Emergency Services Consulting International

Providing Expertise and Guidance that Enhances Community Safety

MIDWEST CITY

FIRE DEPARTMENT EVALUATION AND MASTER PLAN

DECEMBER 2016

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Acknowledgments

Emergency Services Consulting International (ESCI) would like to acknowledge that without the assistance and support of the Midwest City Mayor and City Council, City Management, City staff, and the Midwest City Fire Department fire chief and personnel, this project could not have been successfully completed.

Matt Dukes, Mayor*

Daniel McClure Jr., Councilmember Ward 1

Pat Byrne, Councilmember Ward 2

Rick Dawkins, Councilmember Ward 3

Sean Reed, Councilmember Ward 4

Christine Allen, Councilmember Ward 5

Jeff Moore, Councilmember Ward 6

Guy Henson, City Manager*

Tim Lyon, Assistant City Manager*

Bert Norton, Fire Chief*

Doug Beabout, President of Local 2066 *

David Richardson, Administrative Major*

Daniel Herren, Firefighter, Member of Local 2066 Executive Board*

**Members of the Project Oversight Committee*

Executive Summary

Emergency Services Consulting International (ESCI) was engaged by Midwest City to evaluate the service provided by the fire department. Specifically, the evaluation was to report on the level of services compared to standards and best practices. This Emergency Services Master Plan will assist the department in future planning and provision of comprehensive emergency services to the citizens of Midwest City. This report is organized as an organizational master plan that evaluates current conditions; projects future growth, development, and service demand; and provides recommendations to enhance current services, or to provide an equal level of service over the next 10 to 20 years.

ESCI thanks the Midwest City mayor and City Council, the City Management, fire chief, and the staff of the Midwest City Fire Department (MWCFD) for their outstanding cooperation in the preparation of this report. All involved were candid in their comments and provided a tremendous amount of essential information. Special appreciation is offered to the members of the oversight committee in acknowledgement of the time, effort, and resources he provided for this plan.

The audit and master plan begins with a community forum and review of the current service delivery provided by MWCFD including its programs, administration, management, service delivery performance, and financial health. All areas are evaluated and discussed in detail, and specific recommendations are provided where applicable.

Community Forum

In order to dedicate time, energy, and resources on the functions that are most desired by its customers, MWCFD wants to understand the customers' priorities and expectations. To better understand these priorities and expectations, a facilitated citizen forum was utilized to obtain community perspective regarding the fire department.

The community forum was conducted with community members invited to participate in the master planning process. Approximately 60 attendees were asked to fill out several survey instruments pertaining to how they think MWCFD should plan for the future. The citizens represented were asked to identify the most important functions and services the fire department provides, based on the list of services currently provided, and rank those services as a critical priority, an important priority, or a low priority. In addition, participants were asked to rate several key indicators as they related to service levels, staffing, and cost of service.

Understanding what the community expects of its fire and emergency medical services organization is critical to developing an effective long-range perspective. Armed with this knowledge, the MWCFD internal emphasis can be adjusted to better fulfill customer needs. The citizens group identified the following expectations:

- Properly staffed
- Response times same for residents and businesses
- Maintain service levels voted on and approved by the public

- Does not negatively impact ISO 1 rating and current quality of service
- Well-equipped and trained
- Established and functioning mutual aid program
- Strong community preparedness
- Operate in a safe manner
- Be well trained and knowledgeable
- Utilize and adjust to accurate data
- Staffed firefighting unit in every station
- Maintain stations
- Reflect the community served (diversity)

Report Section I: Evaluation of Current Conditions

An analysis of current conditions is documented in nine survey sections, reviewing the MWCFD administration, governance, staffing, personnel management, service delivery, planning, support programs, and capital assets. Each component of the evaluation includes an introductory explanation of the subject area and discussion of desirable outcomes and identified best practices.

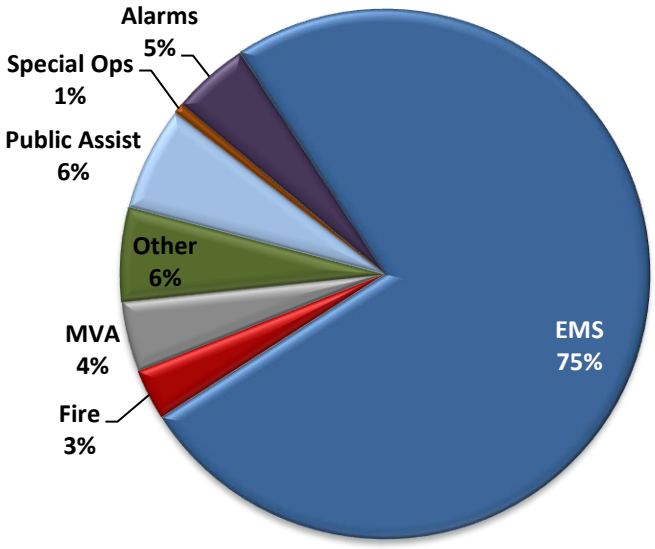
Criterion used to evaluate the fire department has been developed over many years. These gauges include relevant guidelines from national accreditation criteria, the National Fire Protection Association (NFPA) standards, federal and state mandates for fire and Emergency Medical Services (EMS) systems, and generally accepted best practices within the fire and EMS industry.

The evaluation of current conditions offers the City a detailed assessment of existing fire department operations and provides the ESCI project team with a snapshot in time, the basis from which the balance of the report is developed. It is important to note that the fire department has continued to make progressive changes since the initial evaluation thus some of the recommendations may already have been completed. The following discusses some of the key findings:

Current and Future Service Demand

The current service demand was reviewed and analyzed. The types of service demand as a proportion of the total is shown in the following figure:

Figure 1: Service Demand by Type



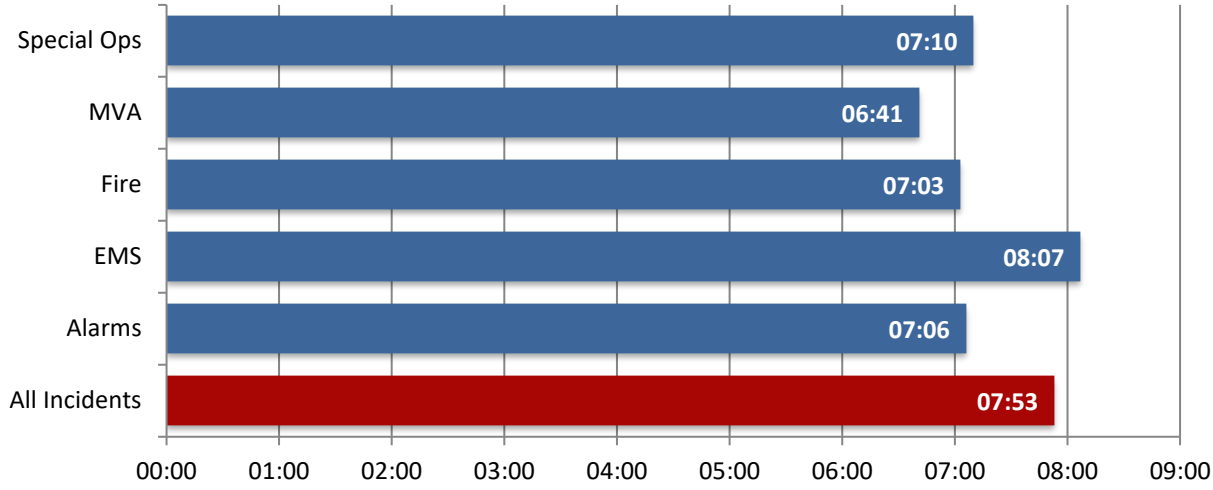
The EMS requests for service are considerably higher than the other types of calls. This is normal to most fire departments that respond to emergency medical calls. The temporal variation was studied to determine unusual patterns or trends that may be of importance to the department's planning. Geographical analysis of over five years of response experience was studied as well.

Service Delivery and Response Performance

Response performance criteria and actual service delivery performance is analyzed in detail, providing information with which the department can develop future deployment methodologies and identify desired levels of response performance and staffing.

Of all incidents to which the department responded emergent in 2015, 90 percent were responded to in 7 minutes, 53 seconds or less.

Figure 2: Response Times by Type



Midwest City has adequate and generally well located resources to respond to calls for service. Geographic Information System (GIS) analysis indicates that over 99 percent of incidents occurring within the city are within four minutes' "travel" time from an existing fire station. Actual performance in 2015 was five minutes, 29 seconds. Absent locally established standards for response times or the components of response time, ESCI compared response times to the NFPA 1710 standard objectives. It is explained that some aspects of response performance are based on time data that may not be complete. Recommendations are given to improve this data collection. It is also important that Midwest City develop and adopt response, performance, and staffing standards that best meet the city's risk profile and needs of the communities served. To meet the identified standards and/or improve upon current response times with anticipated future growth, additional personnel and possible relocation of a fire station may be needed in the future.

Staffing

The staffing section of the report reviews both operational and administrative and support personnel deployment. In general terms, operational (emergency response) staffing of fire apparatus is found to be within acceptable parameters, although to meet the desired emergency response force levels some additional personnel may be required. Further, some administrative and fire prevention personnel changes are also suggested.

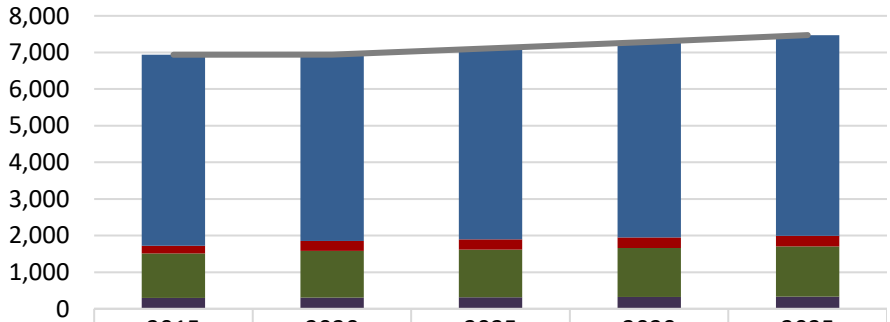
The ability to complete the desired number of inspections on businesses, schools, and assembly occupancies each year will require additional personnel or a revision of expectations or processes.

Report Section II: Future System Demand Projections

Following the evaluation of current conditions, the report continues to analyze the service delivery demands that can be expected to confront Midwest City Fire Department in the future. Existing demographics are identified, and an estimation of population growth and demographics was predicted for the future. Growth in redevelopment areas and areas just beginning to develop were analyzed as well. In addition, community risk potential was evaluated to determine if the department will be adequately prepared for the future demands.

In evaluating the deployment of facilities, resources, and staffing, it is imperative that consideration be given to potential changes—such as population growth—that can directly affect emergency workload. Changes in service demand may require changes and adjustments in the deployment of staffing and capital assets to maintain acceptable levels of performance. For the purpose of this study, ESCI looked at both the historical population growth and the City's comprehensive plan to project the population growth and service demand for Midwest City. The results are shown in the following figure:

Figure 3: Projected Population Growth and Associated Demand



	2015	2020	2025	2030	2035
EMS	5,218	5090	5217	5348	5481
Fire	216	271	278	285	292
Other	1,211	1270	1302	1335	1368
MVA	298	310	318	325	334
Total	6943	6941	7115	7292	7475

The growth potential is an increasing population over the next 20 years. This growth is anticipated to be 7.7 percent by 2035, unless influenced by the redevelopment potential which may increase this rate of growth. Projected growth in service demand is anticipated to be proportional, except for a larger growth in individuals over 65 years of age. Statistically, this will cause an increase in emergency medical calls for service over what might generally be expected for the population growth.

Report Section III: Future Delivery System Models

The current conditions analysis and system demand projections form the foundation from which ESCI has developed strategies for the delivery of services in Midwest City for the future.

This report cites multiple future system model modifications, including both short and long-term initiatives that are identified in the interest of improving or maintaining future system integrity. Each initiative is discussed in detail, and guidance is provided.

The discussion of future delivery systems begins with an explanation of the importance of developing response time standards and targets. Guidance is offered regarding how the agency can assess critical tasking, risk analysis, and staffing performance from which response time performance objectives can be established.

Short and mid-term strategies and models are discussed next. The initiatives identified and explained include:

- Response performance reporting
- Response deployment
- Fire Prevention
- Emergency Medical Services (EMS)
- Personnel management
- Management, administration, and finance
- Training
- Organizational development

The report continues by discussing long-term strategies and needs, including:

- Future fire station relocation considerations
- Future personnel and equipment deployment
- EMS service delivery challenges and future considerations

The strategies needed to meet future service demand do not come without cost. In the final discussion section of the report, ESCI provides information on the financial considerations that come with system expansion and modified delivery models. Financial projections are offered regarding fire station construction costs, as well as future personnel and fire apparatus expenses.

The following figure is a recommendations table that provides a consolidated view of the key short, mid, and long-term recommendations. This table can serve as a tracking and progress report for the recommendations submitted as part of the Master Plan.

Figure 4: Key Recommendations for Tracking Purposes

Key Recommendations	Status		
	Started	50%	Complete
Set citywide response time goals by incident types as needed. Response time goals should include call processing time, turnout time, and travel time.			
Council should adopt jurisdiction response time objectives.			
Collect accurate and complete response time data for all units assigned to an incident. These times should include call processing and turnout times. This may require working with Emergency Management (Midwest City Emergency Communications Center) to implement Automatic Vehicle Locator (AVL) technology and Mobile Data Terminals (MDT) in the apparatus reporting directly to the Computer Aided Dispatch System (CAD).			
Conduct regular reporting of turnout times with on-going analyses of turnout time delays, if these continued to be observed.			
Measure first unit due response time at four minutes for all first due responses against 90 percent compliance. First due response area and the entire department should be tracked and reported.			
Measure the Emergency Response Force (ERF) achieved on all structure fire calls at eight minutes, at 90 percent compliance.			
Fire Chief reports performance against the established goals to department and to city management.			
Expand the incident reporting capability to include geographical distribution working with City GIS unit. Include graphical data in annual report.			
Place a Ladder truck in service at station one in lieu of the squad.			
Consider a second ladder in service at station 2 to maximize aerial device capabilities, address the current risk profile and aerial master stream and rescue capabilities within the city.			
Set minimum staffing based on an Emergency Response Force (ERF) of 17 firefighters arriving within eight-minute travel time, 90 percent of the time and adjust staffing as needed (19 personnel).			

Key Recommendations	Status		
	Started	50%	Complete
Determine structures that require additional effective response force personnel and plan for automatic aid to accomplish the adopted ERF.			
Define fire target hazards and determine what is the necessary Emergency Response Force (ERF) for these hazards			
Establish automatic aid agreements for the greater ERF needs and perform interagency training; ensure compliant and integrated equipment is provided, and coordinated policies and procedures are in place and jointly exercised on a regular basis.			
Utilize closest unit response regardless of jurisdiction, if possible, with surrounding departments.			
Pursue implementation of Medical Priority Dispatch with associated tiered response time standards for non-emergency “Alpha” and “Bravo” call designations.			
Building department and fire department should both use 2015 International Building Code (IBC) and the International Fire Code (IFC).			
Cross train fire inspectors to perform plan review functions to ensure no gaps in service occur when fire protection engineer position is vacant.			
Establish a weekly work plan that supports efforts to achieve the stated goals for annual inspection.			
Consider option(s) to achieve 100 percent inspection rate again (if desired). • Implement a company-level inspection program for non-high risk occupancies and ensure adherence to NFPA 1620 for pre-incident planning program. • Evaluate the potential effectiveness of implementing self-inspection program for non-high risk occupancies. • Consider addition of one new fire inspector position to accomplish 100 percent inspections.			

Key Recommendations	Status		
	Started	50%	Complete
Establish formal training program to ensure the individual performing public education is trained to NFPA 1031 standards.			
Identify school age appropriate fire prevention curriculum.			
Review all fire and life safety education materials to ensure relevancy to non-English speaking populations within the community.			
Develop and implement tracking and reporting mechanisms relative to fire and life safety activities.			
Create an annual report to communicate the activities of the fire and life safety function to the city's residents and business owners.			
Establish a task force between law enforcement and fire department to jointly investigate suspicious fires.			
Explore potential options available to utilize incentive programs to encourage builders to voluntarily install residential sprinklers.			
Review historical emergency medical calls occurring within the MWCFD response area to determine if any gaps in the provision of advanced life support (ALS) service exist.			
Evaluate the efficiency of potential provision of ALS level service by MWCFD personnel.			
Consider an EMS review committee reviewing "advanced calls" more frequently than current standard.			
EMS committee should meet with medical director on a scheduled basis to facilitate improvements in QA/QI processes.			
Implement a formal "lessons learned" program to improve the knowledge, skills, and abilities of MWCFD personnel.			
Establish regularly scheduled medical director "coffee break" style review sessions to facilitate learning and skill improvement.			
Consider the addition of analyst function to the department to support planning activities.			

Key Recommendations	Status		
	Started	50%	Complete
Consider the creation of a deputy chief of operations position to serve as number two administrator and day-to-day overseer of department operations.			
Evaluate the current roles and responsibilities of the administrative major, and whether this position should remain at the rank of major.			
Review and update applicable fire department human resource rules, policies, and procedures to ensure currency and effective processes.			
Finalize updating of all policies and procedures.			
Complete a comprehensive job task analysis and implement results.			
Establish standardized job description format to facilitate clarity in the roles and responsibilities.			
Establish timetable for regular review and revision of all job descriptions.			
Develop and implement a formal recruitment program.			
Determine if selection process through the Vo Tech meets the following: • Baseline physical ability standards for hiring. • Uses a qualified testing process to select best possible candidates in cognitive area. • Uses NFPA 1581 as basis of initial physical.			
Update health and safety related policies to be current with the most recent applicable NFPA standards adopted in accordance with NFPA 1581.			
MWCFD management and the collective bargaining unit work to provide more frequent annual physicals.			
Include cancer screenings as a part of the new hire and incumbent annual physicals.			
Create a strategic plan following the master plan. Establish goals and objectives as a part of the strategic plan.			

Key Recommendations	Status		
	Started	50%	Complete
Create a vision statement for the department.			
Create a values statement for the department. Use the values statement to develop a code of ethics for the department.			
Display mission, vision, and values statement throughout the department.			
Periodically review the mission statement for updates.			
Ensure safety committee activities are in alignment with NFPA 1500, Chapter 4.			
Safety Committee should review accidents, injuries, near-miss incidents and workplace safety suggestions; report analysis and results to fire chief; promote member safety self-awareness.			
Establish SOGs review committee to provide member input.			
Determine a procedure of periodic review and update to SOGs and Policies and Procedures.			
Establish a process to determine critical issues within the fire department and propose solutions.			
Consider establishing an advisory panel from the community.			
Use multiple methods when communicating with department personnel.			
Report compliance with established performance standards in annual report.			
Evaluate effectiveness of having the current fire and life safety specialist position outside of the Fire Prevention Bureau.			
Review the master plan every ten years or as significant change occurs.			
Establish a capital improvement plan for replacement/refurbishment fund, if not included in the City's capital improvement plan.			

Key Recommendations	Status		
	Started	50%	Complete
A capital apparatus replacement plan should be developed with a funding mechanism.			
Establish a training committee.			
Further develop training opportunities with mutual aid partners.			
Develop and exercise mutual and automatic aid policies and procedures for high-risk low-frequency events and incidents.			
Train periodically on SOGs and Policies and Procedures.			
Implementation of labor management collaboration process.			

Evaluation of Current Conditions

Emergency Services Consulting International (ESCI) was engaged by Midwest City, Oklahoma, to provide a master plan for the delivery of emergency services within the Midwest City Fire Department (MWCFD) that will assist the department in future efforts and long-range planning. This report serves as the culmination of the project and is configured as an organizational master plan that evaluates current conditions; projects future growth, development, and service demands; and provides recommendations to enhance current services or provide an equal level of service over the next 10 to 20 years.

Using organizational, operational, staffing, and geographic information system (GIS) models, this phase of the study provides recommendations for improvement in current services delivered to the community. The evaluation and analysis of data and other information is based on National Fire Protection Association (NFPA) standards, health and safety requirements, federal and state mandates relative to emergency services, and generally accepted best practices within the emergency services community.

Each section in the following report provides the reader with general information about that element, as well as observations and analyses of any significant issues or conditions that are pertinent. Observations are supported by data provided by MWCFD and collected as part of the review and interview process. Finally, specific recommendations are included to address identified issues or to take advantage of opportunities that may exist.

It is important to bear in mind that these were the current conditions at the time of the data collection and on-site visit. The agency is continuing to change and improve over the time required to write the report, therefore not every current condition remains as stated here.

FOCUS GROUP MEETING

In order to dedicate time, energy, and resources on the functions that are most desired by its customers, the Midwest City Fire Department (MWCFD) wants to understand the customers' priorities and expectations. A facilitated citizen forum was utilized to obtain community perspective regarding the MWCFD. Invitations were sent out from the fire department and Midwest City to community leaders and participation mailing lists. Fifty-nine community members attended the meeting with 91 percent of the attendees participating in the exercises and submitting responses for inclusion in the master plan. Of the 54 who participated in the exercises, a varying number of participants left some exercise elements blank.

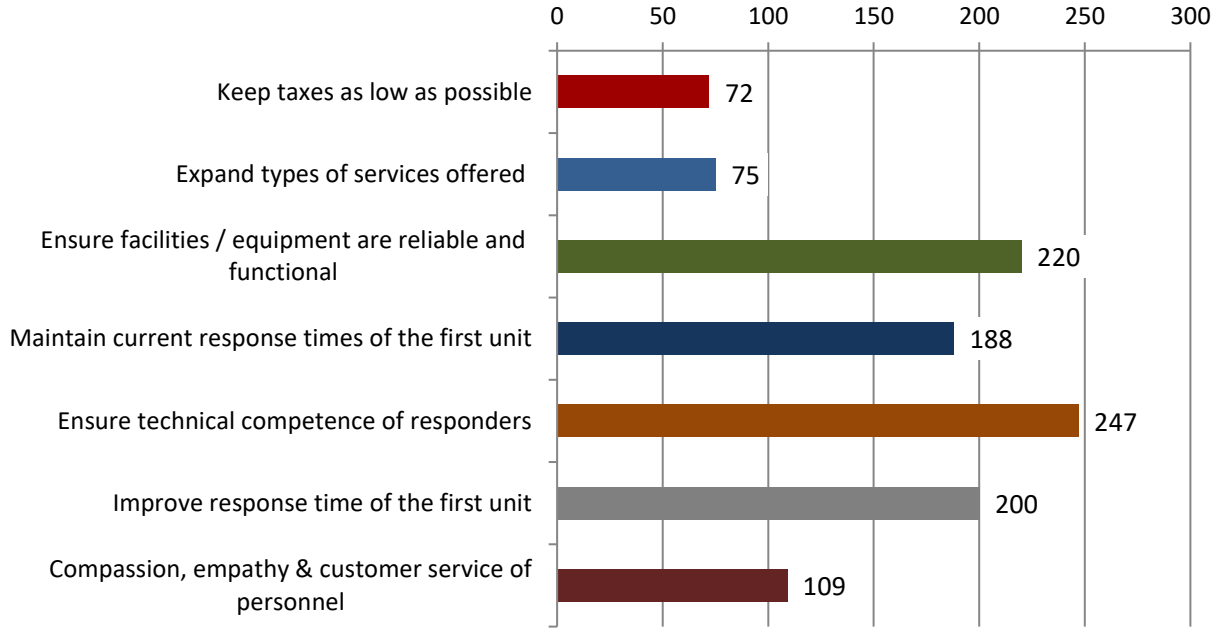
The beginning is the most important part of the work.

Feedback was solicited regarding:

- Expectations, concerns, and organizational strengths.
- Current services and planning elements were prioritized.
- Cost, staffing, and response performance were surveyed.

Forum participants were asked to fill out several survey instruments pertaining to how they think the MWCFD should plan for the future. The planning priorities were presented to the citizens as a forced ranking of seven separate dimensions, allowing the citizens to list those dimensions each citizen felt were more important than the others and so on. These were then compiled as a group to reflect consensus ranking of planning priorities. The following figure describes citizen-planning priorities and the assigned numerical values to each priority:

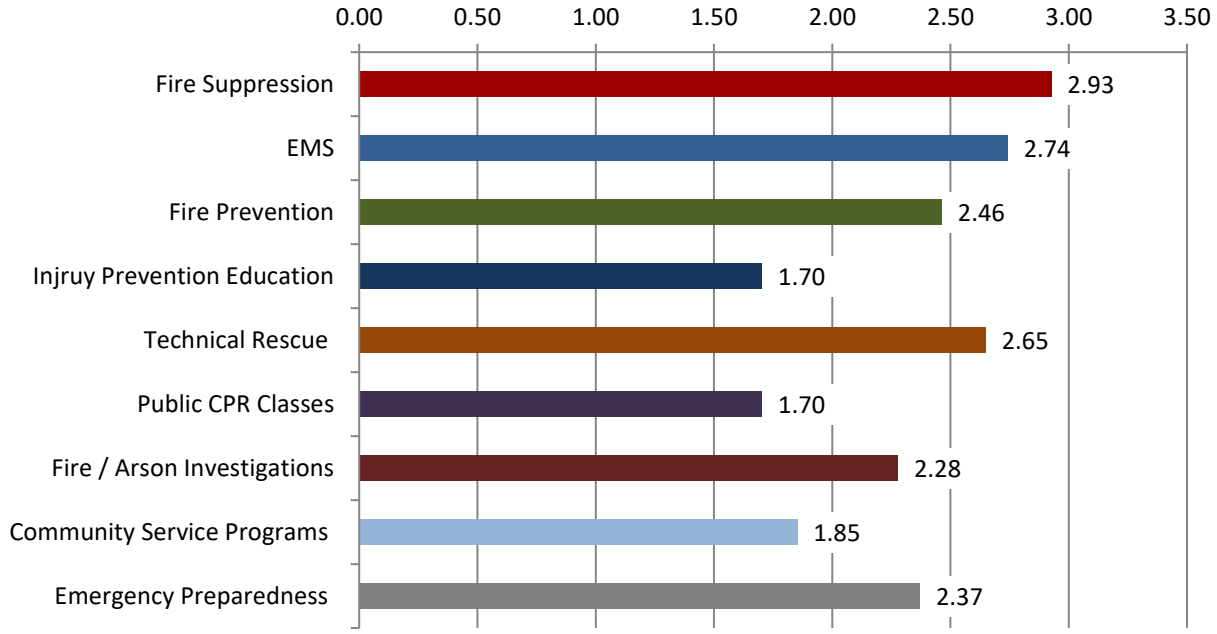
Figure 5: Citizen Planning Priorities



Forum participants felt it was most important to center the MWCFD planning and funding efforts on the technical and professional competence and safety of their fire service providers, ensuring they can adequately provide services their communities. Similar prioritization was given to ensuring that fire department facilities and equipment were maintained, reliable, and functional. The next level of planning priorities was to improve the response times resulting in an adequate and effective response force. After improving response times, high priority was given to maintaining current response times and capabilities.

Next, the citizens were asked to identify the most important functions and services the fire department provides, based on the list of services that are currently provided, and rank those services as a critical priority, an important priority, or a low priority. In this case, the participants could elect to assign a single priority to multiple services. The following figure describes the forum participants' service priorities:

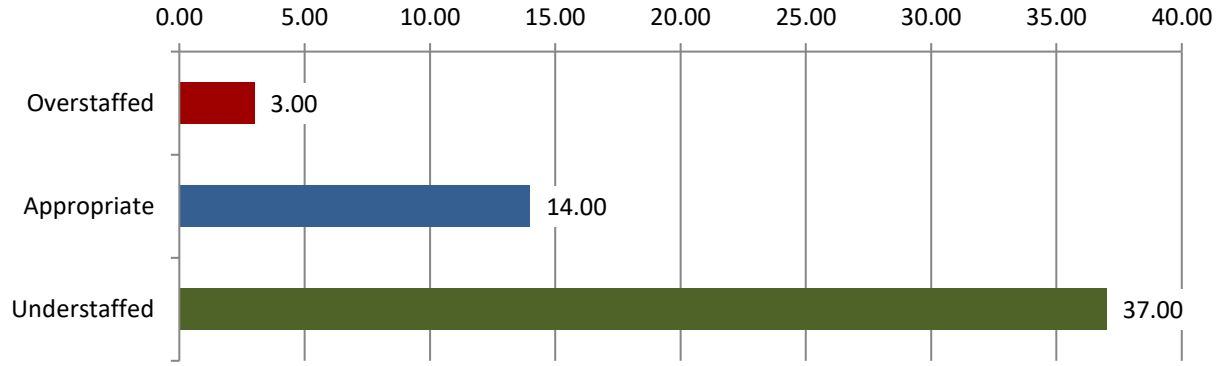
Figure 6: Citizen Service Priorities—Average Priority Assigned



Forum participants were consistent in their desire to have MWCFD center their service efforts on their core mission of fire, EMS, and specialized/technical rescue services. The next tiers of service priorities were centered on code enforcement, fire investigation, and community preparedness. Lastly, while everyone enjoyed and felt community education classes were important, they were considered optional given limited resources. However, there was consistent and strong support for continued presence and interaction with the communities served.

