
Total All Funds $52.0 million



Any revenue received by the Leawood Fire Department to include fees or donations goes directly into the City's general fund. The fire department is allowed to pursue grant opportunities and utilize the funds directly but this must be approved in advance by the city council including any matching fund requirements.

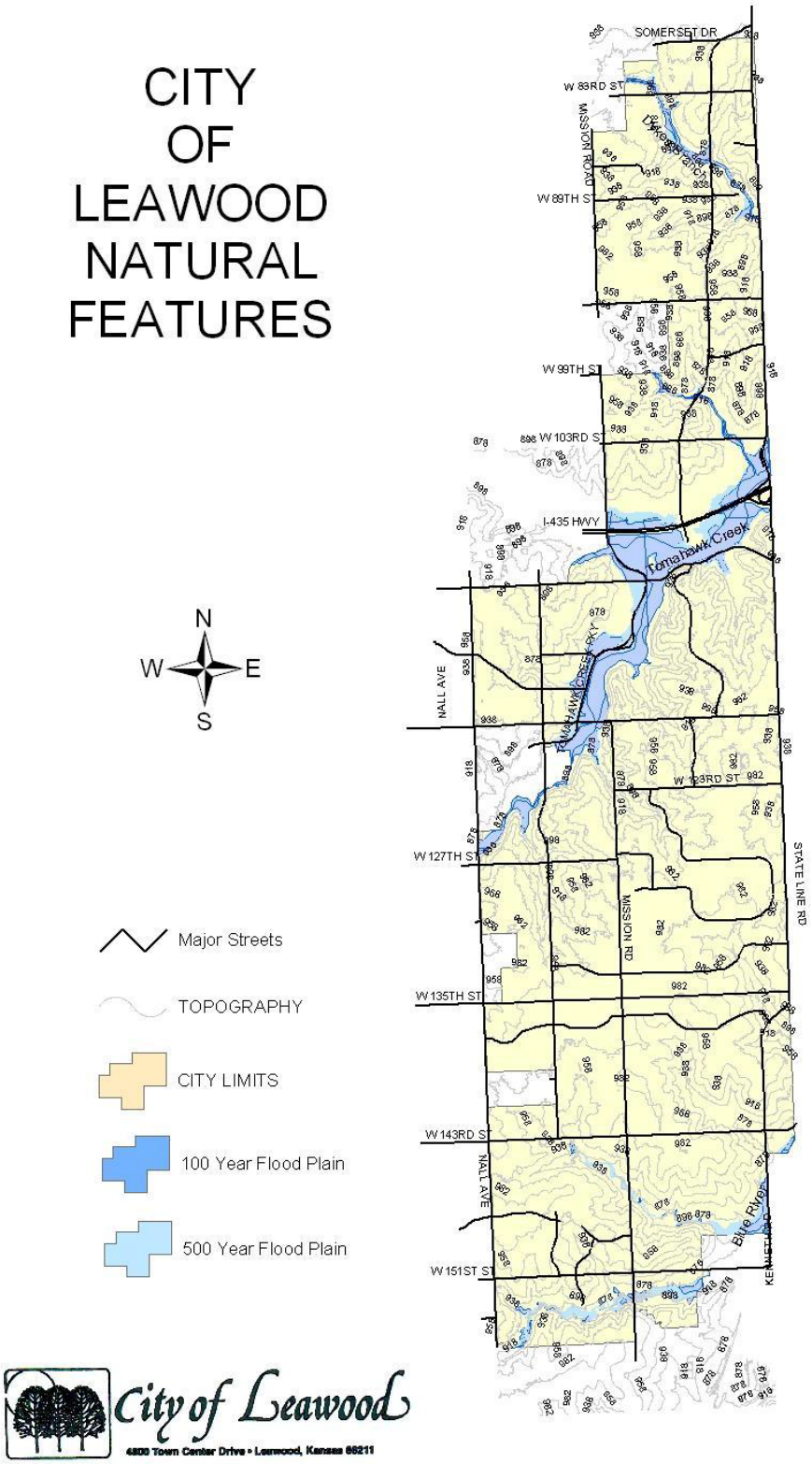
The City's fiscal year is set to the calendar year. Budget discussions begin in March with direction provided by the city council to the city administrator and finance director. The budget is prepared by fund, function, and department. Each department is then responsible for budget development within established guidelines to include putting together council decision packages for requested increases. The fire department budget is developed by the fire chief utilizing input from administrative staff as well as anyone else with program responsibility. The department budget is then submitted to the city administrator who presents the entire budget package to the city council for approval and adoption. The budget must then be submitted to the county clerk by August 25th of each year in accordance with Kansas law.

Area Served

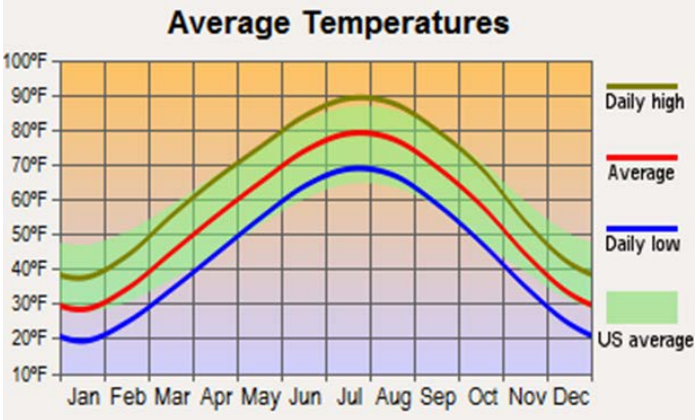
The City of Leawood is found in northeastern Johnson County, Kansas and approximately ten miles southwest of downtown Kansas City, Missouri. Johnson County encompasses 476 square miles and with a 2013 estimated population of over 500,000, is the most populous county in the state. Leawood covers approximately 15.7 square miles, resembling an elongated rectangle running north/south. Leawood sits on the Kansas / Missouri state line and is bordered to the east by Kansas City, Missouri, to the north by Prairie Village, Kansas and to the west and south by Overland Park, Kansas.

Leawood is considered one of the most beautiful communities in northeastern Kansas, not only because of the architectural strengths of its residences, but also because of the City's natural resources. Leawood's land is characterized by flat valleys rising to gently rolling hills. The land generally slopes 2-8 percent which makes it very ideal for development. A very small percentage of the City's total land area slopes 12 percent or more, primarily in areas along the Indian,

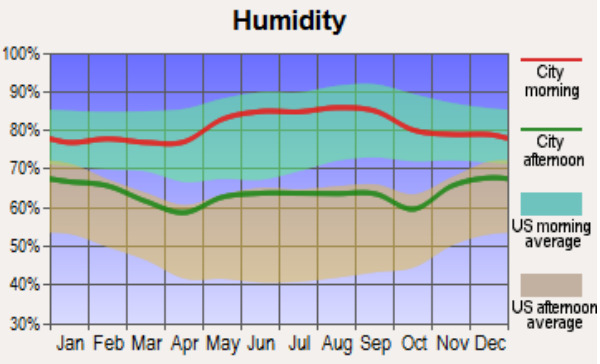
Tomahawk, and Negro creeks. Land elevations range from 850 to 1000 feet above sea level with the highest elevations along ridge lines and the lowest elevations along streambeds.

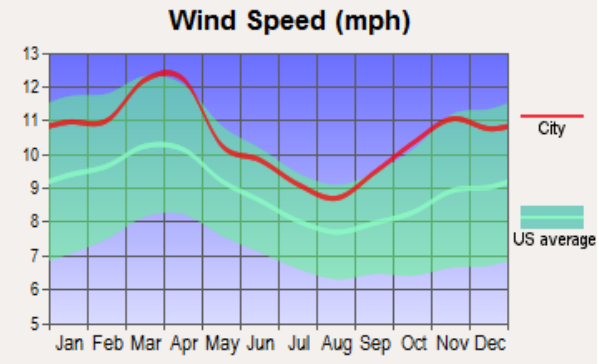


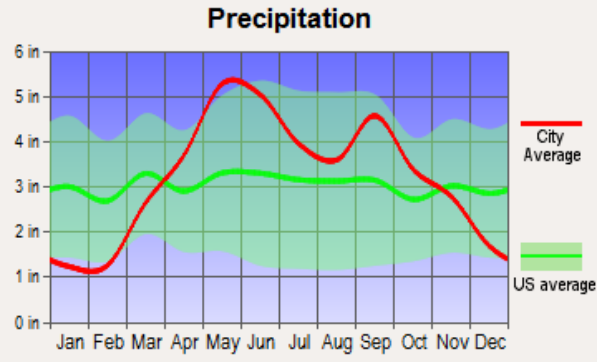
Climate

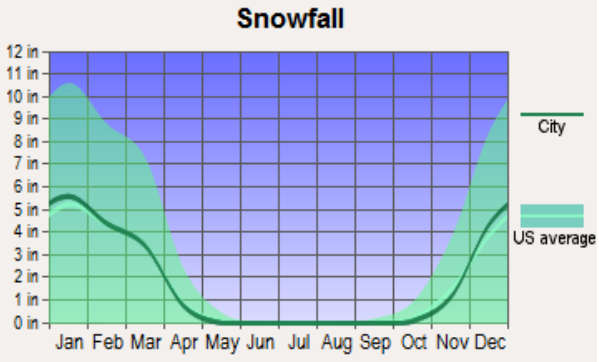


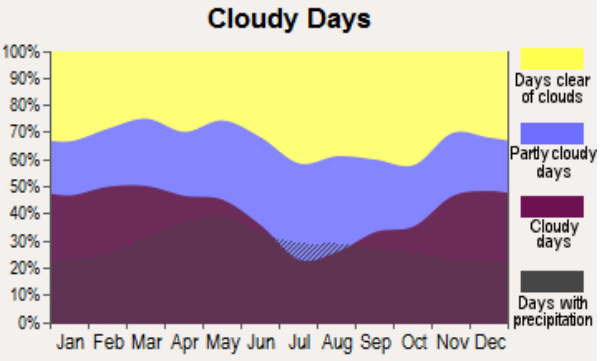
As a Midwestern city located near the geographical center of the United States, Leawood fully experiences all four seasons. The average high temp in July is 89 degrees while the average low temperature in January is 19. Leawood averages 217 sunny days per year with 39 inches of rain and 18 inches of snow on average.

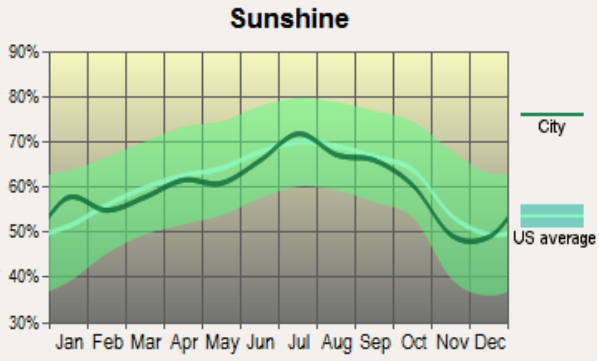












Population

As of the 2010 census, there were 31,867 people, 11,781 households, and 9,367 families residing in Leawood. The current estimated population is 33,566. The population density is 2,116.0 inhabitants per square mile. There are 12,384 housing units at an average density of 822.3 per square mile. The racial makeup of the city is 92.3% White, 1.9% African American, 0.1% Native American, 3.8% Asian, 0.4% from other races, and 1.4% from two or more races. Hispanic or Latino of any race are 2.2% of the population. There are 11,781 households of which 38.0% have children under the age of 18 living with them, 72.7% are married couples living together, 4.8% have a female householder with no husband present, 2.0% have a male householder with no wife present, and 20.5% are non-families. 18.1% of all households are made up of individuals and 9.6% have someone living alone who is 65 years of age or older. The average household size is 2.70 and the average family size is 3.09. The median age in the city is 44.7 years. 28.1% of residents are under the age of 18; 4.3% are between the ages of 18 and 24; 18% are from 25 to 44; 34.3% are from 45 to 64; and 15.3% are 65 years of age or older. The gender makeup of the city is 48.5% male and 51.5% female.

The City of Leawood's socioeconomic profile can be characterized by high levels of population growth, educational attainment, and home values. The City attracts many upper-middle to high-income families moving into the area for the first time or from surrounding cities. The City is home to the State's wealthiest zip code, 66211. The following is a list of comparative statistical information for the City, based on the 2010 U.S. Census Bureau:

	City of Leawood	***Johnson County***	***State of Kansas***	***United States***
Median Age	44.7	36.4	42.9	36.9
Owner Occupied Housing Units	92.4%	70.8%	67.8%	65.1%
Bachelor Degreed Adults	74.8%	51.6%	29.8%	28.2%
Median Income Household	$124,184	$71,761	$47,817	$51,914
Families Below Poverty Level	2.7%	7.1%	13.4%	13.8%
Median Home Value	$387,464	$214,600	$125,500	$147,300

Development

The City of Leawood is well situated in the Kansas City metropolitan area, directly on the Kansas-Missouri border, with easy access to an extensive network of highways. Almost every community in the metro can be reached in thirty minutes or less. Leawood has experienced significant growth in both residential and commercial developments over the last fifteen years. The majority of the growth has occurred in the southern portion of the City, which had been largely undeveloped. The development can be characterized as high bracket, single-family subdivisions, shopping centers and office buildings. The City's location in the growing southern part of Johnson County, the quality of two public school districts (the Shawnee Mission Unified School District No. 512 and the Blue Valley Unified School District No. 229) and the overall high standards of living have all contributed to economic growth. The community has approximately 969 business establishments, currently employing approximately 18,092

individuals. Over 50 area restaurants offer a multitude of dining environments. Leawood is currently 75 percent built out.

A number of developments, including Mission Farms, One Nineteen, and Park Place, offer a pedestrian-friendly environment not often found in a suburban community, with easy access to shops, dining, offices, and a variety of residential choices. Town Center Plaza and Park Place are located in what is considered to be Leawood's "new downtown." The area is located near City Hall, The Leawood Pioneer Branch of the Johnson County Library, and the city's first hotel, Aloft Leawood-Overland Park.

The City of Leawood was recognized in 2013 in *Ingram's* "Best of Business" edition by receiving the "Bronze Award" for the "Best Business- Friendly City/County Government in the Metropolitan Area." Additionally, the City of Leawood was identified by *CNN Money* as the 25th top-earning municipality in the Country with a median family income of over $140,000. Finally, the publication *Neighborhood Scout* ranked Leawood as the 94th safest city in the Country among cities with populations over 25,000.

Section 2 – Services Provided

Service Delivery

The Leawood Fire Department is a career organization that serves the public from three fire stations that are staffed 24 hours a day, 7 days a week. Current department staffing stands at 55 personnel with 53 of those full-time and 2 on-call, part-time personnel.

The Leawood Fire Department is a full service fire and emergency medical service (EMS) agency delivering fire suppression services, EMS at the basic life support level in a first responder role, emergency management, fire prevention inspections and education, codes enforcement, post-fire investigations, pre-plans and plans review, public fire and life safety education, hazardous materials response at the operations level, vehicle extrication, and technical rescue services at the technician level for swift water, ice, high angle, trench and structural collapse.

The Leawood Fire Department is led by the fire chief who also serves as city's emergency manager. Supporting administrative staff includes the deputy chief, the training chief, the fire marshal, a fire prevention specialist, and an administrative assistant. The deputy chief heads up the overall operations division. The training chief manages all aspects of training and also heads up the EMS program, the public education program (CPR, First Aid, CERT, etc.) and is the department accreditation manager. The fire marshal supported by the fire prevention specialist oversees all aspects of fire prevention to include plans analysis, inspection, post fire investigation, and code enforcement.

Two of the three operational shifts have an assigned strength of 16 personnel across four fire companies led by a shift battalion chief. One shift operates with a permanent vacancy and therefore has an assigned strength of 15. Minimum manning for each shift is 13 personnel. Each shift works for 24 hours at a time on the "Berkeley Schedule" which amounts to 24 hours on, 24 hours off, 24 hours on, 24 hours off, 24 hours on, 96 hours off. Each station is led by a captain who also operates as the suppression unit company officer. A lieutenant is assigned to station 32 and serves as the company officer for the second company.

The department has an established program to rescue endangered persons from trapped or life endangering causes. All members are trained to the operational level for hazardous materials and vehicle extrication. Members of the technical rescue team are on duty each shift for incidents involving structural collapse, trench rescue, confined space, high angle rope rescue, extrication, and water rescue. Members of the technical rescue team also belong to Kansas Task Force Three which can be called upon for large-scale rescue incidents throughout the state.

The department has robust automatic aid agreements with all 13 emergency response agencies within Johnson County allowing for large event staffing, system overload coverage, etc. A common county dispatch center using an automatic vehicle location system and computer aided dispatch ensures for consistent event coverage.

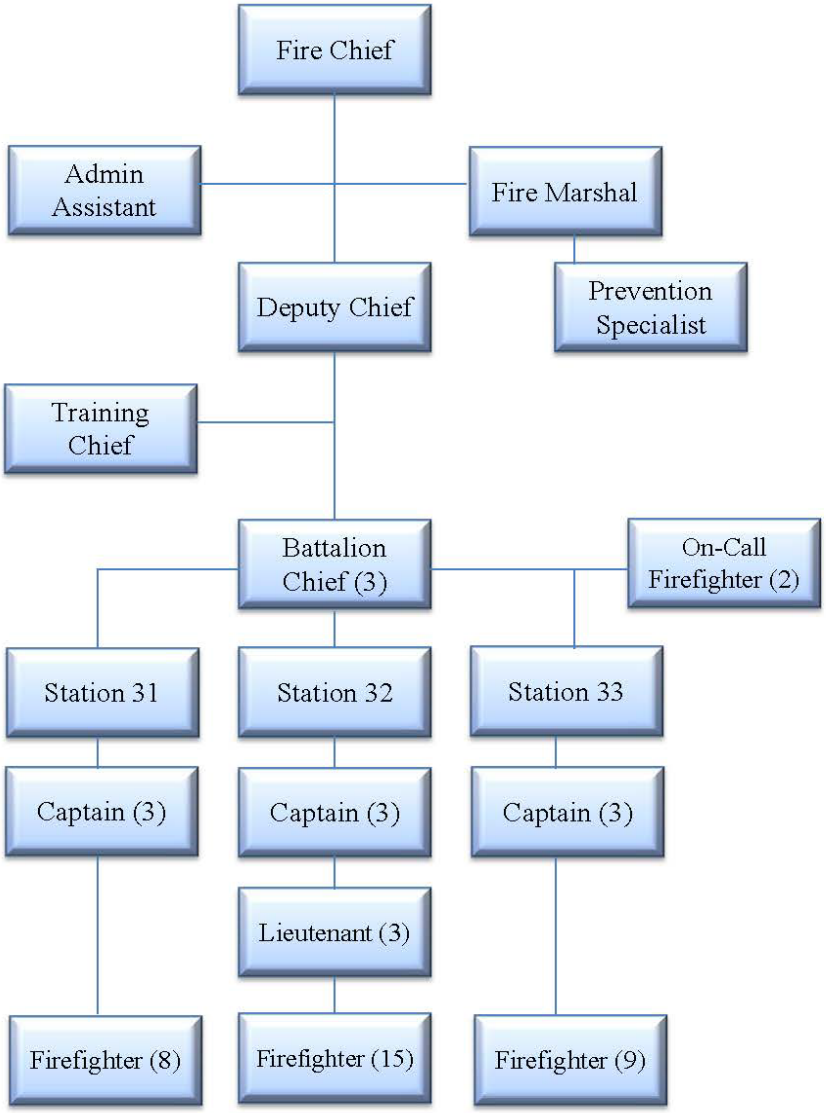
The department provides first responder emergency medical services (EMS) to all incidents within the city at the basic life support level. Automatic aid EMS response is also provided to and received from other county agencies according to established priority and location criteria. All agencies within Johnson County, KS operate under common medical protocols. The department utilizes the county advanced life support (ALS) transport service, Johnson County Med-Act, to provide hospital transport for EMS patients. A Med-Act ambulance and crew is housed at Station 32.

Specialized calls for service beyond the capabilities of the Leawood Fire Department such as major hazardous materials emergencies, sub-surface water rescues, and explosive ordinance disposal calls are handled through automatic or mutual aid responses utilizing extensive county or regional metropolitan resources.

On a local county level, automatic aid agreements are in place for situations that warrant additional resources, equipment or rescue technicians. The City of Olathe Fire Department and Consolidated Fire District #2 provide mutual aid assistance with specialized below grade capabilities for trench rescues. The City of Olathe Fire Department provides mutual aid assistance for specialized structural collapse rescues. The City of Overland Park Fire Department and the City of Olathe Fire Department provides mutual aid assistance for specialized hazardous material and confined space incidents. The City of Olathe Fire Department provides an explosive ordinance disposal team. The Overland Park Police Department and Lee's Summit Fire Department both provide sub-surface water teams. In return the Leawood Fire Department provides specialized rescue technicians and equipment for those cities as a mutual aid response including swift water rescue and structural collapse.

On a regional level, advanced technical rescue resources have been determined by decisions made by the Mid-America Regional Council (MARC) Homeland Security Coordinating Committee. The committee, with UASI assistance, has funded Regional Heavy Urban Search & Rescue Teams. Resourced and funded departments include the Olathe, Kansas Fire Department, Kansas City, Missouri Fire Department, Kansas City, Kansas Fire Department, and Central Jackson County Fire Protection District. The committee also funded with UASI assistance regional Hazardous Materials Teams – Olathe, Kansas Fire Department, Kansas City, Missouri Fire Department, Lee's Summit Fire Department, Overland Park, Kansas Fire Department and the Central Jackson County Fire Protection District – Tri-District Haz-Mat Team.

Leawood Fire Department
Organizational Chart



Minimum Training Standards

Minimum training standards have been established for all positions in the department. The following basic requirements apply for the corresponding rank and responsibility within the department:

Firefighter I (Entry level requirements)
- High School Diploma or GED
- Firefighter I & II certifications (NFPA 1001 compliant)
- Hazardous Materials Operations certification (NFPA 472 compliant)
- Emergency Medical Technician license – KSBEMS

Firefighter II (Must be completed by end of first year)
- Successful completion of the LFD Firefighter Probationary Program
- NIMS IS100
- NIMS IS700

Firefighter III (Must be completed by end of second year)
- Successful completion of the LFD Driver Training Program
- Inspector I certification (NFPA 1031 compliant)
- NIMS IS200

Master Firefighter I (Optional)
- Minimum of one year as a FF III.
- Driver/Operator: Pumper certification (KFRTI or equivalent)
- Successful completion of LFD Driver Operator: Pumper program
- Complete Master Firefighter I Responsibility Acceptance Certification document

Master Firefighter II (Optional)
- Minimum of one year as a MFF I.
- NIMS IS800
- Fire Instructor I certification (NFPA 1041 compliant)
- Driver/Operator: Aerial certification (KFRTI or equivalent)
- Successful completion of LFD Driver Operator: Aerial program
- Complete Master Firefighter II Responsibility Acceptance Certification document

Master Firefighter III (Optional)
- Minimum of one year as a MFF II.
- NIMS IS300
- Fire Officer I certification (NFPA 1021 compliant)
- Incident Safety Officer (KFRTI, NFA, or equivalent)
- Strategies and Tactics for Initial Company Operations (KFRTI, NFA, or equivalent)
- Complete LFD Officer Development Program
- Complete Master Firefighter III Responsibility Acceptance Certification document

Lieutenant (Promotional)

- Associate's Degree (48 hours towards degree required to test)
- Fire Instructor 2 (NFPA 1041)

Captain (Promotional)

- NIMS ICS 400
- Fire Officer 2 (NFPA 1021 compliant)

Chief Officer (Promotional)

- Bachelor's Degree (Master's preferred for Fire Chief)
- Executive Fire Officer (NFA) – can be completed after promotion
- Chief Fire Officer designation (CPC) preferred

Technical Rescue Team (Optional & Department needs based - personnel assigned have the following training and certifications at a minimum):

- Swift water rescue technician 1 & 2 (advanced)
- Technical (Advanced) Rope Rescue Technician
- Structural Collapse Technician
- Confined Space Rescue 1 & 2

Stations, Apparatus, & Staffing

The Leawood Fire Department has four crews plus a shift battalion chief on duty at all times. The department staffs the following stations with the listed apparatus and noted *minimum* staffing per unit:

Station 31 – 9601 Lee Blvd		
Engine 31	2011 Pierce Velocity PUC, 1500 GPM, 500 Gallon Tank, CAFS	3 – personnel minimum
Utility 31	2005 Ford F250 4x4	Support
Engine 30	1949 Ford Central Pumper	Ceremonial Use
Station 32 – 12701 Mission Rd		
Engine 32	2011 Pierce Velocity PUC, 1500 GPM, 500 Gallon Tank, CAFS	3 – personnel minimum
Rescue 32	2008 Pierce Saber	3 – personnel minimum
Truck 32	2002 Pierce Dash, 100' Aerial Platform, 2000 GPM, 300 Gal Tank	Cross-staffed
Battalion 32	2013 Chevrolet Tahoe 4x4 (command vehicle)	1 – personnel minimum
Station 33 – 14801 Mission Rd		
Quint 33	2007 Pierce Dash, 75' ladder, 2000 GPM, 500 Gallon Tank	3 – personnel minimum
Engine 33	2008 Pierce Velocity, 1500 GPM, 500 Gallon Tank, CAFS	Mechanical Reserve
Utility 33	2011 Ford F350 4x4	Support
Utility 35	2009 Chevrolet Tahoe 4x4	Support
Trailer 33	16' Enclosed Trailer (technical rescue equipment, command post)	Support
Boat 33	Inflatable boat for water rescue	Support
ATV 33	All terrain rescue vehicle	Support

Fire Stations

The Leawood Fire Department operates out of three strategically located fire stations. The oldest station is to the north with each station getting newer as you head south.

Station 31

Station 31, found at 9609 Lee Boulevard, is the oldest operating fire station in Johnson County. The original core of the structure was built in 1949 at a cost of $19,245.47 and was financed through the City's first bond issue. While the station has undergone several additions and upgrades over the years, it is still in use today although scheduled to be replaced in the near future. Station 31 houses a single crew manning an engine, along with a utility pickup truck, and the department's original, restored, 1949 Ford Central Pumper.

Station 32

Station 32, found at 12701 Mission Road, was built in 1978. Due to its central location, it houses two fire crews, the shift battalion chief and his SUV, and a county ambulance and crew. One fire crew mans an engine while the other cross-mans a heavy rescue and an aerial platform truck.