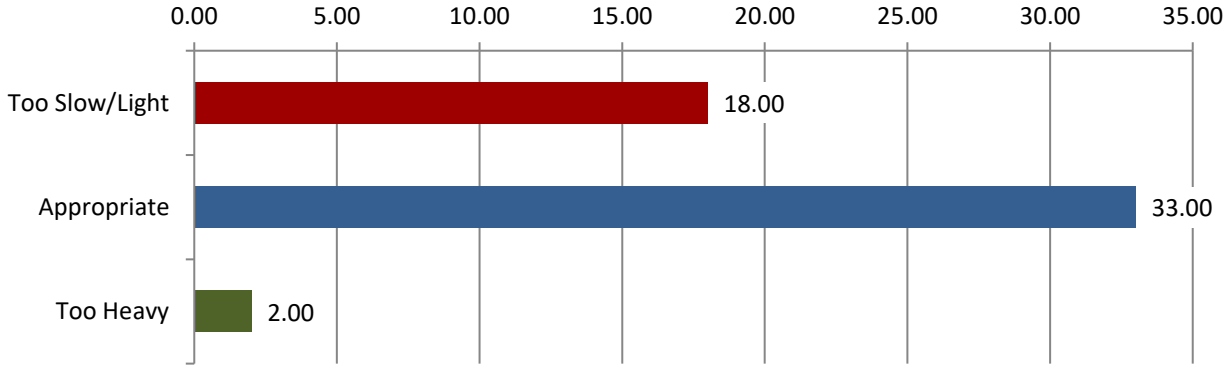
Next, the forum participants were asked to rate and compare the staffing, response performance, and cost of services with their expectations and desired service levels. The following figures describe the results:

Figure 7: Citizen Ranking of Staffing Levels



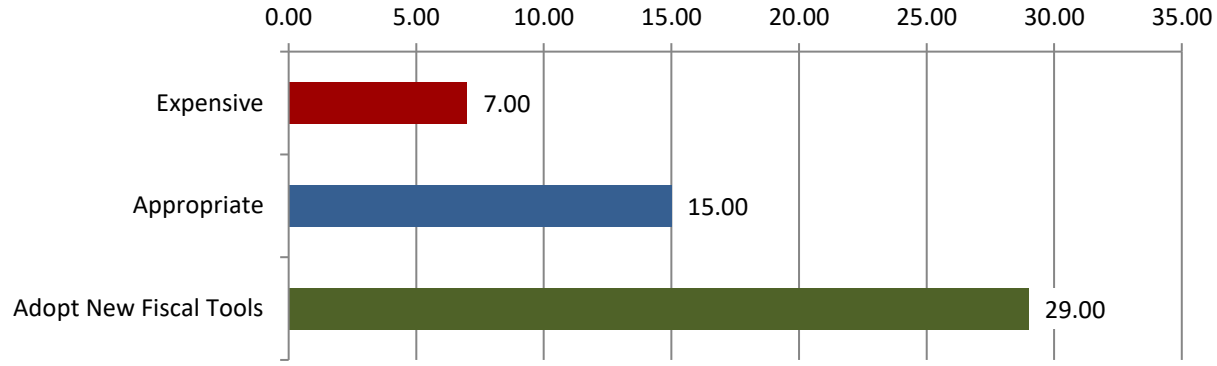
Forum participants clearly identified a need for additional personnel to meet existing and anticipated future service delivery needs. There was acknowledgement that existing recources have experienced reductions and have been redistributed in an effective manner. The community recognized that the current and anticipated service delivery demands exceed current resource capabilities:

Figure 8: Citizen Ranking of Response Performance Levels



Participants (by a two to one margin) felt responses by MWCFD were appropriate. While this seems somewhat inconsistent with the staffing level responses, it is understandable that the participants feel they are adequately protected by the MWCFD. However, it was consistently mentioned they would like to see MWCFD distribute and concentrate resources in a manner that will ensure adequate personnel and apparatus within the desired response time targets and consider the severity, magnitude, and appropriate response level for each call.

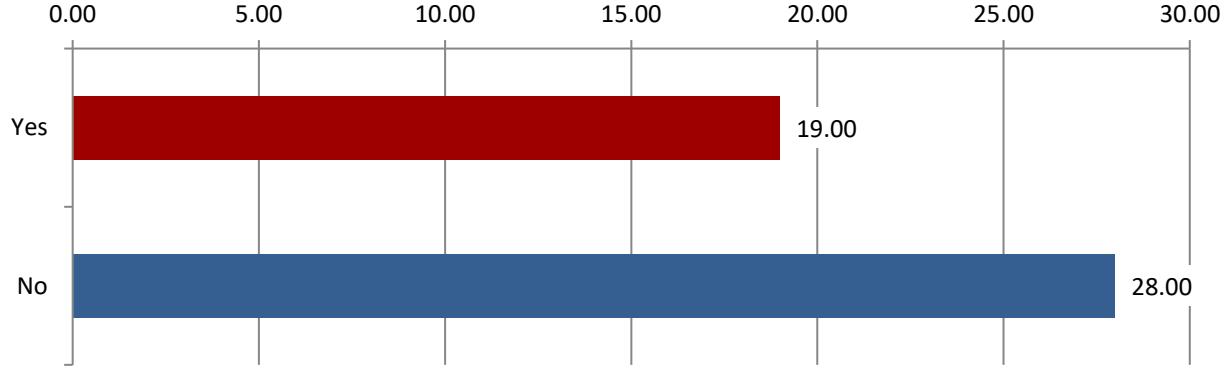
Figure 9: Citizen Ranking of Cost of Services



While cost was a significant issue and concern for all in attendance, the overwhelming perspective was that the resources allocated to MWCFD are managed well and being maximized for efficiency and effectiveness. There was broad support by a two to one margin for adopting new fiscal tools such as peak demand staffing, grants, and other efficiency and revenue measures to ensure adequate service levels and capabilities are maintained.

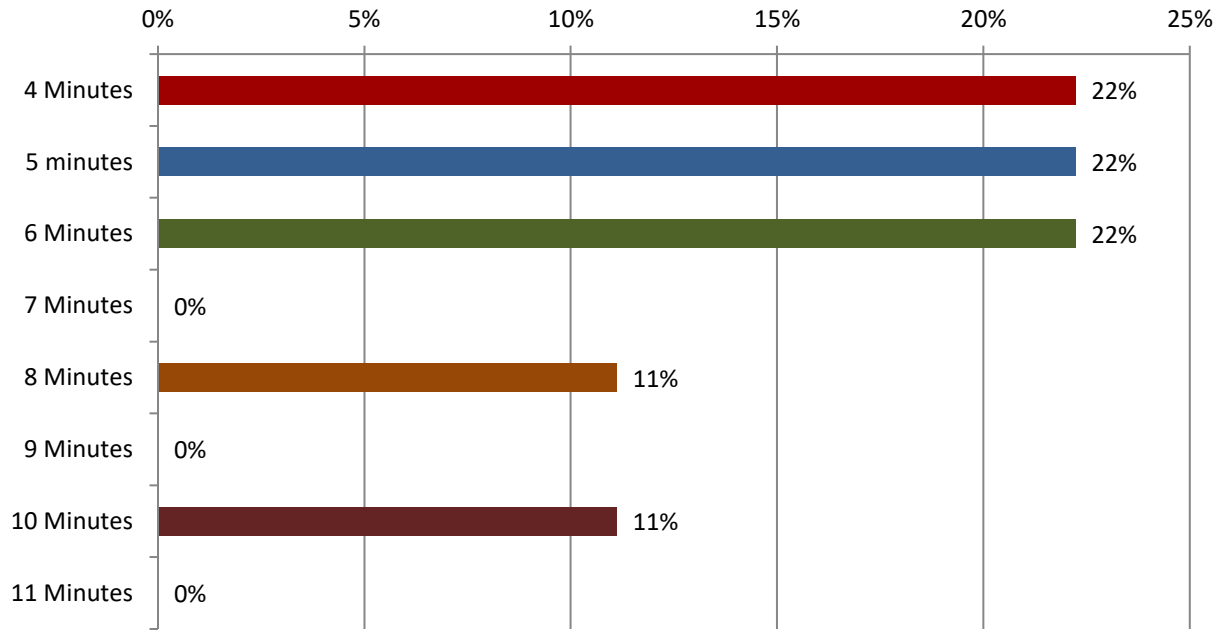
Lastly, forum participants were instructed to share with ESCI their desired response time, given their understanding and observation of response times by MWCFD. These responses are based on the personal perceptions and biases of the forum attendees and did not take into consideration past performance data or comparison to fire service industry best practices or standards.

Figure 10: Citizen Ranking of Response Time Changing Based on Incident Location



Participants felt by a two to one margin that response times should be consistent regardless where the incident occurs within the city. This expectation is consistent with a NFPA 1710 response standard throughout the entire city.

Figure 11: Citizen Ranking of Preferred Response Time



There was a significant and equal deviation of what stakeholders viewed as an acceptable response time. Current overall MWCFD response times are at eight minutes, one second, 90 percent of the time. The four-minute, five-minute, and six-minute response time target received the highest number of votes at 22 percent each for a total of 66 percent of the votes. The eight and ten-minute response times received the next highest number of votes at a combined 22 percent. Ten percent of the respondents did not submit a response to this exercise.

There was a consistent desire by attendees of the forums for MWCFD to meet industry and regional best practices. Overall, current response times were thought to not be optimum and that service demands are exceeding the available resources on a regular basis. There was support to decrease current response times to meet industry best practices. In addition, there was a common understanding and desire to have appropriate resources respond to calls based on the urgency of the call, and need for personnel, and services. There was strong support for a tiered response force with alternative response options based on the type of call and the associated urgency and magnitude of the incident.

Customer Strengths

Customer views on the strengths and image of MWCFD must inform and impact all effective planning. Needless efforts are often put into over-developing areas that are already successful. However, using and promoting customer-identified strengths may help the organization overcome or offset some of the identified weaknesses. The citizens group identified the following strengths:

- Training
- Bravery
- Professionalism and compassion
- City Leadership
- A valued community resource
- Capabilities and competency
- Support staff
- Fire Prevention Services
- Passionate and caring

Customer Expectations

Understanding what a community expects of its fire and emergency medical services organization is critical to developing an effective long-range perspective. Armed with this knowledge the MWCFD internal emphasis can be adjusted to better fulfill customer needs. The citizens group identified the following expectations:

- Properly staffed
- Response times same for residents and businesses
- Maintain service levels voted on and approved by the public
- Does not negatively impact ISO 1 rating and current quality of service
- Well-equipped and trained
- Established and functioning mutual aid program
- Strong community preparedness
- Operate in a safe manner
- Be well trained and knowledgeable
- Utilize and adjust to accurate data
- Staffed firefighting unit in every station
- Maintain stations
- Reflect the community served (diversity)

Customer Concerns

The customer centered planning process would be incomplete without expression from the customers of concerns about the organization. Some concerns, in fact, identify weaknesses within the delivery system. However, others may be perceptions based on limited customer knowledge. The citizens group identified the following concerns:

- Demonstrate efficiency
- Increase community messaging and public education
- Don't stick to an old service delivery model if there is a better way to do business
- Ensure City revenue is appropriately allocated to the fire department
- Fire personnel pay and benefit costs and ensure competitive and adequate
- Lack of diversity
- Adequate mutual and automatic aid agreements and utilization
- Emergency Medical Service system participation and training levels
- Adequate fire prevention services
- Utilization of suppression personnel to assist with fire prevention services

ORGANIZATIONAL OVERVIEW

The Organizational Overview component provides a review of the organization, discussing the agency's configuration and the services that it provides. Data provided by the MWCFD, City Manager's Office, Planning Department, Midwest City Communications Center, and Local 2066 was combined with information collected in the course of ESCI's fieldwork to develop the following overview.

The purpose of this section is two-fold. First, it verifies ESCI's understanding of the agency's composition. This provides the foundation from which the Program and Services Audit and Master Plan are developed.

Secondly, the overview serves as a reference for the reader who may not be fully familiar with the details of the agency's operations. Where appropriate, ESCI includes recommended modifications to current observations based on industry standards and best practices.

Governance and Decision Making

The very basis of any service provided by governmental or quasi-governmental agencies lies within the policies that give that agency the responsibility and authority upon which to act. In most governmental agencies, including MWCFD, those policies lie within the charters, ordinances, and other governing documents adopted by the agency. The following table provides a general overview of the MWCFD's governance and lines of authority elements:

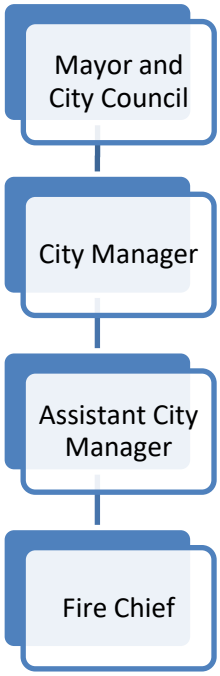
Figure 12: Survey Table—Governance

Survey Components	Midwest City Fire Department Observations	Comments and Recommendations
Agency		
A. Midwest City		
i) Preferred acronym	MWCFD	
Governance and Lines of Authority		
A. Governing Body	City Council	
i) Head of governing body	Matt Dukes, Mayor	
ii) Key employee of governing body	Guy Henson, City Manager	
iii) Meetings	2nd and last Tuesday of each month	
B. Elected Official Authority Defined	City Charter	
C. Fire Chief Position		
i) Hired by contract	No	
ii) Term of contract	None	
iii) Periodic performance evaluation	Yes	
D. Fire Chief/Authority Defined	Charter, Chapter 15	
E. Policy and Administrative Roles Defined	Job descriptions located in HR policies	

Survey Components	Midwest City Fire Department Observations	Comments and Recommendations
Attributes of Successful Organizations		
A. Policy, Rules, Guiding Documents	Under construction	
i) process for revision provided	Developing this process	
B. Legal Counsel Maintained	City attorney	
i) Consultation available	Yes	
ii) Labor counsel	Yes, separate council available	
C. Financial Controls		
i) Financial control system	Naviline system	
ii) Financial review	Bi-weekly review of budget status	
iii) Auditor	McGladrey	
iv) Frequency of review	Annual audit	
D. Governing Body Minutes Maintained	Yes	
i) Availability of minutes	On website	

Discussion

The Midwest City governance is established per the city charter and ordinances. The City governance as it applies to the fire department is shown in the following figure:



The mayor and city council are the governing body that set the strategic direction for the City. The city manager and assistant manager take that strategic direction and, in turn, set the strategic direction for each department in the city. The directors implement the direction into goals and day-by-day actions that accomplish the mission. The chain of command for the City is clearly delineated. The city charter provides for the existence of the City and fire department. The fire chief's authority and responsibilities are outlined in the City ordinances in chapter 15.

Section 15.3 (b) defines that the fire chief works at the pleasure of the city manager. Specifically, it states, "The fire chief shall be appointed by the city manager for an indefinite term and shall also be removable by the city manager." ESCI recommends a document be created that has specifics on the responsibilities of the fire chief over and above that stated in the City ordinances. It should define the expectations of the city manager and council. It is important for the fire chief to fully understand what outcomes are desired for the organization that they are leading. This helps both the governing body, upper management, and the fire chief to more precisely define the expectations.

The fire chief is given an annual job performance evaluation. This is a good time to discuss not only the previous years' performance measured against the previous years' expectations but also plan for the following year.

Job descriptions provide responsibilities and qualifications for the members of the fire department. These are found in the HR policies.

ESCI found that the governance of the City and fire department are well defined and standard in the way it is configured.

Organizational Design

The fire department should be designed in such a way to make the organization nimble and able to respond to changes in the environment and yet be structured enough to operate effectively. The emergency incident scene structure is very rigid and paramilitary in operation. That on-scene process uses the incident command system philosophy that everyone reports to only one person and that the span of control is between four to six reporting to one supervisor. The structural design of an emergency services agency is vitally important to its ability to deliver service in an efficient and timely manner, while providing the necessary level of safety and security to the members of the organization. During an emergency, an individual's ability to supervise multiple personnel is diminished, thus industry standards recommend a span of control of four to six personnel under stressed situations. This is a recommendation carried forward from military history and has shown to be effective in emergency service situations.

When not operating at an incident, the definition of who reports to whom and in what situation is still very important. Studies have shown the increased efficiency when they know to whom they report and have a single point of contact for supervision and direction. A recent research project conducted by Columbia University, Northwestern University, and University of Queensland, Australia, found that:

> *…when there are tasks that require teamwork, people get more done when there are leaders and followers. Without a clear chain of command, members often become sidetracked with grabbing power and lose track of the task at hand.*[1]

The following table summarizes the organizational design components of the MWCFD:

Figure 13: Survey Table—Organizational Design

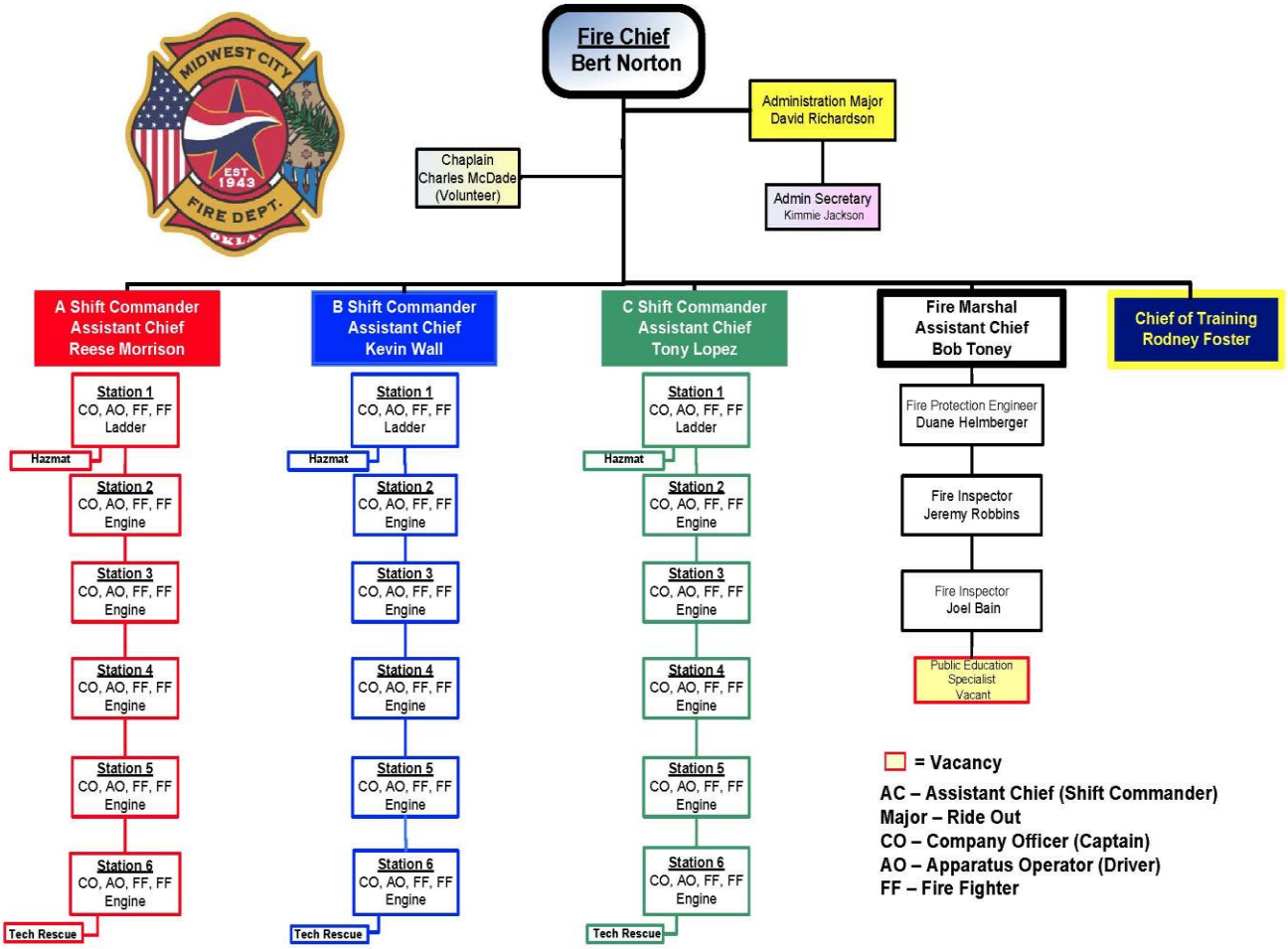
Survey Components	Midwest City Fire Department Observations	Comments and Recommendations
Organizational Structure		
A. Structure Type	Typical FD hierarchy	
B. Descriptions of all Jobs Maintained	Yes	
i) Job descriptions updated	As needed	
C. Employment Agreements	Contract with union members; City policy for non-union	
Chain of Command		
A. Defined Chain of Command	Organizational chart	
B. Span of Control	Up to 6	
C. Hiring/Firing Authority	Yes	
Formation and History		
A. Organization Formed	1943	
B. History Maintained	No	
i) Individual or group responsible	N/A	

Organizational Structure

To operate effectively, the structure of a fire department needs to be clearly defined in a way that all members of the organization understand it. The organizational chart performs this function. The chart institutionalizes the agency's hierarchy, identifies roles and (most importantly) reporting authority, and helps to assure that communication flows appropriately, as well as limiting opportunities to circumvent the reporting structure. MWCFD has developed an organizational chart that achieves this purpose, it operates in a traditional top-down manner. These lines of authority should be clear and carefully protected against communications external to the chain of command, except in unusual circumstances. The fire department organizational chart shows the formal reporting process. When the chain of command is violated it can cause a great deal of disruption to the organization. The organization chart is shown in the following figure:

[1] "Why Hierarchies are Good for Productivity," *Inc*. September 2012, p 26.

Figure 14: Midwest City Fire Department Organizational Chart

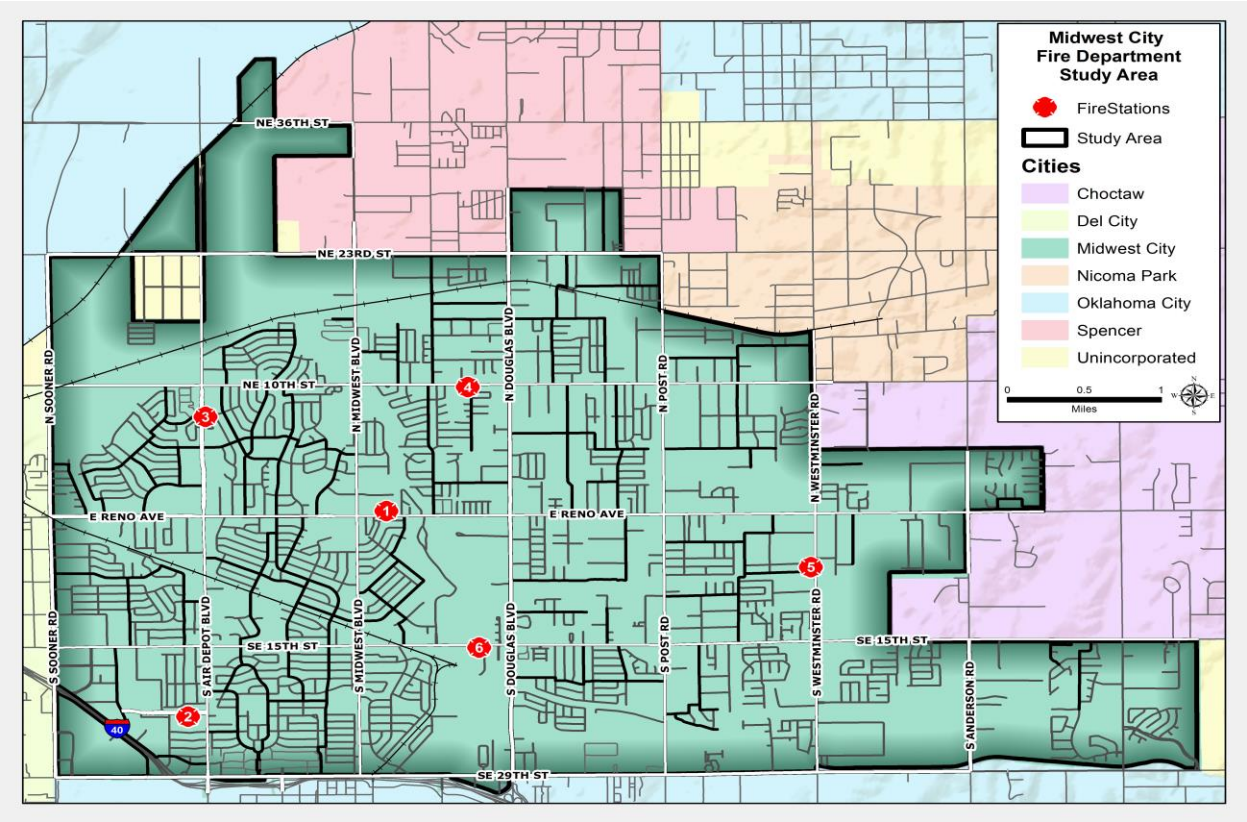


Under the existing organizational configuration, the fire chief, in consultation with human resources and the assistant city manager, makes decisions regarding personnel related issues. Termination is ultimately the responsibility of the city manager.

Service Area and Infrastructure

The MWCFD serves the jurisdiction of Midwest City, a city with a population of 56,000 in 26 square miles. The department has six stations which serves predominately urban population densities as defined by the NFPA 1710. For purposes of this report ESCI will consider the city to be all urban density.

Figure 15: Map of Midwest City Fire Department Service Area



The size and composition of a fire department's service area affects the type and number of personnel, fire stations, and vehicles that are needed to provide services efficiently. Sometimes complex decisions need to be made regarding the deployment strategies employed to properly position resources, based on land area, geography, risk, and similar factors with the constraints of finances. Following is a summary of the MWCFD service area and service infrastructure resources:

Figure 16: Survey Table—Service Area and Infrastructure

Survey Components	Midwest City Fire Department Observations	Comments and Recommendations
General Description of Agency		
A. Agency Type	Municipal FD	
B. Area, Square Miles	26 sq. miles	
C. Headquarters	Station 1	
D. Fire Stations	6	
E. Other Facilities	None	
F. Population Served	56,000	
Service Delivery Infrastructure		
G. Emergency Vehicles		
i) Engines	4	
ii) Engine, reserve	2	
iii) Ladder truck	1/1 reserve	
iv) Ambulance	0	
v) Ambulance, reserve	1	
vi) Quick response unit	1	
vii) Water tender	0	
viii) Brush	6	
ix) Rescue	Tech rescue trailer	
ISO Rating	Class 1 2014	
H. Total Fire Department personnel, uniformed and civilian	84.27	
i) Administrative and support personnel, full-time	8.27+1 vacant; .27 FTE is for shared radio technician	
ii) Administrative and support personnel, volunteer	1 Chaplain	
iii) Operational personnel, full-time	75	
iv) Operational personnel, volunteer	0	

Discussion

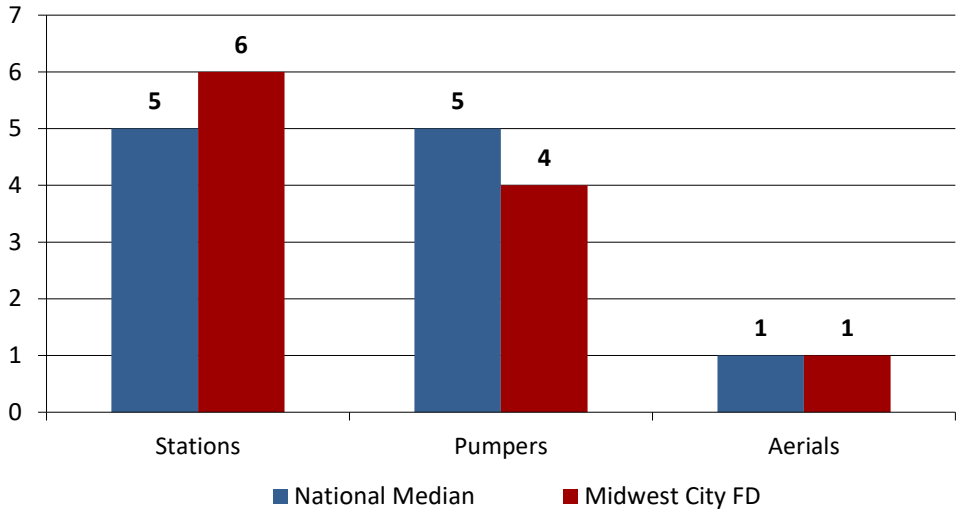
The fire department covers areas that can be defined as urban, suburban, or rural density. As this report will discuss later, it is ESCI's intent to consider all of the city as urban density for purposes of response and deployment. Decisions on deployment define the response capability of the fire department. These decisions need to weigh multiple considerations including risk exposure, response times, access challenges, deployment, community expectations, personnel safety, and fire department capacity. Those decisions need to balance the financial considerations. These decisions are strategic and are in the purview of the mayor, city council, and city manager in consultation with the fire chief. Ultimately, these individuals are responsible to the public to provide the level of service that the citizens desire and for which they are willing to pay.

The reader should consider the extremes to understand the range of options for deployment. The first extreme would be one fire station to cover the entire city. This station would need to house enough apparatus and personnel to support all calls simultaneously within the city. Obviously, to reach an incident on the outer edges of the city would require the time to travel from the one station. The other extreme is a station located every two city blocks. The time to arrive on the scene would be very short, but the apparatus and personnel would need to be replicated in each station to be able to provide the service at a great deal higher cost. The governing body's responsibility as representatives of the citizens is to determine how quickly an effective crew should arrive to handle the emergency. This needs to consider the risk tolerance of the community, types of risks, accessibility obstacles, and financial capability. There are standards and industry accepted norms that can help with the decision, but it is ultimately the governing body's decision. This report will describe factors that should be considered to define the desired response performance.

Midwest City is a nearly built-out city which is starting to redevelop areas within for higher end development and potentially higher densities. The city is in gradual transition, being guided by Community Development which is looking for quality development. The fire department provides the normal services to the community, including first responder emergency medical service, but does not offer ambulance transport. Recently, the fire department was challenged to reduce costs without reducing services to the community. This resulted in reducing staffing from four to three in Station 1, with a shift from an engine to a squad with three-person staffing at that station. Midwest City maintains an ISO class one rating.

To understand how Midwest City compares to national medians, the following chart shows a comparison of fire stations, pumpers (engines), and aerial trucks is provided, mirrored against national median data:

Figure 17: Capital Asset Comparison



Relative to national comparators, Midwest City FD has a higher number of fire stations but less pumpers than similar sized organizations, based on population.[2]

[2] During the time between the on-site visit by ESCI and the publication of this report a fifth engine has been added back.