Station 33

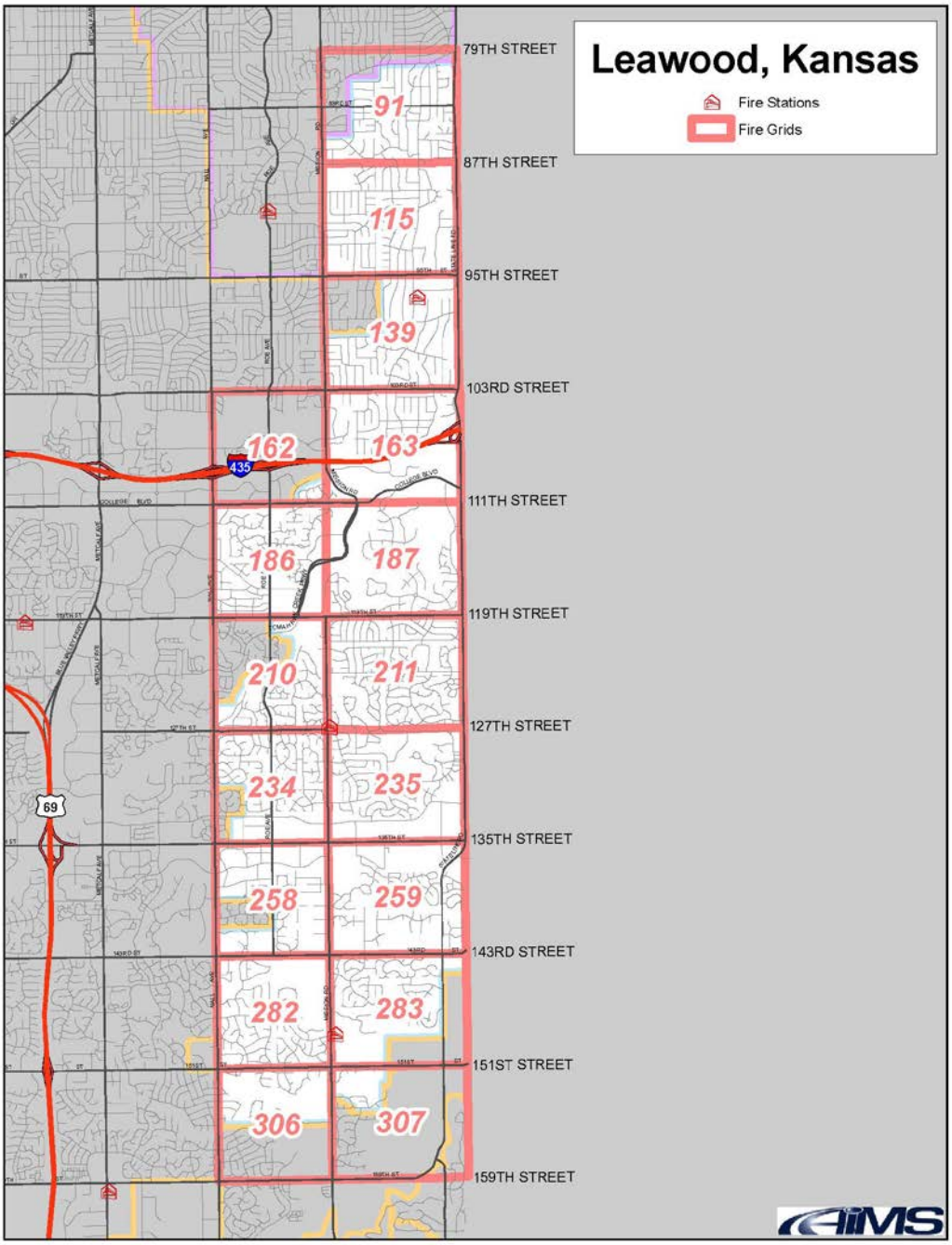
The City's third fire station, Station 33, was opened in 2002 at 14801 Mission Road, and includes the fire department administration offices. The station houses a single fire crew manning a Quint. The station also houses a mechanical reserve engine, a utility pickup, a staff SUV, and two rescue equipment trailers which include the boat and an all-terrain rescue vehicle.

Two capital improvement plans involving fire stations have been approved and are waiting on funding. Station 31 will be completely rebuilt in the near future followed by the construction of a new station 34 in the busy commercial core of the city.

Response Areas

The Leawood Fire Department has identified 17 demand zones which fall into the 3 different station response districts. Each demand zone corresponds to a census tract / county map grid and measures 1 square mile. Some of the grids are only partially within Leawood city limits. The City of Leawood consistently maintains an urban population density of at least 2,116 residents per square mile throughout all 17 grids. More detail can be found in the risk assessment section.

Leawood Demand Zones / Grids



Section 3 – Community Expectations and Performance

Community Expectations

To ensure that community needs were incorporated in the planning process of the fire department, a community-driven strategic planning process was initiated by the Leawood Fire Department. The process began on January 30, 2014, with a local meeting of community representatives including Leawood Chamber of Commerce members, community homeowner's association members, and Leawood citizens. Seventeen questionnaires were completed and returned. The department also posted the same questionnaire on the departmental website resulting in the completion of an additional 67 questionnaires for a total of 84 feedback responses. The department realizes that this feedback is important not only for accreditation, but for developing long term goals and understanding community expectations.

The external stakeholders were first given the task of prioritizing services offered by the fire department.

External Stakeholders prioritized the service categories offered by LFD in order of importance using the numbers 1 – 9 with 1 being the most important and 9 being the least.

Ranking	Average Score	Service Categories
1	1.94	Fire Suppression (Putting out fires)
2	2.14	Emergency Medical Services (medical or trauma care – Examples: cardiac arrests, strokes, bleeding, motor vehicle accidents, etc.)
3	3.85	Rescue – Basic and Technical (advanced water and ice, vehicle extrication, confined space, high angle, structural collapse, etc.)
4	5.16	Fire Prevention (Inspections, Code Enforcement, Pre-Fire Planning, etc.)
5	5.19	Domestic Preparedness Planning and Response (community all–hazards emergency planning, disaster management, etc.)
6	5.82	Fire Cause Investigation (what caused or contributed to the fire)
7	6.20	Hazardous Materials Mitigation (Chemical or biological emergencies - storage, transport, etc)
8	6.93	Public Education (CPR, AED, First Aid, fire safety, school outreach, CERT, etc)
9	7.79	Public Safety Services (certified child car seat installation, alarm and detector investigations and aid, business and residential safety inspections, etc.)

It is realized that fire departments have to adapt and find ways to evolve to provide relevant service. The External Stakeholders were asked to select any areas of service they felt needed immediate or focused attention. It was later discovered that many who may have selected needs were unaware that the department already provides service in these areas, showing a need for great public relations and communications.

Areas the community feels needs immediate or focused attention. (Listed in order from most chosen to least.)

Category
Domestic Preparedness Planning and Response
Emergency Medical Services
Hazardous Materials Mitigation
Public Education
Fire Suppression
Fire Prevention

External stakeholders were asked through various questions to provide expectations of the Leawood Fire Department. A summary of some of the more common themes is provided below. For the complete list of verbatim responses, see the *Leawood Fire Department 2014-2019 Strategic Plan*.

Below are some of the common themes regarding community expectations for the Leawood Fire Department (summarized from verbatim responses):

- Better public education of available services provided by the fire department
- Evaluation of potential station additions due to city growth
- Additional public education over fire prevention systems including smoke detectors and alarm systems
- CPR, first aid, and other public education
- Rapid response to emergencies
- Response utilizing the right equipment with professional, well-trained personnel
- Review need to respond with large fire apparatus to every call
- Develop a relationship with business owners and community leaders and a system to better disseminate information

Community Driven Goals & Objectives

The Leawood Fire Department followed up its strategic planning process with the creation of goals and objectives designed to meet the expectations of both the community external stakeholders and the departmental internal stakeholders.

Goal 1: Improve communication with the public.

A. Objective: Research current public communication services provided by peer agencies as well as other departments in the City of Leawood.

B. Objective: Effective utilization of social media.

C. Objective: Interact with community partners utilizing social events and open houses as a means of providing the public with information

D. Objective: Utilize PIO process to establish media relationships, provide department information, & target specific areas for after action reports

Goal 2: Improve the response to medical emergencies and quality of medical care.

A. Objective: The fire department has improved its response to calls requiring ALS medical service.

B. Objective: Response times to calls for medical service have decreased.

C. Objective: The citizens of Leawood are receiving enhanced information on the medical resources available to them.

D. Objective: Review and utilize the Community Paramedicine concept to the extent that it benefits the citizens of Leawood

Goal 3: Improve the fire department facility and equipment infrastructure.

A. Objective: The department has reviewed the potential for the use of alternative vehicles in providing needed services for its citizens.

B. Objective: The department has begun the design and planning of new fire stations.

C. Objective: The department has established a process for the design and review of new vehicles and equipment.

D. Objective: The department has improved the vehicle maintenance program.

Goal 4: Increased and improved use of technology.

A. Objective: The department is utilizing social media as an effective means of reaching the public.

B. Objective: Improvement of the fire department website.

C. Objective: Effective access to the internet with adequate utilization.

D. Objective: Improved hardware and software in accordance with industry standards

E. Objective: Video conferencing capabilities throughout the department.

Goal 5: The department has effectively improved morale pertaining to personnel and departmental staffing.

A. Objective: Staffing levels have been reviewed in line with both local and national standards.

B. Objective: Review starting pay in relation to peer Johnson County and area departments to ensure that we continue to attract high quality candidates.

C. Objective: Complete a salary schedule study in relation to peer Johnson County and area departments to ensure that we retain our high quality employees.

D. Objective: The promotional process has been reviewed and enhanced.

Goal 6: Review and improve the Department's training program according to the needs of the department.

A. Objective: Obtain a fire department training facility in accordance with the needs of the department and ISO requirements.

B. Objective: Enhanced access to live fire training.

C. Objective: The budget for both internal and external training has been reviewed.

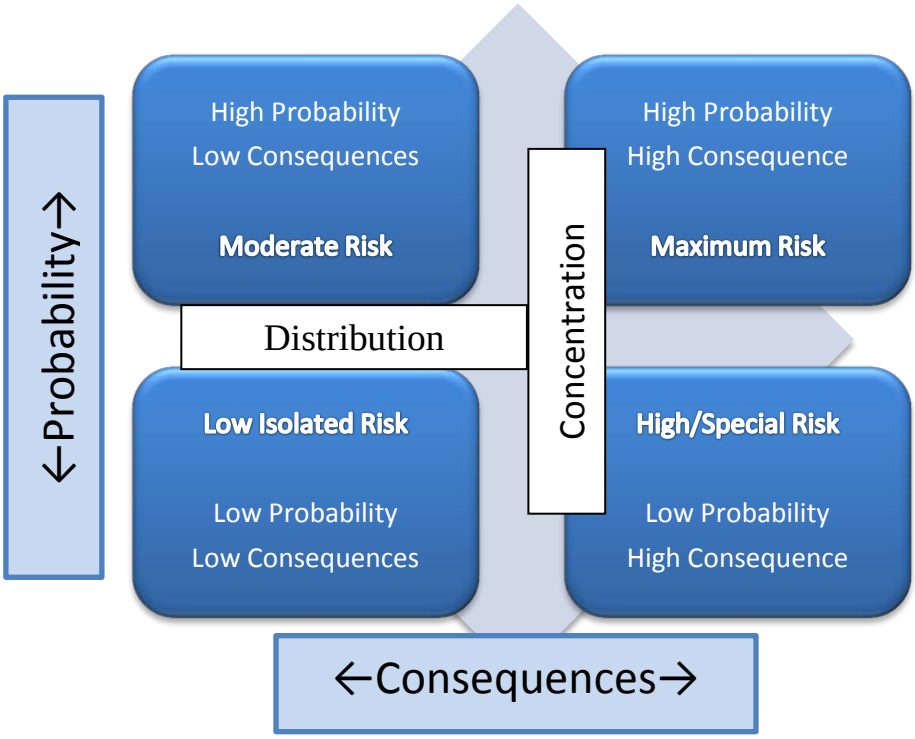
D. Objective: The department is effectively utilizing technology for training including exploring online and distance bridging opportunities.

Section 4 - Risk Assessment

The risk assessment for the City of Leawood has been accomplished through an analysis of hazards from fire and non-fire risk including natural and technological hazards. This analysis utilized many sources including the department's pre-fire planning process, the city and county's emergency planning process, a review of building data from the city planning department, population density, occupancy data, and a review of historical events.

The risk assessment is a crucial part of the standards of cover process as it is used to determine the service needs and necessary capabilities required to adequately address identified risks.

The below matrix is utilized by CFAI to classify hazards based on the probability and consequences of risk:



This matrix does a good job of showing how the probability of an incident interacts with the anticipated consequence to form an anticipated risk level. Additionally, the anticipated risk level also has a direct effect on both the distribution and concentration of department resources.

Community Risk Factors

Community risk factors have a direct effect on both fire and non-fire related hazards. To properly evaluate community risk, you must take into account community demographics, development, transportation infrastructure, natural and technological hazards, and planning zones. Community demographics were discussed in detail in preceding sections but a brief summary is presented here:

City of Leawood	
Geographical Size	15.7 square miles
Estimated Current Population	33,643
Estimated Weekday Population	100,000
Minimum Population Density per Square Mile	2,116
Residential Structures	12,384
Dwelling Units	14,262
Commercial Structures	330
Businesses	969
Center Line Road Miles	209.1
Total Assessed Valuation	$6,090,649,440

Fire Risk

The department used the risk categories as defined in the CFAI Fire and Emergency Services Self-Assessment 8th Edition Manual (FESSAM). The risk categories are broken down into maximum (worst) risk, high hazard risks, special risks, moderate risks, low risks, and remote/isolated rural risks.

Maximum (Worst) Risk – These risks are normally found in the largest cities or towns in the country. For an area to be classified as maximum risk, it should be of substantial size and should contain a heavy concentration of properties presenting a high risk of life loss, loss of economic values to the community or large loss damage to property in the event of fire. Normally these structures lack built-in fire protection features and/or contain occupants not capable of self-preservation. Examples include:

a. Non-sprinklered main shopping and business centers, large department stores, shopping malls and multi-story hotels, and office properties.
b. Non-sprinklered concentration of theaters, cinemas, clubs, dance halls, and other entertainment centers.
c. Non-sprinklered concentrations of high-risk industrial or commercial property (especially if adjacent to residential property).
d. Non-sprinklered high-rise buildings that exceed the reach of the longest fire department ladder, commercial buildings over 10,000 square feet with occupants that may require assistance, buildings with built-in fire protection systems with occupants who are non-ambulatory or restrained.

High Hazard Risk – Contains built-up areas of substantial size with a high concentration of property presenting a substantial risk of life loss, severe financial impact on the community or unusual potential damage to property in the event of a fire. Examples include:

a. Strip shopping and business areas, consisting of single or multi-story properties, offering some degree of a major fire problem.
b. Concentration of hospital and medical facilities.
c. Concentrations of older multi-story properties offering substantial amounts of exposure to life loss potential. Apartment buildings more than 2 stories in height with some areas beyond reach of pre-connected hose lines, buildings with low occupant load but which store high fire load materials or high hazard materials.
d. Infrastructure facilities, such as schools, city, state, or federal facilities.
e. Industrial properties containing some high-risk occupancy.

Special Risks – Areas comprising a single building or complexes which require a first due response over and above that appropriate to the risk predominate in the surrounding areas. These premises or small areas should be treated as special risks and given an appropriate predetermined response. Examples may include:

a. Residential premises of substantial size and presenting abnormal risks, such as hospitals or prisons, where individuals are under 24-hour care or have restricted mobility.
b. Isolated high-rise structures, whether residential or commercial occupancy, when they are in other risk areas.
c. Major chemical, hazardous materials facilities or other high risk industrial plants, wherever they occur.

Moderate Risk – Normally contain built-up areas of average size, where the risk of life loss or damage to property in the event of fire in a single occupancy is usually limited to the occupants, although in certain areas, such as small apartment complexes, the risk of death or injury may be relatively high. Concentration of property may vary, but will generally be of limited extent. Examples might include:

a. Developments of generally detached, single family housing, including estates and smaller multi-story dwellings.
b. Areas of older, attached, multi-family, 2 story dwellings with majority of the property accessible to pre-connected attack lines.
c. Areas of suburban terraced, semi-detached multi-occupancy residential properties.
d. Mixed low-risk industrial and residential areas.
e. Industrial or commercial areas under 10,000 square feet without high hazard or high fire load contents.

Low Risk – Small non-commercial structures that are remote from other buildings. Examples include:

a. Detached garages
b. Out buildings

Remote (Isolated) Rural Risks – Isolated from any centers of population and contain few buildings. Examples include rural land with no occupied structures and recreational areas

The Leawood Fire Department is aggressive in its fire prevention efforts. All commercial buildings are inspected annually. The City of Leawood has one of the most aggressive sprinkler ordinances in the local area. Leawood has required fire sprinklers in all commercial and industrial buildings over 1000 sq. feet since 1993. Leawood is comprised of approximately 90% residential and 10% commercial buildings. Leawood has 330 commercially zoned buildings including municipal, business, churches, schools, nursing homes, and medical facilities. Approximately 90% of all commercial buildings in Leawood are fully sprinklered. There are currently only forty pre-existing commercial buildings in the City of Leawood that are either partially or non-sprinklered. Thirteen of the forty buildings are partially sprinklered.

All commercial buildings have been pre-planned. The Johnson County Emergency Communication Center has a database of uploaded preplans which are accessible by apparatus Mobile Data Terminals (MDT) for use on an incident.

The City of Leawood has an aggressive city code requiring sprinkler systems. The code sets forth hydraulic calculations requiring adequate water supply for the sprinkler systems and additional hose allowances. This code can also require additional hydrants with established minimum flow based on the building's size. This is the process used to establish minimum fire flow requirements and total water supply needs. The code is also considered in the pre-incident planning process. Fire suppression water supply is extremely robust and reliable. Water District No. 1 of Johnson County (WaterOne) is responsible for all hydrants and supply. WaterOne serves three other accredited departments with two of those enjoying an ISO 1 rating proving its capabilities. There are 1,562 hydrants in the boundaries of the City of Leawood with an average pressure of 90 psi. WaterOne produces 200 million gallons of treated water per day which exceeds the single day maximum usage by more than 50 million gallons. Hydrant spacing meets Appendix C of the 2012 International Fire Code with hydrants at a minimum of every 600 feet in residential areas and every 300 feet in commercial areas.

Structure Fires: Low to High Risk
Structure fires vary depending on the associated risk factors ranging from single unit outbuilding fires to multi-alarm commercial structures.

Transportation Fires: Low to Moderate Risk

- Automobiles: Generally isolated to a single vehicle and handled by a single company
- Trucks: vary depending on cargo
- Railroad: BNSF has two tracks that barely catch the south-eastern corner of the city, crossing Kenneth Road. Typical traffic includes 52 long, slow trains carrying coal.
- Pipeline: Natural gas pipelines of various sizes are present in Leawood. However, they are all part of the local distribution system. There are no major transport pipelines within city limits.

Wildfires: Remote (Isolated) to Low Risk
The City of Leawood is 75% built out. Most of the undeveloped land is in the south-eastern part of the city. Numerous paved roads, 100% hydrant coverage, and abundant local fire resources keep wildfire risk minimal.

Fire Critical Task Analysis

The critical task analysis of a fire scene requires an understanding of the potential risks at a particular location along with the resources needed to bring the situation under control. Critical tasking requires historical scene analysis, firefighter capability studies, and an understanding of local staffing levels as well as available automatic and mutual aid resources. The critical tasking presented here is for the generally anticipated effective response force needed for the level of anticipated risk. It also corresponds with the Leawood Fire Department dispatch matrix kept at the dispatch center. The numbers below are minimums and often crews will have four personnel rather than three and typically multiple chief officers show up for dedicated safety and oversight. It should be realized that all fire scenes are unpredictable and additional resources may be needed at any time.

Critical Tasks Necessary for Low Risk Fire Responses

Critical Task(s)	Number of Staff
Command / Safety / Fire Attack	1
Water Supply / Fire Attack	1
Pump Operations	1
Total ERF	**3**

Critical Tasks Necessary for Moderate Risk Fire Responses

Critical Task(s)	Number of Staff
Command / Safety*	1
Fire Attack – Primary	2
Fire Attack – Back-up line	2
Pump Operations	1
Search	2
Water Supply	1
Ventilation / Utilities	2
Rapid Intervention Crew (RIC)	2
Rehab / EMS Standby	2
Total ERF	**15**

*Note – a dedicated safety officer is filled by first arriving additional chief officer

Critical Tasks Necessary for High/Special Risk Fire Responses

Incidents falling into the High or Special Risk categories vary greatly in their response depending on type. These types of incidents often rely upon automatic aid and in many cases, specialized county responses. For example, high rise incidents work under the county High Rise Plan and receive a moderate risk response plus the addition of 7 Engines, 4 Trucks, 3 Chief Officers, 2 ALS Ambulances, 1 EMS Chief, 1 Communications Unit, and a medical supply unit. These types of incidents are extremely rare in Leawood so there is no real historical data to evaluate. It is much more common for Leawood units to respond out of jurisdiction to assist automatic aid partners. For the purpose of tasking a High Risk Response, a nursing home is used

as an example with a second alarm assignment as outlined in the existing Leawood Fire Department Dispatch Matrix.

Critical Task(s)	Number of Staff
Command	1
Safety	1
Fire Attack – Primary	2
Fire Attack – Secondary	2
Pump Operator	1
Search / Rescue / Evacuation	6
Water Supply	1
Ventilation / Utilities	3
Aerial Operations	3
Rapid Intervention Crew (RIC)	3
Medical Group Leader	1
ALS EMS Treatment	2
ALS EMS Transport	2
Rehab	2
Total ERF	**30**

Non-Fire Risk

The City of Leawood does not just face risk from fire. There are many potential hazards that exist, both naturally occurring and man-made. These hazards can cause injury, loss of life, destruction of property, disruption of critical services and communication, and loss of infrastructure. The city has a local emergency operations plan that interacts closely with the Johnson County emergency operations plan. These plans by design focus on all hazards.

Natural Hazards: In general, Leawood faces its greatest hazards from severe weather, primarily high winds and tornadoes during the spring and summer months and ice and snow storms during the late fall, winter and early spring. The area is subject to flash flooding associated with severe thunderstorms, but has relatively little vulnerability to long-term, riverine flooding. Current scientific research assigns the area a moderate earthquake risk. The city is subject to naturally occurring infectious diseases, both those that affect humans and animals. As with any highly developed and populated area, the area would be vulnerable to protracted, severe drought conditions. The likelihood of such an event is slight, however, and the robustness of the County utility infrastructure would be a significant mitigating factor in such an event.

Technological Hazards: The rapid growth and complexity of the city and county makes the risk from manmade and technological hazards at least as high as and perhaps higher than that of natural hazards. Risk from HazMat transportation accidents is especially high due to the presence of major highway corridors, rail lines, and the flight path of commercial air traffic all serving the major industrial districts of the Kansas City metropolitan area. The risk posed by fixed facility HazMat incidents is significantly less than that of HazMat transportation incidents. While there are a number of facilities which store and use such materials, the industrialization of the area tends toward light industry and the codes and inspection system within the city is highly developed. The presence of large industrial facilities in areas surrounding the city, however, make the fixed facility threat greater than in most other areas of the State.

Terrorism and Weapons of Mass Destruction (WMD): Acts of terrorism can come in many forms including the use of Weapons of Mass Destruction (WMD) involving Chemical, Biological, Radiological, Nuclear, or Explosive (CBRNE) weapons. As a highly visible urban city in a major metropolitan area, the threat of terrorism is a concern for Leawood. The Leawood Police Department works with various local, county, state, and federal partners to analyze this threat on a regular basis. Based on this analysis, various programs are in place to enhance the city's ability to prevent, prepare for, respond to, and recover from terrorist events.

Hazard Profile: The table below represents the hazard profile for Johnson County. The values provided in the table are classified according to the magnitude of each hazard.
Planning significance was formulated from the calculated priority risk index (CPRI). The CPRI considers four elements of risk: probability, magnitude/severity, warning time, and duration. The complete hazard analysis can be found in the Johnson County Hazard Mitigation Plan.

Regional Hazard Profile Summary for Johnson County						
Hazard Type	**Probability**	**Magnitude**	**Warning Time**	**Duration**	**CPRI**	**Planning Significance**
Tornado	4	4	4	1	3.70	High
Flood	4	3	3	4	3.55	High
Winter Storm	4	3	2	3	3.30	High
Windstorm	4	2	3	2	3.05	High
Utility/Infrastructure Failure	4	1	4	3	3.00	High
Drought	4	2	3	4	2.95	Moderate
Hazardous Materials	4	1	4	2	2.90	Moderate
Lightning	4	2	2	1	2.80	Moderate
Wildfire	4	1	4	1	2.80	Moderate
Civil Disorder	2	4	4	1	2.80	Moderate
Major Disease Outbreak	2	4	1	4	2.75	Moderate
Hailstorm	4	1	2	1	2.65	Moderate
Terrorism/Agro-terrorism	1	4	4	4	2.65	Moderate
Extreme Temperatures	3	2	1	4	2.50	Moderate
Agricultural Infestation	3	2	1	4	2.50	Moderate
Expansive Soils	3	1	1	4	2.20	Moderate
Dam and Levee Failure	1	3	3	3	2.10	Moderate
Radiological	1	3	3	3	2.10	Moderate
Landslide	1	2	4	1	1.75	Low
Soil Erosion and Dust	2	1	1	4	1.75	Low
Earthquake	1	2	4	1	1.75	Low
Land Subsidence	1	1	3	2	1.40	Low

Natural disasters: Eight natural disasters have been declared in Johnson County which is smaller than the U.S. average of 12. Two were declared as emergencies and six of those disasters were presidentially declared as major. The causes of the declared emergencies were:

- Floods – 5
- Storms – 5
- Tornados – 2
- Hurricane – 1
- Ice Storm – 1
- Winter Storm – 1

Note that some incidents may be assigned to more than one category.

Most Recent Natural Disasters:

- Kansas Severe Winter Storms, Incident Period: December 6, 2007 to December 19, 2007, Emergency Declared (EM-3282): December 12, 2007, FEMA Id: FEMA-EM-3282, Natural disaster type: Winter Storm
- Kansas Hurricane Katrina Evacuation, Incident Period: September 1, 2005 to October 1, 2005, Emergency Declared (EM-3236): September 10, 2005, FEMA Id: FEMA-EM-3236, Natural disaster type: Hurricane
- Kansas Ice Storm, Incident Period: January 29, 2002 to February 15, 2002, Major Disaster (Presidential) Declared (DR-1402): February 6, 2002, FEMA Id: FEMA-DR-1402, Natural disaster type: Ice Storm
- Kansas Severe Storms and Flooding, Incident Period: October 30, 1998 to November 15, 1998, Major Disaster (Presidential) Declared (DR-1258): November 5, 1998, FEMA Id: FEMA-DR-1258, Natural disaster type: Storm, Flood
- Kansas Severe Storms, Flooding, And Tornadoes, Incident Period: October 1, 1998 to October 8, 1998, Major Disaster (Presidential) Declared (DR-1254): October 14, 1998, FEMA Id: FEMA-DR-1254, Natural disaster type: Storm, Tornado, Flood
- Kansas Flooding, Severe Storms, Incident Period: June 28, 1993 to October 5, 1993, Major Disaster (Presidential) Declared (DR-1000): July 22, 1993, FEMA Id: FEMA-DR-1000, Natural disaster type: Storm, Flood
- Kansas SEVERE STORMS, FLOODING, Incident Period: September 20, 1977, Major Disaster (Presidential) Declared (DR-539): September 20, 1977, FEMA Id: FEMA-DR-539, Natural disaster type: Storm, Flood
- Kansas TORNADOES, SEVERE STORMS, FLOODING, Incident Period: July 15, 1969, Major Disaster (Presidential) Declared (DR-267): July 15, 1969, FEMA Id: FEMA-DR-267, Natural disaster type: Storm, Tornado, Flood

Local Non-Fire Risk Evaluation

Thunderstorm/Wind: High Risk
Thunderstorms with high winds and hail are common throughout the spring moths in the Kansas City metro area. According to The National Oceanic and Atmospheric Administration's (NOAA) National Climatic Data Center (NCDC) over the last ten years (7/1/04 to 7/1/14) the Johnson County area has experienced 50 thunderstorms over 52 knot wind gusts resulting in 0 fatalities, 0 injuries and over $167,000 in estimated property damage. During the same time period; 54 hail events were recorded over 1" in size resulting in $820 million in damage reported.