FINANCIAL ANALYSIS—HISTORICAL REVENUE AND EXPENSE

Considerable financial information and background data was provided to ESCI by staff of the Midwest City Fire Department, which was reviewed in detail along with various City Comprehensive Annual Financial Reports (CAFRs) and annual budget books from FY 2011 through FY 2017. This data has enabled ESCI to develop the following discussion providing management, labor, and elected officials with an historical overview of the department's financial outlook. This historical analysis and subsequent status quo forecast for the department served as a comparative basis for evaluating various future options.

The Midwest City Fire Department is a career-staffed department that provides traditional fire rescue services from six strategically placed fire stations. The fire department operates as a component unit of general City government, whose budgets are developed annually on a cash basis, under a separate fund (Fire Fund—040). There is an annual transfer of funds from the department's operating budget (040) into a separate fire department capital budget (041), which is part of the overall City Capital Fund. Fire department revenue, expense, and fund balance were first established in a fund separate from other general fund departments under Ordinance 2540 in 1993. While the department does have a significant, dedicated revenue stream, the bulk of its funding comes from an annual transfer from the City General Fund, and it maintains its own annual fund balance and reserve requirement. The City and its fire department operate on a July 1–June 30 fiscal year calendar.

Revenue

The principal source of funding for governmental services, including the fire department, is the sales and use tax collected by the state and divided amongst local jurisdictions. The following figure shows a breakdown of the Midwest City sales and use tax revenue (rates) as provided by City staff and how that revenue is allocated by function along with the effective date that each portion of the cumulative tax was imposed. Shown at the bottom of the table is an additional distribution of sales tax, transferred from the general services portion of sales tax revenue stream to the Police and Fire Funds. This additional transfer is above and beyond the dedicated functional revenue available to each department and leads to a net distribution of sales tax to each function as shown.

Figure 18: Midwest City Sales Tax Rate and Allocation by Function

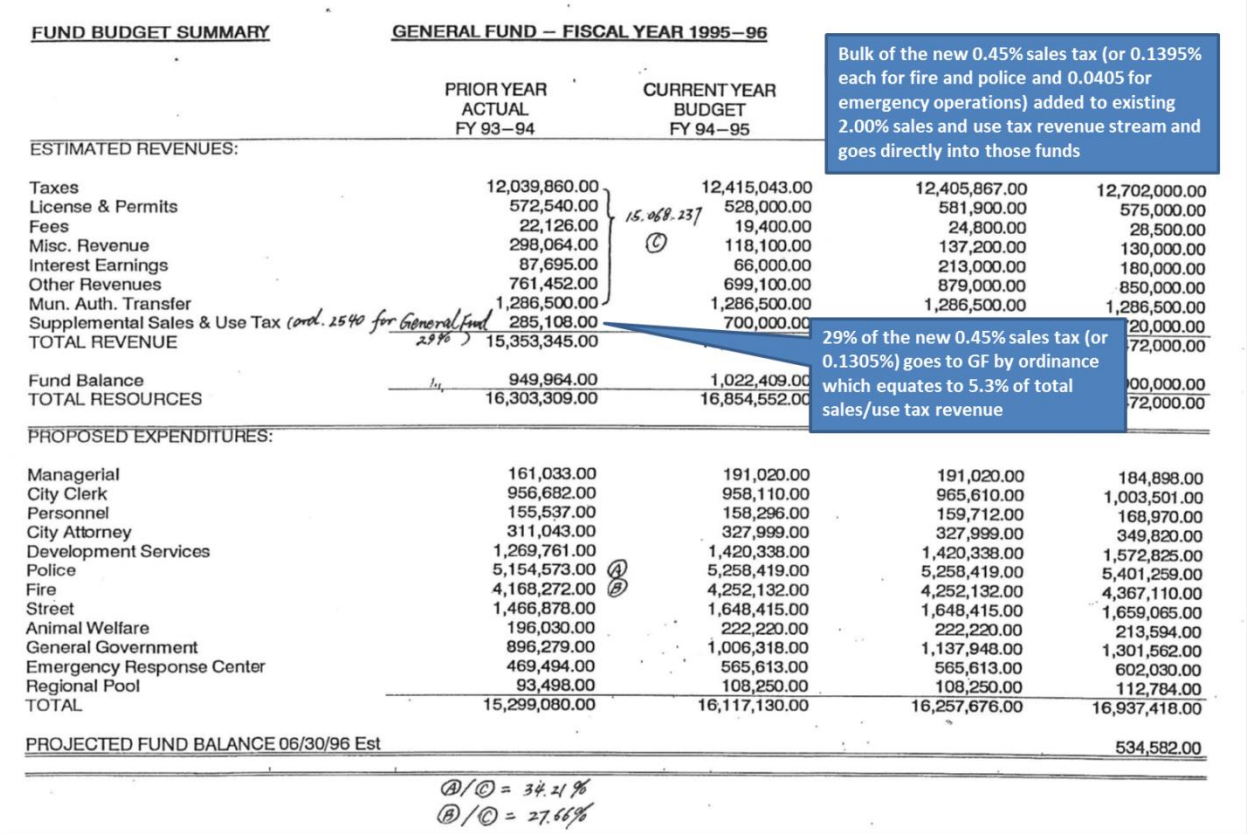
Effective Tax Date	Sales Tax Allocation by Function									Cumulative Tax Rate
	General Services	GF Depts	Police Fund	Fire Fund	Emergency Operations	Capital Improv.	Parks & Rec Fund	Sewer Fund	Street Fund	
9/10/1991	2.0000%									2.0000%
12/1/1993	0.1305%		0.1395%	0.1395%	0.0405%					2.4500%
10/1/1994							0.0500%			2.5000%
4/1/2001	0.2500%					0.2500%				3.0000%
10/1/2004			0.1800%	0.1200%						3.3000%
1/1/2012		0.0495%	0.0124%	0.0371%				0.4015%	0.0495%	3.8500%
	2.3805%	0.0495%	0.3319%	0.2966%	0.0405%	0.2500%	0.0500%	0.4015%	0.0495%	3.8500%
GF Transfer	-1.3921%		0.7697%	0.6224%						
Net Distribution	0.9884%	0.0495%	1.1016%	0.9190%	0.0405%	0.2500%	0.0500%	0.4015%	0.0495%	3.8500%
% Distribution	25.67%	1.29%	28.61%	23.87%	1.05%	6.49%	1.30%	10.43%	1.29%	100.00%

According to Midwest City Code Section 40-39, the fire department receives its funding from three different sources. First, the department receives, “An amount equal to thirty-one percent (31%) of the projected revenues generated by the forty-five hundredths (.45) of one (1) percent sales tax established in Ordinance No. 2540.” This is the 0.1395 of one percent implemented in 1993 and shown on line two of the figure above.

Second, the department also receives, “An amount equal to forty percent (40%) of the projected revenues generated by the three-tenths (.3) of one (1) percent sales tax established in subsection (b) of Section 40-39 of the Midwest City Code.” This is the 0.12 of one percent implemented in 2004 and shown on line five of the figure above.

Third, Sec. 40-39 (c)(1) of the City Code calls for the department to receive, “Funding equal to existing budget levels based on a maximum of the fire department's 1993–94 percentage of the General Fund.” Section 40-39 (c)(1) goes on to state further that, “Those three (3) funding sources and others, such as grants, donations or other sources, as applies to the fire department, will make up the funds available for the fire department's budget.”

Figure 19: FY 93/94 General Fund Actual Budget Showing Fund Transfer Allocation



FUND BUDGET SUMMARY — GENERAL FUND – FISCAL YEAR 1995–96

Bulk of the new 0.45% sales tax (or 0.1395% each for fire and police and 0.0405 for emergency operations) added to existing 2.00% sales and use tax revenue stream and goes directly into those funds

29% of the new 0.45% sales tax (or 0.1305%) goes to GF by ordinance which equates to 5.3% of total sales/use tax revenue

	PRIOR YEAR ACTUAL FY 93–94	CURRENT YEAR BUDGET FY 94–95		
ESTIMATED REVENUES:				
Taxes	12,039,860.00	12,415,043.00	12,405,867.00	12,702,000.00
License & Permits	572,540.00	528,000.00	581,900.00	575,000.00
Fees	22,126.00	19,400.00	24,800.00	28,500.00
Misc. Revenue	298,064.00	118,100.00	137,200.00	130,000.00
Interest Earnings	87,695.00	66,000.00	213,000.00	180,000.00
Other Revenues	761,452.00	699,100.00	879,000.00	850,000.00
Mun. Auth. Transfer	1,286,500.00	1,286,500.00	1,286,500.00	1,286,500.00
Supplemental Sales & Use Tax (ord. 2540 for General Fund 29%)	285,108.00	700,000.00		20,000.00
TOTAL REVENUE	15,353,345.00			72,000.00
Fund Balance	949,964.00	1,022,409.00		00,000.00
TOTAL RESOURCES	16,303,309.00	16,854,552.00		72,000.00
PROPOSED EXPENDITURES:				
Managerial	161,033.00	191,020.00	191,020.00	184,898.00
City Clerk	956,682.00	958,110.00	965,610.00	1,003,501.00
Personnel	155,537.00	158,296.00	159,712.00	168,970.00
City Attorney	311,043.00	327,999.00	327,999.00	349,820.00
Development Services	1,269,761.00	1,420,338.00	1,420,338.00	1,572,825.00
Police	5,154,573.00 (A)	5,258,419.00	5,258,419.00	5,401,259.00
Fire	4,168,272.00 (B)	4,252,132.00	4,252,132.00	4,367,110.00
Street	1,466,878.00	1,648,415.00	1,648,415.00	1,659,065.00
Animal Welfare	196,030.00	222,220.00	222,220.00	213,594.00
General Government	896,279.00	1,006,318.00	1,137,948.00	1,301,562.00
Emergency Response Center	469,494.00	565,613.00	565,613.00	602,030.00
Regional Pool	93,498.00	108,250.00	108,250.00	112,784.00
TOTAL	15,299,080.00	16,117,130.00	16,257,676.00	16,937,418.00
PROJECTED FUND BALANCE 06/30/96 Est				534,582.00

15,068,237 (C)

(A)/(C) = 34.21%
(B)/(C) = 27.66%

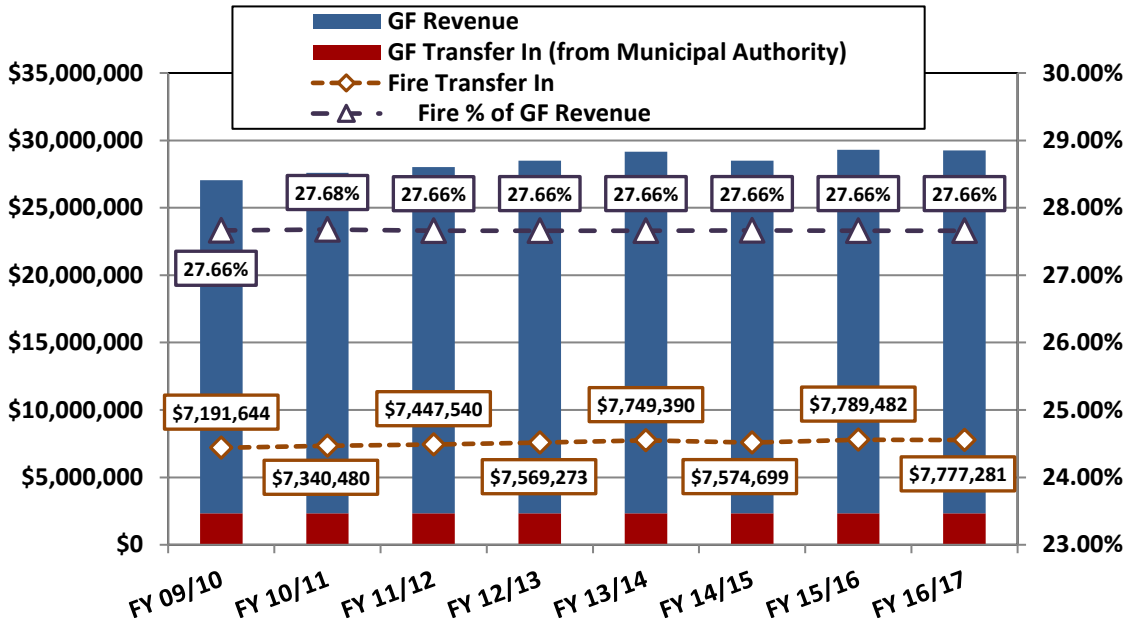
A fourth source of funding, specifically for fire department capital expenditures, and shown on line six of the above figure, was added through Sec. 40-44 of the City Code, which establishes an additional fifty-five hundredths (0.55) of one (1) percent sales tax, bringing the total sales tax imposed by the city to its current level of 3.85 percent. The bulk of this additional sales tax (73 percent) is specifically allocated for capital improvements to the Northside Wastewater Treatment Plant. However, the code also specifies that, "nine (9) percent or four hundred ninety-five ten thousandths (.0495) of one (1) percent of the additional excise tax levied… shall solely and only be used for the following purposes." One of the purposes is specified as follows: "Three-quarters or seventy-five (75) percent [of the 0.0495 mentioned above] shall be deposited into the fire department fund capital outlay account [Fund 041], and shall be spent and expended only for capital outlay items and projects necessary or appropriate for the fire department."

It is the third source of fire department funding and the calculation of its amount each year as specified in Sec. 40-39 (c)(1) of the City Code that leads to a level of complexity and confusion regarding departmental revenues and budgets. The verbiage in the code is unclear, and the calculation of an actual annual amount that is required to be transferred from the General Fund into the Fire Fund somewhat ambiguous. This lack of clarity makes transparent discussions of department funding allocations problematic at best. In the following discussion, ESCI has attempted, as an outside observer, to unravel this third source of funding in a logical manner so that all interested parties have the same

basis from which to understand financial challenges facing the department and work towards resolving them. Discussions with City finance staff have been crucial in bringing clarity to this issue.

As stated in Sec. 40-39 (c)(1) of the City Code, the third source of funding shall be equal to, "… existing budget levels based on a maximum of the fire department's 1993-94 percentage of the General Fund." The preceding figure is an excerpt, provided by staff, from the City's FY 1995/96 budget book that shows a summary of General Fund (GF) revenues and expenses. Specifically, the actual FY 93/94 figures are shown, and staff has made notations in the FY 93/94 column addressing how the third method of fire department revenue is calculated.

Figure 20: General Fund Revenue, GF Transfer to Fire Fund and Percentage Transferred



The FY 93/94 fire department expenditure is divided by the total GF revenue only less the supplemental sales and use tax portion of 0.1305 of one percent allocated to the GF and not subject to division with the police and fire departments. It is important to point out that the GF sales and use tax revenue was derived from the total 2.0 percent city sales and use tax in place in 1993. During the historical period covered by this study, the amount of sales and use tax revenue available in the GF for transfer to the police and fire departments increased and is based upon an aggregate tax rate of 2.3805 percent less the 0.1305 supplemental amount restricted to GF usage. Other city functions have portions of the aggregate city sales tax dedicated specifically, as do the police and fire departments (Figure 18, and these portions of the aggregate are not subject to division. The GF revenue does include the municipal authority transfer amount.

The FY 93/94 calculation referenced in the above figure yields 27.66 percent, which is the amount of future GF revenue that is to be transferred each year into the Fire Fund to offset departmental operations. The code also states that, "The fire department's existing budget levels based on the 1993–

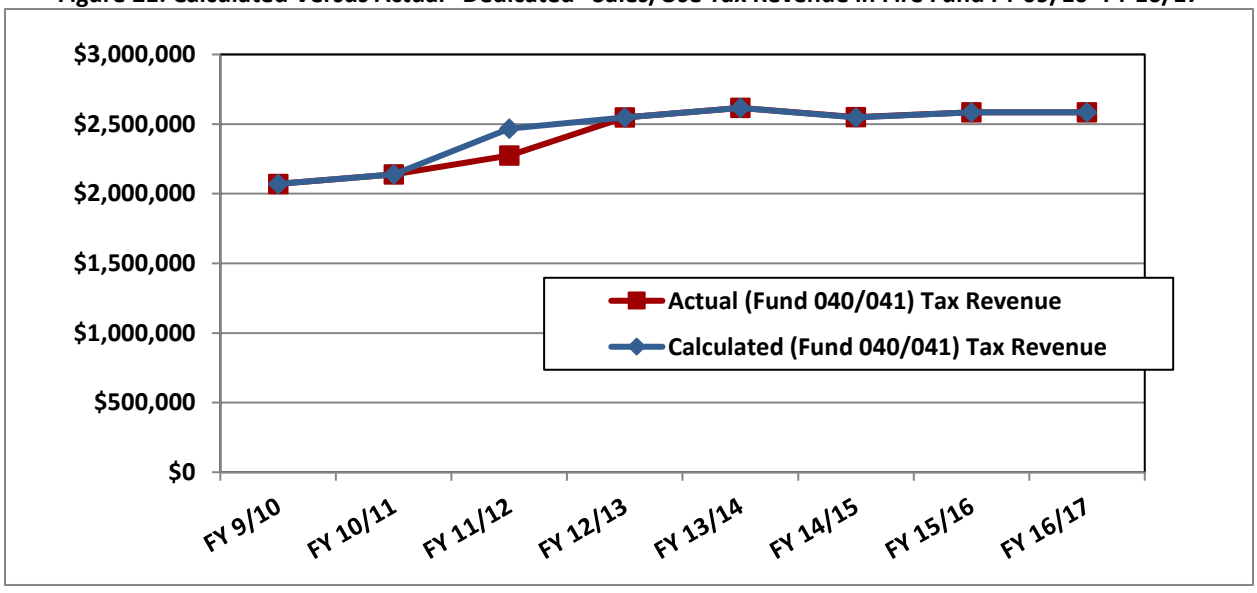
94 percentage of the General Fund may be unilaterally reduced so long as all other General Fund budgets are reduced by a proportional amount."

This same calculation was performed on the GF revenue and GF transfer to the Fire Fund for the period FY 09/10 through FY 15/16 actual and adopted FY 16/17 to determine what percentage of GF revenue was transferred using the logic outlined above. The previous figure shows the municipal authority transfer to the GF (in red bars) and the total GF revenue (in blue bars). The originally identified supplemental GF sales tax revenue (.1305 of one percent) not used in the initial FY 93/94 calculation represents 5.482 percent of the available GF sales/use tax revenue (the dedicated 0.1305 amount allocated to GF use only divided by the total GF amount of 2.3805). The GF sales/use tax revenue, less the dedicated supplemental amount, plus the municipal authority transfer amounts, added together represent the denominator as in the original calculation to determine the percentage transfer to the Fire Fund. The actual amount transferred each year to the Fire Fund is shown in orange and is numerator for the calculation.

Shown in purple is the percentage that this transfer represents each year, using what appear to the same calculation parameters outlined in the original ordinance and codified in City Code Sec. 40-39. The annual funding thus transferred amounts to a uniform 27.66 percent of the GF revenue on average. It would appear from this that the amount transferred each year matches the 27.66 percent called for in code.

A comparison of the actual sales/use tax revenue dedicated to the fire department by code to an approximate calculation of what should be received, based upon sales/use tax rates shown in Figure 21, reveals that the fire department is receiving the revenue it should be from the dedicated portions of sales/use tax. The higher calculated amount in FY 11/12 is due to the calculation assuming a full year at the higher rate which was only implemented on January 1, 2012 (a partial year).

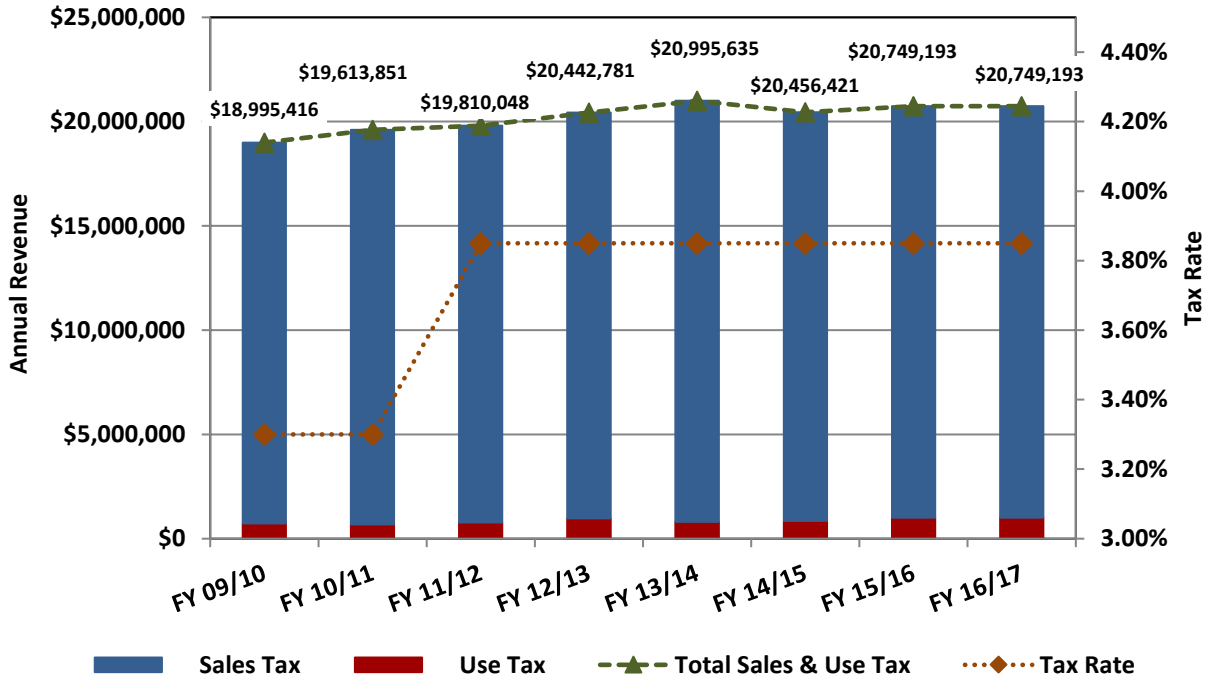
Figure 21: Calculated Versus Actual "Dedicated" Sales/Use Tax Revenue in Fire Fund FY 09/10–FY 16/17



The previous figure shows the calculated, dedicated Fire Fund sales/use tax revenue (blue line) versus actual sales/use tax revenue (red line) by fiscal year. The amounts shown include both the unrestricted revenues placed in Fire Fund 040 and those dedicated for capital expense and placed in Fire Capital Fund 041. The calculated, dedicated fire department sales/use tax revenue is derived by dividing the GF sales/use tax revenue ($20,749,193 in FY 16/17) by the GF percent of the aggregate sales/use tax rate (2.3805/3.85 or 61.8312 percent of the aggregate in FY 16/17). This figure, representing total sales/use tax revenue ($33,557,821 in FY 16/17), is then multiplied by the percentage of aggregate sales/use tax revenue dedicated to the fire department (0.2966/3.85 or 7.7039 percent of the total revenue which is equal to $2,585,260 in FY 16/17).

The following figure shows GF sales (blue bars) and use (red bars) tax revenue (green line/triangles) for the period FY 09/10 actual through FY 16/17 adopted as well as the aggregate sales/use tax rate for the same period (in orange). Revenue increased somewhat after the first full year of the increase from 3.3 to 3.85 percent (FY 12/13) but has not increased appreciably since. It has remained relatively flat at an average of $20.68 million over the last five years. The fire department's total percentage of the aggregate sales/use tax (including the amount transferred from the General Fund) received by the City is shown is equal to 23.87 percent of the aggregate. As discussed above, the amount transferred from the GF to the fire department (27.66 percent of GF revenue) includes all GF revenues and not just sales/use tax.

Figure 22: GF Sales/Use Tax Revenue and Aggregate City Tax Rate FY 09/10–FY 16/17



The following figure shows, in tabular format, the historical financial resources available to the fire department to offset annual operating expenses in the Fire Fund (040). The department's financial resources are separated into recurring and non-recurring revenue sources, fund transfers, and beginning fund balance. The bulk of the departments revenues are recurring in nature, meaning that they can be reasonably expected to continue at some level with some degree of predictability. Similarly, the next figure shows financial resources available to offset department capital expense needs in the fire department Capital Fund (041). Actual values in both cases are shown for the period FY 09/10 through FY 15/16 with adopted figures shown for FY 16/17:

Figure 23: Historical Fire Fund (040) Financial Resources FY 09/10–FY 16/17

FINANCIAL RESOURCES	Actual FY 09/10	Actual FY 10/11	Actual FY 11/12	Actual FY 12/13	Actual FY 13/14	Actual FY 14/15	Actual FY 15/16	Adopted FY 16/17
Taxes	$2,070,704	$2,138,119	$2,159,507	$2,228,482	$2,288,749	$2,229,969	$2,261,885	$2,261,885
Licenses & Permits	$14,060	$10,375	$9,220	$9,550	$11,800	$11,135	$10,793	$11,243
Charges for Services	$10,276	$9,023	$10,835	$24,210	$16,646	$23,804	$12,898	$17,783
Interest	$11,275	$15,644	$15,374	$24,491	$41,841	$34,266	$24,756	$26,501
Miscellaneous	$17,575	-$9,404	$12,014	$6,286	$4,517	$26,296	$9,986	$9,628
Intergovernmental	$0	$0	$0	$0	$0	$678	$0	$0
Recurring Revenue	$2,123,890	$2,163,757	$2,206,950	$2,293,019	$2,363,553	$2,326,148	$2,320,318	$2,327,040
Grants	$0	$0	$0	$0	$0	$0	$0	$0
Transfers In	$7,193,191	$7,335,182	$7,447,540	$7,569,273	$7,751,416	$7,595,784	$7,801,641	$7,957,488
Beginning Fund Balance	$593,968	$533,697	$871,115	$334,830	$1,218,328	$1,324,471	$888,234	$1,112,435
Total Resources	**$9,911,049**	**$10,032,636**	**$10,525,605**	**$10,197,122**	**$11,333,297**	**$11,246,403**	**$11,010,193**	**$11,396,963**

Figure 24: Historical Fire Capital Fund (041) Financial Resources FY 09/10–FY 16/17

FINANCIAL RESOURCES	Actual FY 09/10	Actual FY 10/11	Actual FY 11/12	Actual FY 12/13	Actual FY 13/14	Actual FY 14/15	Actual FY 15/16	Adopted FY 16/17
Taxes[1]	$0	$0	$115,530	$318,815	$327,437	$319,027	$323,593	$323,593
Intergovernmental	$1,000	$0	$0	$0	$0	$0	$0	$0
Interest	$12,141	$8,756	$9,277	$17,841	$21,289	$18,854	$11,211	$10,822
Miscellaneous	$1,174	$6,000	$0	$0	$1,560	$1,250	$3,050	$0
Recurring Revenue	$14,315	$14,756	$124,807	$336,656	$350,286	$339,131	$337,854	$334,415
Asset Retirement	$43,388	$0	$0	$0	$101,310	$20,000	$27,050	$0
Loan Proceeds[2,3]	$470,000	$1,145,000	$0	$1,950,000	$0	$0	$0	$0
Transfers In	$309,843	$145,695	$254,563	$53,554	$300,000	$250,000	$25,946	$212,500
Beginning Fund Balance	$181,927	$497,275	$521,412	$497,219	$520,076	$815,944	$592,836	$103,857
Total Resources	**$1,019,473**	**$1,802,726**	**$900,782**	**$2,837,429**	**$1,271,672**	**$1,425,075**	**$983,686**	**$650,772**

[1]A new sales tax to support capital expenditures was instituted on 1/1/12

[2]Loan of $1,145,000 secured in FY 10/11 consolidating three prior loans used to fund Station #1 roof, aerial purchase and other capital. Debt service begins 3/1/11 on 10-year 5% note.

[3]Loan of $1,950,000 (at 3.75%) secured in FY 12/13 to pay off prior loan and purchase aerial, rescue pumper, brush truck and a demo apparatus. Loan term 10 years and ends 7/1/22.

A new sales and use tax to support capital expenses was implemented FY 11/12 and actually took effect on January 1, 2012. Revenue from this new tax was only partial for FY 11/12. Loan proceeds are a non-recurring revenue source and spiked capital revenue in FY 09/10, FY 10/11 and FY 12/13. The loan of $1.95 million shown in FY 12/13 was used to pay off all prior notes and purchase several pieces of capital apparatus. The transfer shown is actually funding moved from Fund 040 into the Capital Fund. This transfer and the dedicated capital tax are the principal sources of capital funding.

The following figure shows graphically the total recurring revenue, including the transfer to the Fire Fund (040) discussed extensively above, available each year to the fire department for operating and capital expenses. The transfer to the capital fund is not shown since that comes out of the revenue stream for the fire operating fund. The red bars show recurring revenue in the Capital Fund (041) and it is apparent that once this revenue stream came fully online in FY 12/13, it has not risen significantly. The driver for the increased available revenue is found in the recurring and GF transfer in Fund 040 which will be discussed in more detail below.

FY 11/12 was the first full year at the current sales and use tax rates, which affects both funds. It is not unreasonable to use the period FY 12/13 actual through FY 16/17 adopted to examine the trend. Overall, department revenue rose from $10.2 million to $10.6 million, an increase of approximately $100,000 or about one percent per year. Since the bulk of the revenue, including the GF transfer are derived from sales and use tax it appears that this one percent growth is primarily to be found in that source.

Figure 25: Total Fire Department Recurring Revenue and General Fund Transfer

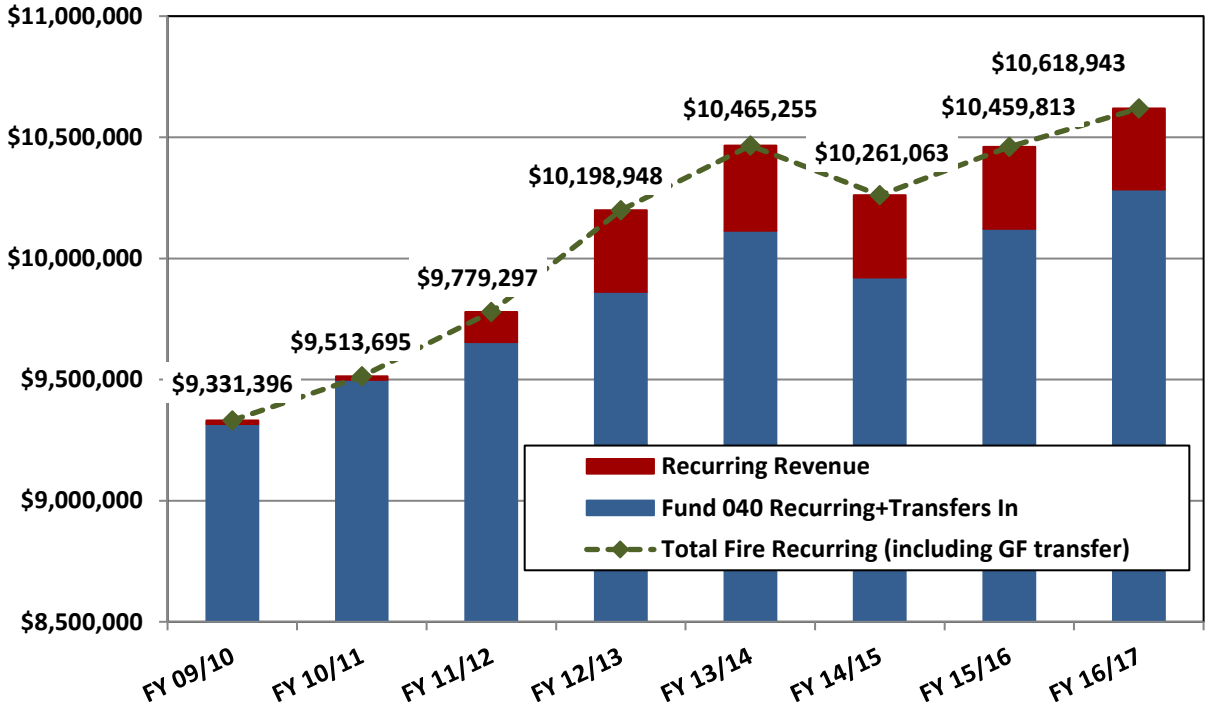
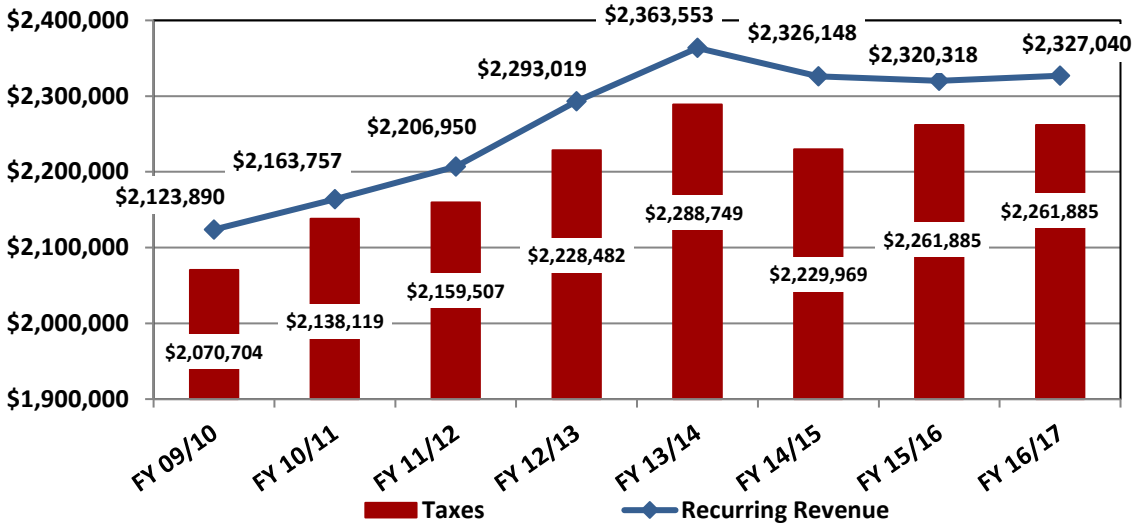
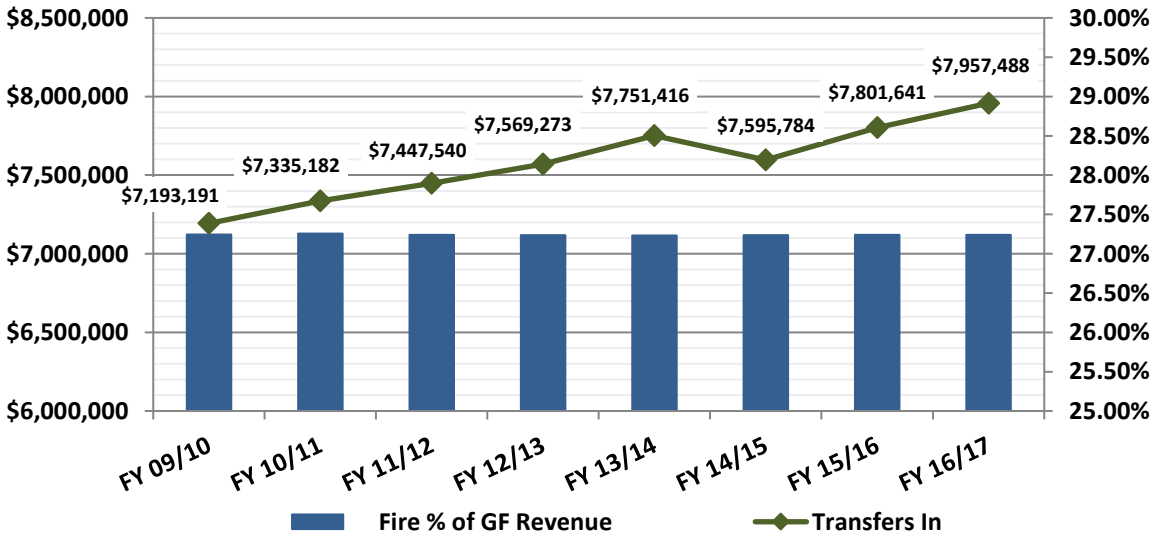


Figure 26: Fire Fund (040) Recurring Revenue and Sales/Use Tax Component



- The preceding figure shows that the sales and use tax forms is the bulk of recurring revenue in the Fire Fund (040) driving its rate of change.
- Following the first full year of revenue received due to the current tax rate (FY 12/13), it appears that, with some variability, this revenue source has increased slightly from $2,228,482 in FY 12/13 to $2,261,885 as projected in FY 16/17. This represents an increase of only $33,403 or 1.5 percent in four years.

Figure 27: GF Transfer into Fire Fund (040) and Percentage of GF Revenue FY 09/10–FY 16/17



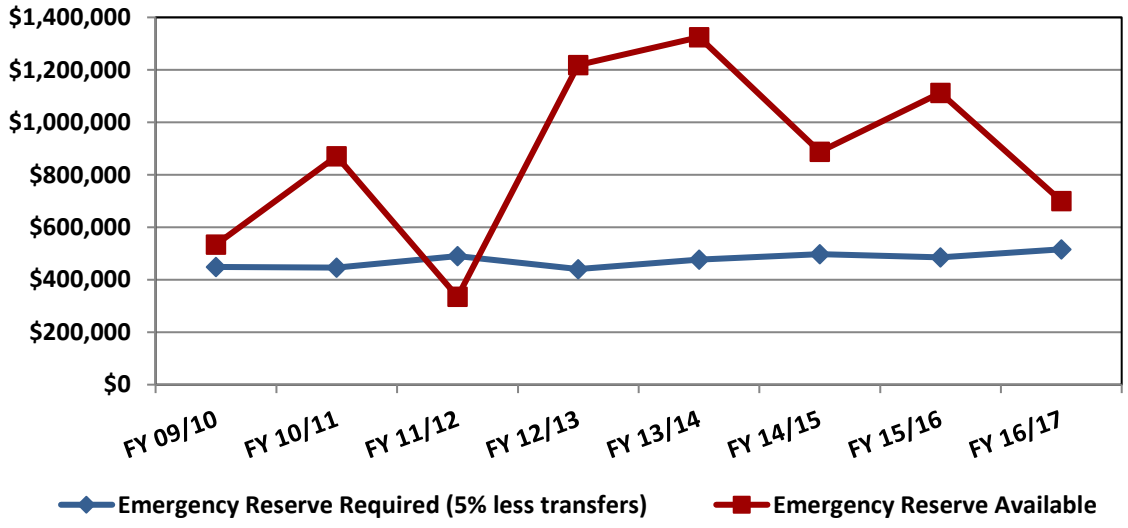
- The previous figure shows the General Fund transfer into the Fire Fund (040) from FY 09/10 actual through FY 16/17 as projected as well as the percentage of GF revenue that this transfer equates to each year as calculated and extensively discussed above.

- The GF transfer increased steadily from $7,193,191 in FY 09/10 to $7,751,416 in FY 13/14 before declining to $7,595,784 in FY 14/15. It has steadily increased since then at approximately the same rate as observed between FY 09/10 and FY 13/14. This annual rate of increase averages 1.89 percent per year. Over the entire period, the average rate of increase is slightly less at 1.46 percent per year.

The City established an emergency reserve requirement for certain operating funds by resolution in FY 07/08. Resolution 2007-31 Section 1 states that, "Emergency reserves are… established for the General Fund, the Police Fund, the Fire Fund…equal to five percent (5%) of each fund's budgetary operating expenditures [less transfers] each fiscal year." The following figure shows the annual required five percent reserve (in blue) versus how much reserve was available (shown in red).

The Fire Fund available reserve, while fluctuating quite a bit throughout the period, has generally been more than sufficient to provide a five percent emergency reserve, as required. However, the fund came close to not covering the requirement in FY 09/10 and had insufficient reserves in FY 11/12. The reason for this is that the department experienced a one-time increase in personal services costs that year. The use of reserves to cover this expense, including part of the required emergency reserve, appears consistent with the intent of Resolution 2007-31. Section 2 states that, "All or a portion of the emergency reserves may be appropriated by the city council as necessary in the event of a natural disaster or other catastrophic circumstances, or in the event of significant budgeting or accounting errors." While this was not a budgeting or accounting error, the increase could be considered an unforeseen expense that would have otherwise been normally funded.

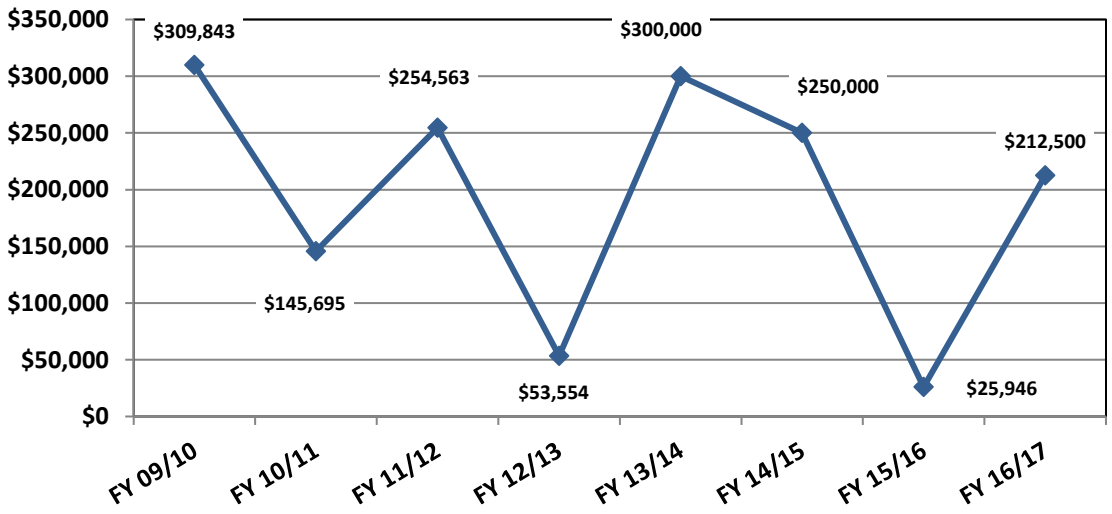
Figure 28: Fire Fund (040) Five Percent Reserve Requirement Versus Available Reserves



- The only significant recurring revenue source in the Fire Capital Fund (041) is the dedicated sales/use tax discussed above.
- The capital sales/use tax has fluctuated slightly but has effectively averaged $323,000 annually since its first full year in FY 12/13.

- A loan of $1,145,000 (five percent on 10-year term) was secured in FY 10/11 which consolidated three prior loans and was used to fund a new roof for Station 1 and acquire several pieces of capital apparatus.
- An additional loan of $1,950,000 (3.75 percent on 10-year term) was secured in FY 12/13, which again was used first to pay off the FY 10/11 note and then fund various capital apparatus. This note terms out on 7/1/22.
- The only other significant source of funding for the Fire Capital Fund comes from a transfer out of the Fire Fund (040).
- The Fire Fund transfer has fluctuated widely as shown in the figure below ranging from highs of around $300,000 to lows between $25-50,000. This is a significant source of concern as will be discussed later. Briefly, the fund must cover an annual debt service payment of $234,000, and dedicated tax revenue is only $323,000. Without a significant transfer, there is a very limited amount remaining for annual capital equipment and apparatus replacement, let alone major facility repair and renovation. This need should be addressed in the near future.

Figure 29: Fund Transfer from Fire Fund (040) into Fire Capital Fund (041)



Expense

The department's expenditures are budgeted in two separate funds. Operating expenses are placed in the Fire Fund (040) while capital and debt service expenses are placed in the Fire Capital Fund (041). The following two figures show, in tabular format, the respective actual expenses for FY 09/10 through FY 15/16 and projected expenses for the adopted FY 16/17 budgets.

Figure 30: Fire Fund (040) Expenditures FY 09/10–FY 16/17

EXPENSE	Actual FY 09/10	Actual FY 10/11	Actual FY 11/12	Actual FY 12/13	Actual FY 13/14	Actual FY 14/15	Actual FY 15/16	Adopted FY 16/17
Personal Services	$8,522,813	$8,506,839	$9,379,691	$8,396,551	$9,055,496	$9,380,102	$9,228,690	$9,722,264
Wages	*$6,569,584*	*$6,521,237*	*$7,162,948*	*$6,364,160*	*$6,471,976*	*$6,589,205*	*$6,537,046*	*$6,834,569*
Benefits	*$1,953,229*	*$1,985,602*	*$2,216,743*	*$2,032,391*	*$2,583,520*	*$2,790,897*	*$2,691,644*	*$2,887,695*
Materials and Supplies	$218,114	$236,758	$249,734	$228,326	$252,535	$336,167	$240,617	$341,449
Other Services and Charges	$222,375	$184,229	$174,537	$187,917	$225,565	$225,900	$236,505	$254,534
Capital Outlay	$0	$0	$0	$0	$9,230	$0	$0	$0
Transfers Out[1]	$414,050	$233,695	$386,813	$166,000	$466,000	$416,000	$191,946	$378,500
Total Expenditures	**$9,377,352**	**$9,161,521**	**$10,190,775**	**$8,978,794**	**$10,008,826**	**$10,358,169**	**$9,897,758**	**$10,696,747**

[1]Transfers Out used to fund 3.5 positions in Code Enforcement ($166,000) and fire department capital expenses in Fund 41

Figure 31: Fire Capital Fund (041) Expenditures FY 09/10–FY 16/17

EXPENSE	Actual FY 09/10	Actual FY 10/11	Actual FY 11/12	Actual FY 12/13	Actual FY 13/14	Actual FY 14/15	Actual FY 15/16	Adopted FY 16/17
Benefits	$0	$0	$7,950	$0	$0	$0	$0	$0
Other Services	$0	$0	$0	$0	$1,952	$0	$289	$289
Capital Outlay	$442,884	$531,835	$249,879	$1,067,315	$219,631	$598,096	$645,397	$398,520
Debt Service	$79,314	$749,479	$145,734	$1,250,038	$234,143	$234,143	$234,143	$234,143
Total Expense	**$522,198**	**$1,281,314**	**$403,563**	**$2,317,353**	**$455,726**	**$832,239**	**$879,829**	**$632,952**

The following figure depicts graphically the combined expenses of the Midwest City Fire Department for the entire period. The bulk of the department cost each year is for personnel (shown in blue dotted bars). Other Services and Charges and Materials and Supplies are relatively minor and primarily found in the Fire Fund. Capital Outlay varies widely from year-to-year and is higher in some years due to expenditure of bond funds. Similarly, debt service is high in some years when newer, lower rate loans are secured. These new loans are used to pay off older, higher interest rate notes and also to acquire additional capital apparatus. For example, note the larger blue bars (debt service) and larger purple bars (capital outlay) in years FY 10/11 and FY 12/13.

Figure 32: Total Fire Department Expenditures (Funds 040/041) FY 09/10–FY 16/17

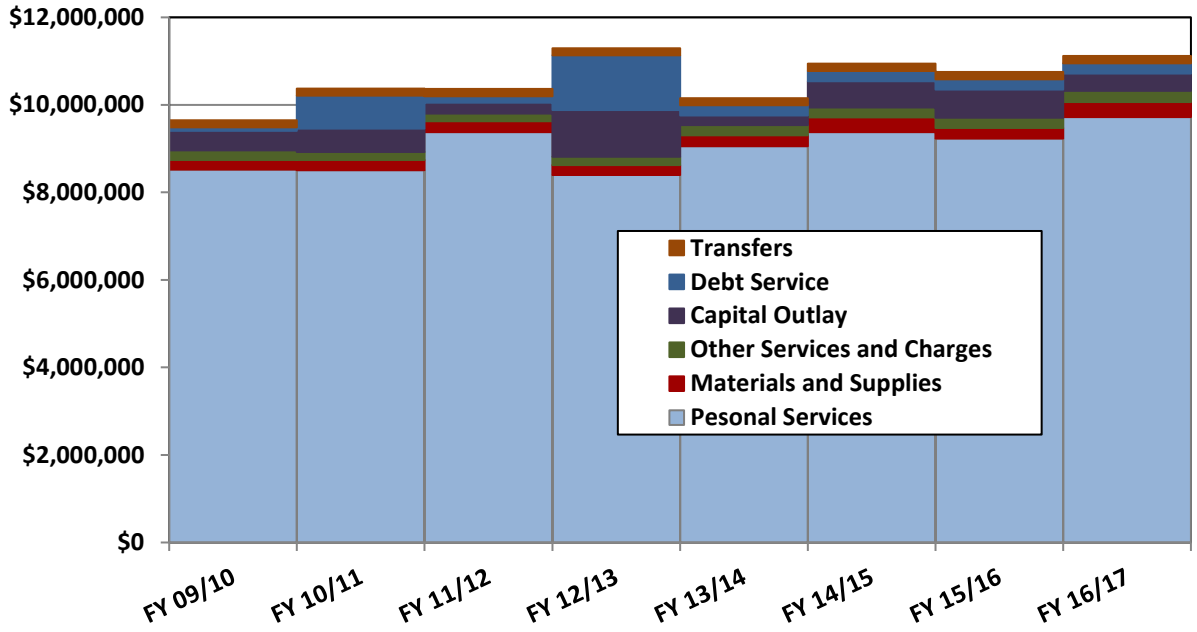
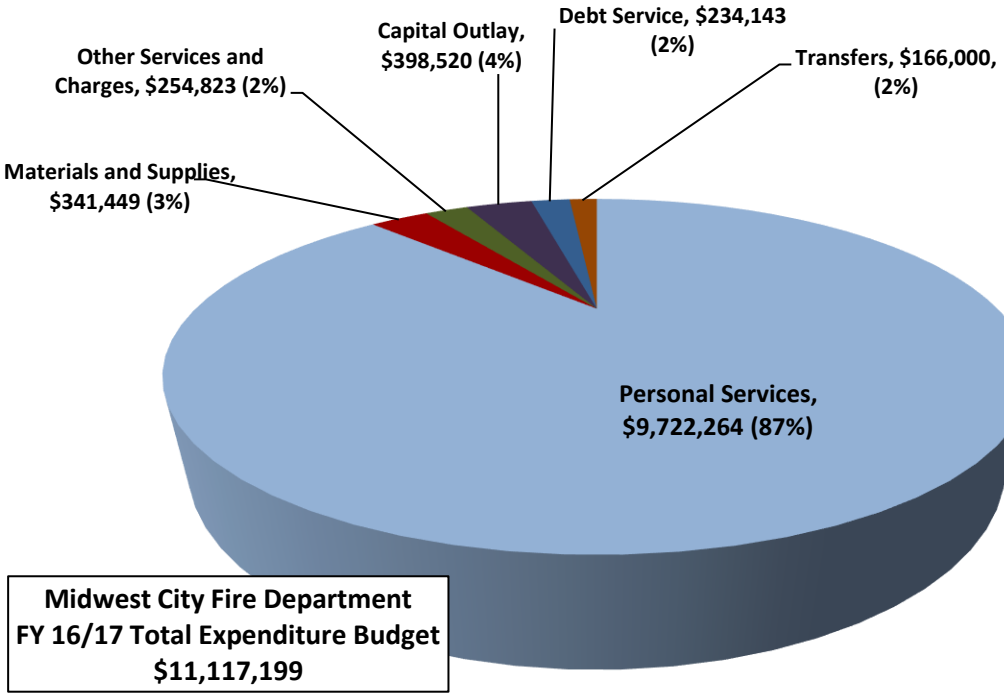
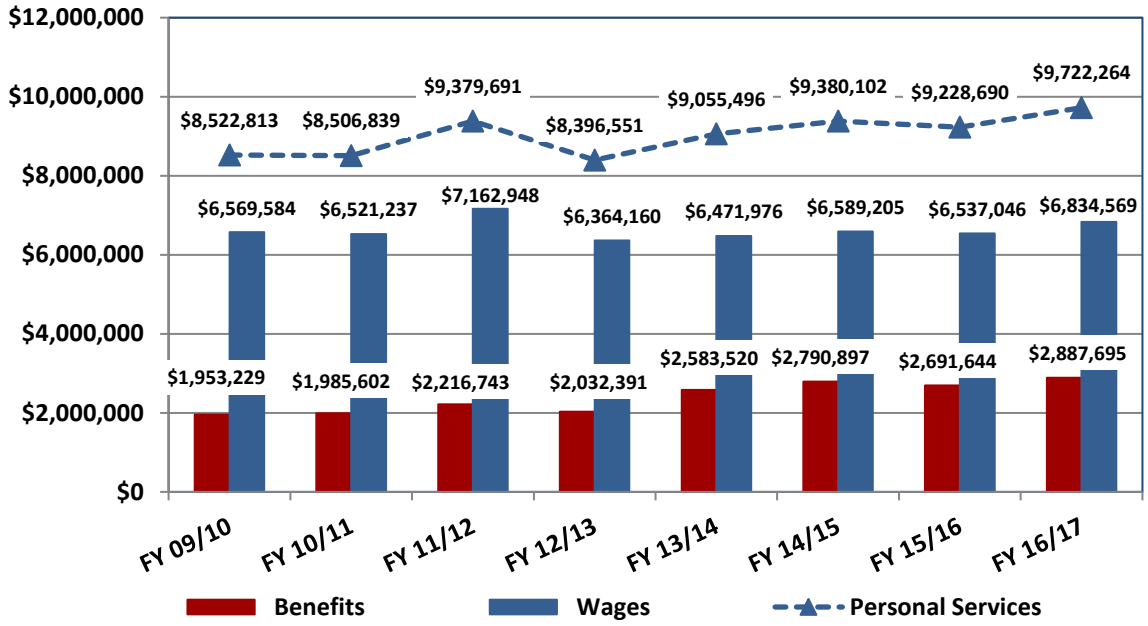


Figure 33: Total Fire Department Expenditures (Funds 040/041) FY 16/17



The previous figure breaks down the major areas of total fire department expense, as projected for FY 16/17, and shows percentage for each major category of expense. Clearly, at almost 90 percent, personnel services are the largest cost to the department. This is not atypical of fully career-staffed fire departments around the country.

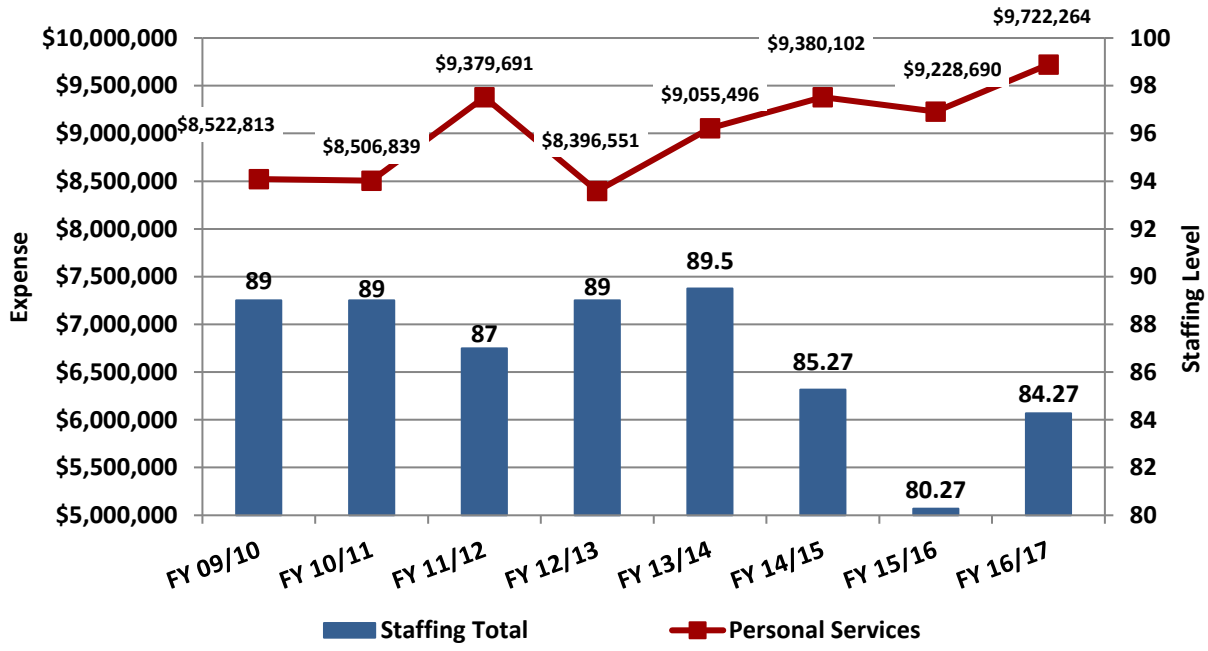
Figure 34: Personal Services Expenditures (Fund 040) FY 09/10–FY 16/17



- At almost 90 percent of the fire departments total expenditure budget (both Fund 040 and 041) personal services are an important category to understand.
- The figure above shows total personal services cost in the dashed blue line as well as wages (blue bars) and benefits (red bars) broken out separately.
- FY 11/12 was an anomalous year for personal services expense. Prior to FY 11/12, wages were flat, averaging just over $6.5 million. After the spike in FY 11/12, wages dropped to $6,363,160 in FY 12/13 and slowly climbed over the next four years to a projected $6,834,569. This represents an increase of $470,409 or 7.4 percent over four years for an average annual increase of 1.8 percent. It is important to note that this does not mean that individual wages increased at that rate; merely that this category of expense increased at this rate.

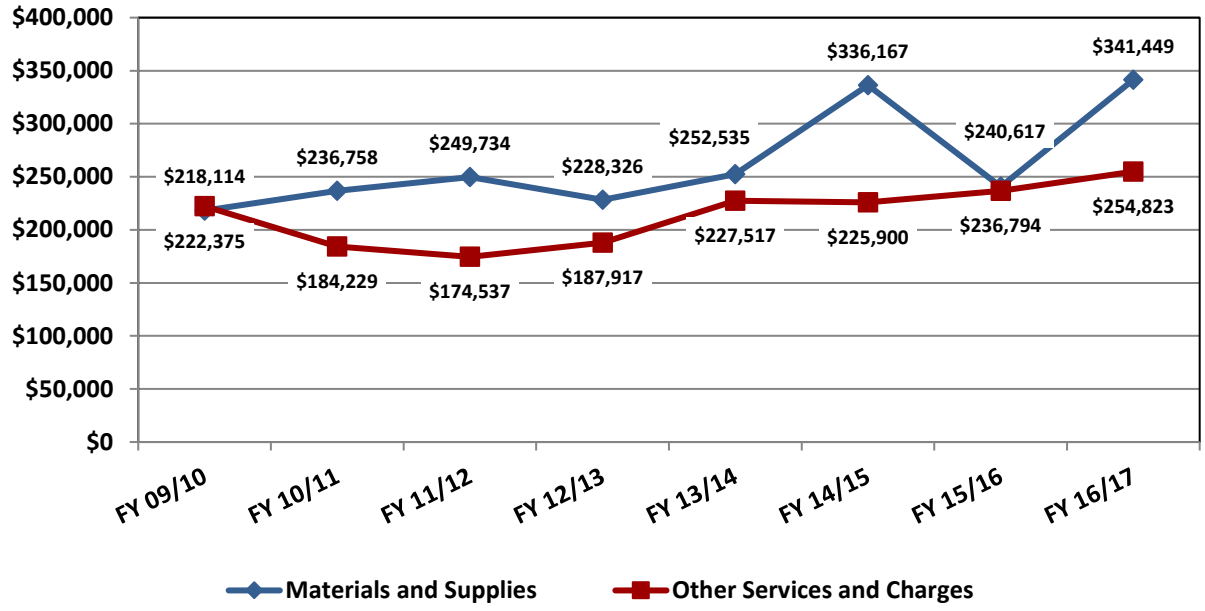
- Benefits, on the other hand, have risen from $2,032,391 in FY 12/13 to a projected $2,887,695 in FY 16/17. This represents an increase of $855,304 or 42 percent over the four-year period for an average annual increase of 9.7 percent. This is driven by increased employer contributions to the state retirement system, increased health insurance costs for employees and retired employees due to law changes and market forces, and worker's compensation.
- To determine if the rate of increasing wages and benefits was real, the following figure showing Full Time Employee or FTE (total department employees) count versus personal services costs through time was prepared. For the period from FY 12/13 through FY 16/17 when wages increased an average of 1.8 percent and benefits by an average of 9.7 percent, the FTE count decreased from around 89 through FY 13/14 down to a low of 80.27 in FY 15/16 and back up to a projected 84.27 in FY 16/17. Therefore, these trends of increased costs are, if anything, underestimated.