Tornadoes: Moderate Risk
Kansas is located within "tornado alley" the geographic area of Kansas, Nebraska, Oklahoma, Texas and Iowa. Tornado season is typically considered the spring with more activity prevalent from April through July with May and June being the peak months. Like thunderstorms, tornadoes can form any time of the year. In the U.S., thunderstorms capable of producing tornadoes usually form when the temperature is at its highest; typically from 4 p.m. to 7 p.m. Johnson County historical area-adjusted tornado activity is above the Kansas state average. It is 3.9 times above the overall U.S. average. The Johnson County area experienced 10 tornado events from 7/1/2004 to 7/1/2014 according to NCDC ranging from an F0 to F1 on the Fujita scale resulting in no injuries and $18,000 in estimated property damages.

Tornadoes in this county have caused 14 injuries recorded between 1950 and 2004.

- On 4/19/1966, a category 3 (max. wind speeds 158-206 mph) tornado injured 4 people and caused between $500,000 and $5,000,000 in damages
  On 5/20/1957, a category F5 (max. wind speeds 261-318 mph) tornado 12.6 miles away from the Leawood city center killed 44 people and injured 207 people and caused between $500,000 and $5,000,000 in damages.
- On 5/22/1952, a category F4 (max. wind speeds 207-260 mph) tornado 11.6 miles away from the city center injured 3 people and caused between $50,000 and $500,000 in damages

Floods: Moderate Risk
The primary risk is from isolated heavy rainfall causing isolated or temporary urban flooding of streets and yards causing minor disruptions in traffic and service delivery. The town has several small creeks/streams including Turkey Creek and Tomahawk Creek that overflow during severe or prolonged thunderstorms/rain events causing minor impacts and limited property damage.

Winter Storms: High Risk
The region experiences hazardous winter weather conditions that include the potential for snow, sleet and freezing rain. The region averages 20 inches of snow fall per year from the last 30-years of record. 15 winter storm events with over 24" of snow fall have been recorded. Disruption of transportation, commerce and educational services is the major issue during the storms. Snow storms slow emergency response times and put the public at risk. A major storm can result in multi-day disruption of many critical safety services.

Earthquake activity: Low Risk
The Johnson County-area historical earthquake activity is slightly above Kansas state average. It is 95% lower than the overall U.S. average.

- On 5/18/2005 at 19:59:42, a magnitude 3.3 (3.3 LG, Depth: 3.1 mi, Class: Light, Intensity: II - III) earthquake occurred 53.6 miles away from the county center
- On 5/13/1999 at 14:18:22, a magnitude 3.0 (3.0 LG, Depth: 3.1 mi) earthquake occurred 12.0 miles away from the county center
- On 3/23/2007 at 08:15:49, a magnitude 3.1 (3.1 LG, Depth: 3.1 mi) earthquake occurred 48.4 miles away from the county center

Terrorism/WMD: Low Risk
The city does not have any high-profile targets. Potential general targets would be municipal buildings, schools, and several large churches. The city is at low risk for domestic terror events such as arson and fire/pipe bombings, school violence or workplace violence such as an active shooter scenario. The city is also at low risk for isolated events targeting City Hall, the Police Station, local Post Office or other local government buildings or corporate offices.

Aircraft/Airport: Low Risk
The closest airports to Leawood are the Johnson County Executive airport (6 miles away), Charles B. Wheeler Downtown Airport in Kansas City MO (17 miles away), New Century Airfield in Gardner (17 miles away), and Kansas City International Airport (38 miles away).

Therefore, the only real aircraft danger is from flyovers. Leawood will operate in a support roll on any aircraft incident.

Non-Fire Critical Task Analysis

Emergency Medical Services: Low to High Risk

Emergency medical responses account for the majority of the department's day to day call volume. However, the vast majority of these are low risk with single patient, routine calls such as an ill subject. Moderate risk events happen regularly but not as frequently. An example of a moderate risk call would be a cardiac arrest. High risk events such as mass casualty incidents are extremely infrequent and could occur as a result of a mass gathering event such as in a community park, at a school, or other special event. Attendance at special events can range from several hundred at smaller park events to 24,000 on Christmas Day at a local mega-church.

Critical Tasks Necessary for Low Risk EMS Response

Critical Task(s)	Number of Staff
Command / Safety / Family Liaison	1
Patient assessment / treatment	1
Scene Documentation	1
Patient Treatment / Transport	2
Total ERF	**5**

Critical Tasks Necessary for Moderate Risk EMS Response

Critical Task(s)	Number of Staff
Command	1
Safety	1
Documentation / Family Liaison / Med Control	1
Patient Assessment / Treatment	2
Patient Treatment / Transport	2
Total ERF	**7**

Critical Tasks Necessary for High Risk EMS Response

Critical Task(s)	Number of Staff
Command	1
Safety	1
Triage/Treatment Group Leader	1
Transport Group Leader	1
Triage / Treatment	8
Patient Treatment / Transport	10
Total ERF	**22**

Technical Rescue: Low to Moderate Risk (depending on type)

- Trench Rescue**:** Moderate to High Risk: Trenching activities are limited to normal construction type events. There are no mining or quarry facilities in the local area.
- Swift Water Rescue: Moderate to High Risk: The department is often called to water rescue events during flash floods. These are typically single victim removals from a car stuck in high water.
- Extrication: Moderate Risk: Most of the city streets are relatively low speed limits. However, the city does cover a short section of interstate highway with several busy exits and merge lanes.
- Elevator: Low Risk: typically involves a stalled elevator car and rescues are handled by the first arriving engine and are generally non-technical in nature.
- Confined Space: Moderate to High Risk: potential exists for hazards associated with public utility work below grade as well as routine construction or building maintenance work.
- High/Low Angle: Moderate to High Risk: Potential exists for the possible rescue of window washers or repair personnel on suspended platforms or elevated scaffolding, along with standard construction risks.
- Structural Collapse: High Risk: Leawood is a modern city with very little building decay and aggressive building codes and enforcement. Risk would come from normal construction or factors such as severe weather.

Critical Tasks Necessary for Low Risk Technical Rescue Responses

Critical Task(s)	Number of Staff
Command / Safety	1
Extrication / Scene Operations	2
Total ERF	**3**

Critical Tasks Necessary for Moderate Risk Technical Rescue Responses

Critical Task(s)	Number of Staff
Command	1
Safety	1
Extrication / Scene Operations	3
Stabilization / Fire Standby	3
Treatment / Transport	2
Total ERF	**10**

Critical Tasks Necessary for High/Special Risk Technical Rescue Responses

Incidents falling into the High or Special Risk categories vary greatly in their response depending on type. These types of incidents often rely upon automatic or mutual aid and in many cases, specialized county responses. For example, a confined space rescue gets 17 personnel and puts a mutual aid task force on standby. A trench rescue gets 11 personnel and puts 2 different mutual aid task forces on standby. These types of incidents are extremely rare in Leawood so there is no real historical data to evaluate. An example of critical tasking for a high/special risk

technical rescue response is shown using the example of a Water-Ice Rescue utilizing the staffing provided by the existing Leawood Fire Department dispatch matrix.

Critical Task(s)	Number of Staff
Command	1
Safety	1
Entry	2
Shore Support	6
Boat Operations	3
EMS Group Leader	1
Treatment / Transport	2
Total ERF	**16**

Hazardous Materials: Low to High Risk
Leawood is at a low to high risk from both fixed facility and transportation related hazardous materials incidents. A low risk incident would include investigations, carbon monoxide detector activations, and outside natural gas leaks. A moderate risk would typically encompass a hazardous material release that is static in nature with no immediate threat to life or environment. A high risk incident would by a dynamic release with a threat to life, property, or the environment.

- Fixed Facilities: There are no major HazMat type occupancies. However, it is common for commercial occupancies to keep varying types and amounts of hazardous materials on site for cleaning and operational use.
- Roads**:** I-435 runs approximately 2 mile East and West from State Line Rd to Roe Ave. and has numerous trucking companies' transporting hazardous materials across the state line. Leawood has limited large truck traffic on city streets.
- Railroad: BNSF has two tracks that barely catch the south-eastern corner of the city, crossing Kenneth Road. Typical daily traffic includes 52 long, slow trains carrying coal.
- Pipeline: Natural gas pipelines of various sizes are present in Leawood. However, they are all part of the local distribution system. There are no major transport pipelines within city limits.
- Swimming Pools: Limited quantities of pool chemicals are stored at Leawood City Pool; 1000 lbs. of calcium hypochlorite tablets; 90 gals. of muriatic acid; 200 lbs. of dry calcium chloride; 400 lb. cylinder of CO2 with a 50 lb. back-up cylinder. There are numerous neighborhood and private pools with unknown quantities of chemicals.
- Golf Courses: The City is home to several golf course facilities that store limited quantities of potentially hazardous materials such as fertilizer.
    - Iron Horse Golf Course (City Owned) stores under 10,000 pounds of fertilizer
    - Hallbrook Country Club Golf Course stores under 10,000 pounds of fertilizer
    - Leawood Country Club Golf Course stores under 10,000 pounds of fertilizer

Critical Tasks Necessary for Low Risk HazMat Responses

Critical Task(s)	Number of Staff
Command / Safety	1
Investigation / Scene Operations	3
Total ERF	**4**

Critical Tasks Necessary for Moderate Risk HazMat Responses

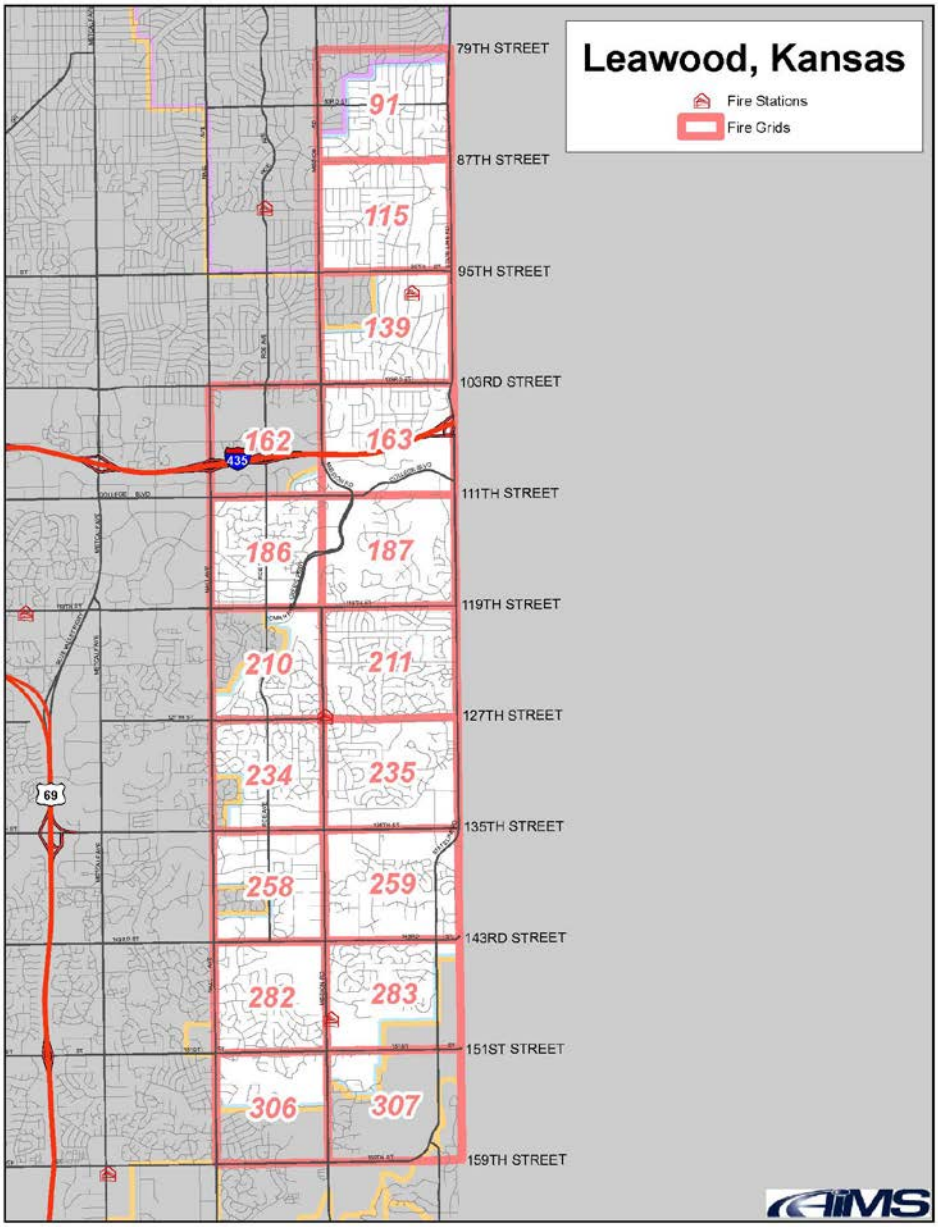
Critical Task(s)	Number of Staff
Command / Safety	1
Safety	1
Investigation	1
Operations	2
Public Safety	2
Total ERF	**7**

Critical Tasks Necessary for High/Special Risk HazMat Responses

Critical Task(s)	Number of Staff
Command	1
Safety	1
Investigation	1
Technical Operations	4
Decon	4
Perimeter Control	3
EMS Leader	1
Rehab	2
Treatment / Transport	2
Total ERF	**19**

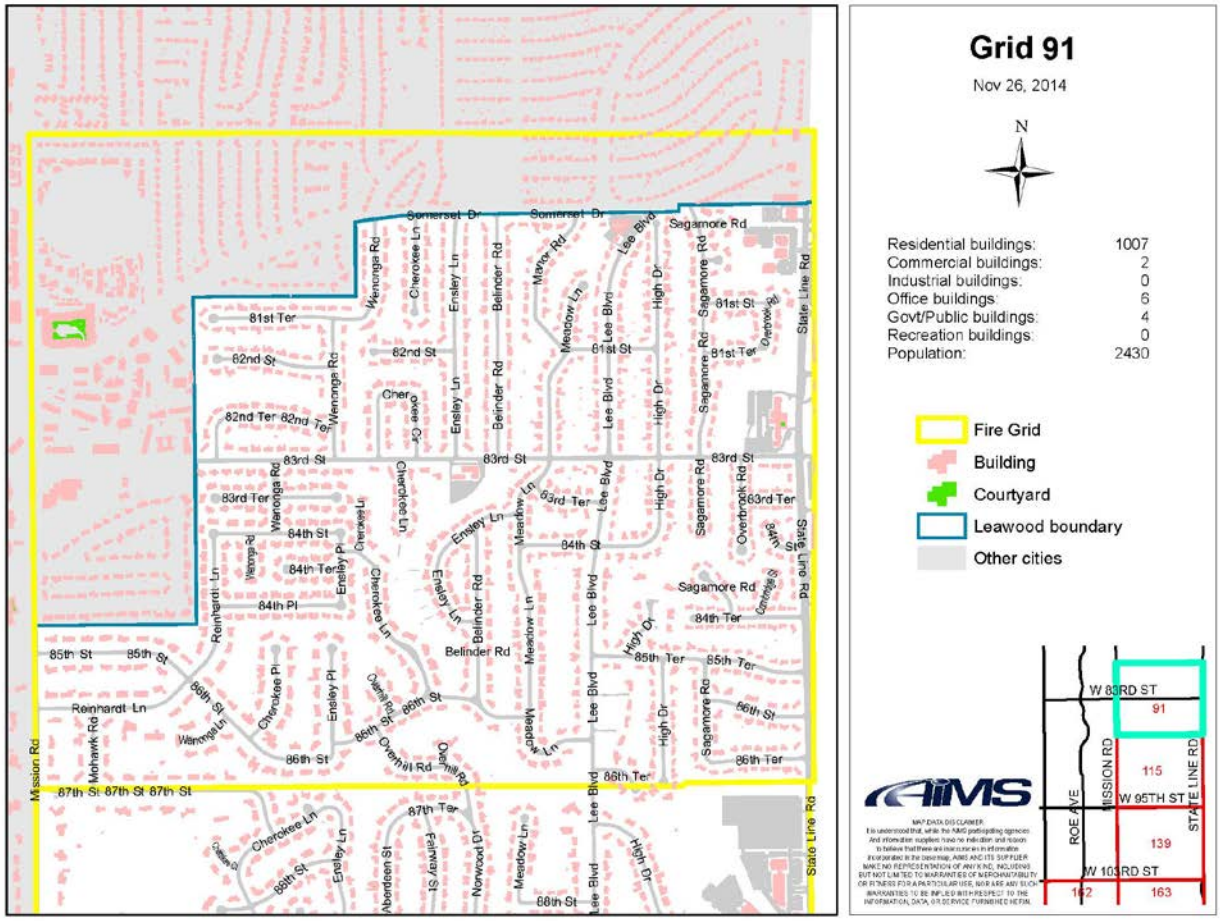
Demand Zones

The Leawood Fire Department has identified 17 demand zones / map grids which fall into the three different station response districts. Each demand zone corresponds to a census tract and measures 1 square mile. Some of the demand zones are only partially within Leawood city limits. The demand zones are numbered county wide with the response grid number part of the incident dispatch information. A map of the demand zones can be found in the response area description earlier in this document. The department has evaluated each demand zone for risk utilizing height and size of structure, occupancy type, occupant type and load, location, and presence of a fire suppression system. Each grid has also been evaluated for non-fire risk. Historical incident response and fire loss data has also been included.



District 1

- **Grid 91**



Grid Population: 2,430

2012-2014 Grid Incident Count

Incident Type	Calls
Fire	7
EMS	256
Haz-Mat	15
Rescue	0
Other	159
Total	**437**

Low Fire Risk:

- Detached outbuildings, dumpsters, fire pits and vehicles

Moderate Fire Risk:

- 13 various general businesses, public buildings and retail buildings
- 1007 Residential Dwellings
- 3 Restaurants

High Fire Hazard:

- Interstate Federal Savings - 8000 State Line Road (Non-Sprinklered)
- Leawood Baptist Church - 8200 State Line Road (Non-Sprinklered)
- Leawood Presbyterian Church - 2715 W. 83rd Street (Non-Sprinklered)
- Lee and Somerset Shops - 2515 Somerset Drive (partially sprinklered)

Non-Fire Risk:

- Routine EMS responses. (Aging population in the area, frequent/moderate EMS runs)
- Vehicle Accidents-typically low to moderate impact. (Low/Infrequent)
- Potential for mass casualty events associated with workplace violence/active shooter scenarios/other domestic violence. (Low/Infrequent) 1 preschool; Presbyterian Church.
- Potential for minor/moderate urban flooding, thunderstorms, tornadoes. (Moderate/High - downed power lines with most thunderstorms).
- Potential for moderate to heavy snow-ice winter storms. Average January temperature 28º F. (Moderate/High)
- Potential for building collapse due to age of construction and disrepair. (Low/Infrequent)

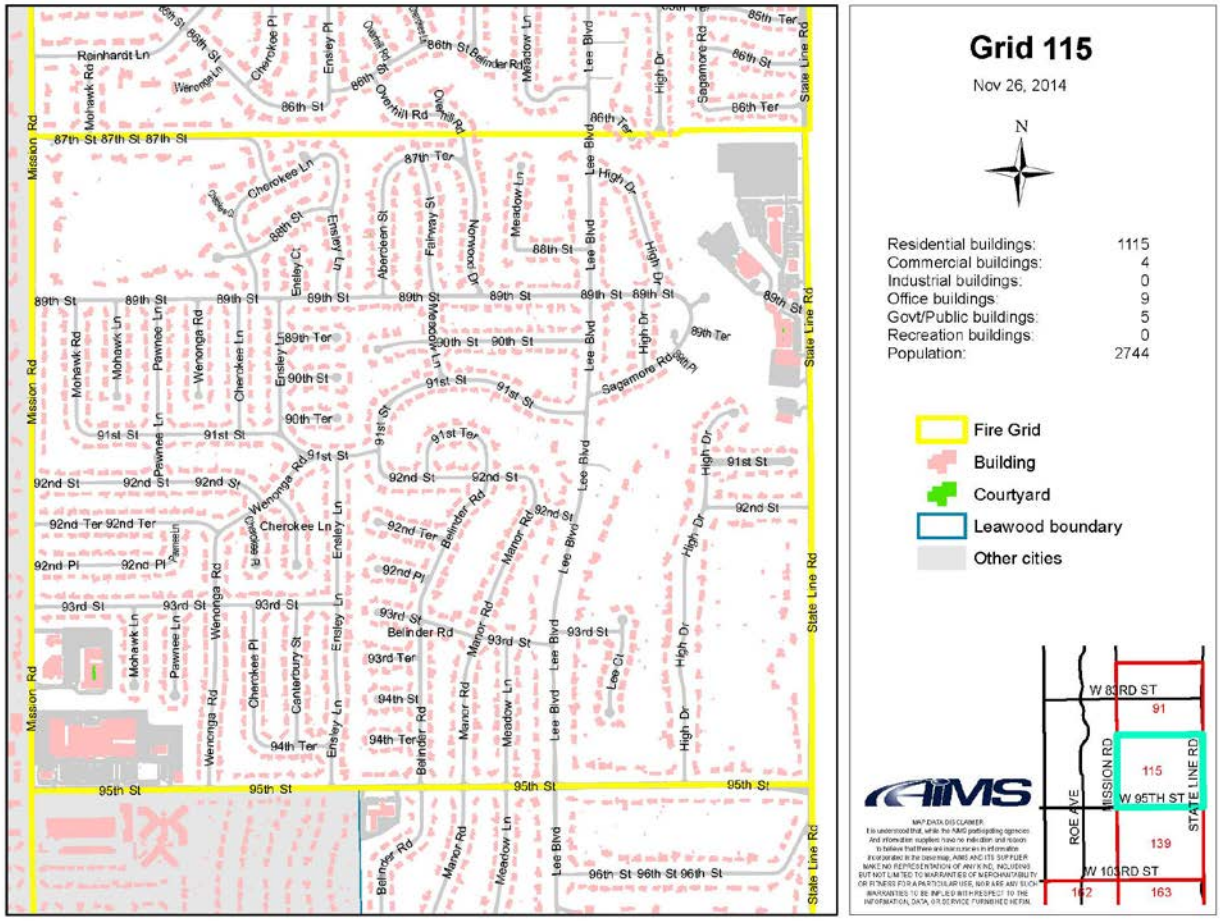
2012-2014 Grid Fire Loss:

Building loss	Building value	Vehicle Loss	Vehicle Value	Contents Loss	Contents Value
$2,000	$350,000	N/A	N/A	N/A	N/A

Analysis:

Grid 91 is mostly within Leawood city limits although does lose approximately 25% to another city. It is predominantly residential with 1007 dwellings along with 2 commercial buildings, 6 office buildings and 4 government / public buildings. Grid 91 receives routine emergency medical calls, fire alarm activations and other calls for service associated with both residential and commercial occupancies.

- **Grid 115**



Grid Population: 2,744

2012-2014 Grid Incident Count

Incident Type	Calls
Fire	13
EMS	351
Haz-Mat	18
Rescue	0
Other	231
Total	**613**

Low Fire Risk:

- Various detached outbuildings, dumpsters, fire pits and vehicles

Moderate Fire Risk:

- 11 general, public, business and retail buildings. (Fully Sprinklered)
- 1,115 Residential Dwellings
- 2 Restaurants (Fully Sprinklered)

High Fire Hazard:

- R. Felkner House - 8000 Lee Blvd. (Non-Sprinklered)
- Ward Parkway Health Services - 8800 State Line Road (Non-Sprinklered)
- BMO Harris Bank - 8840 State Line Road (Non-Sprinklered)
- Continental Consulting Engineers - 9000 State Line Road (partially sprinklered)
- Cure of Ars Rectory - 9401 Mission Road (Non-Sprinklered)
- Cure of Ars School - 9403 Mission Road (partially sprinklered)

Maximum Risk:

- 8900 State Line Road Building - 4 story non-sprinklered building; floors not accessible by same stairways or elevator; tight hallways and corridors in a maze type design. Over 10,000 square feet.