Figure 35: Personal Services Expenditures versus FTE Count (Fund 040) FY 09/10–FY 16/17



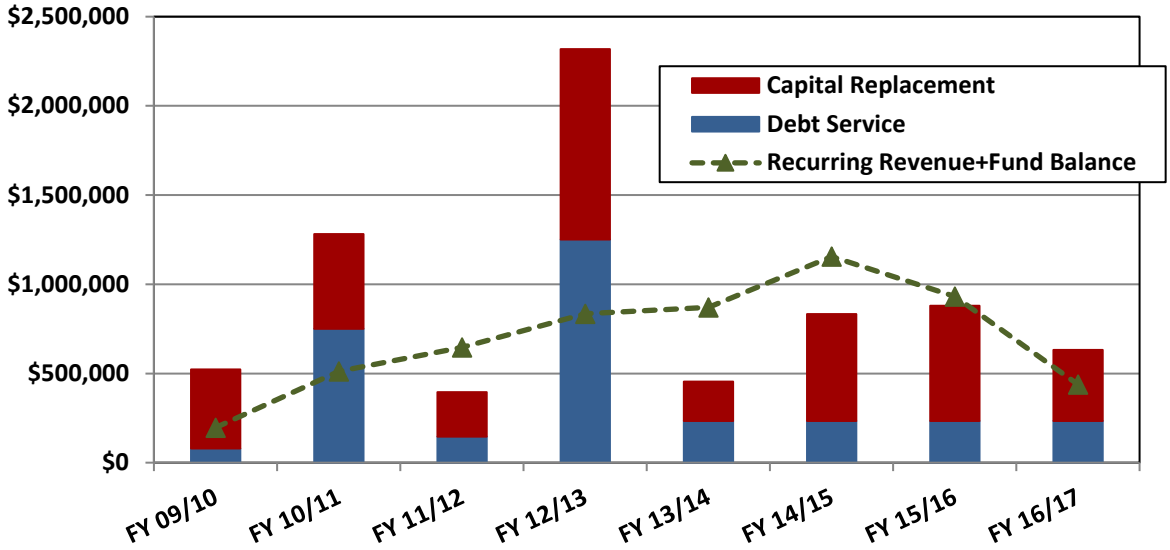
- The Materials and Services expenses have varied somewhat over time but have generally increased from $218,114 in FY 09/10 to an expected $4,341,449 in FY 16/17. This represents an increase of $123,335 or 56.5 percent over seven years, for an average annual increase of 8.95 percent.

Figure 36: Department Materials and Supplies and Other Services and Charges Expenditures



- Other Services and Charges have varied somewhat as well, dropping gradually from $222,375 in FY 09/10 to a low of $174,537 in FY 11/12 before gradually climbing back up to $227,517 in FY 13/14.
- This category of expense has been gradually increasing at, essentially, a linear rate since FY 13/14. From FY 13/14 to FY 16/17, as projected, this category has increased by $27,306 or 12 percent in three years for an average annual increase of 2.6 percent.
- Capital Outlay has varied considerably due primarily to the one-time use of loan proceeds to purchase a number of capital apparatus and perform major building work such as the re-roof project for Station 1.
- Debt Service has also varied considerably as new loans were obtained and used to pay off older, higher rate loans. At the same time, loan proceeds were also as used to fund multiple capital apparatus purchases.
- The relationship between Capital Outlay, Debt Service, and recurring revenue plus fund balance for the fire department Capital Fund (041) is shown in the following figure. Capital expenditures are shown in red, debt service is shown in blue, and the recurring revenue plus fund balance is shown in green:

Figure 37: Relationship of Capital Outlay, Debt Service, and Recurring Revenue+Fund Balance in Fund 041 for the period FY 09/10–FY 16/17

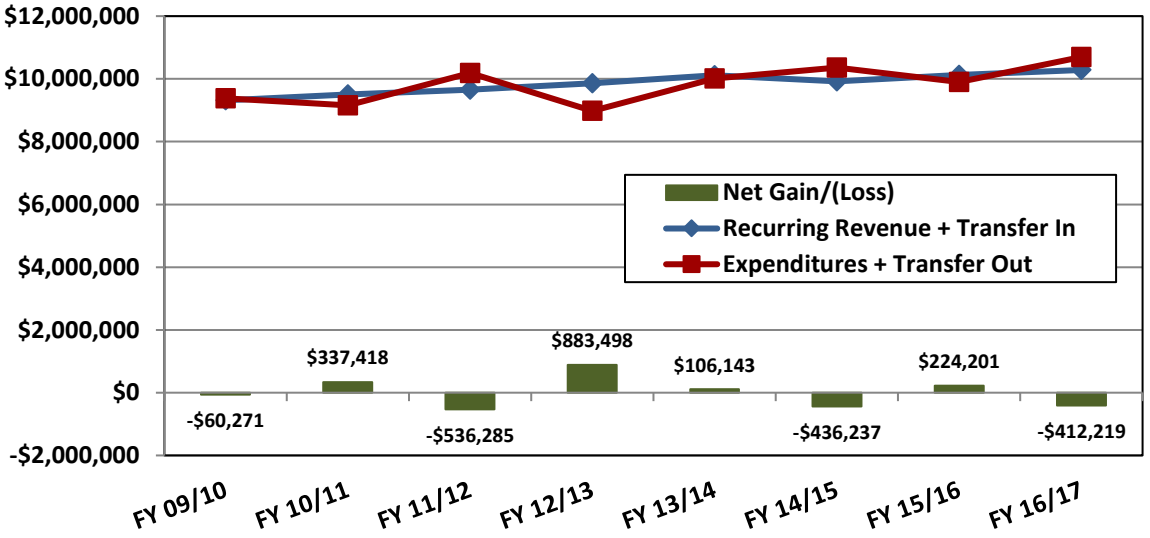


- It is quite clear in the figure above that the fund is not sufficiently capitalized to cover both its required debt service (which runs through July 1, 2022) and a reasonable amount for annual capital equipment/apparatus replacement.
- Recurring revenue and fund balance have been declining since FY 14/15, with a reduction in the transfer of funds from Fire Fund 040 into the capital fund. This transfer had fallen to just $26,000 in FY 15/16 but has been increased to $212,500 as projected in FY 16/17.
- Debt service payments of $234,143 will continue through FY 2022.
- Capital equipment/apparatus replacement has averaged $475,349 over the last four years.

Net Income/Deficit

The following figure shows recurring revenue and the transfer of funds (in blue) into the Fire Fund (040) for the period FY 09/10 actual through FY 16/17, as projected, as well as fund expenditures and transfer out to the Fire Capital Fund (041). Also shown is the annual gain or loss in green. When recurring revenues (including GF transfer) are less than expenditures, such as in FY 11/12, then the fund shows an operating loss and fund balance is reduced. Conversely, when the revenue exceeds expense, such as in FY 12/13, then the fund shows an operating gain and fund balance is increased.

Figure 38: Recurring Revenue versus Expense and Net Gain or Loss Fire Fund (040)



In general terms, the department's recurring revenues and transfer in from the General Fund have balanced department expenditures over time. This result of this balance can be seen in the following figure, which shows the effect of the net gain or loss on fund balance each fiscal year. As recurring revenues and GF transfer have increased over time, the fund balance has also, in general terms, increased slightly over time with the exception of a dip in FY 12/13. Beginning fund balance has grown from just under $600,000 in FY 9/10 to $1.1 million, as projected in FY 16/17.

Figure 39: Recurring Revenue, Net Gain or Loss and Beginning Fund Balance Fire Fund (040) FY 09/10–FY 16/17

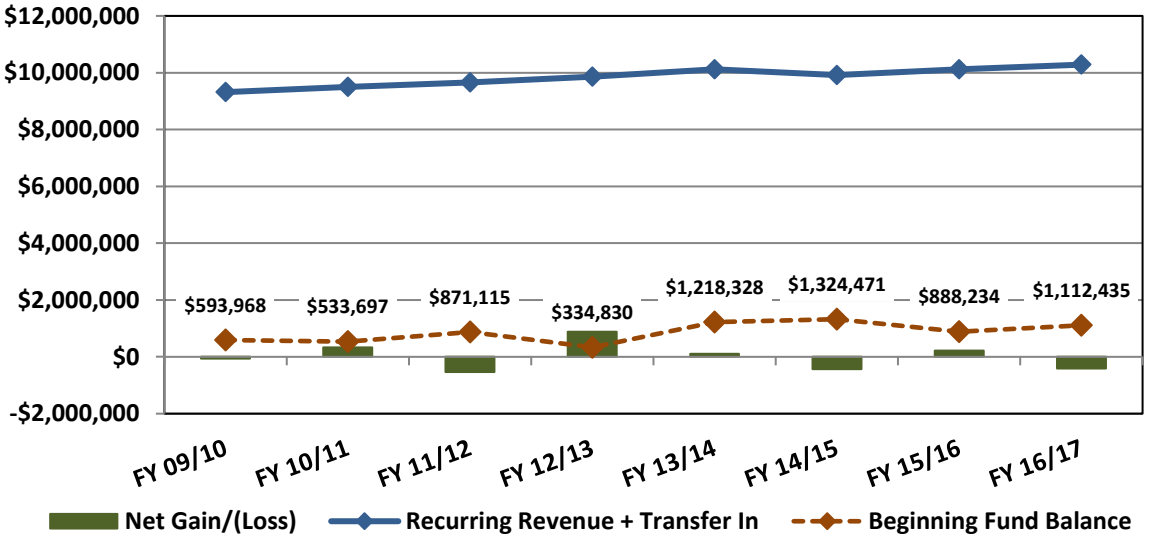
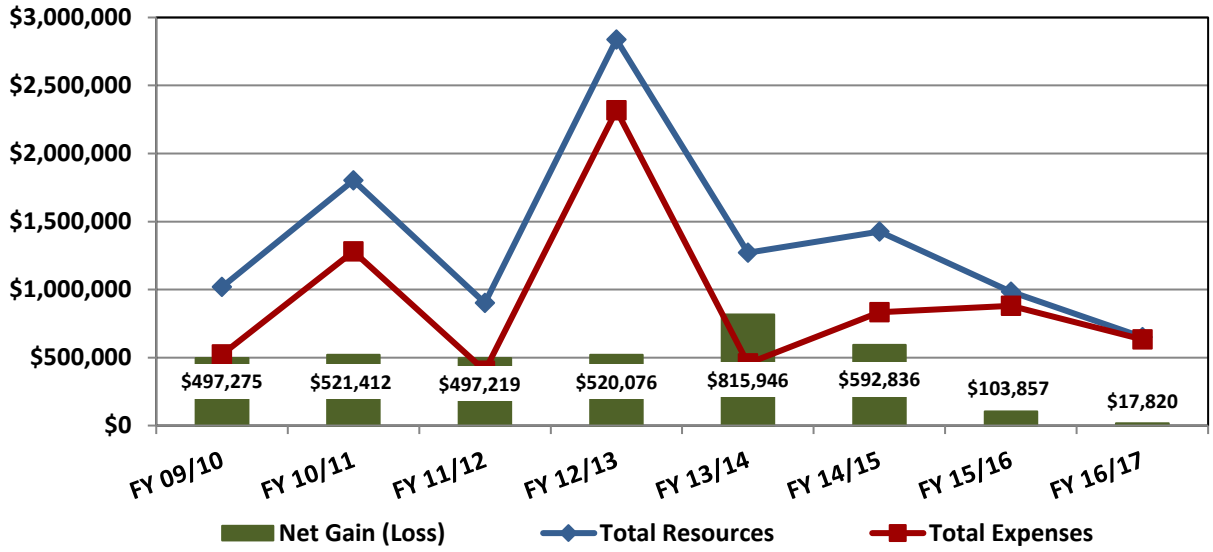
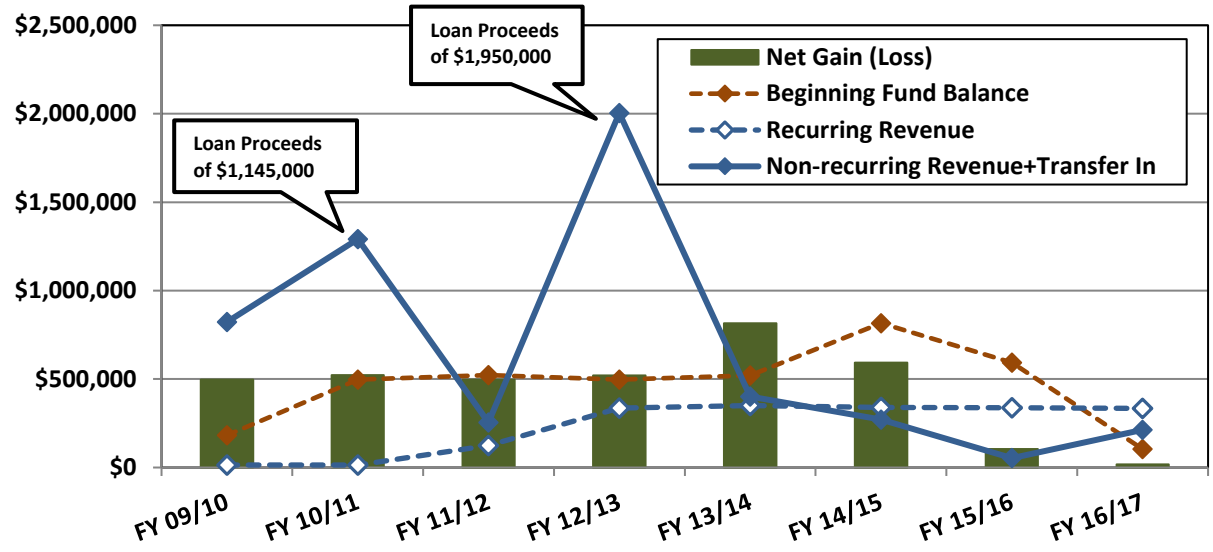


Figure 40: Total Revenue versus Expense and Net Gain or Loss fire Capital Fund (041)



It is apparent when viewing total revenue versus expense in the fire department's Capital Fund (041) that expenses such as capital apparatus replacement and station construction projects have amounted to well less than the funding from loan proceeds and other sources until FY 15/16. From FY 14/15 forward, revenue has declined while expenses have generally averaged about $750,000 annually. While this fund has still shown a net gain from FY 13/14 through FY 16/17, the annual gain has been steadily declining. The net effect of this trend is more readily apparent in the following figure:

Figure 41: Relationship of Recurring vs. Non-Recurring Revenue, Net Gain/Loss and Beginning Fund Balance in Fire Department Capital Fund (041)—FY 09/10–16/17



Non-recurring revenue, such as loan proceeds and transfer into the fund from the Fire Fund (040), are shown in solid blue; while recurring revenue, such as the dedicated sales and use tax, is shown in dashed blue. Net gain or loss is shown as green bars, and the beginning fund balance is shown in orange. With the exception of large infusions of non-recurring funding from loan proceeds in FY 10/11 and FY 12/13, this source of funding for the capital fund has generally been on the decline since FY 09/10. The other major source of non-recurring funding is the transfer from the Fire Fund (040), which declined to just over $50,000 by FY 15/16. Recurring funding, principally the dedicated sales and use tax, has generally been flat since FY 12/13. The net effect of this reduction in non-recurring funding and flat recurring funding while the department continued to fund capital projects and equipment was a decline in beginning fund balance from a high of $815,944 in FY 14/15 to $212,500 by FY 16/17. As discussed above under expenses, the slight infusion of transfer funding in FY 16/17 is not sufficiently large to arrest this trend.

Capital Assets and Assessment of Current Infrastructure

MWCFD maintains a balance of three basic resources that are needed to carry out its emergency mission: People, equipment, and facilities. Because firefighting is an extremely physical pursuit, the adequacy of personnel resources is a primary concern; but no matter how competent or numerous the firefighters are, the department will fail to execute its mission if it lacks sufficient fire apparatus distributed in an efficient manner.

The Midwest City Fire Department maintains six fire stations and millions of dollars-worth of capital assets. These assets are necessary to provide service and must be maintained and replaced as needed.

Figure 42: Survey Table—Capital Assets and Capital Improvement Planning

Survey Components	Midwest City Fire Department Observations	Recommendations
Fire Stations/Structures		
A. Replacement Plan Maintained	No	Establish a capital improvement plan for replacement/refurbishment fund, if not included in the City's capital improvement plan.
i) Period of plan (from – to)	N/A	
ii) Funding mechanism	N/A	
B. Construction or improvement plans	No	
Apparatus		
A. Replacement Plan Maintained	Not specific plan	A capital apparatus replacement plan should be developed with a funding mechanism.
i) Period of plan (from – to)		
ii) Funding mechanism		
B. Purchase or Refurbishment Schedule	None	
i) 2016, planned		
ii) 2017, planned		
iii) 2018, planned		
Support Equipment		
A. Replacement Plan Maintained	Yes	
i) Period of plan (from – to)		
ii) Funding mechanism	$25K per year dedicated to reserve for equipment purchases	
Methods of Financing		
A. General Revenue	Yes	
B. Reserve Fund(S)	Varied amount dedicated towards apparatus replacement annually	
C. Revenue Fund(S)		
D. General Obligation Bond	No	
E. Lease-Purchase	Loan from City account	
F. Grants or Gifting	No	
G. Special Fees	No	

Facilities

Appropriately designed and maintained facilities are critical to a fire department's ability to provide services in a timely manner and with appropriate deployment of assets. ESCI observed and reviewed the fire stations operated by MWCFD. The findings are summarized in the following pages, and any areas of concern observed are identified:

Figure 43: Midwest City Fire Department Station 1

	Station 1 8201 E Reno
Structure	
A. Construction Type	Concrete Block/Brick
B. Date Built	1976
C. Seismic Protection/Energy Audits	No
D. Auxiliary Power	Yes
E. Condition	Good
F. Special Considerations (American with Disabilities Act of 1990 (ADA), Mixed Gender Appropriate, Storage, Etc.)	Common Restroom
Square Footage	15500
Facilities Available	
A. Exercise/Workout	Yes
B. Kitchen/Dormitory	Yes
C. Lockers/Showers	Yes
D. Training/Meetings	Yes
E. Washer/Dryer	Yes
Protection Systems	
A. Sprinkler System	No
B. Smoke Detection	No
C. Security	Key Locked
D. Apparatus Exhaust System	No

Figure 44: Midwest City Fire Department Station 2

	Station 2 550 Aidair
Structure	
A. Construction Type	Steel Frame, Brick Veneer
B. Date Built	2009
C. Seismic Protection/Energy Audits	No
D. Auxiliary Power	Yes
E. Condition	Excellent
F. Special Considerations (American with Disabilities Act of 1990 (ADA), Mixed Gender Appropriate, Storage, Etc.)	Mixed Gender Appropriate, Storage Areas
Square Footage	8340
Facilities Available	
A. Exercise/Workout	Yes
B. Kitchen/Dormitory	Yes
C. Lockers/Showers	Yes
D. Training/Meetings	Yes, Kitchen Area
E. Washer/Dryer	Yes
Protection Systems	
A. Sprinkler System	Yes
B. Smoke Detection	Yes
C. Security	Key Locked with Combination Key Box
D. Apparatus Exhaust System	No

Figure 45: Midwest City Fire Department Station 3

	Station 3 800 N Air Depot
Structure	
A. Construction Type	Steel Frame, Brick Veneer
B. Date Built	2009
C. Seismic Protection/Energy Audits	No
D. Auxiliary Power	Yes
E. Condition	Excellent
F. Special Considerations (American with Disabilities Act of 1990 (ADA), Mixed Gender Appropriate, Storage, Etc.)	Mixed Gender Appropriate, Storage Areas
Square Footage	6450
Facilities Available	
A. Exercise/Workout	Yes
B. Kitchen/Dormitory	Yes
C. Lockers/Showers	Yes
D. Training/Meetings	Yes, Kitchen Area
E. Washer/Dryer	Yes
Protection Systems	
A. Sprinkler System	Yes
B. Smoke Detection	Yes
C. Security	Key Locked with Combination Key Box
D. Apparatus Exhaust System	No

Figure 46: Midwest City Fire Department Station 4

	Station 4 8712 NE 10th St
Structure	
A. Construction Type	Steel Frame, Brick Veneer
B. Date Built	2009
C. Seismic Protection/Energy Audits	No
D. Auxiliary Power	Yes
E. Condition	Excellent
F. Special Considerations (American with Disabilities Act of 1990 (ADA), Mixed Gender Appropriate, Storage, Etc.)	Mixed Gender Appropriate, Storage Areas
Square Footage	6450
Facilities Available	
A. Exercise/Workout	Yes
B. Kitchen/Dormitory	Yes
C. Lockers/Showers	Yes
D. Training/Meetings	Yes, Kitchen Area
E. Washer/Dryer	Yes
Protection Systems	
A. Sprinkler System	Yes
B. Smoke Detection	Yes
C. Security	Key Locked with Combination Key Box
D. Apparatus Exhaust System	No

Figure 47: Midwest City Fire Department Station 5

Station 5

801 S. Westminster

Structure	
A. Construction Type	Wood Frame, Brick Veneer
B. Date Built	1983
C. Seismic Protection/Energy Audits	No
D. Auxiliary Power	Yes
E. Condition	Good
F. Special Considerations (American with Disabilities Act of 1990 (ADA), Mixed Gender Appropriate, Storage, Etc.)	Separate Rooms, Common Bathroom
Square Footage	6400
Facilities Available	
A. Exercise/Workout	Yes
B. Kitchen/Dormitory	Yes
C. Lockers/Showers	Yes
D. Training/Meetings	Yes, Kitchen Area
E. Washer/Dryer	Yes
Protection Systems	
A. Sprinkler System	No
B. Smoke Detection	Yes
C. Security	Key Locked with Combination Key Box
D. Apparatus Exhaust System	Connected Hose Exhaust System

Figure 48: Midwest City Fire Department Station 6

Station 6

8750 SE 15th

Structure	
A. Construction Type	Steel Frame, Brick Veneer
B. Date Built	2009
C. Seismic Protection/Energy Audits	No
D. Auxiliary Power	Yes
E. Condition	Excellent
F. Special Considerations (American with Disabilities Act of 1990 (ADA), Mixed Gender Appropriate, Storage, Etc.)	Mixed Gender Appropriate, Storage Areas
Square Footage	12673
Facilities Available	
A. Exercise/Workout	Yes
B. Kitchen/Dormitory	Yes
C. Lockers/Showers	Yes
D. Training/Meetings	Yes, Kitchen Area
E. Washer/Dryer	Yes
Protection Systems	
A. Sprinkler System	Yes
B. Smoke Detection	Yes
C. Security	Key Locked with Combination Key Box
D. Apparatus Exhaust System	No

Apparatus

MWCFD maintains a sizeable fleet of response vehicles that are generally newer and clearly well maintained. The overall condition of the fleet was found to be good to excellent generally. An inventory of fire apparatus, configuration, and condition is provided below:

Figure 49: MWCFD Apparatus Inventory

Station 1							
Apparatus Designation	**Type**	**Year**	**Make/Model**	**Condition**	**Seating Capacity**	**Pump Capacity**	**Tank Capacity**
Squad 1	EONE	1995	EONE	Fair	3	N/A	N/A
Haz-mat 1	International	2009	Durastar	Good	Cross Staffed	N/A	N/A
Brush Pumper 1	One Ton	1997	Chevy/3500	Fair	Cross Staffed	160	300
Ladder 1- Reserve	EONE	2004	Typhoon/75'	Excellent	N/A	1500	500

Station 2							
Apparatus Designation	**Type**	**Year**	**Make/Model**	**Condition**	**Seating Capacity**	**Pump Capacity**	**Tank Capacity**
Engine 2	EONE	2012	Typhoon	Excellent	6	1500	1000
Brush Pumper 2	Chevy	2013	Chevy 3500	Excellent	Cross Staffed	160	250
Engine 8- Reserve	EONE	1996	Freightliner	Fair	N/A	1250	750

Station 3							
Apparatus Designation	**Type**	**Year**	**Make/Model**	**Condition**	**Seating Capacity**	**Pump Capacity**	**Tank Capacity**
Engine 3	EONE	2006	Typhoon	Good	6	1250	1000
Brush Pumper 3	Ford	2015	F350	Excellent	Cross Staffed	160	250

Station 4							
Apparatus Designation	**Type**	**Year**	**Make/Model**	**Condition**	**Seating Capacity**	**Pump Capacity**	**Tank Capacity**
Engine 4	EONE	2015	Typhoon	Excellent	5	1500	750
Brush Pumper 4	Ford	2015	F350	Excellent	Cross Staffed	160	250

Station 5							
Apparatus Designation	Type	Year	Make/Model	Condition	Seating Capacity	Pump Capacity	Tank Capacity
Engine 5	EONE	2010	Typhoon	Good	6	1250	1000
Brush Pumper 5	Chevy	2002	Chevy 3500	Good	Cross Staffed	160	300

Station 6							
Apparatus Designation	Type	Year	Make/Model	Condition	Seating Capacity	Pump Capacity	Tank Capacity
Ladder 6	EONE	2012	Typhoon/75'	Good	6	1250	500
Brush Pumper 6	Ford	2000	F350	Good	Cross Staffed	160	300
Engine 7 – Reserve	EONE	2003	Typhoon	Good	N/A	1250	1000

Discussion

ESCI observed the MWCFD's vehicles to be well maintained and in good to excellent condition generally. It appears that the maintenance performed by the City's shops is done well. The designated drivers should have training on how to do daily vehicle checks routinely including brakes. This is a safety and readiness issue for the department. Including training on proper operation of the vehicles will allow drivers to detect problems earlier and can get them repaired before they result in failure.

Apparatus Replacement Planning

Fire apparatus are typically unique pieces of equipment, often very customized to operate efficiently in a narrowly defined mission. A pumper may be designed such that the compartments fit specific equipment and tools, with virtually every space on the truck designated in advance for functionality. This same vehicle, with its specialized design, cannot be expected to function in a completely different capacity, such as a hazardous materials unit or a rescue squad. For this reason, fire apparatus is very expensive and offers little flexibility in use and reassignment. As a result, communities across the country have sought to achieve the longest life span possible for these vehicles.

Unfortunately, no mechanical piece of equipment can be expected to last forever. As a vehicle ages, repairs tend to become more frequent, parts more difficult to obtain, and downtime for repair increases. Given the emergency mission that is so critical to the community, this factor of downtime is one of the most frequently identified reasons for apparatus replacement.

Because of the large expense of fire apparatus, most communities find the need to plan for the cost of replacement. To properly do so, agencies often turn to the long-accepted practice of establishing a life cycle for the apparatus that results in a replacement date being anticipated well in advance. Forward thinking organizations then set aside incremental funds during the life of the vehicle, so replacement dollars are ready when needed.

MWCFD does not maintain a formal schedule that places all apparatus on any specified replacement cycle from date of primary service. ESCI recommends that the MWCFD make an effort to develop a vehicle replacement schedule, including a funding strategy that will fully meet future needs.

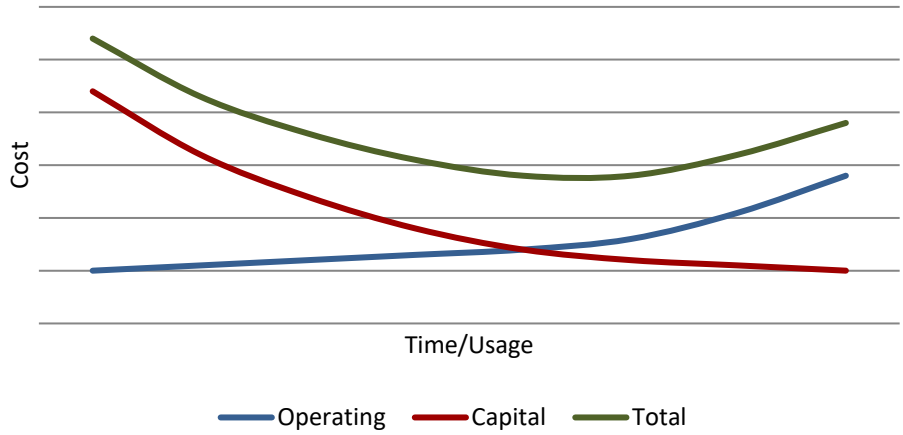
NFPA 1901: Standard for Automotive Fire Apparatus is a nationally recognized industry standard for the design, maintenance, and operation of fire suppression apparatus. The issue of replacement cycles for various types of apparatus has been discussed in the committee that develops the standard for many years. In developing its latest edition, the committee calls for a life cycle of 12 years in front-line service and five years in reserve status for engines, and 15 years in front-line service and five years in reserve status for ladder trucks.

Does this mean that a fire engine cannot be effective as a front-line pumper beyond 12 years? A visit to many departments in the United States might prove otherwise. Small, volunteer fire departments with only a hundred or so calls per year often get up to 25 years from a pumper, though the technology is admittedly not up-to-date. Likewise, busy downtown city fire stations in some urban communities move their engines out of front-line status in as little as eight years.

The reality is that it may be best to establish a life cycle that would be used in the development of replacement funding for various types of apparatus, while applying a different method for determining the replacement date in real life in an effort to achieve greater cost efficiency where possible.

A conceptual model that may be used when a replacement cycle is considered is the *Economic Theory of Vehicle Replacement*. The theory states that, *as a vehicle ages, the cost of capital diminishes and its operating cost increases*. The combination of these two costs produces a total cost curve. The model suggests the optimal time to replace any piece of apparatus is when the operating cost begins to exceed the capital costs. This optimal time may not be a fixed point but rather a range over time. The flat spot at the bottom of the total curve in the following figure represents the replacement window:

Figure 50: Economic Theory of Vehicle Replacement



Shortening the replacement cycle to this window allows for an apparatus to be replaced at optimal savings to the department. If the department does not routinely replace equipment in a timely manner, the overall reduction in replacement spending can result in a quick increase of maintenance and repair expenditures. Officials who assume that deferring replacement purchases is a good tactic for balancing the budget need to understand that two events may occur:

1. Costs are transferred from the capital budget to the operating budget.
2. Such deferral may increase overall fleet costs.