Non-Fire Risk:

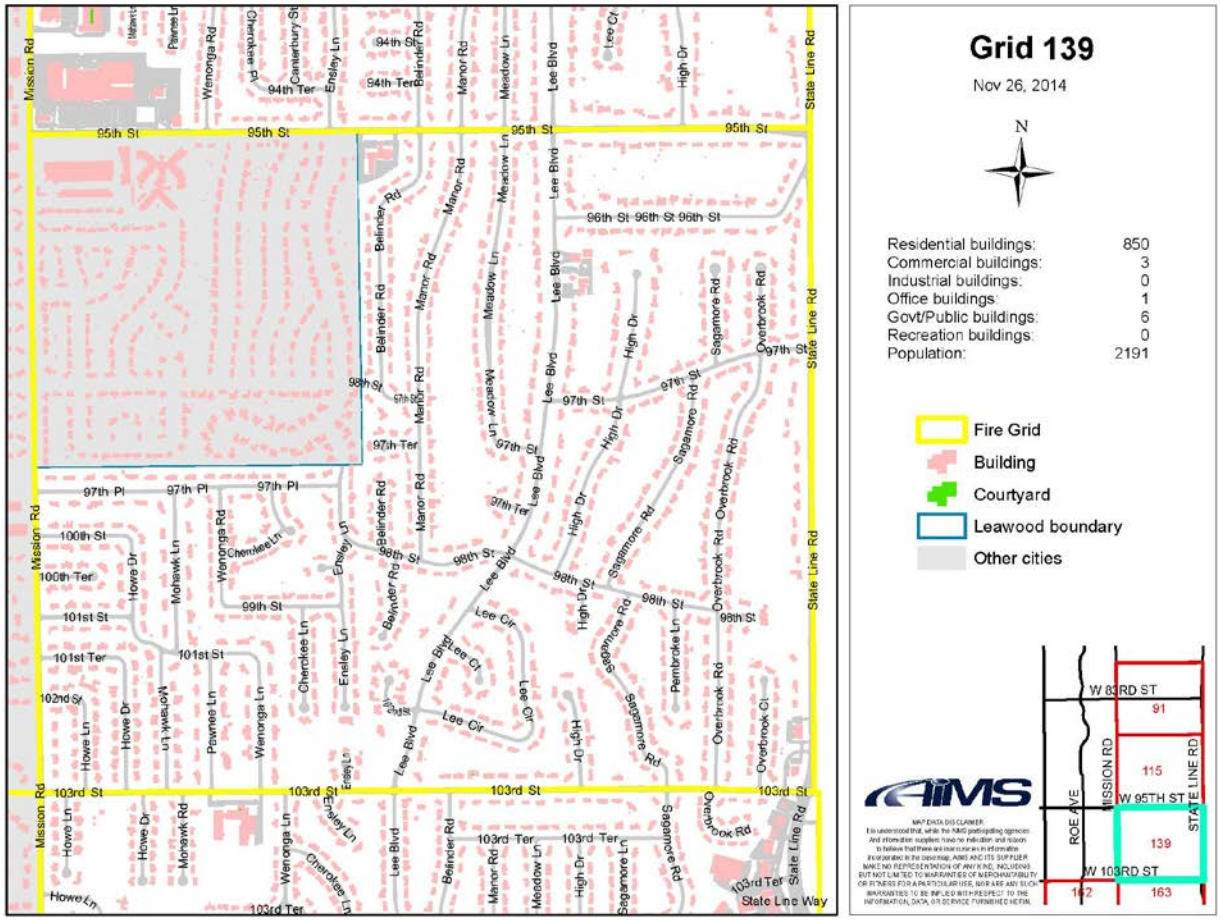
- Routine EMS responses. (Aging population in the area, frequent/moderate EMS runs)
- Vehicle Accidents - typically low to moderate impact. (Low/Infrequent)
- Potential for mass casualty events associated with workplace violence/active shooter scenarios/other domestic violence. (Low/Infrequent) 1 School; Cure of Ares.
- Potential for minor/moderate urban flooding; thunderstorms; tornadoes. (Moderate/High; downed power lines with most thunderstorms).
- Potential for moderate to heavy snow-ice/winter storms. Average January temperature 28º F. (Moderate/High)
- Potential for building collapse due to age of construction and disrepair. (Low/Infrequent)

2012-2014 Grid Fire Loss:

Building loss	Building value	Vehicle Loss	Vehicle Value	Contents Loss	Contents Value
$ 206,500.00	$ 206,500.00	$ 26,000.00	$ 256,000.00	$ 50,500.00	$ 50,500.00

Analysis: Grid 115 is predominantly residential with 1,115 dwellings along with 4 commercial buildings, 9 office buildings and 5 government / public buildings. Grid 115 receives routine emergency medical calls, fire alarm activations and other calls for service associated with both residential and commercial occupancies.

- **Grid 139**



Grid Population: 2,191

2012-2014 Grid Incident Count

Incident Type	Calls
Fire	9
EMS	271
Haz-Mat	13
Rescue	0
Other	189
Total	**482**

Low Fire Risk:

- Various detached outbuildings dumpsters, fire pits and vehicles

Moderate Fire Risk:

- 8 general, public, business and retail buildings (Fully Sprinklered)
- 850 Residential dwellings
- 2 Restaurants

High Fire Hazard:

- Ranch Mart North Shopping Center - 3800 W. 95th Street (partially sprinklered)
- Leawood United Methodist Church - 2917 W. 95th Street (partially sprinklered)
- Leawood Fire Station #1 - 9617 Lee Blvd. (non-Sprinklered)

Non-Fire Risk:

- Routine EMS responses. (Aging population in the area, infrequent/low EMS runs)
- Vehicle Accidents - typically low to moderate impact. (Low/Infrequent)
- Potential for mass casualty events associated with workplace violence/active shooter scenarios/other domestic violence. (Low/Infrequent) 0 Schools.
- Potential for minor/moderate urban flooding, thunderstorms, tornadoes. (Moderate/High - downed power lines with most thunderstorms).
- Potential for moderate to heavy snow-ice winter storms. Average January temperature 28º F. (Moderate/High)
- Potential for building collapse due to age of construction and disrepair. (Low/Infrequent)

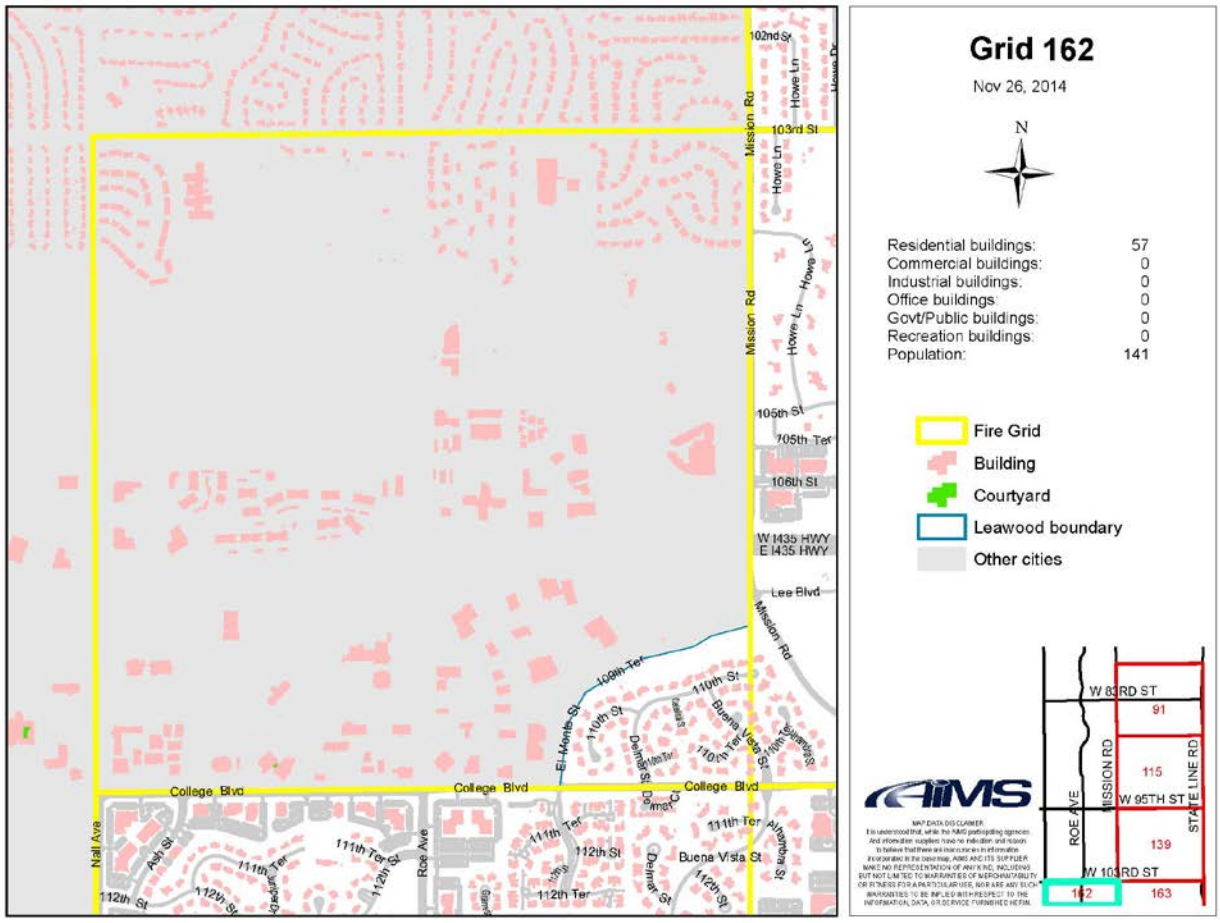
2012-2014 Grid Fire Loss:

Building loss	Building value	Vehicle Loss	Vehicle Value	Contents Loss	Contents Value
$7,000.00	$587,500.00	$1,000.00	$2,000.00	$1,000.00	$50,000.00

Analysis:

Grid 139 is mostly within Leawood city limits although does lose approximately 20% to another city. It is predominantly residential with 850 dwellings along with 6 office buildings and 4 government / public buildings. Grid 139 receives routine emergency medical calls, fire alarm activations and other calls for service associated with both residential and commercial occupancies.

- **Grid 162**



Grid Population: 141

2012-2014 Grid Incident Count

Incident Type	Calls
Fire	4
EMS	51
Haz-Mat	0
Rescue	0
Other	21
Total	**76**

Low Fire Risk:

- Detached outbuildings, dumpsters, fire pits and vehicles

Moderate Fire Risk:

- 0 general businesses, public buildings and retail buildings.
- 57 Residential Dwellings.
- 0 Restaurants

High Fire Hazard:

- None

Non-Fire Risk:

- Routine EMS responses. (Low/Infrequent EMS runs)
- Vehicle accidents-typically low to moderate impact. (Low/Infrequent)
- Potential for mass casualty events associated with workplace violence/active shooter scenarios/other domestic violence. (Low/Infrequent).
- Potential for minor/moderate urban flooding, thunderstorms, tornadoes. (Moderate/High).
- Potential for moderate to heavy snow-ice winter storms. Average January temperature 28º F. (Moderate/High)
- Potential for building collapse due to age of construction and disrepair. (Low/Infrequent)

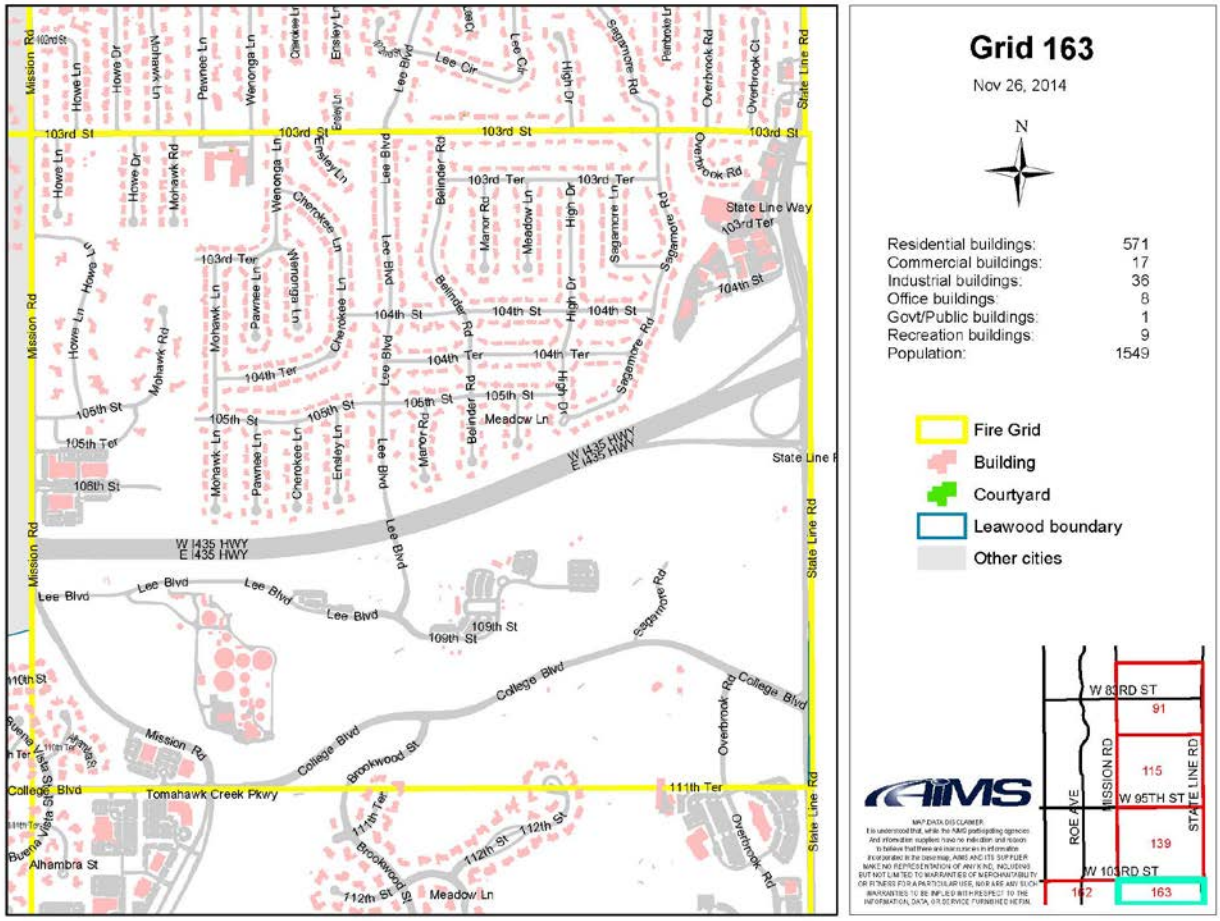
2012-2014 Grid Fire Loss:

Building loss	Building value	Vehicle Loss	Vehicle Value	Contents Loss	Contents Value
$180,000.00	$370,000.00	$70,000.00	$100,000.00	$100,000.00	$200,000.00

Analysis:

Grid 162 only has a small portion within Leawood city limits. That portion is all residential dwellings with 57 (0 commercial buildings). Grid 162 receives routine emergency medical calls; fire alarm activations and other calls for service associated with both residential and commercial occupancies.

- **Grid 163**



Grid Population: 1,549

2012-2014 Grid Incident Count

Incident Type	Calls
Fire	19
EMS	279
Haz-Mat	25
Rescue	3
Other	157
Total	**483**

Low Fire Risk:

- Various detached outbuildings at the water treatment facility, covered shelters in the city park, playgrounds, dumpsters, fire pits and vehicles

Moderate Fire Risk:

- 6 various general, business, public and retail buildings. (Fully sprinklered)
- 571 Residential Dwellings
- 5 Restaurants (Fully Sprinklered)

High Fire Hazard:

- Leawood Parks and Recreation - 2007 W. 104th Street (Non-Sprinklered)
- Preferred Contracting - 2008 W. 104th Street (Non-Sprinklered)
- State Line Animal Hospital - 2009 W. 104th Street (Non-Sprinklered)
- Phoenix Montessori - 2013 W. 104th Street (Non-Sprinklered)
- A.B. May - 2017 W. 104th Street (Non-Sprinklered)
- Leawood Aquatic Center - 10601 Lee Blvd (Non-Sprinklered)
- Tomahawk Creek Water Treatment Facility and outbuildings - 10701 Lee Blvd. (partially sprinklered)
- World Savings - 2000 W. 103rd Street (Non-Sprinklered)
- Jiffy Lube - 10301 State Line Road (Non-Sprinklered)
- Medical Office Building - 10308 State Line Road (Non-Sprinklered)
- O'Reilly Auto Parts - 10318 State Line Road (Non-Sprinklered)
- Fritz's Smoked Meats - 10326 State Line Road (Non-Sprinklered)
- Gates Barbecue - 2001 W. 103rd Terrace (partially sprinklered)
- Furrs Oriental Rugs - 10342 State Line Road (Non-Sprinklered)
- State Line Dental Clinic - 10346 State Line Road (Non-Sprinklered)

Non-Fire Risk:

- Routine EMS responses. (frequent/moderate EMS runs)
- Vehicle Accidents - typically low to moderate impact except on Interstate 435 which runs East and West for 3 miles through Leawood; Interstate motor vehicle crashes are typically high velocity impacts resulting in significant injury to patients and potential injury for firefighter due to traffic speeds and congestion. (moderate)
- Potential for mass casualty events associated with workplace violence/active shooter scenarios/other domestic violence. (Low/Infrequent) 1 School: Brookwood Elementary.
- Potential for minor/moderate urban flooding, thunderstorms, tornadoes. (Moderate/High - Turkey Creek floods with significant rains).
- Potential for moderate to heavy snow-ice winter storms. Average January temperature 28º F. (Moderate/High)
- Potential for building collapse due to age of construction and disrepair. (Low/Infrequent)

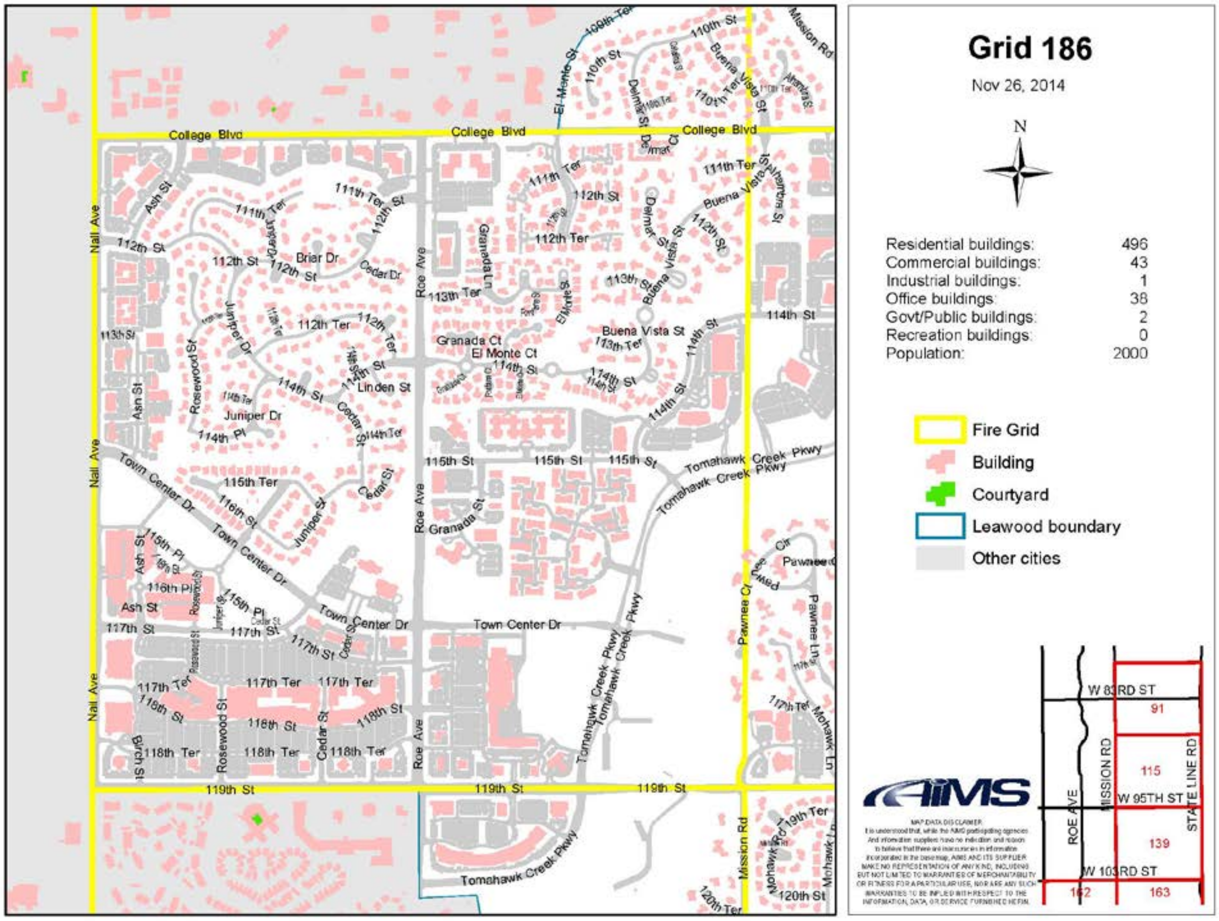
2012-2014 Grid Fire Loss:

Building loss	Building value	Vehicle Loss	Vehicle Value	Contents Loss	Contents Value
$54,000.00	$758,600.00	$3,800.00	$5,460.00	$20,000.00	$259,400.00

Analysis:
Grid 163 is predominantly residential with 571 dwellings along with 17 commercial buildings, 8 office buildings and 37 government / public buildings. Grid 163 has the highest number of non-sprinklered buildings in the city. The buildings are aging with potential increased fire load. Grid 163 receives routine emergency medical calls, fire alarm activations and other calls for service associated with both residential and commercial occupancies.

District 2

- **Grid 186**



Total Population: 2,001

2012-2014 Grid Incident Count

Incident Type	Calls
Fire	23
EMS	1,492
Haz-Mat	28
Rescue	4
Other	385
Total	**1,932**

Low Fire Risk:

- Various detached outbuildings, dumpsters and vehicles

Moderate Fire Risk:

- 147 - Multi-family Condo/ Apartment Structures.
    - Tomahawk Creek Apartments (Wood construction 24 hr. residences; fully sprinklered, 365 units).
    - The Residence at Park Place (Wood construction 24 hr. residences; fully sprinklered, 177 units).
- 92 - various general, business, public and retail buildings (limited combustible, fully sprinklered).
    - AMC Movie Theatre (11 screens with 2,300 total seating capacity)
- 1 Hotel (Aloft- Non-combustible, fully sprinklered)
- 449 Residential Dwellings
- 21-Restaurants

High Fire Hazard:

- Leawood Corporate Manor 1 (partially sprinklered) - 4701 College Blvd.
- Leawood Corporate Manor 2 (partially sprinklered) - 4707 College Blvd.
- Leawood Corporate Manor 3 (partially sprinklered) - 5001 College Blvd
- Root Dental Labs (partially sprinklered) - 5201 College Blvd.
- Leawood Fountain Plaza 1 (partially sprinklered) - 5401 College Blvd
- Leawood Fountain Plaza 2 (partially sprinklered) - 11100 Ash
- Leawood Fountain Plaza 3 (partially sprinklered) - 11111 Nall Ave.
- Hallbrook Maintenance Facility (partially sprinklered) - 2501 W. 111th Terr.

Maximum Fire:

- **Brookdale at Leawood Assisted Living** (3 story with limited mobility residents; building fully sprinklered except attic not sprinklered, 5 studio units, 55 two-bed units, 127 one-bed units; typically 95% occupied).
- **Sunrise Nursing Home** (3 story with limited mobility residents; fully sprinklered, 59 two-bed units and 30 one-bed units; typically 80% occupied).

Non-Fire Risk:

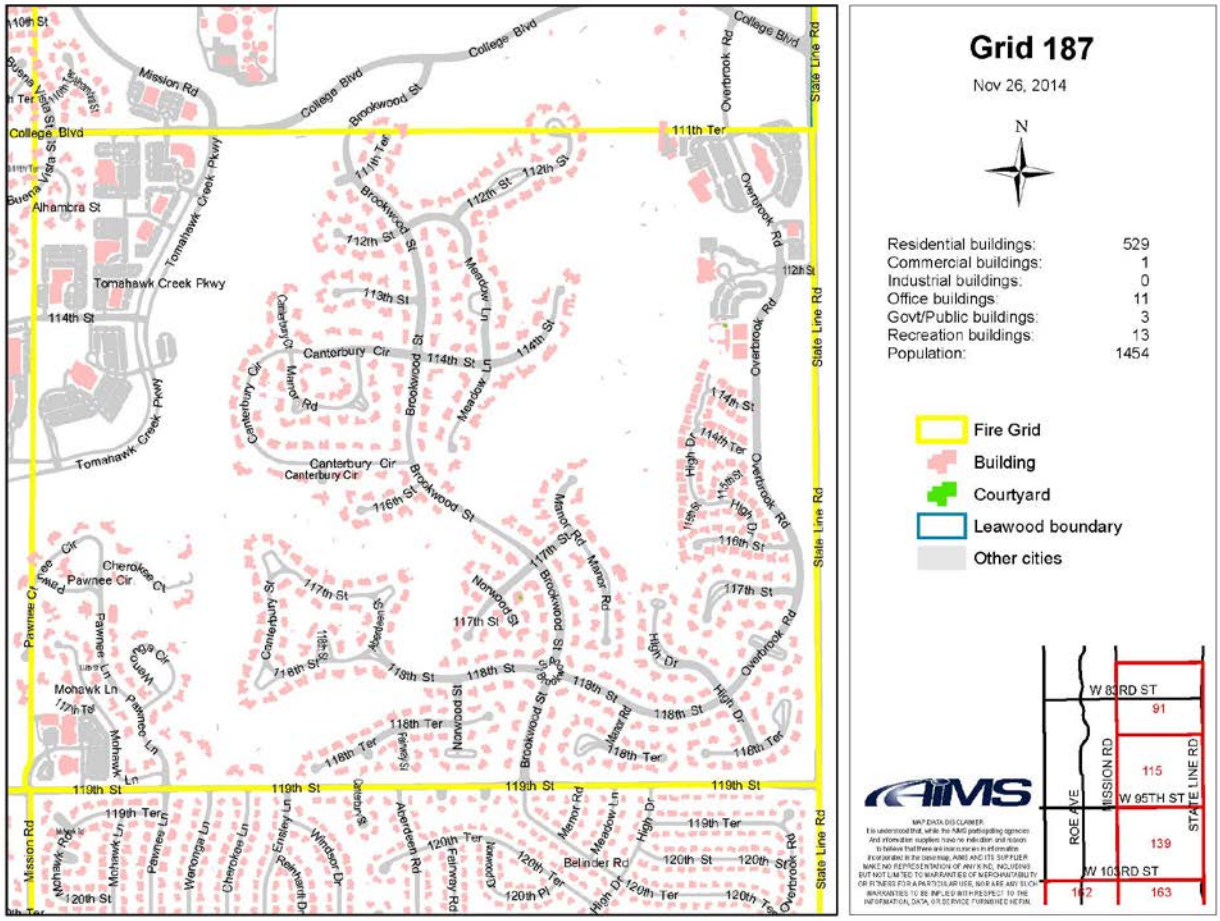
- Routine EMS responses (Frequent; 25% of calls for Department)
- Vehicle Accidents-typically low to moderate impact due to lower speed limit postings.
- Potential for mass casualty events associated with workplace violence/active shooter scenarios/other domestic violence (Low)
- Potential for moderate/high urban flooding, thunderstorms, tornadoes. (Tomahawk Creek floods with heavy rain)
- Potential for building collapse due to age of construction and disrepair. (Low/Infrequent)
- Potential for moderate/high snow-ice/winter storms. Average January temperature 28º F.

2012-2014 Grid Fire Loss:

Building loss	Building value	Vehicle Loss	Vehicle Value	Contents Loss	Contents Value
$345,000.00	$127,515,000.00	$5,050.00	$5,050.00	$111,000.00	$5,026,000.00

Analysis:
Grid 186 is predominantly residential with 496 dwellings, along with 43 commercial buildings, 38 office buildings and 2 government / public buildings. This fire response district generates approximately 25% of all calls in the City of Leawood. Grid 186 receives routine emergency medical calls, fire alarm activations and other calls for service associated with both residential and commercial occupancies.

- **Grid 187**



Grid Population: 1,454

2012-2014 Grid Incident Count

Incident Type	Calls
Fire	8
EMS	197
Haz-Mat	9
Rescue	1
Other	195
Total	**410**

Low Fire Risk:

- Detached outbuildings, dumpsters, fire pits and vehicles

Moderate Fire Risk:

- 28 various general businesses, public buildings and retail buildings.
- 529 Residential Dwellings.
- 0 Restaurants

High Fire Hazard:

- Kansas City Orthopedic Hospital - 3601 College Blvd. Non-Combustible; fully sprinklered; Non-ambulatory patients on the 2nd floor.
- Church of the Nativity and School - 3400 W 119th St. Limited Combustible; fully sprinklered; 300 students on weekdays.

Non-Fire Risk:

- Routine EMS responses. (infrequent/low EMS runs)
- Vehicle Accidents-typically low to moderate impact. (Low/Infrequent)
- Potential for mass casualty events associated with workplace violence/active shooter scenarios and other domestic violence. (Low/Infrequent).
- Potential for minor/moderate urban flooding, thunderstorms, tornadoes. (Moderate/High; downed power lines with most thunderstorms).
- Potential for moderate to heavy snow-ice/winter storms. Average January temperature 28º F. (Moderate/High)
- Potential for building collapse due to age of construction and disrepair. (Low/Infrequent)

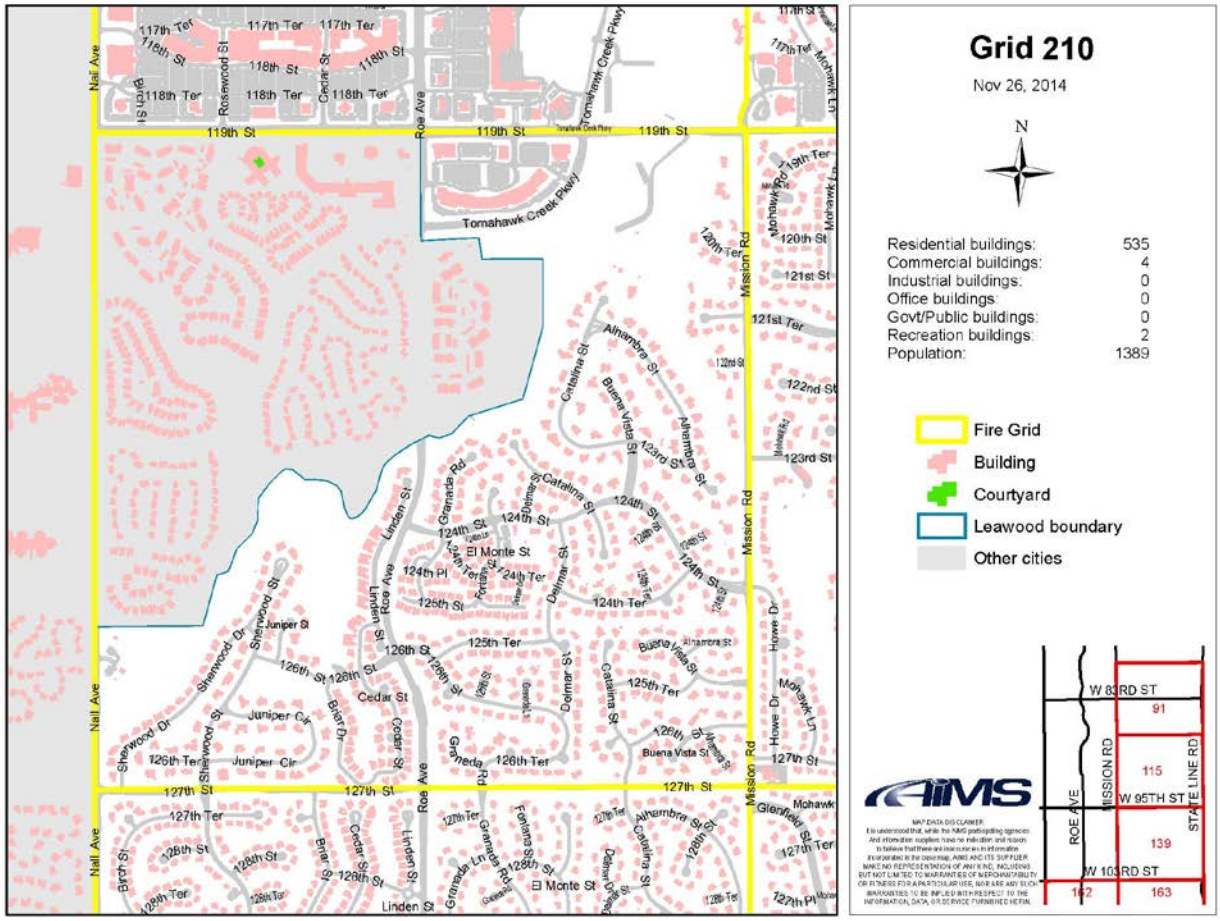
2012-2014 Grid Fire Loss:

Building loss	Building value	Vehicle Loss	Vehicle Value	Contents Loss	Contents Value
$2,000.00	$1,200,000.00	$2,046.00	$2,046.00	$0.00	$0.00

Analysis:

Grid 187 is predominantly residential with 529 dwellings, along with 1 commercial building, 11 office buildings and 16 government / public buildings. Grid 187 receives routine emergency medical calls, fire alarm activations and other calls for service associated with both residential and commercial occupancies.

- **Grid 210**



Grid Population: 1,389

2012-2014 Grid Incident Count

Incident Type	Calls
Fire	9
EMS	170
Haz-Mat	20
Rescue	0
Other	109
Total	**308**

Low Fire Risk:

- Detached outbuildings, dumpsters, fire pits and vehicles

Moderate Fire Risk:

- 6 general businesses, public buildings and retail buildings.
- 535 Residential Dwellings.
- 4 Restaurants

High Fire Hazard:

- None

Non-Fire Risk:

- Routine EMS responses. (infrequent/low EMS runs)
- Vehicle Accidents-typically low to moderate impact. (Low/Infrequent)
- Potential for mass casualty events associated with workplace violence/active shooter scenarios/other domestic violence. (Low/Infrequent).
- Potential for minor/moderate urban flooding, thunderstorms, tornadoes. (Moderate/High; downed power lines with most thunderstorms).
- Potential for moderate to heavy snow-ice/winter storms. Average January temperature 28º F. (Moderate/High)
- Potential for building collapse due to age of construction and disrepair. (Low/Infrequent)

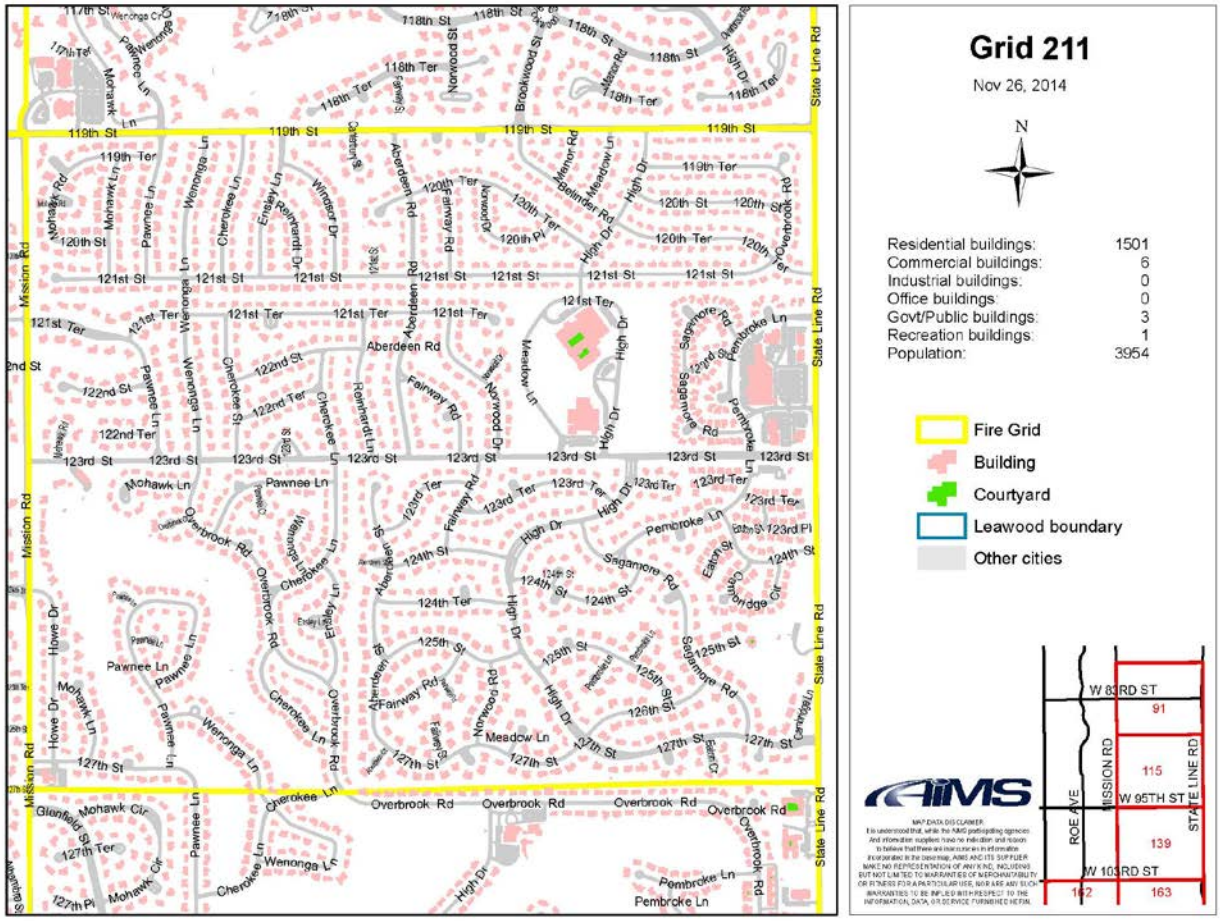
2012-2014 Grid Fire Loss:

Building loss	Building value	Vehicle Loss	Vehicle Value	Contents Loss	Contents Value
$23,000.00	$838,000.00	$0.00	$0.00	$11,103.00	$11,103.00

Analysis:

Grid 210 is predominantly residential with 535 dwellings, along with 4 commercial buildings, 0 office buildings and 0 government / public buildings. Grid 210 receives routine emergency medical calls, fire alarm activations and other calls for service associated with both residential and commercial occupancies.

- **Grid 211**



Grid Population: 1,501

2012-2014 Grid Incident Count

Incident Type	Calls
Fire	15
EMS	376
Haz-Mat	19
Rescue	2
Other	198
Total	**610**

Low Fire Risk:

- Detached outbuildings, dumpsters, fire pits and vehicles

Moderate Fire Risk:

- 13 general businesses, public buildings and retail buildings.
- 1,007 Residential Dwellings.
- 3 Restaurants

High Fire Hazard:

- Leawood Elementary School - Non-Combustible, fully sprinklered, 400 students on weekdays.
- Leawood Middle School - Non-Combustible, fully sprinklered, 300 students on weekdays.

Non-Fire Risk:

- Routine EMS responses. (frequent/moderate EMS runs)
- Vehicle Accidents with typically low to moderate impact. (Low/Infrequent)
- Potential for mass casualty events associated with workplace violence/active shooter scenarios and other domestic violence. (Low/Infrequent).
- Potential for minor/moderate urban flooding, thunderstorms, tornadoes. (Moderate/High; downed power lines with most thunderstorms).
- Potential for moderate to heavy snow-ice/winter storms. Average January temperature 28º F. (Moderate/High)
- Potential for building collapse due to age of construction and disrepair. (Low/Infrequent)

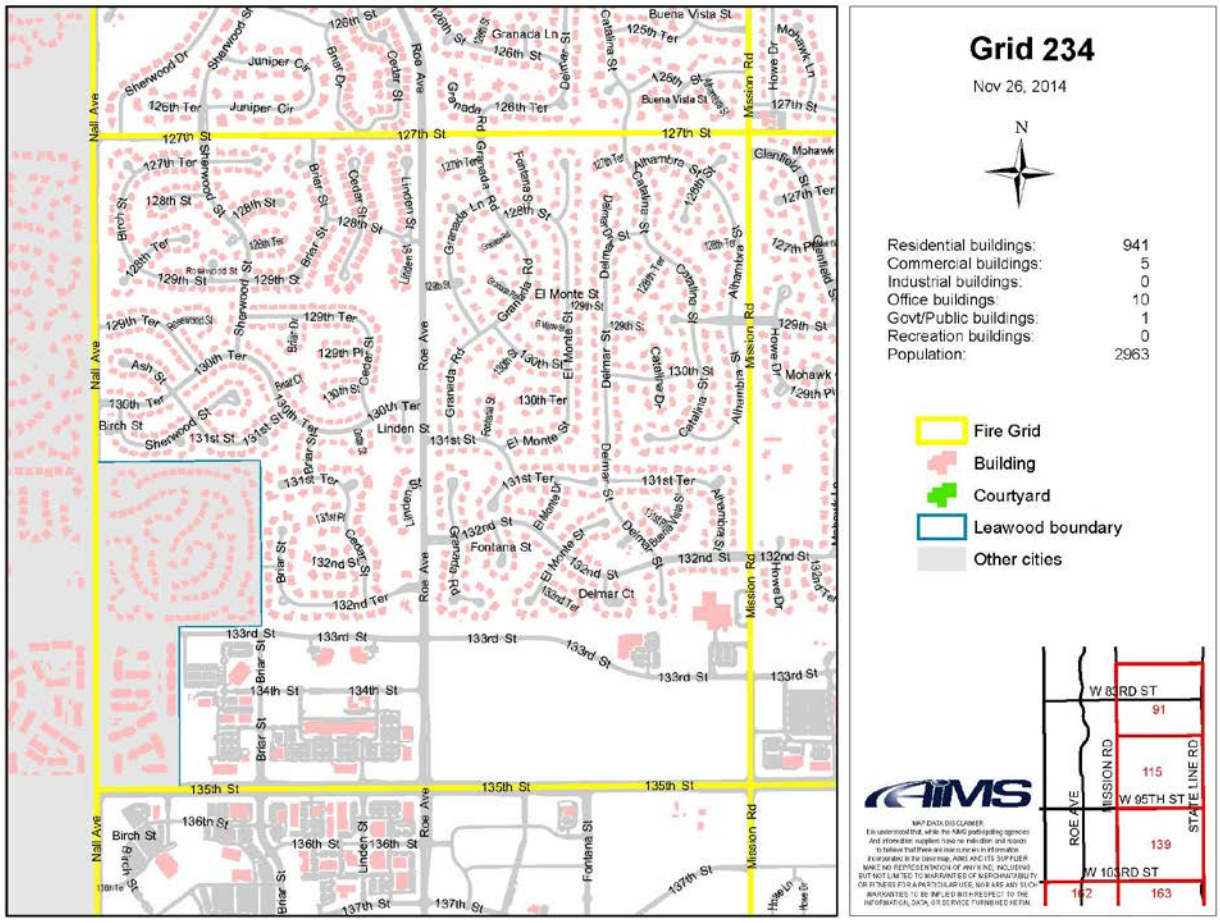
2012-2014 Grid Fire Loss:

Building loss	Building value	Vehicle Loss	Vehicle Value	Contents Loss	Contents Value
$18,200.00	$2,505,400.00	$0.00	$0.00	$1000.00	$748,473.00

Analysis:

Grid 211 is predominantly residential with 1,501 dwellings, along with 6 commercial buildings, 0 office buildings and 3 government / public buildings. Grid 211 receives routine emergency medical calls, fire alarm activations and other calls for service associated with both residential and commercial occupancies.

- **Grid 234**



Grid Population: 2,963

2012-2014 Grid Incident Count

Incident Type	Calls
Fire	9
EMS	172
Haz-Mat	11
Rescue	1
Other	122
Total	**315**

Low Fire Risk:

- Detached outbuildings, dumpsters, fire pits and vehicles

Moderate Fire Risk:

- 16 general businesses, public buildings and retail buildings
- 941 Residential dwellings
- 2 Restaurants

High Fire Hazard:

- Mission Trail Elementary School - Non- Combustible, fully sprinklered, 300 students on weekdays.

Non-Fire Risk:

- Routine EMS responses. (infrequent/low EMS runs)
- Vehicle Accidents with typically low to moderate impact. (Low/Infrequent)
- Potential for mass casualty events associated with workplace violence/active shooter scenarios and other domestic violence. (Low/Infrequent).
- Potential for minor/moderate urban flooding, thunderstorms, tornadoes. (Moderate/High; downed power lines with most thunderstorms).
- Potential for moderate to heavy snow-ice/winter storms. Average January temperature 28º F. (Moderate/High)
- Potential for building collapse due to age of construction and disrepair. (Low/Infrequent)

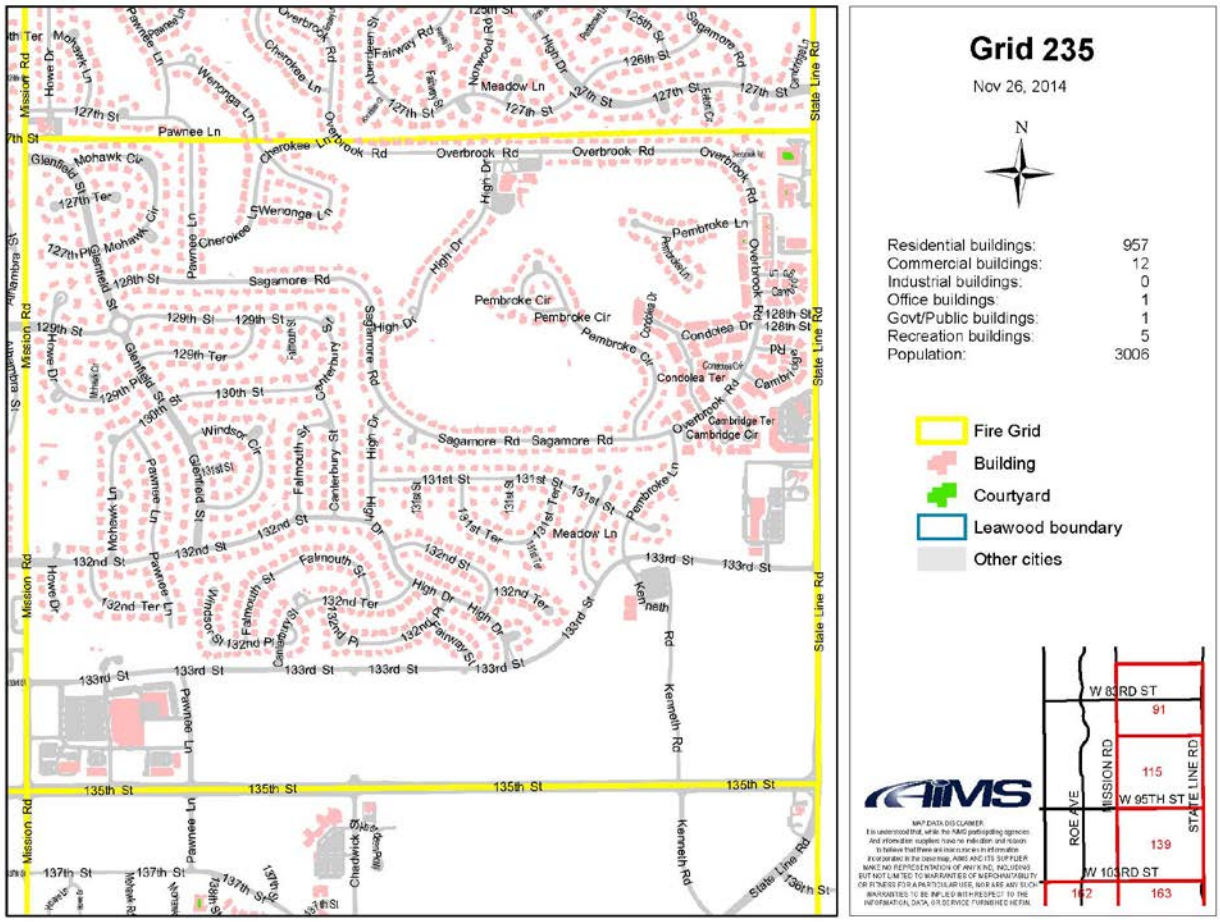
2012-2014 Grid Fire Loss:

Building loss	Building value	Vehicle Loss	Vehicle Value	Contents Loss	Contents Value
$33,500.00	$862,000.00	$0.00	$0.00	$10,050.00	$295,050.00

Analysis:

Grid 234 is predominantly residential with 941 dwellings, along with 5 commercial buildings, 10 office buildings and 1 government / public building. Grid 234 receives routine emergency medical calls, fire alarm activations and other calls for service associated with both residential and commercial occupancies.

- **Grid 235**



Grid Population: 3,006

2012-2014 Grid Incident Count

Incident Type	Calls
Fire	14
EMS	510
Haz-Mat	9
Rescue	0
Other	163
Total	**696**

Low Fire Risk:

- Detached outbuildings, dumpsters, fire pits and vehicles

Moderate Fire Risk:

- 19 general businesses, public buildings and retail buildings
- 957 Residential Dwellings
- 4 Restaurants

High Fire Hazard:

- None

Maximum Fire:

- **Homestead of Leawood Assisted Living** (1 story with limited mobility residents; building fully sprinklered except attic not sprinklered).
- **Clarebridge Nursing Home** (1 story with limited & non-mobility residents; fully sprinklered).

Non-Fire Risk:

- Routine EMS responses. (frequent/moderate EMS runs)
- Vehicle Accidents with typically low to moderate impact. (Low/Infrequent)
- Potential for mass casualty events associated with workplace violence/active shooter scenarios and other domestic violence. (Low/Infrequent).
- Potential for minor/moderate urban flooding, thunderstorms, tornadoes. (Moderate/High; downed power lines with most thunderstorms).
- Potential for moderate to heavy snow-ice/winter storms. Average January temperature 28º F. (Moderate/High)
- Potential for building collapse due to age of construction and disrepair. (Low/Infrequent)

2012-2014 Grid Fire Loss:

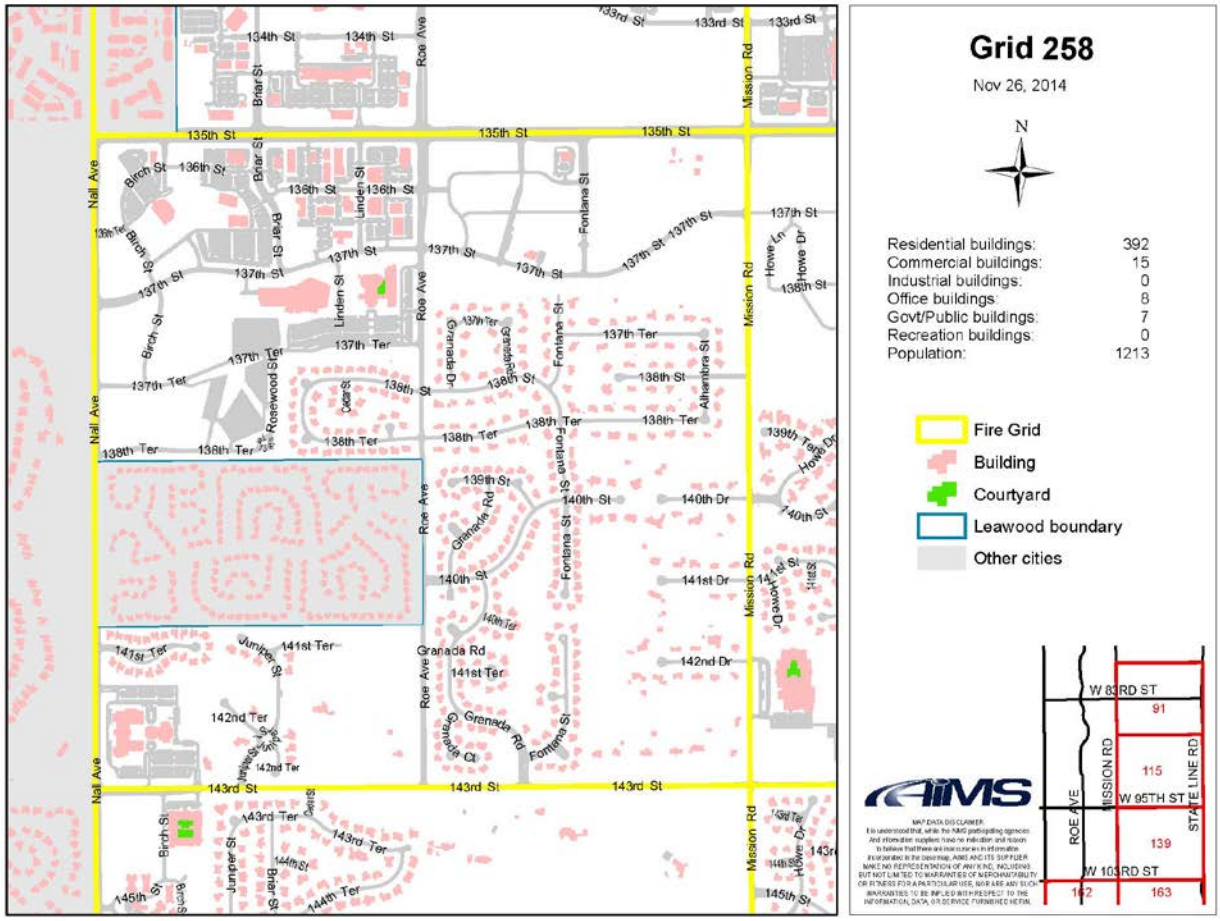
Building loss	Building value	Vehicle Loss	Vehicle Value	Contents Loss	Contents Value
$2,000.00	$450,000.00	$3,000.00	$3,000.00	$1,000.00	$1,000.00

Analysis:

Grid 235 is predominantly residential with 957 dwellings, along with 12 commercial buildings, 1 office building and 1 government / public building. Grid 235 receives routine emergency medical calls, fire alarm activations and other calls for service associated with both residential and commercial occupancies. The grid's assisted living facility and nursing facility contribute to the high EMS call load.

District 3

- **Grid 258**



Grid Population: 1,213

2012-2014 Grid Incident Count

Incident Type	Calls
Fire	7
EMS	155
Haz-Mat	4
Rescue	0
Other	55
Total	**221**

Low Fire Risk:

- Detached outbuildings, dumpsters, fire pits and vehicles

Moderate Fire Risk:

- 30 general businesses, public buildings, and retail buildings.
- 1,007 Residential Dwellings.
- 6 Restaurants

High Fire Hazard:

- Church of the Resurrection (Methodist Church and Schools) - Limited combustible, fully sprinklered; school has 300 students on weekdays; church can have up to 10,000 people per service with five Sunday services. The 2 major church buildings equal 700,000 square feet.
- St. Michaels Church & School (K-8 + preschool) – Limited combustible, fully sprinklered - 563 students.