Regardless of its net effect on current apparatus costs, the deferral of replacement purchases unquestionably increases future replacement spending needs.

The following figures demonstrate the recommended replacement schedule for the MWCFD. The current replacement cost and life expectancy of that type of unit are show in the first table. From industry experts, the recommended annual inflation rate for fire apparatus is five percent. Using these figures, the MWCFD front line fleet is shown in the second table. This table calculates the replacement cost with inflation and shows the total needed amount over the total life of the fleet but also the annual contribution that should be made to the replacement fund in order to fully fund the schedule.

Figure 51: Apparatus Life Expectancies

Vehicle	Life Expectancy	Replacement Cost
Light Rescue Truck	10	$140,000
Med Rescue Truck	15	$350,000
Custom Pumper	15	$550,000
Ladder	20	$800,000
Brush Pumper	15	$80,000

The following figure displays the replacement cost of the front-line apparatus is calculated over the life of the vehicle at a three percent inflation factor. The table also contains the current cash required to fund the replacement at the end of the life expectancy. The replacement schedule indicates that a replacement fund of $4,802,454 will be needed to meet the future replacements with ideally a current fund balance of $1,556,967 and should be funded at a rate of $535,223 annually. ESCI recommends that MWCFD identify a funding mechanism to at least partially fund replacement cost with the long-term goal of fully funding the replacement of apparatus.

Figure 52: Front Line Apparatus Replacement Schedule

Unit	Year	Replacement Cost w/inflation	Annual Fund Contributions w/inflation	Current Cash Requirements	Current Age	Life Expectancy	Replacement Year
EONE Typhoon E2	2012	$761,329	$69,212	$203,021	4	15	2027
EONE Typhoon E3	2006	$637,601	$127,520	$425,067	10	15	2021
EONE Typhoon E4	2015	$831,924	$59,423	$55,462	1	15	2030
EONE Typhoon E5	2010	$717,625	$79,736	$287,050	6	15	2025
Chevy 3500 BP 1[3]	1997	$80,000	N/A	$80,000	19	15	OVERDUE
Chevy 3500 BP 2	2013	$114,061	$9,505	$22,812	3	15	2028
Ford F350 BP 3	2006	$92,742	$18,548	$61,828	10	15	2021
Ford F350 BP 4	2015	$121,007	$8,643	$8,067	1	15	2030
Chevy 3500 BP 5	2002	$82,400	$82,400	$76,907	14	15	2017
Ford F350 BP6	2000	$80,000	N/A	$80,000	16	15	OVERDUE
EONE Typhoon 75' L6	2012	$1,283,765	$80,235	$256,753	4	20	2032
TOTAL/Avg.	**2008**	**$4,802,454**	**$535,223**	**$1,556,967**	**8.0**		

[3] This Brush Pumper has already had a replacement unit ordered but not delivered. Since the replacement has already been accounted for the current cash requirement is shown as zero.

Only front-line apparatus are calculated here and not the reserve apparatus. Typically, when a unit is placed in reserve mode, it is because new piece of equipment has replaced it on front line, so reserve apparatus are not scheduled for replacement.

Recommendations:

- Provide training on vehicle operation and daily checks, including brake checks for vehicle drivers.
- Create an apparatus replacement schedule and identify funding source.

Emergency Response Type and Frequency

MWCFD responded to 6943 requests for assistance from the citizens of the city in the 2015 reporting year. As typical, the vast majority of incidents are of an emergency medical nature. The number of various types of emergency calls for 2015 are listed in the following table:

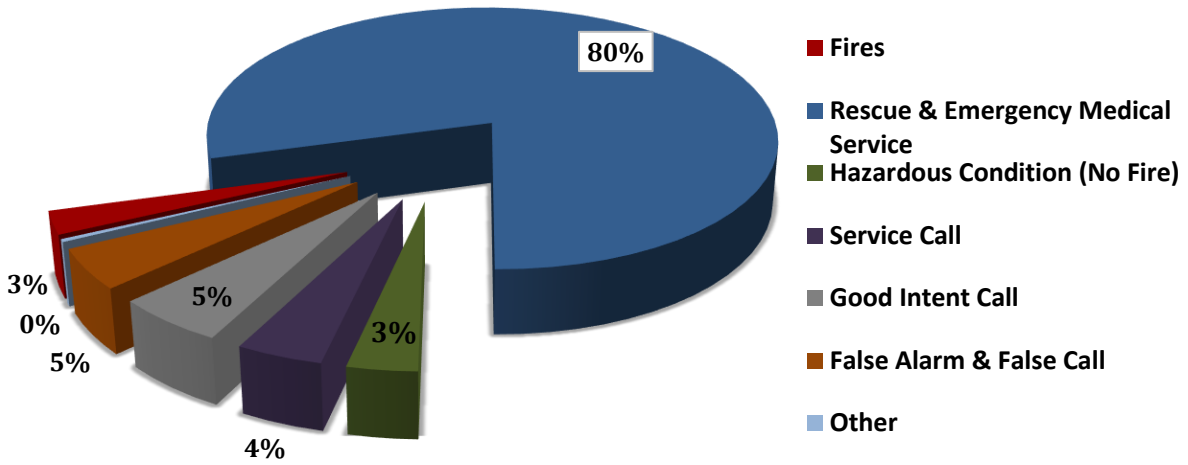
Figure 53: Survey Table—Emergency Response Type and Frequency

Survey Components	Midwest City Fire Department Observations
A. Fire	184
i) Value of property exposed to fire, 2015	$1,842,740
ii) Value of property lost to fire, 2015	$334,300
B. Rupture or Explosion	14
C. EMS/Rescue	5521
D. Number of EMS Transports	N/A
E. Hazardous Condition	232
F. Service Call	287
G. Good Intent Call	374
H. False Call	322
I. Severe Weather	1
J. Other	8
K. Total	6943

Discussion

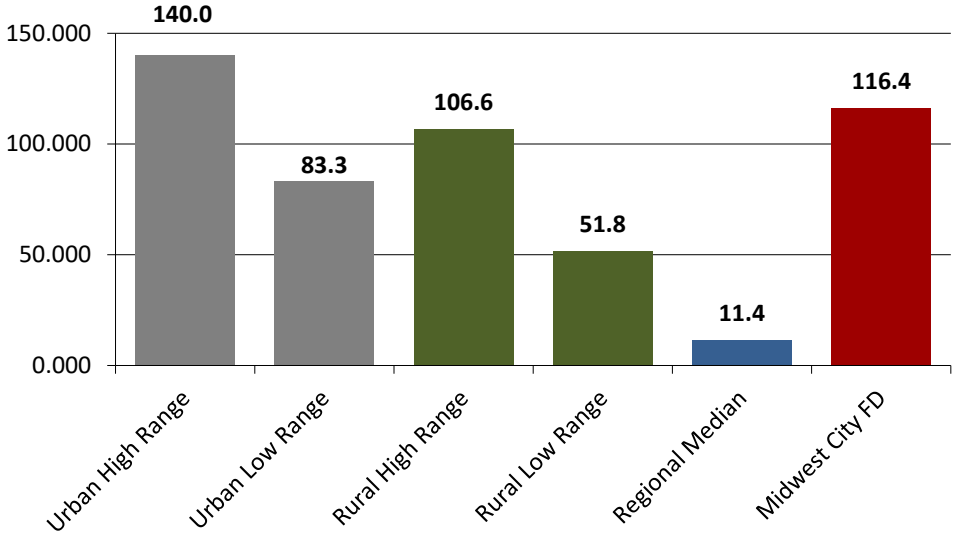
Emergency medical calls amounted to 80 percent of the activity of the fire department in 2015. It is not unusual for a fire department to respond to a high percentage of EMS calls compared to the total calls. Service calls constitute four percent of all calls, and good intent and false calls are five percent each.

Figure 54: 2015 Incidents of the Midwest City Fire Department



In the following figure, the total number of incidents is compared to other urban fire departments around the country in the midrange:

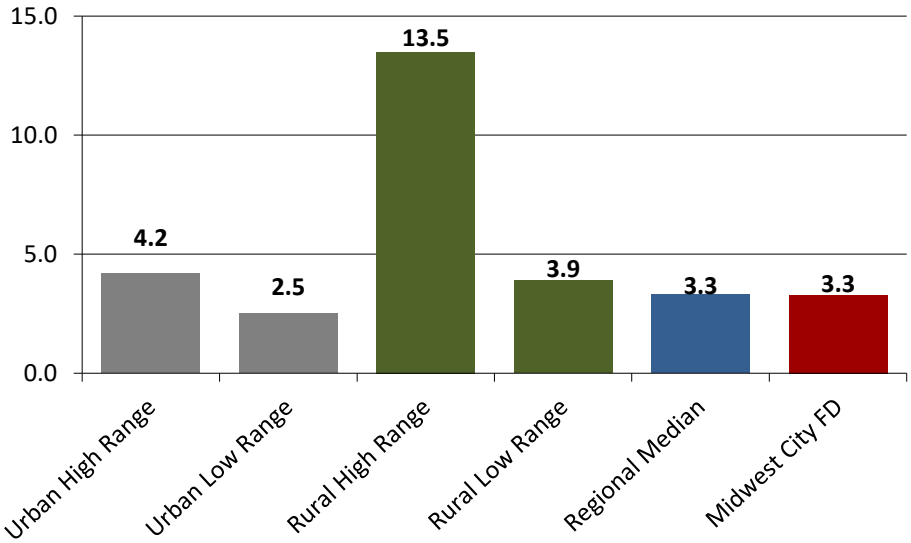
Figure 55: Incidents Per 1000 Population Comparison Based on MWCFD 2015 Data



This chart reflects NFPA's data collection from fire departments throughout the nation. MWCFD is comparable to other urban areas. The regional number of incidents per 1000 population is only 11.4. This number is for departments in the southern region of the country, and this may be distorted by lack of EMS reported in some comparable sized jurisdictions.

Contrasting the number of fire incidents to national and regional comparable sized departments is shown in the following figure:

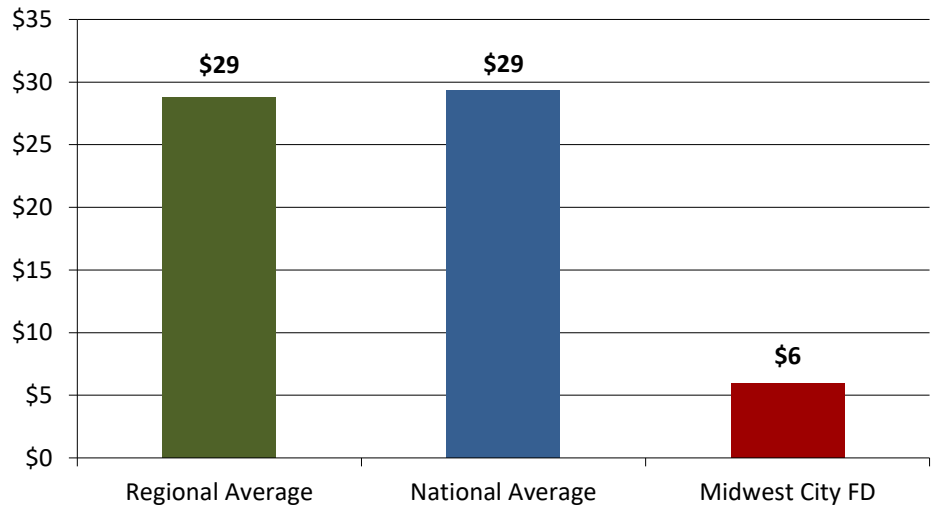
Figure 56: Fires per 1000 Population Comparison Based on MWCFD 2015 Data



MWCFD fires per 1000 population is the same as regional experience at 3.3 fires per 1000 population. It is also within the range of fires for other urban departments.

The next figure shows fire loss per capita compared with other national and region departments:

Figure 57: Fire Loss Comparison Based on MWCFD 2015 Experience



MWCFD's fire loss is quite low compared to both regional and national medians. The loss is only about 20 percent of other comparable departments. This indicates that MWCFD is able to keep fires small with the resultant fire loss low.

MANAGEMENT COMPONENTS

Effective fire department management is a common challenge for fire service leaders. Today's fire department must address management complexities that include an effective organizational structure, a qualified work force, maintenance of personnel competencies, adequacy of emergency response, and financial sustainability for the future.

To be effective, the management of a fire department needs to be based on a number of components. One of the management tools is the creation of a master plan. This plan is a roadmap for the future. It helps to decide where the department desires to be in the long term. It is a strategic view that must be accepted and approved by the City management and elected officials. This is accomplished by this report. This study gives the City information and options that can be used to decide the direction that the fire department should take for the future.

Another management tool of importance is the strategic plan. While similar to the master plan, a strategic plan is a three-to-five year view of how to meet the master plan initiatives. A strategic plan is built on three foundational elements: the mission statement, the vision statement, and the values statement. The strategic plan mobilizes the master plan direction. Following the creation of a master plan, the department should begin on creating its strategic plan.

Foundational Management Elements

The development of baseline management components in an organization enables it to move forward in an organized and effective manner. In the absence of foundational management elements, the organization will tend to operate in a random and generally ineffective manner. The following table reviews MWCFD's baseline management components:

Figure 58: Survey Table—Foundational Elements

Survey Components	Midwest City Fire Department Observations	Comments and Recommendations
Mission, Vision, Strategic Planning, Goals and Objectives		
A. Mission Statement Adopted	Yes	
i) Displayed	No	Display mission widely throughout the department.
ii) Periodic review	No	Periodically review the mission statement for updates.
B. Vision Established and Communicated	No	Create a vision statement for the department.
C. Values of Staff Established	No	Create a values statement for the department.
D. Strategic or Master Plan	No	Master plan is recommended and study is currently in process. Create a strategic plan following the master plan.
i) Adopted by elected officials	Master plan is anticipated to be adopted by council	
ii) Published and available	Will be when completed	

Survey Components	Midwest City Fire Department Observations	Comments and Recommendations
iii) Periodic review	N/A	Review master plan every ten years or as significant change occurs.
E. Agency Goals and Objectives Established	No	Establish goals and objectives as a part of the strategic plan.
i) Date developed	N/A	
ii) Periodic review	N/A	
iii) Tied to division/personnel performance statements/plans	N/A	
iv) Objectives linked to programs	N/A	
v) Performance objectives established	N/A	
F. Code of Ethics Established	No	After values statement is created suggest codifying in a code of ethics.

Discussion

The strategic plan serves to align effort and inform all members of the following:

- The purpose of the organization (*mission*)
- Where the organization is going (*vision*)
- How the members will treat each other and their customers (*values or guiding principles*)
- How the organization will achieve the desired future state (*goals and objectives*)
- Each person's role in accomplishing that future state (*work assignments*)
- The *timelines* and *priorities* for each component of the effort

The mission statement tells what the department does and, to a certain extent, how that will be done. Midwest City Fire Department has completed a mission statement which says:

> *The Midwest City Fire Department is charged with the responsibility of reducing risks to lives, property, and the environment from man-made and natural disasters, to the lowest extent possible through the effective use of all resources made available.*

The mission statement is the anchor that keeps a department from drifting, and it tells why the department exists. The mission is stated broadly "reducing the risks to lives, property, and environment." This allows the agency to change as methods and technologies improve but is still targeted for lives, property, and environment. It allows for the reduction of risk through prevention activities as well as emergency mitigation. This statement also addresses how it will be done, i.e. "through the effective use of all resources made available." This puts constraints, so there are limits for spending on this mission. Sometimes, it is important for the organization to reference other things in the mission statement, such as safety.

This mission statement tells both internal personnel and citizens what the fire department does and desires to accomplish. It is published on the website, but it should also be published on Facebook as well as being posted in the stations. It can be printed on the reverse of fire department employee's business cards as well.

MWCFD does not have a vision or values statement. While on the surface it may seem unimportant to create these, both documents are helpful to point the organization in a common direction and specify what the expectations are for all personnel.

The vision statement articulates the direction the fire department is going. It reflects long-term ambitions of the department. The values statement enumerates those the common standards and principals held by nearly, if not all, of the members. This is best created by a group, represented by a cross section of the department. The values statement should direct discipline within the organization. When a member violates the values, that person can be held accountable for their actions. This can be the framework of a code of conduct.

A strategic plan guides and focuses all members of MWCFD on the priorities of the entire organization, ensuring every member is pulling in the same direction. City council adopting the strategic plan ensures alignment from the very top of the organization to the newest firefighter. The annual action plan with work assignments and the annual budget should support the goals and objectives. ESCI can assist with the strategic planning process, as needed, but the strategic plan is outside the scope of the study at hand.

Recommendations:

- Review mission statement for updates.
- Create a vision statement for the department.
- Create a value statement for the department.
- Display mission, vision, and values statement throughout the department.
- Review the master plan every ten years or as significant change occurs.
- Create a strategic plan after the master plan.
- Establish goals and objectives as a part of the strategic plan.
- Create a code of ethics for the department, after developing the values statement.

Management Documents and Processes

Similarly, an organization should establish appropriate documentation, policies, procedures, and identification of internal and external issues that affect the agency. Processes must also be established to address the flow of information and communication within the fire departments as well as with its constituents.

Figure 59: Survey Table—Foundational Documents and Processes

Survey Components	Midwest City Fire Department Observations	Comments and Recommendations
Availability of SOPs, Rules and Regulations, Policies		
A. Copies of Rules Provided	In each station	
i) Last date reviewed	Under review currently	
B. Copies of SOGs or Guidelines Available	Yes	
i) Regular update	No	Determine a procedure of periodic review and update to SOGs and Policies and Procedures.
ii) Process for development of new SOGs	Process for updating being developed previously was issued as a general order rather than SOG/Policy change.	Train periodically on SOGs and Policies and Procedures.
iii) SOGs used in training evolutions	No	
C. Policy Manual Available	Yes	
i) Reviewed for consistency	Yes	
ii) Reviewed for legal mandates	Will have it reviewed	
iii) Training on policies provided	No	Train periodically on SOGs and Policies and Procedures.
Critical Issues		
A. Critical Issues Are Identified	No formal process to determine critical needs of the department.	Adoption and utilization of a participation and decision-making process with labor will enhance decision-making and relationships within the organizations.
i) Internal evaluation of critical issues	No	
Challenges of the Future		
A. Challenges Are Identified	Challenges are known by each set of stakeholders but no process to identify or prioritize them as a group.	Establish a process to determine critical issues within the fire department and propose solutions.

Survey Components	Midwest City Fire Department Observations	Comments and Recommendations
Internal and External Communications		
A. Internal Communications		Use multiple methods when communicating with department personnel.
i) Regularly scheduled staff meetings (fire department)	Quarterly	
ii) Written staff meeting minutes	Yes	
iii) Memos	Yes	
iv) Member newsletter	No	
v) Member forums	No	
vi) Open door policy	Yes	
vii) Bulletin board	Yes	
viii) Vertical communication path clearly identified	Yes	
ix) E-mail	Yes, only to station and officers	
x) Employee mail boxes	Yes	
xi) Voice mail	Only administrative staff and stations	
xii) issues taskforce	No	
B. External Communications		
i) Community newsletter	City publishes one	
ii) Website	Yes	
iii) Advisory committee(s)	No	Establish an advisory panel from the community.
iv) Complaint process	No	
v) Social media (Facebook/twitter)	Facebook	
vi) Community survey	Yes	
vii) Local community planning organizations	Yes	
viii) Focus groups	No	

Discussion

MWCFD is in the process of revising the standard operating guidelines (SOGs). In the past, a general order was issued to make a new policy or change an existing one. ESCI recommends that the SOG process incorporate all general orders that are currently utilized into standard operating guidelines. The SOGs should be ordered in a way that they can be easily referenced for review. Further, it is recommended that there be a process of periodic review and changes. A good way to assure this review is to have a committee of fire department members review one third of the guidelines each year recommending changes. There should also be a process to trigger changes of a guideline that has be modified due to a new method or a technology change.

MWCFD, by necessity and its mission, must function in a paramilitary manner. Consistent service delivery is dependent on standardized rules, regulations, and policies that guide appropriate behavior and accountability. Personnel should be expected to read and know these, but more effective is to incorporate the SOGs and Policies and Procedures into periodic training. This will assure that everyone understands and the entire department functions in a uniform way. Without understanding of standardized policies, the department will operate in different ways, depending on the understanding and desire of each shift commander, or worse, every company office decides how to operate. When there are different ways of operating, it becomes a safety issue, particularly when an individual works overtime on a different shift. These guiding documents are vital for success and meeting the expectations of the citizens served by the MWCFD. ESCI recommends that MWCFD initiate training on both SOGs and Policies and Procedures.

Critical Issues

There is no formalized process to identify critical issues within the fire department. ESCI recommends that the department set up a process to periodically identify critical issues. In addition to identifying problems there must be proposed solutions, as well as implemented and monitored results so that the critical issues are resolved. The process of identifying and finding solutions should be a participative process between fire management and labor. This results in solutions that everyone can support. It also builds relationships between management and labor and makes solving problems easier over time.

Midwest City has a long and distinguished history of providing high quality fire and EMS services. This has been established over a long period in which important and high profile decision and policy determinations were conducted in a collaborative and transparent process. The current MWCFD Leadership team and the Midwest firefighters IAFF Local 2066 have both been long time contributors to the success of the MWCFD. Both are committed to ensuring the highest level of service and professionalism to the citizens of Midwest City.

Recently, there has been increasing concern and mistrust from the labor group over the policy and decision making process by the fire administration. The fire administration is also concerned that the local's activities will impact the administration of the fire department. During this study, it has become apparent to ESCI that the fire administration and Local 2066 are open to a Labor Management Collaboration Initiative (LMCI). Both are open to a system that will help improve their relationship and align expectations and standards relating to policy development and day to day decision making.

To accomplish this goal, ESCI recommends the implementation of a LMCI to assist with the decision-making process. This recommended approach is based on the best practice elements of many labor management collaborative processes nationwide. This framework is intended to be a starting point for the MWCFD to develop and implement a process that will work best for the department and community served.

The goal of the LMCI is to establish a positive working relationship built upon trust and mutual respect among all members of the MWCFD. The process creates a systematic approach to institute new Official Action Guides (OAG) and policies. It is also an avenue for members to provide input on new ideas, and implement new and/or modified programs, projects, and services. In addition, it provides a clear method to implement the tasks of the master plan.

The process does not take the place of the negotiating (collective bargaining) process between the City and the Union, and does not remove responsibility for policy approval and implementation from the fire chief and administration. It is not intended to circumvent the fire administration's discretion to conduct business and make decisions. Specifics on this process will be discussed in the recommendations section of this report.

Internal and External Communications

There are multiple channels for internal communications within the department: written memos, open door policy for the fire chief, and bulletin boards. MWCFD staff meetings are quarterly; and, if that appears sufficient, it is not recommended to increase the frequency of meetings just to meet. However, if there is department business that is being delayed until the next meeting, or decisions are being made without vetting by the entire management staff, then ESCI recommends additional meetings be added.

Staff meetings are critical for dissemination of information throughout the entire department, especially when there is not direct email to individual firefighters. It is important that each shift commander carry the same message to his shift officers. Additional communications during times of change is extremely important. Change brings about unrest that is best settled by clear and direct communications from the fire chief, not only through his officers but directly to the troops. That is why ESCI recommends that, if possible, multiple methods of communications be utilized. Different firefighters receive messages more readily in different ways (i.e. face to face, emails, videos, blogs, etc.). Sometimes utilizing a video or calling the “all hands” meetings are the best ways to reach everyone. Having all members hear information for themselves decreases the amount of rumors that can be generated.

In the same way, external communications are best handled by multiple avenues. The citizens of Midwest City will gravitate to the type of media that they like. Typically, this stratifies along age groups but not necessarily. MWCFD currently uses a community newsletter, website, and Facebook, as well as attending local civic organization meetings. This is representative of a well-balanced and effective approach to communicating with the citizens if these are utilized often. The website needs to be vibrant with information that the citizens and businesses can use. This where they will go to get their questions answered. MWCFD does use this to answer code process questions, which is a great benefit for those doing business with the Fire Prevention Bureau. The website could be expanded to provide more questions and answers. Facebook is a great place to share human interest stories that demonstrate what the fire department does. It allows for the community to comment as well. It is also an excellent tool to field questions from the community.

With the controversy regarding staffing units and stations, it is a good time to invite a cross-section of the community to be a part of an advisory or blue ribbon panel. Invite them to participate in strategy sessions, setting the master plan direction with members of the fire department and city government. This group can advocate for the department throughout the city as they will have a much better understanding of the department. The panel can offer a citizen's perspective and ask questions about the process as well. Transparency is key for strong citizen support. The persons chosen for the panel should be agreed to by council, City and fire department management, and the firefighters' union representatives.

Record Keeping and Documentation

In any organization, documentation of activities is of paramount concern. The following table reviews the practices that are in place in MWCFD:

Figure 60: Survey Table—Record Keeping and Documentation

Survey Components	Midwest City Fire Department Observations	Comments and Recommendations
Document Control		
A. Process for Public Access Established	City open records process	
B. Hard Copy Files Protected	Yes	
C. Computer Files Backed Up	Cloud based back-up	
Security		
A. Building Security	Key locked; Combination key box	
B. Office Security	Locked up offices and cabinets	
C. Computer Security	Barracuda fire wall	
D. Vehicle Security	No	
E. Capital Inventory Maintained	For some items	
i) Asset security system used	Yes	
ii) Inventory interval	Not designated	
F. Monetary Controls Used	Yes	
i) Cash access controls	Not used	
ii) Credit card controls	Fire chief and shift commanders	
iii) Purchasing controls	Log and receipts	
Reporting and Records		
A. Records Kept by Computer	ERS Emergency Reporting Systems	
i) Type of platform	PC/iPads	
ii) Operating system	Windows and IOS	
B. Periodic Report to Elected Officials		
i) Financial report	Finance department reports	
ii) Management report	None from fire	
iii) Operational report	As needed and at end of year	
iv) Distributed to others	No	

Survey Components	Midwest City Fire Department Observations	Comments and Recommendations
C. Annual Report Produced	Yes, letter to city manager	
i) Distributed to others	No	
ii) Analysis of data provided	Report to NFIRS and NFPA Experience	
D. Required Records Maintained	Yes	
i) Incident reports	Yes	
ii) Patient care reports	Not required	
iii) Exposure records	Yes	
iv) SCBA testing	Yes, in house	
v) Hose	Yes, in house	
vi) Ladder	Yes, both ground ladders and aerials	
vii) Pump	Yes, in house and fleet	
viii) Breathing air	Yes	
Information Technology		
A. Computer Platform	Desktops Windows 7 and Notebooks Apple OSX	
B. Maintenance/IT Support Provided by	City IT	
C. Computer Security	City IT	

Discussion

The documentation and security processes are well established, and there are only a couple of comments regarding this area. All the required reports are maintained. Inventory of capital assets on a regular basis is recommended and should be set up in conjunction with the financial officer and the city manager's office. ESCI noted that the annual reporting was through an internal memo to the city manager. The contents of this letter effectively described the activities of the department and reiterated what actions were taken in regards to staffing and deployment changes. ESCI recommends that the fire chief also report compliance with established performance standards. These standards should be locally determined or, if not determined locally, correspond to nationally accepted standards. The fire chief is compelled to report under city ordinance. City Ordinance 15-4 states that, "A report of the fire department's activities shall be made annually and transmitted to the city manager, with such statistics as the fire chief may wish to include. The fire chief shall also recommend any amendments to this Code which, in his judgment, are desirable." In NFPA 1710 it specifically requires the fire department to provide the AHJ (authority having jurisdiction) with a written report annually. It states the contents of the periodic evaluations in section 4.1.2.5.2:

> *The evaluation shall be based on emergency incident data relating to level of service, deployment, and the achievement of each time objective in each geographical area within the jurisdiction of the fire department.*

The specific time objectives required by the standard are alarm handling time, turnout time, and travel times measured to the specified percentage.[4] There will be more on this later in this report.

Recommendations:

- Train periodically on SOGs and Policies and Procedures.
- Determine a procedure of periodic review and update to SOGs and Policies and Procedures.
- Increase staff meetings if needed to speed decision making and communications.
- Establish a process to determine critical issues within the fire department and propose solutions.
- Use multiple methods of communications when communicating with department personnel.
- Consider establishing an advisory panel from the community.
- Report compliance with established performance standards in annual report.

[4] *NFPA 1710 Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Departments*. 2016 Edition. Article 4.1.2.5 Evaluations.

STAFFING AND PERSONNEL MANAGEMENT

An organization's greatest asset is its people. It is important that special attention be paid to managing human resources in a manner that achieves maximum productivity while ensuring a high level of job satisfaction for the individual. Consistent management practices combined with a safe working environment, equitable treatment, opportunity for input and recognition of the work force's commitment, and sacrifice are key components impacting job satisfaction.

The size and structure of an organization's staffing is dependent upon the specific needs of the organization. These needs must directly correlate to the needs of the community and a structure that works for one entity may not necessarily work for another agency. This section provides an overview of the MWCFD's staffing configuration and management practices.

Fire department staffing can be divided into two distinctly different groups. The first group is what the citizens typically recognize and is commonly known as the operations unit, which can be generally classified as the emergency response personnel. The second group typically works behind the scenes to provide the support needed by the operation's personnel to deliver effective emergency response and is commonly known as the administrative section.

Administrative and Support Staffing

One of the primary responsibilities of a fire department's administration is to ensure that the operational segment of the organization has the ability to respond to and mitigate emergencies in a safe, efficient, and effective manner. An effective administration and support services system is critical to the success of a fire agency.

Like any other part of a municipal fire department, administration and support need appropriate resources to function properly. By analyzing the administrative and support positions within an organization, it is possible to create a common understanding of the relative resources committed to this function compared to industry best practices and similar organizations. The appropriate balance of administration and support, compared to operational resources and service levels, is critical to the success of the department in accomplishing its mission and responsibilities.