Non-Fire Risk:

- Routine EMS responses. (infrequent/low EMS runs)
- Vehicle Accidents with typically low to moderate impact. (Low/Infrequent)
- Potential for mass casualty events associated with workplace violence/active shooter scenarios and other domestic violence. (Low/Infrequent).
- Potential for minor/moderate urban flooding, thunderstorms, tornadoes. (Moderate/High; downed power lines with most thunderstorms).
- Potential for moderate to heavy snow-ice/winter storms. Average January temperature 28º F. (Moderate/High)
- Potential for building collapse due to age of construction and disrepair. (Low/Infrequent)

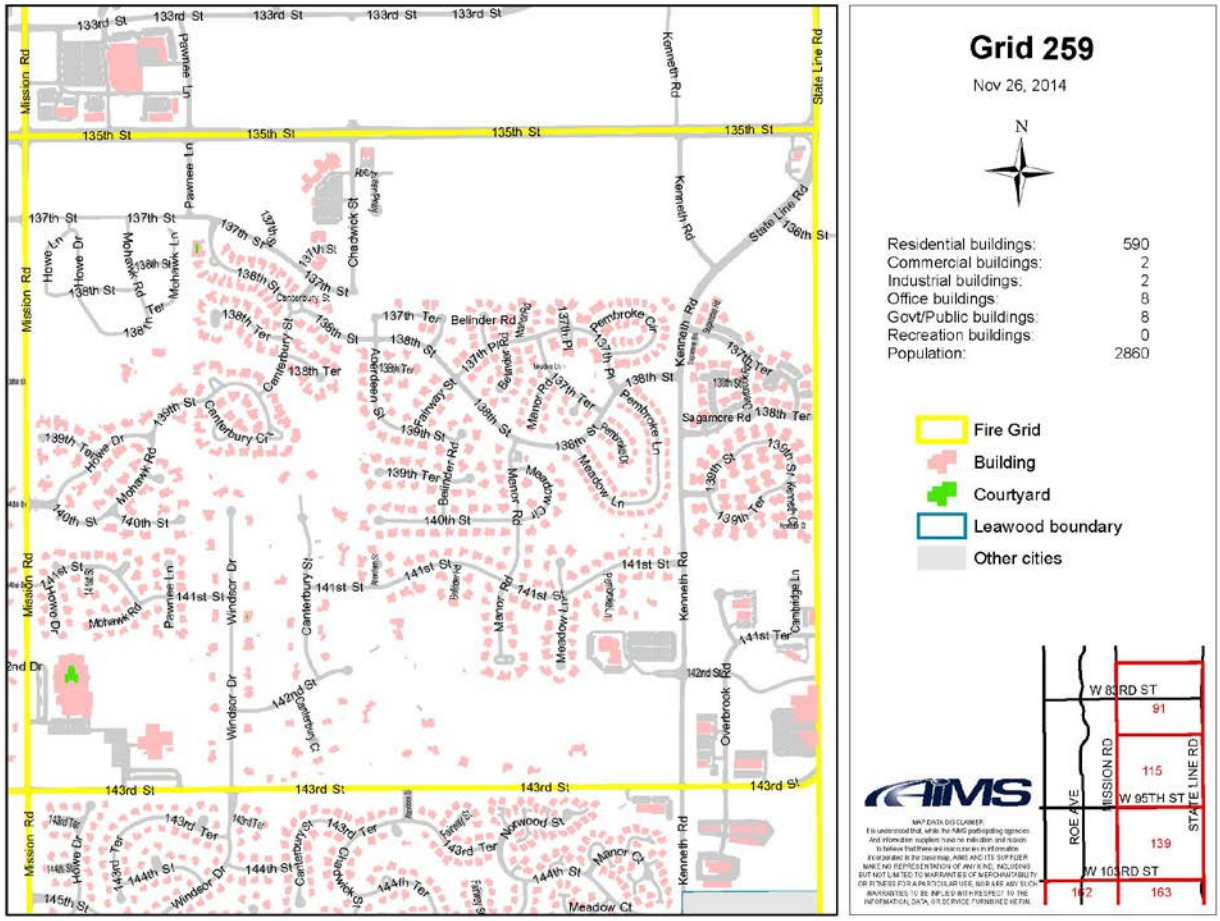
2012-2014 Grid Fire Loss:

Building loss	Building value	Vehicle Loss	Vehicle Value	Contents Loss	Contents Value
$0.00	$0.00	$1,000.00	$3,500.00	$650.00	$1,650.00

Analysis:

Grid 258 has 392 residential dwellings, 15 commercial buildings, 8 office buildings, and 7 government / public buildings. Grid 258 receives routine emergency medical calls, fire alarm activations and other calls for service associated with both residential and commercial occupancies.

- **Grid 259**



Grid Population: 2,860

2012-2014 Grid Incident Count

Incident Type	Calls
Fire	9
EMS	220
Haz-Mat	10
Rescue	2
Other	167
Total	**408**

Low Fire Risk:

- Detached outbuildings, dumpsters, fire pits and vehicles

Moderate Fire Risk:

- 20 general businesses, public buildings and retail buildings
- 590 Residential dwellings
- 0 Restaurants

High Fire Hazard:

- Villa Milano - 13740 Howe Ln - wood frame construction, fully sprinklered - 290 total units with 580 total occupants.
- Prairie Star Elementary School (K-5) - limited combustible, fully sprinklered – 474 students
- Prairie Star Middle School (6-8) – limited combustible, fully sprinklered – 560 students

Non-Fire Risk:

- Routine EMS responses. (infrequent/low EMS runs)
- Vehicle Accidents with typically low to moderate impact. (Low/Infrequent)
- Potential for mass casualty events associated with workplace violence/active shooter scenarios and other domestic violence. (Low/Infrequent).
- Potential for minor/moderate urban flooding, thunderstorms, tornadoes. (Moderate/High; downed power lines with most thunderstorms).
- Potential for moderate to heavy snow-ice/winter storms. Average January temperature 28º F. (Moderate/High)
- Potential for building collapse due to age of construction and disrepair. (Low/Infrequent)

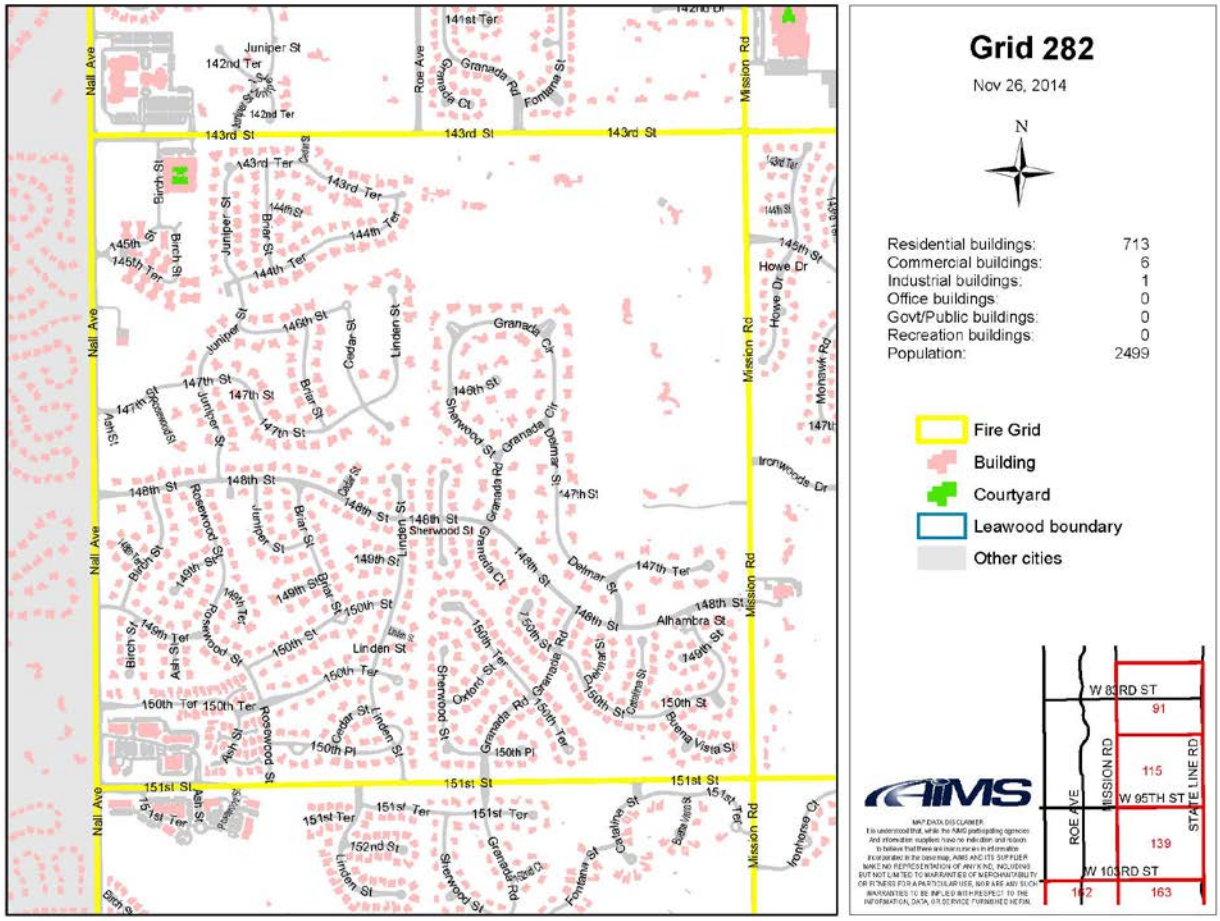
2012-2014 Grid Fire Loss:

Building loss	Building value	Vehicle Loss	Vehicle Value	Contents Loss	Contents Value
$3,009.00	$303,500.00	$0.00	$0.00	$750.00	$5,500.00

Analysis:

Grid 259 is predominantly residential with 590 dwellings, along with 4 commercial buildings, 8 office buildings and 8 government / public buildings. Grid 259 receives routine emergency medical calls, fire alarm activations and other calls for service associated with both residential and commercial occupancies.

- **Grid 282**



Grid Population: 2,499

2012-2014 Grid Incident Count

Incident Type	Calls
Fire	10
EMS	283
Haz-Mat	7
Rescue	0
Other	99
Total	**399**

Low Fire Risk:

- Detached outbuildings, dumpsters, fire pits and vehicles

Moderate Fire Risk:

- 17 general businesses, public buildings and retail buildings.
- 713 Residential Dwellings.
- 0 Restaurants

Maximum Fire Risk:

- Manor at Grace Gardens Nursing Home - 5400 W 143rd St - single story wood frame construction fully sprinklered except part of attic, 70 units.

Non-Fire Risk:

- Routine EMS responses. (Ageing population in the area; infrequent/low EMS runs)
- Vehicle Accidents-typically low to moderate impact. (Low/Infrequent)
- Potential for mass casualty events associated with workplace violence/active shooter scenarios and other domestic violence. (Low/Infrequent).
- Potential for minor/moderate urban flooding, thunderstorms, tornadoes. (Moderate/High; downed power lines with most thunderstorms).
- Potential for moderate to heavy snow-ice/winter storms. Average January temperature 28º F. (Moderate/High)
- Potential for building collapse due to age of construction and disrepair. (Low/Infrequent)

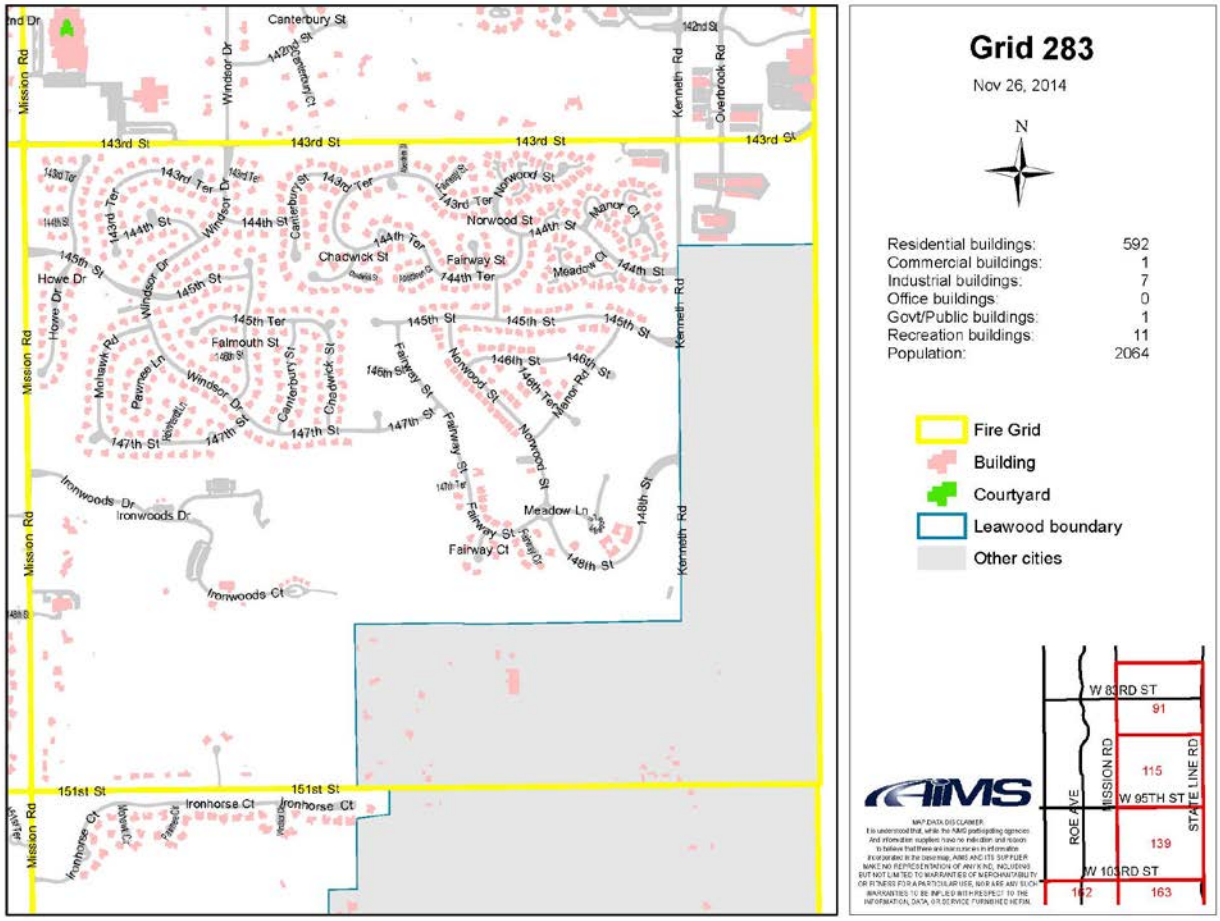
2012-2014 Grid Fire Loss:

Building loss	Building value	Vehicle Loss	Vehicle Value	Contents Loss	Contents Value
$1,000.00	$2,000.00	$100.00	$500.00	$2,500.00	$2,500.00

Analysis:

Grid 282 is predominantly residential with 713 dwellings, along with 7 commercial buildings, 0 office buildings and 0 government / public buildings. Grid 282 receives routine emergency medical calls, fire alarm activations and other calls for service associated with both residential and commercial occupancies.

- **Grid 283**



Grid Population: 2,064

2012-2014 Grid Incident Count

Incident Type	Calls
Fire	9
EMS	139
Haz-Mat	5
Rescue	0
Other	92
Total	**245**

Low Fire Risk:

- Detached outbuildings, dumpsters, fire pits and vehicles

Moderate Fire Risk:

- 20 general businesses, public buildings and retail buildings
- 592 Residential dwellings
- 3 Restaurants

High Fire Hazard:

- None

Non-Fire Risk:

- Routine EMS responses. (Ageing population in the area, infrequent/low EMS runs)
- Vehicle Accidents with typically low to moderate impact. (Low/Infrequent)
- Potential for mass casualty events associated with workplace violence/active shooter scenarios and other domestic violence. (Low/Infrequent).
- Potential for minor/moderate urban flooding, thunderstorms, tornadoes. (Moderate/High; downed power lines with most thunderstorms).
- Potential for moderate to heavy snow-ice/winter storms. Average January temperature 28º F. (Moderate/High)
- Potential for building collapse due to age of construction and disrepair. (Low/Infrequent)

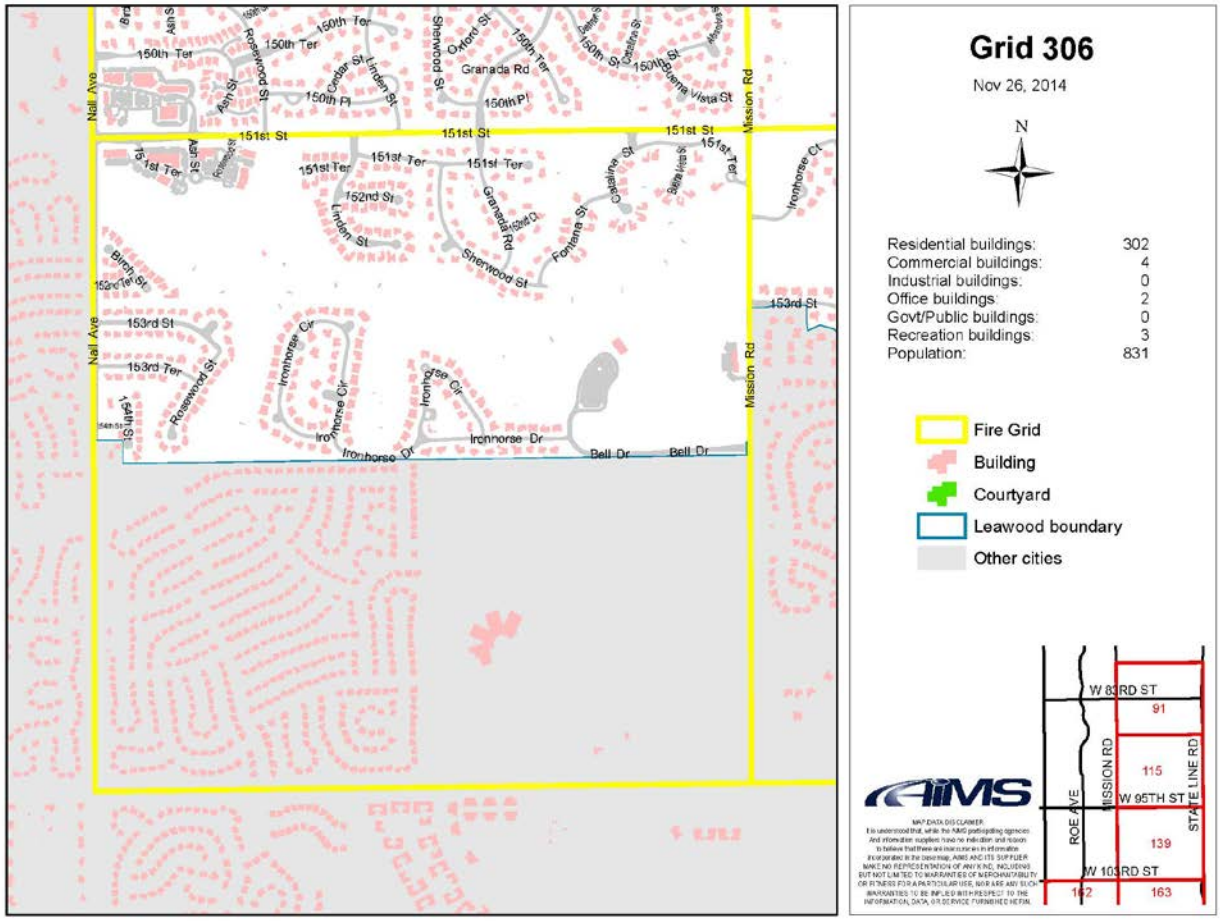
2012-2014 Grid Fire Loss:

Building loss	Building value	Vehicle Loss	Vehicle Value	Contents Loss	Contents Value
$11,500.00	$1,100,000.00	$7,000.00	$7,000.00	$0.00	$0.00

Analysis:

Grid 283 is predominantly residential with 592 dwellings along with 19 commercial buildings, 0 office buildings and 1 government / public building. Grid 283 receives routine emergency medical calls, fire alarm activations and other calls for service associated with both residential and commercial occupancies.

- **Grid 306**



Grid Population: 831

2012-2014 Grid Incident Count

Incident Type	Calls
Fire	9
EMS	40
Haz-Mat	1
Rescue	0
Other	29
Total	**79**

Low Fire Risk:

- Detached outbuildings, dumpsters, fire pits and vehicles

Moderate Fire Risk:

- 9 general businesses, public buildings and retail buildings
- 302 Residential dwellings
- 2 Restaurants

High Fire Hazard:

- None

Non-Fire Risk:

- Routine EMS responses. (infrequent/low EMS runs)
- Vehicle Accidents with typically low to moderate impact. (Low/Infrequent)
- Potential for mass casualty events associated with workplace violence/active shooter scenarios and other domestic violence. (Low/Infrequent).
- Potential for minor/moderate urban flooding, thunderstorms, tornadoes. (Moderate/High; downed power lines with most thunderstorms).
- Potential for moderate to heavy snow-ice/winter storms. Average January temperature 28º F. (Moderate/High)
- Potential for building collapse due to age of construction and disrepair. (Low/Infrequent)

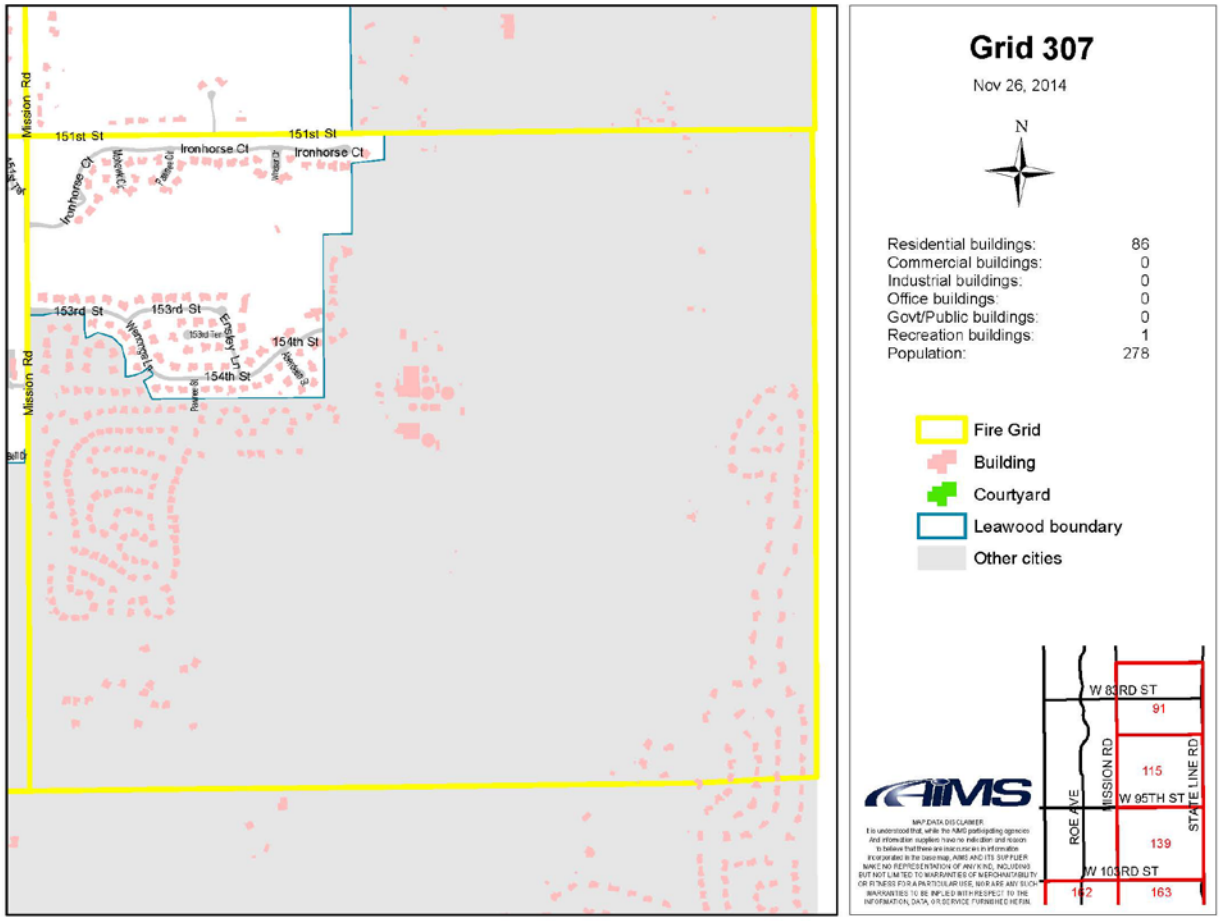
2012-2014 Grid Fire Loss:

Building loss	Building value	Vehicle Loss	Vehicle Value	Contents Loss	Contents Value
$0.00	$226,600.00	$0.00	$1,000.00	$1,000.00	$3,000.00

Analysis:

Grid 306 is predominantly residential with 301 dwellings along with 4 commercial buildings, 5 office buildings and 0 government / public buildings. Grid 306 receives routine emergency medical calls, fire alarm activations and other calls for service associated with both residential and commercial occupancies.

- **Grid 307**



Grid Population: 278

2012-2014 Grid Incident Count

Incident Type	Calls
Fire	6
EMS	34
Haz-Mat	0
Rescue	0
Other	20
Total	**60**

Low Fire Risk:

- Detached outbuildings, dumpsters, fire pits and vehicles

Moderate Fire Risk:

- 86 Residential dwellings

High Fire Hazard:

- None

Non-Fire Risk:

- Routine EMS responses. (infrequent/low EMS runs)
- Vehicle Accidents with typically low to moderate impact. (Low/Infrequent)
- Potential for mass casualty events associated with workplace violence/active shooter scenarios and other domestic violence. (Low/Infrequent).
- Potential for minor/moderate urban flooding, thunderstorms, tornadoes. (Moderate/High with most thunderstorms).
- Potential for moderate to heavy snow-ice/winter storms. Average January temperature 28º F. (Moderate/High)
- Potential for building collapse due to age of construction and disrepair. (Low/Infrequent)

2012-2014 Grid Fire Loss:

Building loss	Building value	Vehicle Loss	Vehicle Value	Contents Loss	Contents Value
$26,000.00	$1,051,000.00	$0.00	$0.00	$10,000.00	$235,000.00

Analysis:

Only around 20% of Grid 307 is within Leawood city limits. This portion is residential with 86 dwellings, no commercial buildings, office buildings or government / public buildings. Grid 259 receives routine emergency medical calls, fire alarm activations and other calls for service associated with both residential and commercial occupancies.

Fire Loss vs. Value by Grid - Summary
2012-2014

Grid	Building Loss	Building Value	Vehicle Loss	Vehicle Value	Contents Loss	Contents Value
91	$2000	$350,000	$0	$0	$0	$0
115	$206,500	$206,500	$26,000	$256,000	$50,500	$50,500
139	$7,000	$587,500	$1,000	$2,000	$1,000	$50,000
162	$180,000	$370,000	$70,000	$100,000	$100,000	$200,000
163	$54,000	$758,600	$3,800	$5,460	$20,000	$259,400
186	$345,000	$127,515,000	$5,050	$5,050	$111,000	$5,026,000
187	$2,000	$1,200,000	$2,046	$2,046	$0	$0
210	$23,000	$838,000	$0	$0	$11,103	$11,103
211	$18,200	$2,505,400	$0	$0	$1,000	$748,473
234	$33,500	$862,000	$0	$0	$10,050	$295,050
235	$2,000	$450,000	$3,000	$3,000	$1,000	$1,000
258	$0	$0	$1,000	$3,500	$650	$1,650
259	$3,009	$303,500	$0	$0	$750	$5,500
282	$1,000	$2,000	$100	$500	$2,500	$2,500
283	$11,500	$1,100,000	$7,000	$7,000	$0	$0
306	$0	$226,600	$0	$1,000	$1,000	$3,000
307	$26,000	$1,051,000	$0	$0	$10,000	$235,000
Total	**$914,709**	**$138,326,100**	**$118,996**	**$385,556**	**$320,553**	**$6,889,176**

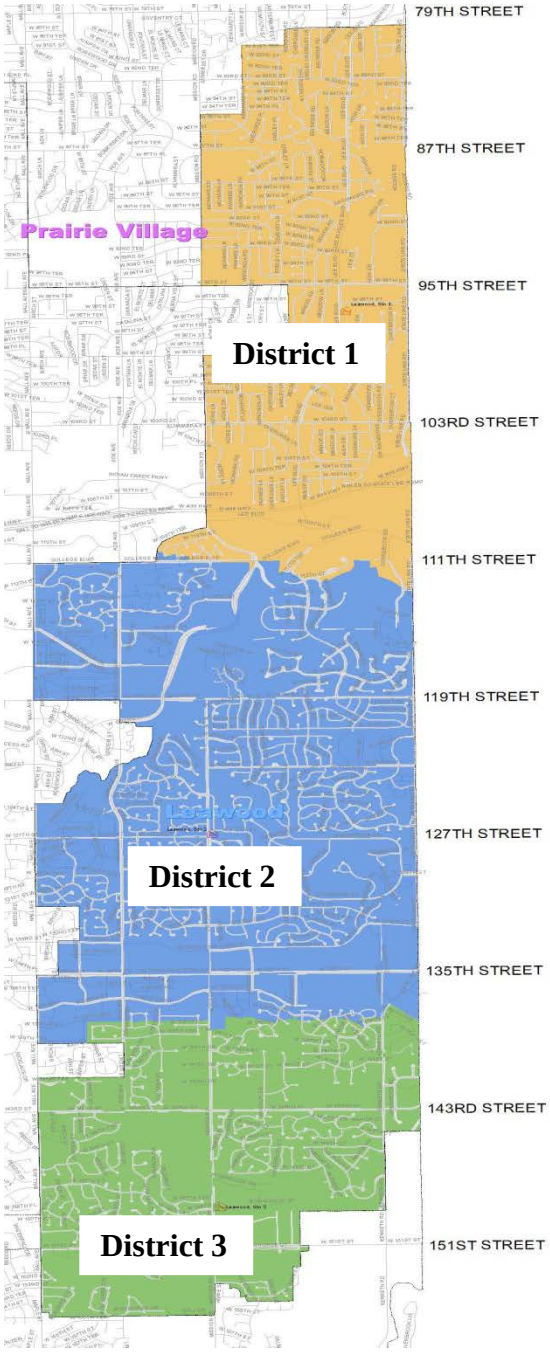
Incidents by Grid - Summary
2012-2014

Grid	Fire	EMS	HazMat	Rescue	Other	Total
91	7	256	15	0	159	437
115	13	351	18	0	231	613
139	9	271	13	0	189	482
162	4	51	0	0	21	76
163	19	279	25	3	157	483
186	23	1,492	28	4	385	1,932
187	8	197	9	1	195	410
210	9	170	20	0	109	308
211	15	376	19	2	198	610
234	9	172	11	1	122	315
235	14	510	9	0	163	696
258	7	155	4	0	55	221
259	9	220	10	2	167	408
282	10	283	7	0	99	399
283	9	139	5	0	92	245
306	5	40	1	0	29	75
307	6	34	0	0	20	60
Total	**176**	**4,996**	**194**	**13**	**2,391**	**7,770**

Section 5 - Historical Perspective

Distribution

Distribution describes the geographical placement of first-due resources for all-risk intervention within the community. In order to have an effective distribution, resources must be located in such a way that first-due units will arrive on the scene within the adopted service level objective time. For the City of Leawood, geographical placement is established by fire station location. Each station has an assigned area of the city for primary response known as a district. There are three response districts in Leawood.



Response District Statistics

District	Square Miles	Road Miles	Population	Dwelling Units
Station 31	4.36	54.2	9,169	3622
Station 32	7.10	96.7	15,617	7105
Station 33	3.89	58.2	8,857	3535
Total	15.35	209.1	33,643	14,262

Response District Resources

District	District Resources
Station 31	Engine Company
Station 32	Shift Commander, Engine Company, Truck/Rescue Company
Station 33	Quint Company

Land Use by Response District

District	Agri	Cmrcl	Office	Civic / Park	Multi-use	Multi Family Res.	Single Family Res.	Right of Way
Station 31	4%	1%	4%	5%	1%	0%	68%	17%
Station 32	7%	8%	6%	10%	2%	7%	43%	17%
Station 33	5%	2%	2%	8%	0%	6%	62%	14%

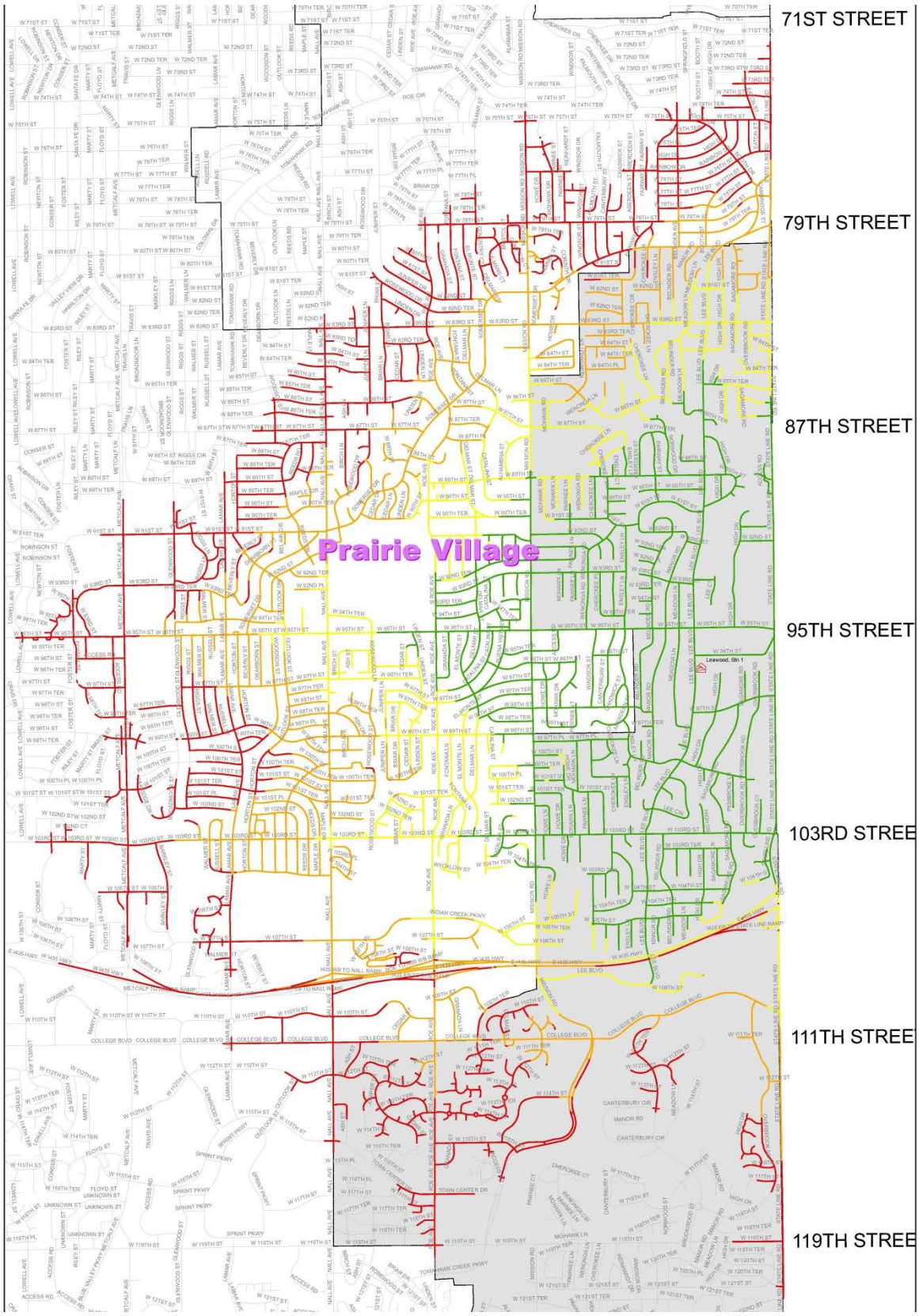
Station Travel Time Analysis

The following district maps show travel time from each station. Areas of the map have surface roads color coded as:

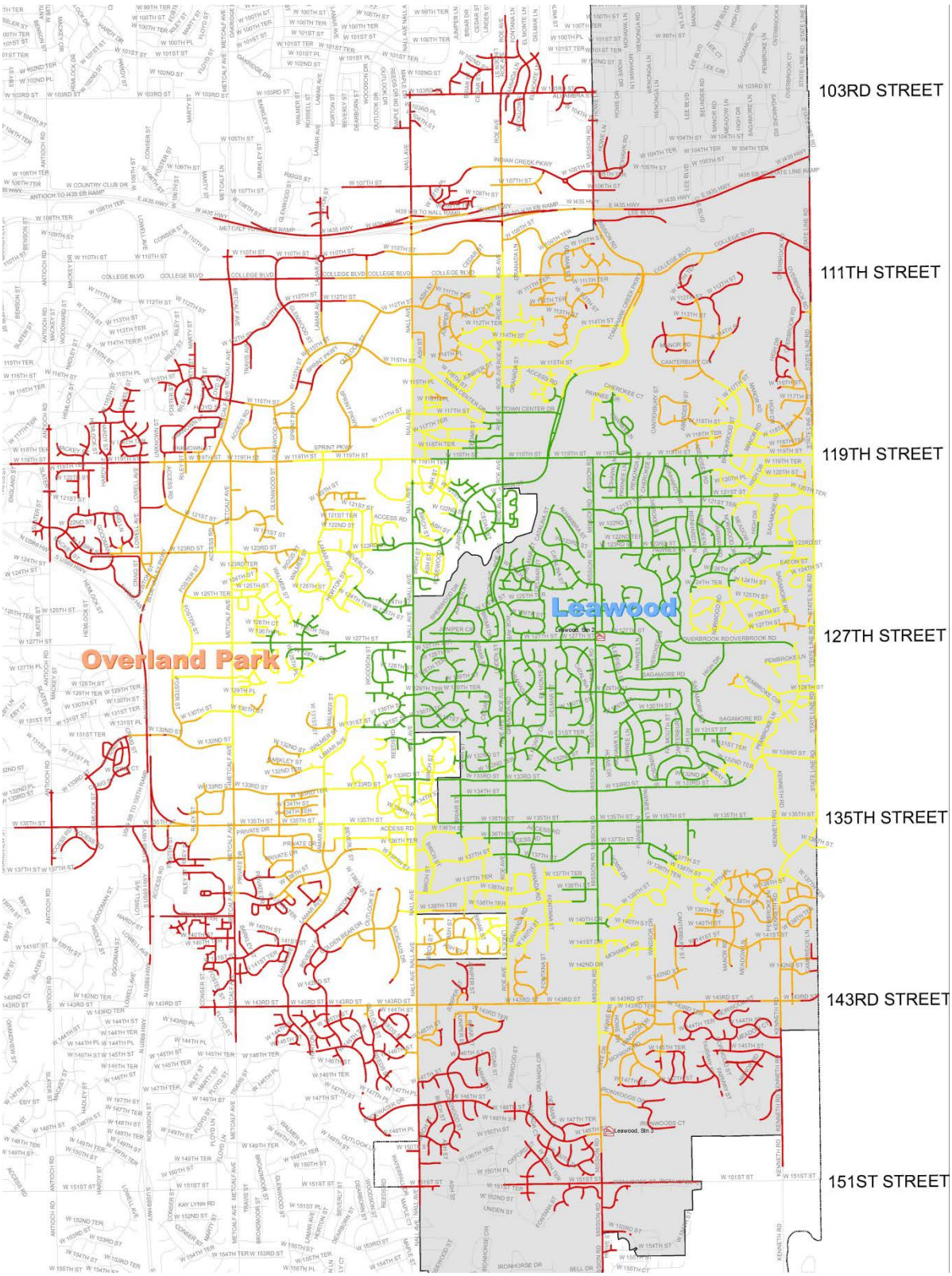
- Green - less than 3 minutes
- Yellow – 3-4 minutes
- Orange – 4-5 minutes
- Red – 5-6 minutes

Comparison of these travel time maps to the district map show calculated travel time for district coverage. This analysis shows that each district first due unit is able to cover their assigned district in under five minutes in the vast majority of locations. Station 31 does have a 5-6 minute travel time to west bound I-435. Station 32 has a 5-6 minute travel time to several residential streets in the north-eastern part of their district, as well as to a commercial area in the north-western part of the district. Station 33 is able to access all streets in district in less than 5 minutes.

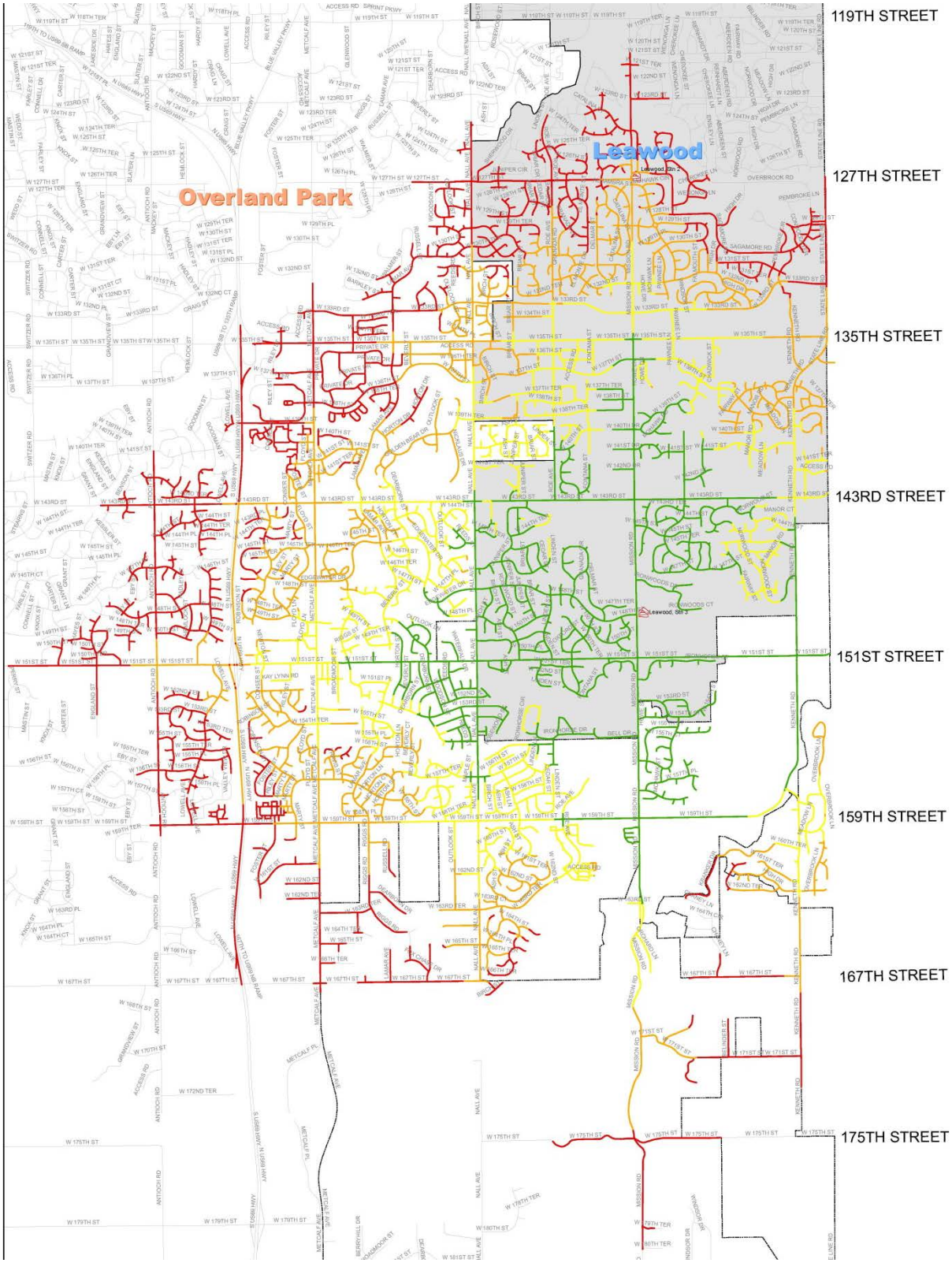
Station 31 Travel Time Analysis



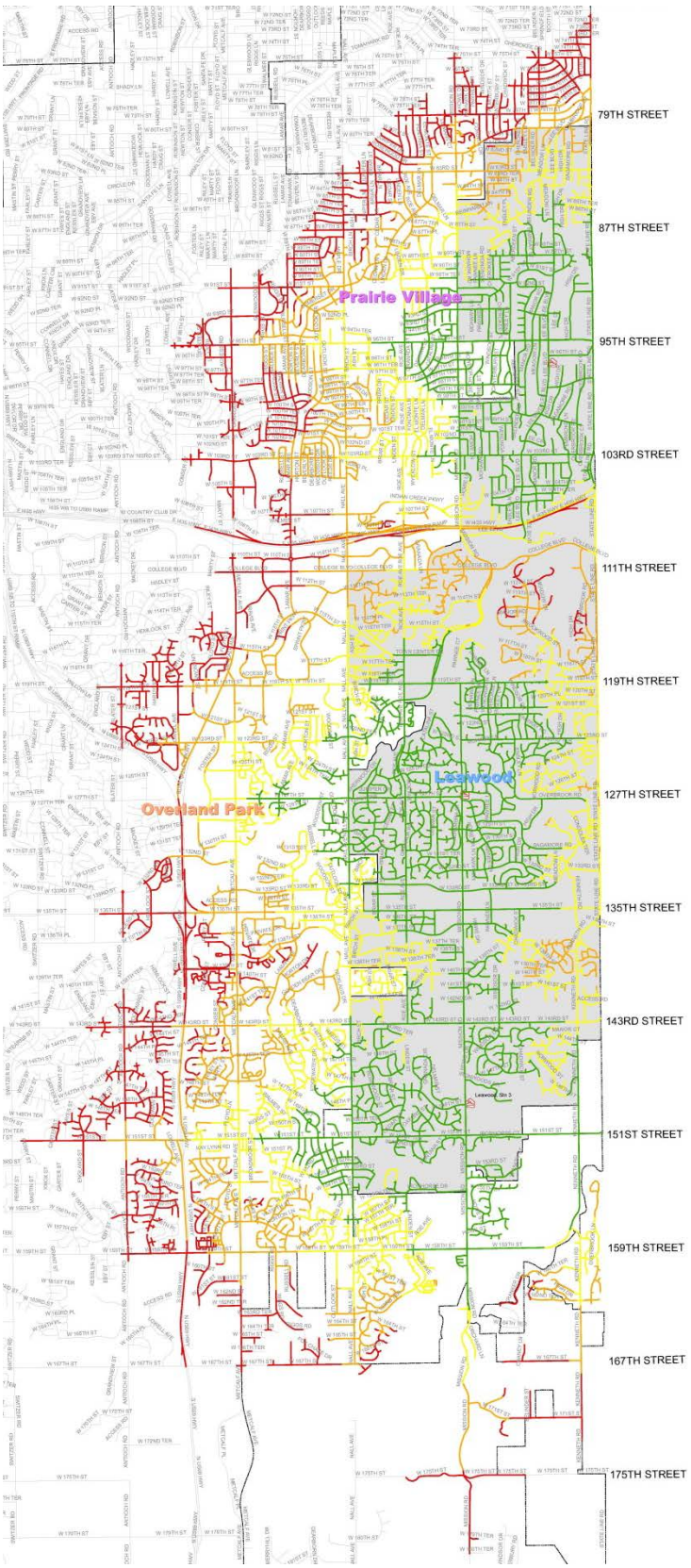
Station 32 Travel Time Analysis



Station 33 Travel Time Analysis



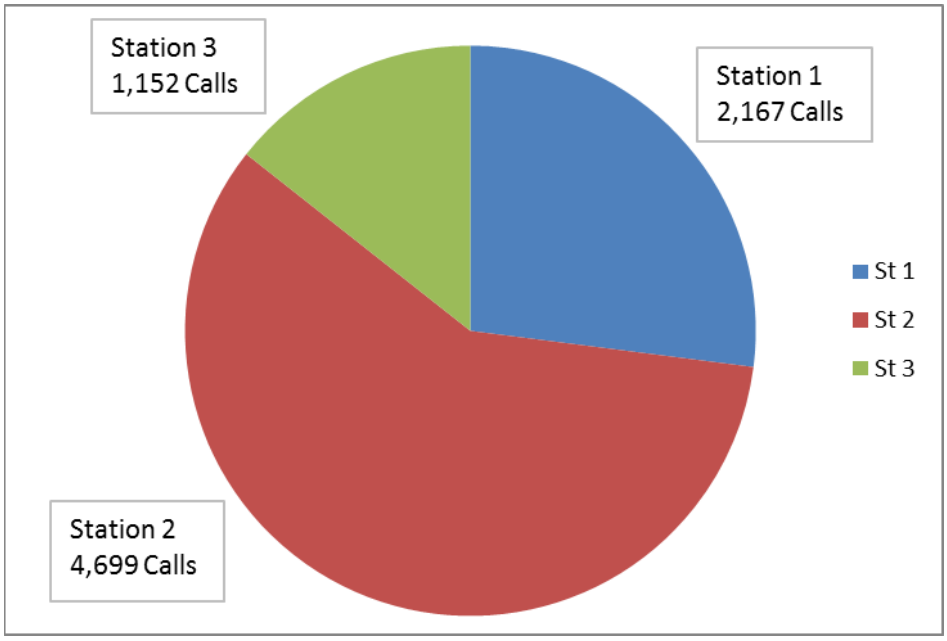
All Stations Travel Time Analysis



Concentration

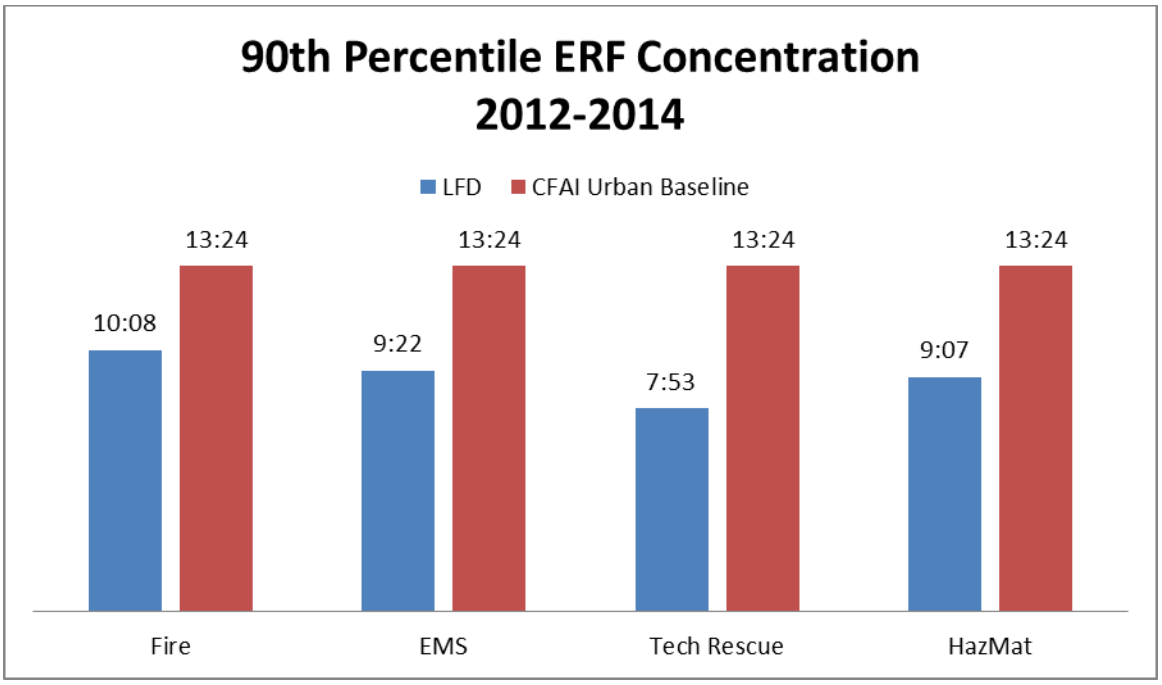
Concentration is the analysis of the arrangement of multiple resources so that the Effective Response Force (ERF) can arrive on the scene within established policy timeframes. The ERF varies depending on the type and severity of the incident. The ERF has been established through critical task analysis as outlined in the risk assessment.

Call Load Distribution by Station (2012-2014)



The call load distribution shows the highest number of calls to Station 32 which makes sense considering it is also the largest in geographical size and has the highest population. However, it must be remembered that there are two companies operating out of Station 32 versus a single company at Station 31 and Station 33. This puts the company work load relatively consistent between the Station 32 and Station 31 district response units. The Station 33 district work load is noted to be approximately half that of the other district response units. This is unusual in that population and response area per response unit is relatively consistent. However, as the risk assessment shows, several key hazards such as nursing homes and the interstate highway help to raise incident rates for the other two response districts.

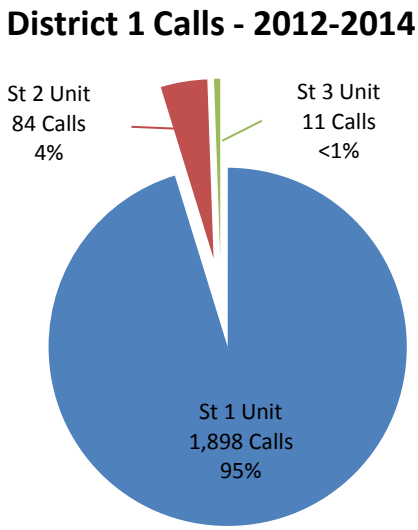
An analysis of total response time for the effective response force at the 90th percentile for 2012-2014 is illustrated below by major incident type. The CFAI urban baseline of 13:24 is shown for comparison. It should be noted that LFD significantly beats the CFAI baseline standard in each category. However, it should also be noted that for Tech Rescue and HazMat, very small data sets were available as not many calls of those types required an ERF during that period. This can be seen in detail in the historical baseline performance section.