Typical responsibilities of the administration and support staff include planning, organizing, directing, coordinating, and evaluating the various programs within the department. This list of functions is not exhaustive, and other functions may be added. It is also important to understand these functions do not occur in a linear fashion and can more often occur concurrently. This requires the fire chief and administrative support staff to focus on many different areas at the same time.

The following table reviews the administration and support organizational structure of the Midwest City Fire Department.

Figure 61: Survey Table—Administrative and Support Staffing

Survey Components	Midwest City Fire Department Observations	Comments and Recommendations
Administration and Other Support Staff		
A. Fire Chief	1	Consider the addition of analyst function to the department to support planning activities.
B. Deputy Chief	Currently none	Consider the creation of a deputy chief position to serve as number two administrator.
C. Administration Major	1	Evaluate the current roles and responsibilities of this position.
D. Training Chief	1	
E. Fire Marshal	1	
F. FPE	(1)	In process of filling.
G. Fire Inspectors	2	Cross train fire inspectors to perform plan review functions to ensure no gaps in service occur when fire protection engineer position is vacant.
H. Administrative Secretary	1	
I. Public Educator (Vacant)	(1)	Identify external training sources to ensure the individual performing these duties is trained to NFPA 1031 standards.
J. Radio Technician	.27	
K. Total Administrative and Support Staff	9.27	
L. Percent Administrative and Support to Total	11%	

ESCI notes that currently the level of administrative and support staffing represents 10.9 percent of MWCFD total staffing. It is our experience that typically effective administrative staffing totals range from 12 percent to 15 percent of agency totals. After reviewing the functions and responsibilities assigned to the work group, ESCI concludes that the number of FTEs (Full Time Employees) assigned is below what is needed to appropriately accomplish the responsibilities of this division. The incorrect staffing of the administrative and support functions creates a situation in which important organizational activities, at best, are delayed; but, in worst case scenarios, get completely missed.

Administration

The administrative function within the department is currently established with the position of fire chief and administrative major. Some of the typical responsibilities of the fire chief include planning, organizing, directing, and budgeting for all aspects of the department's operations. The current number of positions assigned to this activity are marginally sufficient to meet these expectations. In review of MWCFD job descriptions, it is clear the administrative major functions at a level typically filled by a deputy chief in most fire departments in the United States. It is recommended that MWCFD evaluate the effectiveness of this position operating at this level. An alternative for MWCFD would be to establish the rank of deputy chief and conduct an open competitive search to fill this position.

Fire Prevention

The fire prevention bureau for MWCFD is staffed with three (3) of the five (5) authorized individuals. This includes one (1) fire marshal, one (1) fire protection engineer, two (2) fire inspectors, and one (1) public education specialist. At the time of this report, MWCFD had one (1) vacancy at the position of fire protection engineer and one (1) public education specialist. The fire protection engineer vacancy had been vacant for more than six (6) month. The fire protection engineer is responsible for conducting the plans review process for all new construction within the community. It is recommended that MWCFD cross-train fire inspectors to conduct plans review activities in support of the fire protection engineer.

In addition to the extended vacancy of the fire protection engineer position, MWCFD's fire marshal has been recently promoted and had limited experience in the plans review process. It is noted that this individual has done well to get a better understanding of the plans review process and increased his skills sets quickly.

The second vacancy of the public education specialist position has also caused negative impacts as other members of the department "step in" to complete the necessary tasks. Further impacting this position is the reality that hiring individuals with experience and training in conducting fire prevention programs is difficult.

The current organizational structure of the MWCFD Fire Prevention Bureau is similar to other fire prevention bureaus across the United States. The operating structure of the bureau is important, but further consideration must be given to specific duties of each position and the establishment of clear performance measures that enable the bureau to achieve its mission.

Training

Historically, training was done by three on shift majors. This arrangement was recently changed through the addition of a training chief to serve as the single point of responsibility for conducting all needs assessments relative to training, as well as program design, coordination, and evaluation. The value in this arrangement is that the training of all personnel is delivered in a consistent manner. The justification for this change came from the belief that each shift training major focused their respective shift's training efforts around their respective areas of interest. Essentially this resulted in the training of MWCFD personnel being conducted in a decentralized manner with three different approaches. This utilization of a single training officer is common among departments across the United States. A typical challenge with this type of system design is that each company officer is the individual responsible for the actual delivery of the training, and officers not having a passion for training tend to avoid the delivery of training. MWCFD will need to develop and implement accountability mechanisms to ensure necessary training is accomplished.

While the design and staffing of a fire department is dependent upon the specific needs of the community, the reality is that a majority of the needed training is common among all fire departments. In addition to maximizing resources through sharing training resources and opportunities, fire departments that train together tend to work better together during mutual aid incidents. This also lends itself to making the firefighters more well-rounded, as they are exposed to other lines of thinking. Finally, a regionalized, collaborative approach to training delivery, in addition to the benefits noted, can substantially reduce costs and increase efficiency of educational efforts. MWCFD conducts a variety of training activities with mutual aid partners. It is recommended that MWCFD further develop training efforts with its regional partners.

Emergency Management

The emergency management function for Midwest City is accomplished using an individual outside of MWCFD. This individual is the retired fire chief for MWCFD and oversees the emergency operations 911 center (EOC) in addition to the duties of emergency manager. The EOC is responsible for receiving 911 calls and dispatching emergency medical service, police, and fire units. This individual is responsible for interacting with the state of Oklahoma for all emergency management activities. As the result of being a "one-person" activity, the current emergency manager relies upon the fire chief to serve as a backup in the event of his being unavailable. The current fire chief holds a degree in Emergency Management and is well-trained. The City should evaluate the effectiveness of moving this position into the fire department when the ultimate retirement/departure of the current emergency manager occurs. The roles and responsibilities of the emergency manager are closely aligned with the activities of the fire department. Placement of this position within the fire department allows for a high level of coordination to exist as the City conducts planning, response, recovery, and mitigation activities for the city.

Administrative Support

MWCFD currently employs one full time employee (FTE) in an administrative support role. Recognizing that the provision of emergency services has become heavily driven by the usage of statistical data, it is important to understand that the effective analysis of data is a unique skill set and requires an individual with necessary training to complete. ESCI recommends that MWCFD add an "analyst" position or have one assigned by the City to assist with financial oversight, data collection and analysis, and project management. ESCI sees this as a critical function in order for MWCFD to strengthen decision-making and policy development through data-driven information.

Recommendations

- Consider the addition of analyst function to the department to support planning activities.
- Consider the creation of a deputy chief position to serve as number two management position.
- Evaluate the current roles and responsibilities of the administrative major position.
- Cross train fire inspectors to perform plan review functions to ensure no gaps in service occur when fire protection engineer position is vacant.
- Establish formal training program to ensure the individual performing public educator is trained to NFPA 1031 standards.
- Further develop training opportunities with mutual aid partners.

Emergency Services Staff

The following table lists MWCFD emergency response staffing configuration:

Figure 62: Survey Table—Emergency Response Staffing

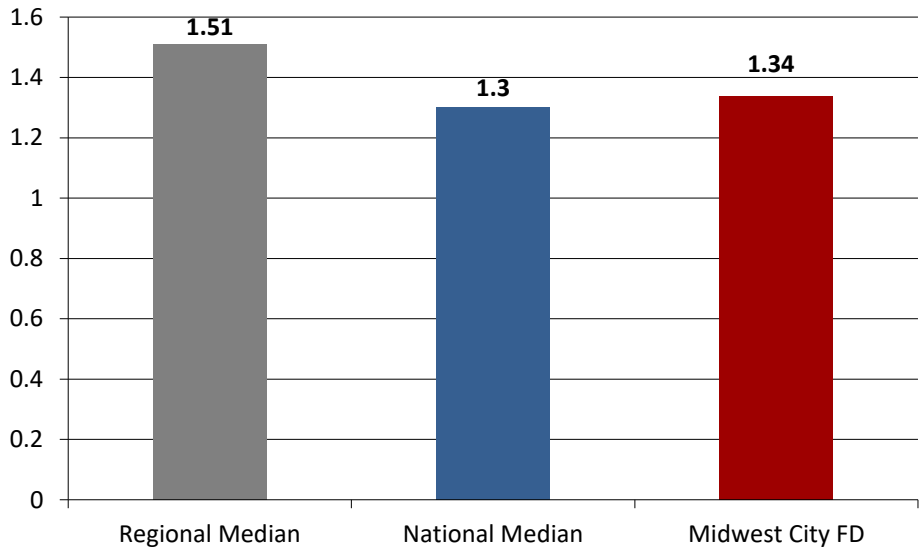
Survey Components	Midwest City Fire Department Observations	Comments and Recommendations
Emergency Service Staff—Fire		
A. Assistant Chief	3	
B. Captain	18	
C. Apparatus Operators	18	
D. Firefighters	36	
E. Total Operational Staff	75	
F. Fire Department Total	83	
G. Percent of Operational Officers to Firefighters	28.4%	
Use of Career and Volunteer Personnel		
A. Career Scheduling Methodology		
i) Length of normal duty period	27 days; 216 hrs.	
ii) FLSA period	12 hrs.	
iii) Residency requirements	No	
B. Operational career services		
i) Fire suppression	Yes	
ii) EMS/rescue, first response	All firefighters hold a minimum certification of Emergency Medical Technician	
iii) EMS, advanced life support	No	Provided by ambulance service
iv) Specialized rescue	Trench, Ropes, and Technical Rescue lite	
v) Fire prevention inspections	Yes	
vi) Emergency management	City department	
vii) Public education	Yes	
viii) Hazardous materials response (level)	Type 1 Team with Technician and Specialists	
C. Volunteer Services		
i) Chaplain	Yes	
ii) Civilian administrative volunteer	No	
Responsibilities and Activity Levels of Personnel		
A. Assignment of Routine Duties:		
i) By position	By Shift	
ii) By areas of personal interest	By interest first and then by assignment	
B. Special Duties Assigned by:		
ii) Duty assignment	Station assignment for SCBA	

Survey Components	Midwest City Fire Department Observations	Comments and Recommendations
C. Work Groups/Committees		
i) EMS quality management	Yes	
ii) Chaplain	Volunteer chaplain	
iii) Training	No	Establish training committee.
iv) Safety	Yes	
v) Building development	As needed	
vi) Standards/SOGS	The policies are in electronic format and in process of updating.	Establish SOG review committee to provide member input.

Discussion

A means of comparison, also used on a national basis, is that of measuring the number of firefighters on staff per 1,000 population of the service area. The following figure illustrates the current comparison of MWCFD staffing with both national and regional norms:

Figure 63: Firefighters per 1000 Population



The 2014 National Fire Experience Survey indicates the median rate of career firefighters per 1,000 population is 1.3; and, regionally, the number of firefighters per 1,000 population is 1.51. Within Midwest City, the rate of firefighters per 1,000 citizens is 1.34. This comparison, in and of itself, does not indicate a necessary change in staffing, but it does serve as a point of reference for analysis of current operational MWCFD shift operations are accomplished using a three-platoon system working 24 hours per shift. Each shift is led by an assistant chief (three total) that serves as the senior officer on the shift. This individual is responsible for all aspects of the shift operations and serves as the fire chief's representative at significant incidents. Each fire station is led by a company officer (18 total). MWCFD utilizes the rank of apparatus operator (18 total) who serves as the individual responsible for all aspects of maintaining and operating fire engines and aerial units. Each station is staffed with twelve (12) firefighters (36 total) to bring the total shift operations staffing to 75 persons. The current officer to firefighter ratio within MWCFD is at 28 percent. ESCI sees this ratio in the range of 25 to 33 percent.

Emergency Response Staffing

It takes an adequate and properly trained staff of emergency responders to put the appropriate emergency apparatus and equipment to its best use in mitigating incidents. Insufficient staffing at an operational scene decreases the effectiveness of the response and increases the risk of injury to all individuals involved.

Tasks that must be performed at a fire can be broken down into two key components: life safety and fire flow. Life safety tasks are based on the number of building occupants and their location, status, and ability to take self-preservation action. Life safety related tasks involve search, rescue, and evacuation of victims. The fire flow component involves delivering sufficient water to extinguish the fire and create an environment within the building that allows entry by firefighters.

The number and types of tasks needing simultaneous action will dictate the minimum number of firefighters required to combat different types of fires. In the absence of adequate personnel to perform concurrent action, the command officer must prioritize the tasks and complete some in chronological order, rather than concurrently. These tasks include:

- **Command**
- **Scene safety**
- **Search and rescue**
- **Fire attack**
- **Water supply**
- **Pump operation**
- **Ventilation**
- **Back-up/rapid intervention**

The first 15 minutes is the most crucial period in the suppression of a fire. The timing of this 15-minute period doesn't start when the firefighters arrive at the scene but begins when the fire initially starts. How effectively and efficiently firefighters perform during this period has a significant impact on the overall outcome of the event. This general concept is applicable to fire, rescue, and medical situations. Critical tasks must be conducted in a timely manner to control a fire or to treat a patient. The MWCFD is responsible for assuring that responding companies can perform all of the described tasks in a prompt, efficient, and safe manner.

Considerable ongoing local, regional, and national discussion and debate draws a strong focus and attention to the matter of firefighter staffing. Frequently, this discussion is set in the context of firefighter safety. NFPA 1710 specifies the number of firefighters assigned to a particular response apparatus, often characterized as a "minimum of four personnel per engine company." ESCI notes that the more critical issue is the number of firefighters that are assembled at the scene of an incident in conjunction with the scope and magnitude of the job tasks expected of them, regardless of the type or number of vehicles upon which they arrive. Setting the staffing levels is a determination that is made at the community level, based on risk, capability, and citizen expectations. There is not a mandated requirement that fits all situations, although NFPA 1710 has objectives to meet regarding the number required for some typical scenarios. Additionally, there is a process for MWCFD to conduct its own critical staffing analysis later in this report.

Some terms are used nearly interchangeably, such as the assembly of firefighters on an incident may be called the "Initial Full Alarm Assignment" or also called an "Effective Firefighting Force" or "Effective Response Force" (ERF). ESCI will attempt to describe the NFPA 1710 levels for this effective response force for three different scenarios:[5]

Figure 64: Initial Full Alarm Assignment for Residential Structure Fire

Initial Full Alarm Assignment—2000 SF Residential Structure Fire	
Incident Commander	1
Water Supply Operator	1
2 Application Hose Lines	4
1 Support Member per Line	2
Victim Search and Rescue Team	2
Ground Ladder Deployment	2
Aerial Device Operator	1
Incident Rapid Intervention Crew (2FF)	2
Total	**15**

This is a single family residential structure of 2000 square feet, two-story without basement, and no exposures. MWCFD has opted to increase the minimum levels of staffing for this level of fire risk to 17 firefighters to have two additional for ventilation and to reinforce other functions as needed.

The following figure describes an initial full alarm assignment for an open-air strip type shopping center:

Figure 65: Initial Full Alarm Assignment for Strip Shopping Center

Initial Full Alarm Assignment Open Air Strip Shopping Center (13,000SF to 196,000SF)	
Incident Commander	1
Water Supply Operators	2
3 Application Hose Lines	6
1 Support Member per Line	3
Victim Search and Rescue Team	4
Ground Ladder Deployment	4
Aerial Device Operator	1
Rapid Intervention Crew (4FF)	4
EMS Care	2
Total	**27**

[5] *NFPA 1710, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments* (National Fire Protection Association 2016 ed.) Article 5.2.4 Deployment.

The following is an initial full alarm assignment for a three-story apartment building with a single 1200 square foot apartment on fire:

Figure 66: Initial Full Alarm Assignment in a Three-Story Apartment Building

Initial Full Alarm Assignment 1200 SF Apartment (3 story garden apartment)	
Incident Commander	2
Water Supply Operators	2
3 Application Hose Lines	6
1 Support Member per Line	3
Victim Search and Rescue Team	4
Ground Ladder Deployment	4
Aerial Device Operator	1
Rapid Intervention Crew (4FF)	4
EMS Care (1 crew)	2
Total	**28**

These are generalizations that are representative of different types of structures and risks. Each department may handle these types of fires with fewer or more personnel, however, this describes the work functions that must take place for handling of a fire.

When a fire escalates beyond what can be handled by the initial assignment, or the fire has unusual characteristics such as a wind-driven fire, or has been accelerated with a highly flammable compound, additional personnel will be needed. There are also types of scenarios that may not be fires, but mass casualty incidents, explosions, tornadoes, etc. that may need additional staffing. It is difficult or impossible to staff for these worse case incidents. These require a strong mutual aid or automatic aid plan for assistance.

The on-duty staffing meets the need for a routine house fire but may not be sufficient for a strip shopping mall or an apartment building, unless there is fire protection built-in to these structures. The current staffing for MWCFD if all personnel are on-duty is three personnel short of what is recommended in NFPA 1710 for the initial full alarm assignment for an open-air strip shopping center (13000 ft^2 to 196,000 ft^2). This is a type of fire that is likely within the jurisdiction and represents a higher level of risk than the typical medium size residential dwelling. An initial full alarm force for this level of hazard would commit the entire on-duty staffing to one fire. On a typical day, as in most jurisdictions, the full authorized staffing is not available due to vacations or other types of leave. The minimum staffing available in the city is only 19.

In addition to being certified as firefighters and emergency medical personnel, many MWCFD personnel are trained to conduct various technical rescue functions. These include trench rescue, high angle rescue, confined space rescue, and hazardous materials.

Discussion

Staff Allocation to Various Functions and Divisions

MWCFD allocates its staffing equally across each of its six (6) fire stations. This places four (4) personnel per station with one (1) company officer, one (1) apparatus operator, and two (2) firefighters. The department maintains its Haz-Mat unit at Station 1 and its Technical Rescue unit at Station 6. This allocation of staff across the stations and units is a typical staffing model across the United States for career organizations.

Staff Scheduling Methodology

MWCFD utilizes a traditional three (3) platoon system operating on a 24-hour shift rotation. This staffing methodology is very common across the United States for firefighters to work a 24-hour period and is proven to be effective for agencies with moderate workloads. Large agencies with heavy workloads have implemented different staffing models to avoid employee fatigue. Staffing for a 24-hour period reduces the number of crew changes that occur in a given period of time. All personnel are trained as firefighters, with most being trained at the emergency medical technician level. Some firefighters have been trained to the EMT-Intermediate or paramedic levels. Those individuals trained beyond the emergency medical technician level have done so of their own volition and utilize those skills in employment outside of MWCFD. The department does not provide advanced life support (ALS) services.

Deployment Methods and Staffing Performance for Incidents

The current staffing of the emergency response division is established at 25 individuals per shift. It is important to note that this staffing level is only realized when all personnel are on duty. On duty numbers are regularly impacted by vacation and sick leave. The number 25 includes the shift commander and allows for 24 persons to staff the department's six (6) fire stations. Fully staffed, this equates to four (4) persons per station to maintain a force capable of meeting the response needs of the community. Fire departments across the United States typically establish a "minimum staffing" level. This number reflects the minimum number of personnel a department will have on duty before beginning to hire overtime. MWCFD has establish a minimum number of 19 personnel as its minimum staffing level. This number is inclusive of the shift commander and leaves 18 personnel to staff the six (6) fire stations.

Responsibilities and Activity Levels of Personnel

In every fire department, there exist a number of activities that must be accomplished that are outside of the "regular" duties of responding to emergency incidents. These typically involve maintenance of self-contained breathing apparatus (SCBA), EMS quality assurance, and various committees. MWCFD relies upon individuals who have a particular interest in these additional areas to accomplish the tasks. In addition to the benefit of completing these tasks, the additional responsibilities serve to further develop knowledge, skills, and abilities of participating individuals. These individuals learn project management, time management, and budgeting skills that prepare them for future promotional opportunities.

Personnel Management

Although the delivery of emergency services to the citizens and visitors of a community is critical, the facts are that effective management and organization of an emergency services agency is just as critical to its success. The personnel that deliver those services are the backbone of the system. However, without proper administrative and support personnel to handle supervision, command, and control, operational personnel may not be able to perform satisfactorily.

It is commonly understood that an organization's greatest asset is its people. While the purchase of capital equipment can appear to be expensive when viewed as a one-time expense, the reality is personnel expenses typically account for more than 70 percent of an organization's expenses. It is important that special attention be given to managing human resources in a manner that achieves maximum productivity while ensuring a high level of job satisfaction for the individual. Consistent management practices combined with a safe working environment, equitable treatment, opportunity for input, and recognition of the work force's commitment and sacrifice are key components impacting job satisfaction.

In this section, ESCI will review and analyze the policies, procedures, job descriptions, and other personnel management related activities of Midwest City Fire Department.

Figure 67: Policy and Procedures

Survey Components	Midwest City Fire Department Observations	Comments and Recommendations
Human Resources		
Policies and Handbook	Currently under review	Review and update applicable fire department human resource rules, policies, and procedures to ensure currency and effective processes. Finalize updating of all policies and procedures.
Quality and status of job descriptions		Establish standardized job description format to facilitate clarity in the roles and responsibilities. Establish timetable for regular review and revision of all job descriptions.
Disciplinary Process		
Disciplinary Policy Established	Yes	
Disciplinary Process Communicated	In contract	
Appeal Process Provided	Grievance procedure	
Pending Litigation	No	
Critical Incident Stress Debriefing	Yes	
Employee Assistance Program	Yes	
Intervention Program	No	
Application Process		
Recruitment Program	Eastern OK Vocational program	Develop and implement a formal recruitment program.
Application Process		
• Qualification check	Yes	
• Reference check	Yes	
• Background check	Yes	
• Physical standards established	Requires CPAT for candidate hiring	
• Knowledge testing	No	Use a qualified testing process to select best possible candidates in cognitive area.
• Interview	Yes	
• Medical exam required	State FF pension physical	Establish using NFPA 1581 as basis of initial physical.
• Psychological exam required	No psych polygraph	Establish using NFPA 1581 as basis of initial physical.

Survey Components	Midwest City Fire Department Observations	Comments and Recommendations
Testing, Measuring, and Promotion Process		
Periodic Competence Testing	JPR	Develop and implement periodic competence testing.
Periodic Physical Competence Testing	Yes, annually	SCBA challenge and Fitness Performance Evaluation.
Periodic Performance Review	Annual evaluations	Conduct periodic performance reviews to identify deficiencies and develop remedial training.
Promotional Testing	Yes	
Medical Standards Established	None	Update health and safety related policies to be current with the most recent applicable NFPA standards adopted in accordance with NFPA 1581.
Periodic Medical Exam	3, 4, 5-year basis; not mandatory	MWCFD and the collective bargaining unit work to provide frequent annual physicals in alignment with NFPA 1582 age parameters. Include cancer screenings as a part of the new hire and incumbent annual physicals. The frequency of cancer screenings should align with NFPA 1582.
Safety Committee Established	Yes	Ensure all safety committee activities are in alignment with NFPA 1500, chapter 4.
Membership		Ensure continued diversity of safety committee membership; representing various groups, interests and functions.
Meetings		Ensure Safety Committee continues to meet at least quarterly.
Function		Safety Committee should review accidents, injuries, near-miss incidents and workplace safety suggestions; report analysis and results to fire chief; promote member safety self-awareness.
Meeting Minutes		All Safety Committee meeting minutes should be recorded and posted for all members to see.

The personnel management functions for MWCFD are managed in conjunction with the City's human resources department in coordination with fire department management staff. As has been previously noted, ESCI urges establishment of a regular review and updating of applicable fire department human resource rules, policies, and procedures to ensure currency and effective processes.

Human Resources Policies and Handbooks, MOU

At the time of this report, policies and procedures pertaining to MWCFD fire department personnel and operations are maintained in different documents. The department is in process of updating the policies and procedures into a format that provides clarity and removes confusion. ESCI recommends this project receive the highest priority to ensure effective administration of departmental operations.

Quality and Status of Job Descriptions

At the time of this report, policies and procedures for MWCFD were contained within the Midwest City Policy Manual and further augmented by the collective bargaining agreement (CBA). The department is undergoing a revision of operating procedures to be contained in a stand-alone document intended to be used in concert with the city's procedures manual. The rationale for maintaining two separate manuals is to allow for emphasis to be placed on the department's policies avoid potential confusion between the manuals. This is a common practice in many fire departments and does tend to lend itself to a higher degree of clarity in administering the daily operations of the department.

The presence of relevant and accurate job descriptions is critical to managing an organization effectively. This is especially true in para-military organizations like fire departments. Job descriptions are the foundational document for establishing roles, responsibilities, and expectations. Job descriptions are critical to the process of conducting quality performance evaluations and ensuring managerial and personnel accountability. Firefighters and officers must be clear in the expectations and responsibilities associated with their respective duties. Any confusion creates an environment in which employees are unclear and operate based upon subjective opinions and not objective fact. The presence of a subjectively administered work environment will also lend itself to low morale and high employee turnover. Without accurate job descriptions, conducting the simple but important supervisory function of administering performance evaluations is impossible. The failure to maintain accurate job descriptions also increases the liability an organization is exposed to in the event an employee must be disciplined or terminated.

An analysis of MWCFD job descriptions indicates the documents are significantly dated, contain unclear reporting structures, and are not clearly representative of positions listed on the organizational chart. As an example, the job description for apparatus operator was created in 1991 and does not reflect any period in time at which updates or revisions were completed. Other positions have creation dates of 2003 and 2007 with no revision dates indicated.

The current set of job descriptions include uncertain reporting structures and not readily discernable. In conducting interviews and reviewing agency documents, various titles were being used interchangeably or non-existent within agency records. A specific example involved the listing of the lieutenant/sergeant position in the staffing sheet provided to ESCI, but no job description exists for this function, nor does the position appear on the organizational chart. In some of the job descriptions, titles were used for the position but did not reflect those used in the organizational chart. Additionally, the job description of apparatus operator indicates the position reporting to the company officer, but a company officer could be a captain, major, or ride-out major.

MWCFD utilizes the rank of major as part of its administration and command functions. This rank indicator is not common in the United States fire service. Additionally, having the rank of major appear in the operations bureau and the administration bureau can be problematic. While the two ranks would intuitively indicate equal rank and similar managerial responsibilities, a review of the job descriptions reveals otherwise. The position of administrative major does not correlate to the position of operations major. The administrative major functions more in-line with what would traditionally be considered a deputy chief in most other organizations in the United States. The position of ride-out major listed on the job description, but not on the organizational chart, is more reflective of a senior company officer or assistant shift commander in other organizations. Finally, the job descriptions of captain/major and ride-out major are exactly the same with the same implementations dates.

Recommendations:

- Complete a comprehensive job task analysis and implement results.
- Establish a standardized job description format to facilitate clarity in the roles and responsibilities of all fire department functions.
- Establish a timetable for the regular review and revision of all job descriptions within the fire department.

PERSONNEL REPORTS AND RECORDKEEPING

Compensation Systems

The pay system for members of the collective bargaining unit are included within the Collective Bargaining Unit between the Midwest City and IAFF Local 2066 for contract year 2015/2016. Midwest City also maintains a pay and classification system for non-union personnel that is published for all personnel to see.

Disciplinary Processes

Disciplinary processes are identified within Midwest City Policy Article 8 and the collective bargaining agreement with the International Association of Firefighters (IAFF) Local 2066. The City utilizes a progressive program of administering discipline in a progressive manner. All City employees are subject to the terms of the City's discipline processes. However, members of IAFF Local 2066 have separately identified grievance procedures under the collective bargaining agreement (article 15.) At the time of this report, there are no pending litigations against MWCFD.

Counseling Services

Critical Incident Stress Management

MWCFD provides Critical Incident Stress Management activities via the Oklahoma Critical Response Network. This network is a state-wide association of professionals trained to provide critical incident stress management across the state of Oklahoma. Notification of the CISM team can be done by any member of MWCFD should feel the situation warrants the need for the team.

Employee Assistance Program

Midwest City has in place an Employee Assistance Program for all employees as part of their health benefits. The EAP program allows for informal referral or informal referrals. Entrance to the EAP can be initiated by either an employee request or supervisor direction.

Intervention Program

Midwest City maintains a substance abuse policy (article 23) which applies to all City employees. The collective bargaining agreement with IAFF, Local 2066 includes article 23 of the City's policies and procedures as Exhibit "A." Under the terms of the CBA, both parties have agreed to clearly defined random drug testing criteria.

Application and Recruitment Processes

The recruitment and selection of new personnel is critical to the success of any organization. The identification and selection of candidates must be an intentional process yielding high quality individuals. This process must be designed in manner to hire employees who share core values of the organization and have the ability to be productive employees. Simply hiring individuals to fill voids and expect them to have the necessary human relations skills is a reactive hiring process that does not insure the candidate and the organization are well-suited for each other. To be truly effective, an organization must "hire for fit" and not simply for technical skills sets that can be taught.

At the time of this report, there appears to be no formal or structured recruitment program for MWCFD. MWCFD relies upon the Eastern Oklahoma Vocational program to identify and hire candidates for vacancies.

Currently, the hiring processes for Midwest City (article 4) requires MWCFD leadership to utilize the human resources department of the City under the direction of the human resources director. The process as communicated within City policies is very common to governmental units across the United States. All vacancy announcements and application processing are completed by human resources and forwarded to the fire chief.

Candidate Physical Ability Testing

Currently, MWCFD utilizes the IAFF/IAFC Candidate Physical Ability Test (CPAT) physical standards screening process as part of its hiring process. MWCFD requires each candidate to complete the CPAT process and submit their respective scores to the department upon making application to the department. The CPAT is a validated physical testing process widely utilized by many fire departments across the United States utilize.

The International Association of Fire Fighters (IAFF) and the International Association of Fire Chiefs (IAFC) teamed up through the Fire Service Joint Labor Management Wellness/Fitness Initiative to develop the IAFF/IAFC *Candidate Physical Ability Test* (CPAT).[6] The Task Force successfully developed the Fire Service Joint Labor-Management Wellness-Fitness Initiative in 1997 to address the wellness and fitness needs in the fire service. In conjunction with this effort, the Task Force discovered that people were hired who would not be physically capable of a successful career in the fire service. The Task Force proceeded to develop the CPAT, resulting in a more consistent and valid test for hiring of candidate fire fighters. ESCI recommends MWCFD continue to utilize the CPAT process as part of its hiring program.