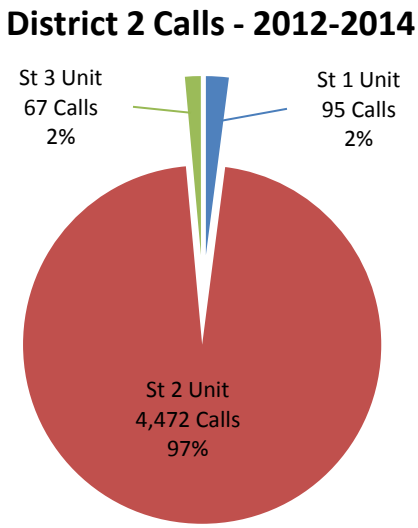


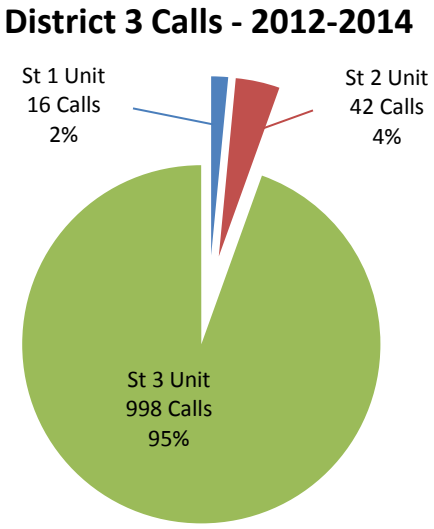
Reliability

Reliability is the ability of an agency to have the necessary staffing and apparatus available when an incident is received. To evaluate reliability, actual historical call data is analyzed. One key measure of reliability is the ability of an organization to meet its established performance measures. This information is analyzed in depth in Section 6 – Performance Objectives & Performance Measures.

Reliability can also be looked at according to response district. With perfect district reliability, the in-district unit would always be available to handle calls for service within that district. However, multiple calls for service in the same district can require an out-of-district unit to be called in. Likewise, response units are often called out of district for daily activities such as training, maintenance, and public education activities. To measure district reliability, district calls were analyzed to see which station's units handled the call as the initial unit. The below charts show this analysis. It should be noted that the charts only show Leawood units as the occurrence of an out of jurisdiction unit handling the call initially was statistically insignificant and did not change the below percentages.







As shown in the above charts, all three districts show a minimum of 95% reliability for first unit response. District 2 is the highest but this is not surprising with two assigned companies.

The second part of the reliability would then center on the effective response force. The Leawood Fire Department enjoys a very robust automatic aid agreement with the other agencies in Johnson County. Common dispatching and automatic vehicle location systems via satellite augment this agreement. This ensures that units are always available to fill an effective response force. This is proven by an analysis of actual effective response force times. This was shown above in the concentration section where ERF times exceeded CFAI urban baselines in all areas.

Comparability

Comparability is the review of the organization in comparison to other like-sized agencies, other accredited fire agencies, or industry best practices. Outlined below are three relevant national standards: the American Heart Association guidelines, the Insurance Services Office standards, and the National Fire Protection Association standards.

American Heart Association (AHA)
The American Heart Association (AHA) has established that the brain begins to die within four to six minutes without oxygen; brain damage is irreversible after ten minutes. Interventions include early cardiopulmonary resuscitation (CPR) and electrical defibrillation. The earlier CPR is initiated, the better the patient's chance of survival. The AHA states that patients receiving CPR within two minutes and defibrillation within four minutes have a thirty percent survival rate. For patients receiving no CPR and delayed defibrillation (after ten minutes), the survival rate drops below two percent.

Insurance Services Office (ISO)
The ISO evaluates municipal fire protection in communities throughout the United States. The evaluation of a jurisdiction's fire suppression capability includes an assessment of the dispatch center (weighted at ten percent), fire department staffing, apparatus and equipment (fifty percent weight), and the water supply system (weighted at 40 percent). After calculating the jurisdiction's strengths and weaknesses, the Department is given a rating on a scale of one to ten. A Class 1 rating is the best while a Class 10 rating represents that no fire protection services are available. The City of Leawood Fire Department has a current ISO classification of 3.

National Fire Protection Association (NFPA)
National Fire Protection Association 1710 is a nationally recognized voluntary standard for the organization and deployment of fire suppression operations, emergency medical operations, and special operations to the public by career fire departments. These standards outline an organized approach to defining levels of service, deployment capabilities, and staffing. Specifically, NFPA 1710 provides standard definitions for fire apparatus, personnel assigned, procedural guidelines within which they operate, and staffing levels needed to accomplish specific tasks on arrival at an incident. NFPA 1710 states that fire departments shall establish a performance objective of not less than 90 percent for each of the following response time objectives:

- One minute (60 seconds) for alarm processing time.
- One minute and twenty seconds (80 seconds) for turnout time for fire and special operations response and one minute (60 seconds) turnout time for EMS response
- Four minutes (240 seconds) or less travel time for the arrival of the fire arriving engine company at a fire suppression incident and eight minutes (480 seconds) or less travel time for the deployment of an initial full alarm assignment at a fire suppression incident
- Four minutes (240 seconds) or less travel time for the arrival of a unit with first responder with automatic external defibrillator (AED) or higher level capability at an emergency medical incident
- Eight minutes (480 seconds) or less travel time for the arrival of an advanced life support (ALS) unit at an emergency medical incident, where this service is provided by the fire

department provided a first responder with AED or basic life support (BLS) unit arrived in 240 seconds or less travel time.

Commission for Fire Accreditation International (CFAI)

For the purpose of evaluating response time criteria, the following benchmark and baseline norms for a candidate agency serving an urban area have been established by CFAI in the 8th Edition FESSAM (based on NFPA 1710 requirements):

CFAI - 90th Percentile Performance		**CFAI-Urban Benchmark**	**CFAI Urban Baseline**
Alarm Handling	Pick-up to Dispatch	1:00	1:30
Turnout Time	Turnout Time 1st Unit	1:00 EMS 1:20 Fire	1:30
Travel Time	1st Unit **Distribution**	4:00	5:12
	ERF **Concentration**	8:00	10:24
Total Response Time	1st Unit On Scene **Distribution**	6:00 EMS 6:20 Fire	8:12
	ERF **Concentration**	10:00 EMS 10:20 Fire	13:24

The Leawood Fire Department has identified 17 demand zones which fall into the three different station response districts. Each demand zone corresponds to a census tract and measures 1 square mile. Some of the demand zones are only partially within Leawood city limits. The City of Leawood consistently maintains a population density of at least 2,102 residents per square mile throughout all 17 grids and has an overall population of 33,566. This makes the city an urban environment which is defined as a population concentration of at least two thousand people per square mile and/or overall population over 30,000. This is why the above chart shows norms for an urban area only.

Historical Baseline Performance

Emergency service performance standards are measured by 90-percentile performance to demonstrate credibility and reliability in service delivery. The response time standards are measured from first key stroke by the dispatcher at the emergency communications center to the arrival of the first unit and arrival of the complete effective response force (first alarm response complement) required to mitigate most emergencies. The arrival times are measured by distribution; the physical location of response resources to meet industry accepted response times for the first arriving tactical unit. Concentration is the physical location of sufficient apparatus and personnel resources that can amass in a timely manner to mitigate most emergencies.

The following data tables present the Department's historical 90th percentile baseline. Following NFPA 1710 standards and CFAI requirements, percentile metrics demonstrate a better representation of response times than averages. Instead of displaying what the Department does half of the time, the Department observes what it does the majority of the time. All performance metrics are measured against CFAI's urban population density range standard and represent all risk types.

The following chart depicts the department's historical baseline performance from 2012-2014 for all emergency calls for service within the city.

All calls – 90th Percentile Baseline Performance

		2012-2014	2014	2013	2012
	Incident Count 1st Unit:	4,670	1,846	1,381	1,443
	Incident Count ERF:	2,323	789	729	805
Alarm Handling Time	*Pick-up to Dispatch*	:38	:39	:38	:38
Turnout Time	*Distribution - 1st unit*	1:23	1:25	1:23	1:22
Travel Time	*Distribution - 1st unit*	5:26	5:48	5:18	5:03
	Concentration - ERF	8:19	8:29	8:16	8:08
Total Response Time	*Distribution - 1st unit*	6:44	7:03	6:35	6:18
	Concentration - ERF	9:23	9:29	9:16	9:09

The following chart depicts the department's historical baseline performance from 2012-2014 for fire suppression calls within the city.

Fire Suppression (All Fire Types) – 90th Percentile Baseline Performance

		2012-2014	2014	2013	2012
	Incident Count 1st Unit:	183	55	60	68
	Incident Count ERF:	65	24	19	22
Alarm Handling Time	*Pick-up to Dispatch*	:47	:42	:42	:50
Turnout Time	*Distribution - 1st unit*	1:35	1:30	1:30	1:35
Travel Time	*Distribution - 1st unit*	5:44	4:48	5:56	4:56
	Concentration - ERF	8:59	9:28	8:16	8:07
Total Response Time	*Distribution - 1st unit*	7:19	6:47	8:34	6:27
	Concentration - ERF	10:08	11:11	9:14	9:30

Fire Suppression (Only Building Fires) – 90th Percentile Baseline Performance

		2012-2014	2014	2013	2012
	Incident Count 1st Unit:	30	18	6	6
	Incident Count ERF:	26	16	4	6
Alarm Handling Time	*Pick-up to Dispatch*	:44	:42	:38	:44
Turnout Time	*Distribution - 1st unit*	1:38	1:38	1:28	1:49
Travel Time	*Distribution - 1st unit*	4:48	4:48	4:37	3:02
	Concentration - ERF	8:56	9:00	8:16	8:08
Total Response Time	*Distribution - 1st unit*	6:15	6:15	5:21	5:04
	Concentration - ERF	10:07	10:07	9:14	9:12

The following chart depicts the department's historical baseline performance from 2012-2014 for EMS calls within the city.

EMS – 90th Percentile Baseline Performance

		2012-2014	2014	2013	2012
	Incident Count 1st Unit:	3,846	1,312	1,249	1,286
	Incident Count ERF:	2,000	678	631	691
Alarm Handling Time	*Pick-up to Dispatch*	:36	:37	:36	:35
Turnout Time	*Distribution - 1st unit*	1:13	1:12	1:22	1:13
Travel Time	*Distribution - 1st unit*	5:16	5:27	5:14	4:57
	Concentration - ERF	8:20	8:22	8:16	8:19
Total Response Time	*Distribution - 1st unit*	6:31	6:40	6:28	6:09
	Concentration - ERF	9:22	9:23	9:16	9:20

The following chart depicts the department's historical baseline performance from 2012-2014 for technical rescue calls within the city.

Technical Rescue – 90th Percentile Baseline Performance

		2012-2014	2014	2013	2012
	Incident Count 1st Unit:	17	3	9	5
	Incident Count ERF:	9	0	6	3
Alarm Handling Time	*Pick-up to Dispatch*	:47	:66	:32	:49
Turnout Time	*Distribution - 1st unit*	1:11	1:22	:57	1:07
Travel Time	*Distribution - 1st unit*	4:35	5:34	4:13	4:35
	Concentration - ERF	6:29	N/A	7:14	6:29
Total Response Time	*Distribution - 1st unit*	6:04	8:02	5:54	6:20
	Concentration - ERF	7:53	N/A	8:54	7:53

The following chart depicts the department's historical baseline performance from 2012-2014 for hazardous materials calls within the city.

HazMat – 90th Percentile Baseline Performance

		2012-2014	2014	2013	2012
	Incident Count 1st Unit:	125	67	10	48
	Incident Count ERF:	5	4	0	1
Alarm Handling Time	*Pick-up to Dispatch*	:47	:47	:39	:48
Turnout Time	*Distribution - 1st unit*	1:27	1:27	1:27	1:24
Travel Time	*Distribution - 1st unit*	6:30	6:35	4:54	6:05
	Concentration - ERF	8:02	8:02	N/A	7:44
Total Response Time	*Distribution - 1st unit*	8:09	9:07	6:08	7:21
	Concentration - ERF	9:07	8:51	N/A	9:07

Data Collection Methodology

Data was gathered from the department's existing records management system, Firehouse Software®, and exported into Microsoft® Excel® for statistical analysis. Times in the Firehouse Software® system are auto imported from the dispatch center's CAD system. Alarm handling time, turnout time, travel time, and total response time were calculated utilizing the following formulas:

- Alarm Handling Time = Alarm Time (units dispatched) – Dispatch Notification (first keystroke)
- Turnout Time = First Unit Enroute – First Unit Notified
- First Unit Travel Time = First Unit Arrived – First Unit Notified
- ERF Travel Time = ERF Last Unit Arrived – First Unit Notified
- First Unit Total Response Time = First Unit Arrived – Dispatch Notification (first keystroke)
- ERF Total Response Time = ERF Last Unit Arrived – Dispatch Notification (first keystroke)

All call records were used for alarm handling time and turnout time. For travel and total response time calculations, records were eliminated for known non-emergency responses or for responses outside the city limits on automatic or mutual aid.

Section 6 - Performance Objectives & Performance Measures

A detailed review of historical performance, current capabilities, critical tasking, risk analysis, system demand, and community expectations have helped guide the measurement of system performance as well as to set performance objective standards. Criteria such as fire growth, EMS response guidelines, response times, operational tasks helped determine the effective response force benchmark for various call types.

Baseline system performance based on actual response data as well as benchmark performance objectives has been set. The baseline performance describes what the department is currently doing 90 percent of the time. Benchmark standards are goals that the department is striving to meet 90 percent of the time. Baseline and benchmark standards have been established not only for all call types, but also for fire, EMS, technical rescue, and HazMat incident types.

Benchmark methodology: Benchmark standards were calculated using the 2012-2014 cumulative incident response data at the 85th percentile number or the established CFAI benchmark standards (based on NFPA 1710 requirements) if lower. The exception is the high risk response benchmark for each incident type as no historical data exists nor do specific standards from either CFAI or NFPA. Therefore high risk benchmarks are hypothetical.

Fire Suppression Benchmark Performance Measures

For 90 percent of all moderate risk fire responses, the total response time for the arrival of the first unit staffed with a minimum of 3 firefighters shall be 5 minutes and 55 seconds. The first unit shall be capable of providing a minimum of 500 gallons of water and 1,500 gallons per minute (gpm) pumping capacity, establishing command, requesting additional resources, advancing an attack line flowing a minimum of 150 gpm, establishing a constant water supply, and rescuing at risk victims.

For 90 percent of all moderate risk fire responses, the total response time for the arrival of the effective response force (ERF) staffed with a minimum of 15 personnel shall be 10 minutes. The ERF shall be capable of establishing command, providing a constant water supply, advancing fire attack lines, conducting victim search and rescue, establishing ventilation, completing utility control, completing salvage and overhaul operations, providing safety oversight, and establishing a rapid intervention team.

For 90 percent of all high/special risk fire responses, the total response time for the arrival of the effective response force (ERF) staffed with a minimum of 30 personnel shall be 18 minutes and 3 seconds. The ERF shall be capable of establishing command, providing a constant water supply, advancing fire attack lines, conducting victim search, rescue and evacuation, establishing ventilation, completing utility control, completing salvage and overhaul operations, providing safety oversight, establishing a rapid intervention team, and providing for incident rehabilitation.

Fire Suppression Baseline Performance Measures

For 90 percent of all moderate risk fire responses, the total response time for the arrival of the first unit staffed with a minimum of 3 firefighters shall be 6 minutes and 15 seconds. The first unit shall be capable of providing a minimum of 500 gallons of water and 1,500 gallons per minute (gpm) pumping capacity, establishing command, requesting additional resources, advancing an attack line flowing a minimum of 150 gpm, establishing a constant water supply, and rescuing at risk victims.

For 90 percent of all moderate risk fire responses, the total response time for the arrival of the effective response force (ERF) staffed with a minimum of 15 personnel shall be 10 minutes and 7 seconds. The ERF shall be capable of establishing command, providing a constant water supply, advancing fire attack lines, conducting victim search and rescue, establishing ventilation, completing utility control, completing salvage and overhaul operations, providing safety oversight, and establishing a rapid intervention team.

No baseline data exists to set ERF baselines for high/special risk fire responses. No incidents of this nature have occurred in the City of Leawood.

EMS Benchmark Performance Measures

For 90 percent of all moderate risk EMS incidents, the total response time for the arrival of the first-arriving unit shall be 6 minutes. The first-due unit shall be staffed with a minimum of 2 certified responders. The first-due unit shall be capable of establishing command, evaluating the need for additional resources, initiating basic life support, and early defibrillation.

For 90 percent of all moderate risk EMS incidents, the total response time for the arrival of the effective response force (ERF) staffed with a minimum of five certified responders shall be 8 minutes and 40 seconds. The effective response force shall be capable of completing patient assessment, delivering advanced life support, and transporting the patient to the appropriate receiving facility.

For 90 percent of all high risk EMS incidents, the total response time for the arrival of the effective response force (ERF) staffed with a minimum of 22 certified responders shall be 14 minutes and 40 seconds. The effective response force shall be capable of completing patient assessment and triage, delivering advanced life support, and transporting the patients to the appropriate receiving facilities.

EMS Baseline Performance Measures

For 90 percent of all moderate risk EMS incidents, the total response time for the arrival of the first-arriving unit shall be 6 minutes and 31 seconds. The first-due unit shall be staffed with a minimum of 2 certified responders. The first-due unit shall be capable of establishing command, evaluating the need for additional resources, initiating basic life support, and early defibrillation.

For 90 percent of all moderate risk EMS incidents, the total response time for the arrival of the effective response force (ERF) staffed with a minimum of five certified responders shall be 9 minutes and 22 seconds. The effective response force shall be capable of completing a patient assessment, delivering advanced life support, and transporting the patient to the appropriate receiving facility.

No baseline data exists to set ERF baselines for high risk EMS responses. No incidents of this nature have occurred in the City of Leawood.

Technical Rescue Benchmark Performance Measures

For 90 percent of all moderate risk technical rescue incidents, the total response time for the arrival of the first-arriving company shall be 5 minutes and 54 seconds. The first-due unit shall be staffed with a minimum of three firefighters, capable of establishing command, evaluating the need for additional resources, and controlling immediate hazards.

For 90 percent of all moderate risk technical rescue incidents, the total response time for the arrival of the effective response force (ERF) staffed with 10 personnel shall be 7 minutes and 26 seconds. The effective response force shall be capable of hazard control, patient stabilization, extrication, and transport.

For 90 percent of all high risk technical rescue incidents, the total response time for the arrival of the effective response force (ERF) staffed with 16 personnel shall be 10 minutes and 8 seconds. The effective response force shall be capable of hazard control, patient stabilization, extrication, and transport.

Technical Rescue Baseline Performance Measures

For 90 percent of all moderate risk technical rescue incidents, the total response time for the arrival of the first-arriving company shall be 6 minutes and 4 seconds. The first-due unit shall be staffed with a minimum of three firefighters, capable of establishing command, evaluating the need for additional resources, and controlling immediate hazards.

For 90 percent of all moderate risk technical rescue incidents, the total response time for the arrival of the effective response force (ERF), staffed with 10 firefighters and officers, shall be 7 minutes and 53 seconds. The effective response force shall be capable of providing safety oversight, hazard control, patient stabilization, extrication, and transport.

Across a period of three years, from 2012-2014, there were only 17 total technical rescue calls with only 9 of those receiving an ERF response for at the moderate risk level rendering 90th percentile analysis statistically insignificant for analysis.

No baseline data exists to set ERF baselines for high risk technical rescue responses. Historic incident responses have been limited to the moderate level or below.

Hazardous Materials Benchmark Performance Measures

For 90 percent of all moderate risk hazardous material incidents, the total response time for the arrival of the first-arriving company shall be 6 minutes and 20 seconds. The first-due unit shall be staffed with a minimum of three firefighters, capable of establishing command, evaluating the need for additional resources, and establishing the initial isolation distance.

For 90 percent of all moderate risk hazardous material incidents, the total response time for the arrival of the effective response force (ERF), staffed with 7 personnel, shall be 8 minutes and 51 seconds. The effective response force shall be capable of providing safety oversight, hazard control, local occupant evacuation, emergency or mass decontamination, and defensive containment measures.

For 90 percent of all high risk hazardous material incidents, the total response time for the arrival of the effective response force (ERF), staffed with 19 personnel, shall be 18 minutes and 51 seconds. The effective response force shall be capable of providing safety oversight, hazard control, local occupant evacuation, emergency or mass decontamination, offensive mitigation, and defensive containment measures.

Hazardous Materials Baseline Performance Measures

For 90 percent of all moderate risk hazardous material incidents, the total response time for the arrival of the first-arriving company shall be 8 minutes and 9 seconds. The first-due unit shall be staffed with a minimum of three firefighters, capable of establishing command, evaluating the need for additional resources, and establishing the initial isolation distance.

For 90 percent of all moderate risk hazardous material incidents, the total response time for the arrival of the effective response force (ERF), staffed with 7 firefighters and officers, shall be 9 minutes and 7 seconds. The effective response force shall be capable of providing safety oversight, hazard control, local occupant evacuation, emergency or mass decontamination, and defensive containment measures.

Over a period of three years from 2012-2014, there were only 125 hazardous materials responses. 48 of those calls were in 2012 with only 10 calls in 2013 and 67 calls in 2014. This wide discrepancy has been attributed to changes in call typing in the reporting process in the two most recent years. Additionally, of those 125 total calls, only 5 received an ERF with emergent response. This minimal call data renders 90th percentile analysis statistically insignificant for analysis.

No baseline data exists to set ERF baselines for high risk hazardous materials responses. Historic incident responses have been limited to the moderate level or below.

Benchmark Objectives Summary

The following chart depicts an overall summary of the department's established benchmark times listed individually by call type at the moderate risk level.

LFD - Benchmark Objectives 90th Percentile		All Calls	Fire	EMS	Tech Rescue	HazMat
Alarm Handling	First Keystroke to Dispatch	:33	:38	:31	:46	:39
Turnout Time	Turnout Time 1st Unit	1:16	1:20	1:00	1:07	1:15
Travel Time	1st Unit **Distribution**	4:00	4:00	4:00	4:00	4:00
	ERF **Concentration**	7:35	8:00	7:38	6:08	7:44
Total Response Time	1st Unit On Scene **Distribution**	6:18	5:55	6:00	5:54	6:20
	ERF **Concentration**	8:42	10:00	8:40	7:26	8:51

Baseline Performance Summary

The following chart depicts an overall summary of the department's baseline performance, listed individually by call type.

Summary of LFD Baseline Performance at the 90th Percentile for 2012-2014

LFD - Baseline Performance 90th Percentile – 2012-2014		**All Calls**	**Fire**	**EMS**	**Tech Rescue**	**HazMat**
Alarm Handling	First Keystroke to Dispatch	:38	:44	:36	:47	:47
Turnout Time	Turnout Time 1st Unit	1:23	1:38	1:13	1:11	1:27
Travel Time	1st Unit **Distribution**	5:26	4:48	5:16	4:35	6:30
	ERF **Concentration**	8:19	8:56	8:20	6:29	8:02
Total Response Time	1st Unit On Scene **Distribution**	6:44	6:15	6:31	6:04	8:09
	ERF **Concentration**	9:23	10:07	9:22	7:53	9:07

Section 7 - Compliance Methodology

Compliance methodology as established by CFAI requires that service level objectives and performance measures are evaluated and efforts are made to reach or maintain established levels. CFAI has established a compliance model for a systematic approach. It includes the following six phases:

Establish/Review Performance Measures

The performance measures as established in this document will be reviewed on an annual basis as part of the annual compliance reporting process. The Standards of Cover will be republished every five years. Performance measures will also be reviewed on a monthly basis and reported to the city council.

Evaluate Performance

Performance will be evaluated as part of an ongoing report quality assurance program to ensure compliance. Additionally, performance measure reports will be generated monthly and reviewed against established measures.

Develop Compliance Strategies

Compliance strategies will be developed to meet goals and objectives that result from SWOT (Strength, Weakness, Opportunity, Threat) analysis. These strategies are formally overseen by an established Strategic Planning Board which ensures that ownership is taken for each need and progress is ongoing.

Communicate Expectations to Organization

Organization communication is a priority for department administration. Expectations are communicated formally through documents such as the Standards of Cover and the Strategic Plan. Progress reports on projects and objectives are regularly provided via established departmental communication channels including email as well as face to face meetings. An annual “all-hands” meeting is held along with quarterly “lunch with the chief” meetings to answer questions and send a uniform message.

Validate Compliance

Compliance with objectives is a part of daily activities in the incident reporting process with a quality assurance process that evaluates one hundred percent of incidents for compliance including response times. Established baseline and benchmark times are also evaluated with a monthly report provided to the city council. Annual validation is undertaken as part of the annual compliance reporting process.

Make Adjustments and Repeat the Process

Adjustments will be made as the need arises on a continuous basis. The analysis of baseline times is evaluated on an ongoing basis both monthly and annually and compared to established benchmark objectives. Additionally, the department’s Strategic Planning Board and Accreditation Committee both exist to review objectives and ensure recommendations and objectives are implemented. Needed changes are made immediately to keep the process current. All formal evaluations such as strategic plans and the standards of cover are formally re-published every five years. It is recognized that accreditation and planning are an ongoing process, not a one-time project.

Section 8 - Conclusions & Recommendations

The community risk assessment and creation of the standards of cover has provided a lot of insight into the Leawood Fire Department's abilities, both at an operational as well as an administrative level. It quickly became apparent response times were positive when compared to national standards, especially in areas such as call processing and total response time. Robust automatic aid as well as a resource rich surrounding region aid in a highly effective response capability. This translated well to both fire and non-fire risk.

One identified area of need was not newly discovered but reinforced. The City has already identified the need for a fourth fire station in the rapidly developing commercial core of the city in the north western area of District Two. Evaluation of historical call data shows that one particular grid in this area, Grid 186, accounts for approximately 25% of the department's total call volume, with most of this being EMS related, particularly due to that response grid's residential care facilities. Because of this overly high concentration of EMS calls in this grid, EMS travel times tend to be highest of any call type. The eventual addition of a fourth station in the Town Center area should greatly ease that burden.

Other areas of needed improvement tended to fall more heavily into administrative areas such as incident reporting and records documentation. For instance, hundreds of man hours were needed to take data in the existing records management system and make it accessible for the needed calculations and processing. This caused multiple changes in departmental policies and procedures and even drove the department to evaluate and eventually choose a new records management system.

The process of assessing risk and creating the standards of cover also drove the department to better understand itself and to develop closer relationships with supporting entities such as other City of Leawood departments and Johnson County agencies. Individuals closely involved with the overall process gained an understanding of overall departmental operations not typically enjoyed by most fire department personnel. This in itself was a big success as many of these personnel are the future leaders of the agency and the fire service itself.

Future recommendations center on continuing the learning and development process. More efficient and productive procedures need to be continuously sought and adopted. Continuing to involve the entire department as well as supporting agencies in the communication and development process should be a constant goal. The simple goal of continuous improvement combined with a willingness to adapt and overcome will ensure future success and make the Leawood Fire Department a positive and essential part of the City of Leawood, Johnson County, and the Kansas City metropolitan area.

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Mission Statement of the Leawood Fire Department

The Leawood Fire Department will meet the emergency and service needs of our community in a professional, compassionate, and timely manner.