Testing, Measuring, and Promotion Processes

The collective bargaining agreement (CBA) between Midwest City and Local 2066 outlines a very detailed testing and promotion process. Article 14 (*Promotion Policy and Procedures*) of the CBA outlines 22 different sections identifying promotional board members, position eligibility requirements, and scoring procedures.

MWCFD does conduct annual competence testing of its members. The maintenance of critical skills is paramount to the effective delivery of emergency services to the citizens of Midwest City. Additionally, maintenance of skills is a significant component in ensuring the safety of firefighters. The results of these competence tests should be used to identify gaps and develop ongoing training needs.

[6] http://www.iaff.org/hs/CPAT/cpat_index.html.

The evaluation and feedback of employee performance is critical to the success of the individual and the organization. Employees must understand what the organization expects of them and they must receive relevant and timely feedback as to how they are performing, relative to identified expectations. MWCFD conducts annual performance evaluations of all positions within the department. The performance evaluation system is developed in a numerical format not unlike other fire department in the United States.

Health and Safety

Medical Standards Established

Incumbent employees participate in an annual physical performance evaluation. This evaluation consists of a scaled down version of the CPAT examination in the second quarter of the year and an SCBA endurance course is completed in the fourth quarter. Individuals who cannot complete the annual physical fitness evaluation are referred to human resources and a fitness for duty evaluation is conducted through the City Occupational Medicine Program. It is noted that the health and safety policy containing this program is dated 2007 and references NFPA standards from 2000, 2002, and 2003. ESCI recommends that MWCFD update the health and safety related policies to be current with the most recent applicable NFPA standards.

Periodic Medical Exams

Newly hired employees must complete a comprehensive medical physical to participate in the state fire pension system. At the time of this report, there was some uncertainty as to the level of detail involved in this pre-employment physical, which is administered outside of the department's purview. It is recommended MWCFD verify with the state fire pension system leadership that these physicals are fully compliant with NFPA 1582. As a condition of the collective bargaining agreement, the City will provide incumbent employees with a comprehensive medical physical every four (4) years. However, the participation in the physical is voluntary. The results of this physical are provided directly to the employee and the City receives no feedback relative to the results. The fact that the City doesn't receive the results of this physical is of no concern. The most important aspect of the physical is that the employee has the results and can manage any concerns with their personal physician. It is recommended that MWCFD and the collective bargaining unit work to provide more frequent annual physicals and ensure these annual physicals are compliant with NFPA 1582. MWCFD should also work to include components of the Fire Service Joint Labor Management Wellness—Fitness Initiative which was developed as a cooperative effort between the IAFF/IAFC. It is also noted that the new hire and incumbent physicals do not include cancer screenings. It is highly recommended that MWCFD include cancer screenings as a part of the new hire and incumbent annual physicals.

Safety Committee

NFPA 1500 *Standard on Fire Department Occupational Safety and Health Program* is the industry standard for development and administration of a fire department safety program. At the time of this report, MWCFD does have a safety committee in place. The establishment and empowerment of a safety committee can be one of the best tools to increase the safety of firefighters. ESCI strongly encourages the department to ensure all activities of the safety are in alignment with chapter 4 of NFPA 1500. To be effective, safety committees must be diverse in its representation from across the department, ensuring representation by shift, rank, function, and interest, and including representation from non-uniformed and staff members as well. MWCFD should continually evaluate the diversity of representation within the safety committee. The committee should continue to meet at least quarterly and include in its mission raising awareness and modifying member behaviors that will result in a safe work environment. Additionally, the committee should review all accidents, injuries, near-miss incidents, and workplace safety suggestions. The committee should analyze the information before them and report their findings to the fire chief. As opposed to being reactionary through the development of additional rules, it is recommended that the committee should work to implement member safety education programs and encourage members' safety self-awareness. The committee should maintain regular and open meeting times and locations; minutes of the meetings should be recorded and posted for all members of the department to review.

Recommendations:

- Develop and implement a formal recruitment program.
- Assure the hiring process includes:
  - A baseline physical ability standards for hiring.
  - A qualified testing process to select best possible candidates in cognitive area.
  - Uses NFPA 1581 as basis of initial physical.
- Update health and safety related policies to be current with the most recent applicable NFPA standards adopted in accordance with NFPA 1581.
- MWCFD management and the collective bargaining unit work to provide more frequent annual physicals.
- Include cancer screenings as a part of the new hire and incumbent annual physicals.
- Ensure safety committee activities are in alignment with NFPA 1500, chapter 4.
- All Safety Committee meeting minutes should be recorded and posted for all members to see.
- Safety Committee should review accidents, injuries, near-miss incidents and workplace safety suggestions; report analysis and results to fire chief; promote member safety self-awareness.

FIRE PREVENTION AND PUBLIC EDUCATION PROGRAMS

Life Safety Services (Fire Prevention)

It is widely acknowledged that it is far more effective to prevent fires and other emergencies than it is to respond to them. The financial impact of a fire or injury goes far beyond the cost of extinguishment or treatment. The long-term impacts realized by an individual building owner through the loss of revenue is significant. However, additional fiscal impacts are felt by the community through the loss of employee salaries and associated spending. It is also not uncommon for businesses to never re-open following a fire, and the community the further suffers through the loss of tax revenue.

The fiscal impacts of injuries, while not as immediately observable, can be equally devastating. Individuals experiencing an injury lose the ability to earn an income during the recovery time and businesses lose productivity of that individual until they return to work. Beyond the fiscal impacts associated with lost work time, injured persons and families often experience significant emotional trauma.

A strong fire prevention and life safety program, based on effective application of relevant codes and ordinances, reduces loss of property, life, and the personal disruption that accompanies a catastrophic fire and accidents.

The fundamental components of an effective fire prevention program are listed in the following table, accompanied by the elements needed to address each component:

Figure 68: Fire Prevention Program Components

Fire Prevention Program Components	Elements Needed to Address Program Components
Fire Code Enforcement	Proposed construction and plans review New construction inspections Existing structure/occupancy inspections Internal protection systems design review Storage and handling of hazardous materials
Public Fire and Life Safety Education	Public education Specialized education Juvenile fire setter intervention Prevention information dissemination
Fire Cause Investigation	Fire cause and origin determination Fire death investigation Arson investigation and prosecution

Discussion

MWCFD operates an active fire prevention bureau in support of the above-mentioned fire prevention program components and the associated elements for each. This fact demonstrates that MWCFD has a healthy appreciation of fire prevention within the community it serves. The fire marshal clearly understands the significance of having a quality program that is valid and credible if the department is truly going to serve its constituents. In the following tables, the program components listed in the chart above are compared to specific initiative currently underway in Midwest City:

Figure 69: Survey Table—Fire Prevention Code Enforcement

Survey Components	Midwest City Fire Department Observations	Comments and Recommendations
Code Enforcement		
A. Fire codes adopted		
i) Code used – year/version	2015 IFC	Building department and fire departments should both use 2015 IBC and IFC codes.
B. Local codes or ordinances adopted, amendments	Ord. chapter 15	
C. Sprinkler ordinance in place	Yes	Explore potential options available to utilize incentive programs to encourage builders to voluntarily install residential sprinklers.
New Construction Inspections and Involvement		
A. Consulted in proposed new construction	Yes	
B. Perform fire and life safety plan review	Yes	
C. Sign-off on new construction	Yes	
D. Charges for inspections or reviews	Sprinkler, alarm, fire alarm, and fire protection system	

Code Enforcement Activities

The State of Oklahoma requires all buildings be permitted and adhere to the State Fire Code. As a city, Midwest City has the ability to provide all plans review, permitting, and code enforcement activities in place of the Oklahoma State Fire Marshal's Office. Midwest City has adopted the 2015 ICC International Fire Code via City Code of Ordinances, Chapter 15. However, the Midwest City Building Department still utilizes the 2009 ICC International Building Code. The usage of codes from differing years creates a situation in which discrepancies may exist. To address these potential conflict, the City has elected to utilize the less stringent standard whenever discrepancies occur.

The adopted City Code of Ordinances places the responsibility for the enforcement of fire codes directly on MWCFD. Midwest City has a sprinkler ordinance in place for new non-residential construction projects. However, the City does not have a residential fire sprinkler requirement in place at this time. The presence of fire sprinklers is a critical component in reducing the likelihood of catastrophic loss of

life and property as the result of a fire. Recognizing the challenges associated with implementing a residential fire sprinkler ordinance, it is recommended that MWCFD explore options to improve the possibilities of builders and homeowners installing residential fire sprinklers. These efforts should focus around public education relative to the safety benefits of residential sprinkler system. Some communities across the United States have established incentive programs through tax breaks or reduced fire assessments for property owners who install residential sprinklers.

New Construction Inspection and Involvement

Permitting and plans review activities are provided by the Midwest City. MWCFD provides plans review for all new construction within the city relative to fire codes. The city has experienced positive growth in commercial and other non-residential occupancies. Being actively involved in new construction inspection ensures the department does not experience negative operational impacts when construction occurs without consideration of the needs of emergency responders.

Figure 70: Survey Table—Existing Occupancy Inspection Program

Survey Components	Midwest City Fire Department Observations	Comments and Recommendations
General Inspection Program		
A. Perform Existing Occupancy Inspections	Yes	Implement a company level inspection program for non-high risk occupancies.
B. Special Risk Inspections	Yes	
C. Storage Tank Inspections	No, outside entity does inspection	
D. Key-Box Entry Program in Place	Yes	
E. Hydrant Flow Records Maintained	Fire department tests and maintains records	
F. Self-Inspection Program in Place	No	Evaluate the potential effectiveness of implementing self-inspection program for non-high risk occupancies.
G. Frequency of Inspections	Annual, inspectors	
H. Citation Process in Place and Formally Documented/Adopted	Yes	
i) Court-cited to	Municipal court	
I. Inspections Computerized	Yes	
J. Community Feedback System in Place	Inspection report sent through email. Feedback is either face-to-face or through email to the fire marshal.	
K. Number of Personnel Devoted to Program	4 positions with 1 vacant	Consider addition of one new fire inspector position to accomplish 100% inspection.
L. Fees for Specialty Inspections	Charge for burn permits	

The incorrect staffing of the administrative and support functions creates a situation in which important organizational activities, at best, are delayed; but, in worst case scenarios, get completely missed. At the time of this project, MWCFD was realizing two vacancies with the fire prevention division (or bureau). One key vacancy was that of fire protection engineer, which has been vacant for more than six (6) months. As a result, MWCFD is required to either outsource the plans review process to either a private provider (contractor) or the State Fire Marshal's (SFM) office. MWCFD also investigated the possibility of entering into a memorandum of understanding (MOU) with Tinker Air Force Base to conduct plans review, but the belief was that the background in federal properties and laws of the Tinker AFB staff differed significantly from those of Oklahoma law. MWCFD has chosen to utilize the private contractor to better serve the customer's needs, even though the cost of the contractor exceeds revenues generated as part of the plans review process. While the SFM would be more cost effective, the resulting impact would probably cause a delay of several months for the customer's construction project.

Additional impacts of vacancies within the administrative and support functions occur when individuals are promoted into new positions as they get "up to speed." The current fire marshal is newly promoted and had limited experience in the plans review process. This individual has done well to get a better understanding of the plans review process and increased his skills set quickly. As the fire marshal has become stronger in his knowledge and skills of conducting plans review, he has been able to increase the number of plans reviews being completed.

MWCFD is responsible for providing fire inspections to approximately 1,850 non-residential properties. It is goal of the department to inspect each of these properties annually. In 2015, the department was able to complete 69 percent of these non-residential inspections by conducting 1,278 fire inspections. MWCFD clearly desired to maintain the 100 percent annual inspection rate for all non-residential occupancies. To achieve a 100 percent inspection rate, the department must conduct 37 fire inspections per week. It is important to understand that many fire inspections can be time intensive when done correctly and the current number of fire inspectors makes this goal impossible to effectively accomplish. In addition to initial fire inspections, the fire prevention staff was required to conduct 20 re-inspections to address issues discovered during the initial inspections. It is certainly appropriate to modify the inspection schedule based on a rational nexus such as basing the inspection schedule on potential risk to people and/or property. Whatever schedule is decided upon, the tracking of number of inspections planned per week versus inspections performed is recommended.

In addition to the regular inspections mentioned above, the Fire Prevention Bureau also conducted the following activities in 2016:

Activity	Quantity
Re-Inspections	83
Oil Well Inspections	49
Alarm Testing	18
Hood and Duct Inspections	46
Fire Protection Systems	54
School Drills and System Operation	34
Construction Inspections	29
Certificate of Occupancy	200
Burning Site Inspections	200

It is recommended that the Fire Prevention Bureau establish a weekly work plan that supports efforts to achieve a 100 percent inspection rate. This will require each inspector to attempt to complete a specific number of inspections each week. Even in the instances where this target inspection rate, having a structured goal will assist in determining service gaps and justifying future staffing needs.

In addition to the annual fire inspections, MWCFD is responsible for inspecting 48 oil wells annually. The department was successful in accomplishing 100 percent of these inspection. Oil wells are clearly recognized as being high risk/low frequency risk, and the fire inspection effort is key to preventing fire at these types of facilities. In addition to the threat to life as the result of an oil well fire, the community would realize significant negative impacts to the environment as well as the loss of jobs. As a high risk hazard the completion of inspections at all oil well is critical to the health and economic viability of the community.

In 2000, the MWCFD fire prevention bureau had seven (7) individuals responsible for managing all bureau activities. As a result of economically challenging times, staffing levels have been reduced. In the intervening period, new businesses have begun to open in the community and the workload continues to increase. In the foreseeable future, this growth will continue and the department will continue to be unsuccessful in accomplishing a 100 percent inspection rate for all non-residential occupancies. It is recommended that MWCFD return staffing of the Fire Prevention Bureau to its 2000 staffing levels as soon as practical.

Because of the previously mentioned workload and increasing demand of plans review for new non-residential properties with Midwest City, MWCFD is unable to inspect approximately 600 occupancies. A variety of options exist to allow MWCFD to achieve a 100 percent inspection rate of non-residential properties. These options include conducting company level inspections, self-inspections, or returning prevention bureau staffing levels to seven (7). Many communities have utilized fire companies to complete basic annual inspection of non-high risk occupancies. These types of inspections do not require certified individuals to complete but typically must be under the management/oversight of a certified fire inspector. Company level inspections generally inspect basic items and report findings back to the fire prevention division for follow-up, if needed. Other communities have implemented self-inspection programs for non-high risk occupancies that have undergone multiple years of successful inspection by a fire inspector.

Recommendations:

- Building department and fire departments should both use 2015 IBC and IFC codes.
- Explore potential options available to utilize incentive programs to encourage builders to voluntarily install residential sprinklers.
- Establish a weekly work plan that supports efforts to achieve a 100% inspection annually
- Implement option(s) to achieve 100% inspection rate again.
    - Evaluate the potential effectiveness of implementing self-inspection program for non-high risk occupancies.
    - Implement a company level inspection/pre-fire planning program for non-high risk occupancies.
    - Consider addition of one new fire inspector position.

Fire and Life Safety Public Education

The prevention of fires and other emergency incidents is one of the most critical functions of any community's service to its citizens and visitors. This activity cannot be accomplished in a haphazard approach of simply "talking to people" in the course of doing business. Delivering fire and life safety messages must be accomplished through an intentional process resulting from a strategic fire protection campaign. A comprehensive fire and life safety education program involves teaching the public methods and techniques used to minimize the occurrence of fire and other accidents. The reality is that it is more cost effective to prevent a fire or emergency than it is to respond to a fire or emergency. A well-educated and trained public becomes a force multiplier in maintaining a safe community. The following section reviews the fire and life safety activities of MWCFD:

Figure 71: Survey Table—Fire Safety and Public Education

Survey Components	Midwest City Fire Department Observations	Comments and Recommendations
Fire Safety and Public Education		
A. Public Education/Information Officer in Place	Joel Bain	Evaluate effectiveness of having the current fire and life safety specialist position outside of the Fire Prevention Bureau.
B. Feedback Instrument Used	No formal survey but do get feedback through Facebook and Thank You cards.	Suggest using a feedback instrument.
C. Public Education in the Following Areas:		
i) Calling 911	Yes	
ii) EDITH (exit drills in the home)	Yes	
iii) Smoke alarm program	Yes	
iv) Fire safety (heating equipment, chimney, electrical equipment, kitchen/cooking, etc.)	Yes, in fire escape house training; also with Jr. High school students/new college students at university.	
v) Injury prevention (falls, burns/scalding, bike helmets, drowning, etc.)	Child car seat checks	
vi) Fire extinguisher use	Yes; simulator 500 employees at hospital; all city hall	
vii) Fire brigade training	No	
viii) Elderly care and safety	Trip and fall safety classes; fire prevention cigarettes	
ix) Curriculum used in schools	Early childhood videos available for checkout. October all Midwest City schools with children K-2nd receive fire safety education with trailer, fire trucks, etc. Approximately 2500 children go through the program annually.	

Survey Components	Midwest City Fire Department Observations	Comments and Recommendations
x) Baby-sitting classes offered	Not specifically CPR family and friends	
xi) CPR courses, blood pressure checks offered	Yes; Both Red Cross and American Heart	
D. Publications Available to Public	Yes; display at city hall	
E. Bilingual Information Available	Some	Review all fire and life safety education materials to ensure relevancy to non-English speaking populations within the community.
F. Annual Report Distributed to Community	Yes; log public contacts at events	Develop and implement tracking and reporting mechanisms relative to fire and life safety activities. Develop and implement an annual report to communicate the activities of the fire and life safety function to the city's residents and business owners.
G. Juvenile Fire Setter Program Offered	JSF; 6 in year and a half; No intervention	
H. Wildland Interface Education Offered	No; social media and signs	

Discussion

A review of the current MWCFD Fire and Life Safety Education program identifies a significant number of associated activities. These include outreach to schools, businesses, and community groups, as well as the general community.

Within the schools, the efforts have included the "Kitchen Safety" program for junior high students and college age students at Rose State College. This program is specifically geared toward the prevention of fires in an area of the home that is nationally recognized as being a common source of fires and injuries. Additional school based efforts include the "5th Grade Science" program intended to teach children the realities of fire as opposed to those seen on television. The department also conducts fire prevention programs in conjunction with the annual nationwide Fire Prevention Week which occurs every October. The National Fire Prevention Week effort resulted in more than 2,500 children hearing the prevention message.

MWCFD conducts a variety of programs focused at businesses and their respective members. These include CPR, AED, and fire extinguisher use. In 2015, MWCFD trained more than 500 hospital employees in the utilization of fire extinguishers. MWCFD also conducts regular speaking engagements for Rotary Clubs, Kiwanis Clubs, Boys Scouts, as well as other interested groups. The department also actively participates in the Midwest City Chamber of Commerce's "Youth Excel Leadership" class.

MWCFD also provides fire and life safety services to the community at large. These include installation of smoke detectors and car seats. In 2015, the department installed more than 200 smoke detectors in

77 homes in the community. The department also installed 143 car seats in 2015. The department also provides fall and injury prevention education to senior citizens through it's "Remember When" program.

The current fire and life safety education function within the MWCFD reports to the administrative major as indicated by the department's organizational chart. Traditionally, the fire and life safety education program function is a component of the fire prevention division and reports to the fire marshal. The rationale for this reporting structure is to ensure a strategic fire prevention strategy is developed and implemented. Midwest City should consider the realignment of this function to report to the fire marshal.

When compared to many other fire departments, the MWCFD fire and life safety education program is very active. MWCFD is encouraged to continue to deliver the current programs supporting its fire and life safety efforts. It is recommended that MWCFD further develop and implement tracking mechanisms to more effectively communicate the activities associated with its strategic fire prevention effort.

The second vacancy of the public education specialist position has also caused negative impacts as other members of the department "step in" to complete the necessary tasks. Further impacting this position is the reality that hiring individuals with experience and training in conducting fire prevention programs is difficult.

The public education specialist is typically responsible for establishing the community's overall life safety education program and facilitating the activities leading to the implementation of the plan. Examples of these activities include school based fire prevention programs (i.e. Learn Not to Burn®, Stop Drop and Roll®). Additional activities often include fire safety programs include senior homes, fire safety in the workplace, as well as child safety seat installation programs. To effectively deliver Fire and Life Safety prevention programs, the individuals must be properly trained. In 2015, the department's Public Education function accounted for delivering the department's fire prevention message to approximately 2,500 children from kindergarten to 2nd grade ages. This activity is in support of the national fire prevention week effort. It is commonly understood that focusing fire prevention message to children of this age group is highly effective in impacting the fire safety of a community.

Historically, MWCFD public education specialists have gained education through online self-study courses and attendance at National Fire Academy programs. However, it was noted that most training is accomplished through on-the-job training. Within the State of Oklahoma, there does not exist a current established certification for the position of Fire and Life Safety Educator, however this does not preclude MWCFD from training individuals to a nationally recognized standard. It is recommended that MWCFD establish an internal training program to ensure this position is trained to the Job Performance Requirements of *NFPA 1035: Standard on Fire and Life Safety Educator, Public Information Officer, Youth Firesetter Intervention Specialist, and Youth Firesetter Program Manager Professional Qualifications*. It is also recommended that MWCFD revise the existing public education specialist job description to include Job Performance Requirements identified within NFPA 1035 with clear timeframes in which the training will be completed.

It is also important to note that the existing job description reflects the reporting structure tied to two different supervisory positions and differs slightly from the organizational chart. Historically, the fire and life safety public education specialist position has been part of fire prevention bureau. Recently, this position has been relocated into the administration section. This staffing arrangement is uncommon in most fire departments within the United States. It is recommended that MWCFD re-evaluate this arrangement to determine its effectiveness in relation to a strategic fire and life safety prevention program.

Recommendations:

- Evaluate effectiveness of having the current fire and life safety specialist position outside of the Fire Prevention Bureau.
- Identify school age appropriate fire prevention curriculum.
- Review all fire and life safety education materials to ensure relevancy to non-English speaking populations within the community.
- Develop and implement tracking and reporting mechanisms relative to fire and life safety activities.
- Develop and implement an annual report to communicate the activities of the fire and life safety function to the city's residents and business owners.

Figure 72: Survey Table—Fire Investigation

Survey Components	Midwest City Fire Department Observations	Comments and Recommendations
Fire Investigation		
A. Fire Origin and Cause Determination	Company officers and investigators; Policy mandates cause and origin is determined on every fire.	
B. Arson Investigation and Prosecution	Rotation on-call investigators; No arson investigation conducted by FD now.	Establish a task force between law enforcement and fire department to jointly investigate suspicious fires.
i) Arson investigation training provided	Not much training for fire investigators; Investigators are trained on the fire.	
C. Person Responsible for Investigations	Jeremy Robbins; OSU training	
D. Local FIT Membership (Fire Investigation Team)	Mutual aid available	
E. Process for Handling Juvenile Suspects	Police Department handles them.	
F. Liaison with Law Enforcement	Liaison Jeremy Robbins	

Survey Components	Midwest City Fire Department Observations	Comments and Recommendations
G. Scene Control Practices in Place	Secure yes	
H. Photographer Available	Yes	
I. Adequate and Appropriate Equipment Issued/Supplied	Yes	
J. Evidence Collection Process in Place	Law Enforcement now	
K. Reports and Records of all Incidents Made	Yes	
L. File, Record, and Evidence Security	Have capability for evidence chain of custody but not needed as law enforcement handles this for all suspected arson fires.	
Pre-Incident Planning		
A. Pre-Plans Completed	Fire prevention schedules crews to conduct the visits.	
B. Frequency of Review	Annually	
C. Accessibility of Plans	On computer but not easily accessed by units in field. Too many steps to get to them.	
Statistical Collection and Analysis		
A. Records Kept by Computer	Yes	
i) Type of operating platform	Windows	
ii) Software used	Emergency Reporting Systems	
B. Information collected in the following areas:		
i) Fire incidents	Yes	
ii) Time of day and day of week	Yes	
iii) Method of alarm (how received)	Yes	
iv) Dispatch times	Yes	
v) Response times	Yes	
C. Information Analyzed and Used for Planning	As requested; State does NFIRS compilation for county and state levels but not city.	
D. Reports Made and Distributed	Yes	
E. Full Time Employees Used in Data Collection and Analysis	Part time of two persons	

Discussion

Fire Investigations

MWCFD company officers are responsible for conducting the initial cause and origin determination for all fires to which the department responds. Should the determination be made that an investigator is needed, MWCFD notifies the on-call investigator to conduct a fire investigation. This is a typical arrangement for most fire department across the United States. The reality is that fire investigation requires a high level of training and skill set to be effective. Individuals trained specifically in the techniques and procedures of conducting fire investigation to far more than simply investigating fires. These individuals are quite often relied upon to provide expert witness testimonies in court cases and legal proceeding.

It is advisable for the fire and law enforcement agencies to work cooperatively on suspicious or suspected arson fires. The ability to achieve a conviction is increased when both sides understand the constraints on the others. To that end a joint task force with both fire investigators and law enforcement investigators assigned to investigate fires is recommended for Midwest City.

Data Collection and Statistical Analysis

All fire incident and investigation data is collected and reported to the Oklahoma State Fire Marshal's Office via National Fire Incident Reporting System (NFIRS). The NFIRS module is contained within the department's Emergency Reporting System records management system. The Emergency Reporting System™ is a commercially available records management software that many fire departments across the United States utilize.

Recommendations:

- Establish a task force between law enforcement and fire department to jointly investigate suspicious fires.

EMERGENCY MEDICAL SERVICES SUPPORT AND SYSTEM OVERSIGHT

The presence of proper EMS controls, quality assurance, quality improvement, and logistical support are key components in the effective delivery of care to the citizens and visitors of Midwest City. The following section provides a review of each of these areas and identifies recommendations in support:

Figure 73: Survey Table—EMS Medical Control and Quality Assurance

Survey Components	Midwest City Fire Department Observations	Recommendations
Medical Control		
A. EMS Service Delivery Level	Emergency Medical Responder/ EMT's First Response agency/Defibrillator	Review historical emergency medical calls occurring within the MWCFD response area to determine if any gaps in the provision of advanced life support (ALS) service exist. Evaluate the efficiency of potential provision of ALS level service by MWCFD personnel.
B. Written Protocols Adopted	Yes – State of Oklahoma protocols Protocols written by the state with some local protocols by EMS Director	
C. Case Reviews Conducted Regularly	Yes – EMS committee reviews 10% 10% of all cases per state mandate; all critical cases once a quarter.	MWCFD should implement policies to ensure that a specific percentage of medical calls are reviewed by the medical director. MWCFD should consider having its internal review committee to meet more frequently to insure "advanced calls" are reviewed sooner.
D. EMS Officer Conducts in Service Training	EMS Committee/ 3 Instructors/Coordinator	
Q.A./Q.I. – (Quality Assurance/Quality Improvement)		
A. Internal Committee	EMS Committee	MWCFD should consider EMS review committee reviewing "advanced calls" more frequently than current standard. EMS committee should meet with medical director on a scheduled basis to facilitate improvements in QA/QI processes.
B. Lessons Learned Are Shared?	No Lessons learned put on 10% review sheet, sent to medical director for additional review; additional outlines created for training	MWCFD should implement a formal "lessons learned" program to improve the knowledge, skills, and abilities of MWCFD personnel.

Survey Components	Midwest City Fire Department Observations	Recommendations
C. Medical Program Director Participates?	Yes Occasionally rides out, teaches classes on occasion	MWCFD should establish regularly scheduled medical director "coffee break" style review sessions to facilitate learning and skill improvement.
D. Charts Spot Evaluated for Accuracy?	Yes Every supervisor signs off on all reports	

Discussion

Emergency medical calls account for approximately 80 percent of the calls for service to which MWCFD responds. This figure is consistent with the rates realized by most agencies across the United States. MWCFD functions within a two-tiered emergency medical services (EMS) response system. As a two-tiered system, the advanced life support functions and transport functions are provided by a hospital based ambulance service. As the second-tier responder, MWCFD is recognized as an Emergency Responder Agency serving as backup and support for the ambulance service. The two-tiered system is a common system utilized across the United States. The advantage to Midwest City in having MWCFD respond as part of a two-tiered system is the department's ability to respond to medical incidents when the ambulance service is committed to patient care or transport and not immediately available to respond.

MWCFD is recognized as an Emergency Medical Responder (EMR) agency by the State of Oklahoma. As an EMR agency, MWCFD is not required to staff any positions at the EMT-I or Paramedic levels. While some MWCFD personnel are certified at paramedic level, this is a result of them working in their off-duty time for an ambulance service. As EMT-Basic, MWCFD personnel do not perform any sort of invasive procedures. MWCFD does not respond to local nursing homes or the jail for routine medical calls since these facilities provide some level of medically trained staff to support ambulance personnel. However, MWCFD does respond to these facilities for respiratory and cardiac arrest incidents. It is recommended that MWCFD conduct an analysis of all emergency medical responses to determine if any gap in the provision of ALS level services exist. It is also recommended that MWCFD evaluate the efficiency and effectiveness of providing ALS services, should any gaps in ALS level response exist. Conducting this evaluation does not imply that MWCFD must begin providing ALS services but does ensure the issue of Midwest City's residents receiving advanced care is never in jeopardy. This type of evaluation should involve the department's medical advisor and determine evidence-based performance measures that are indicative of the level of service provided to the citizens. The medical advisor can guide the types of measures best suited for this endeavor. Examples of possible measurement might be: times for cardiac patient to receive catherization in the hospital; time from 911 call to defibrillator shock applied; overall cardiac survival rates without neurological deficits; stroke times from patient contact to treatment; on-scene time required to prepare trauma patients for transport. The intent is to determine what changes can be made to improve the service provided as a team between and fire department and ambulance responses.

As an Emergency Responder Agency, MWCFD is subject to regular auditing requirements of the State of Oklahoma. At least annually, MWCFD undergoes a site visit form the state's Department of Health. As part of this site visit, the agency reviews individual employee licensing records, training, and potentially call reports.

Medical Control and Oversight

MWCFD utilizes a licensed physician to serve as the medical director for the agency and function as medical control. In its role as an EMR agency, MWCFD provides medical response to limited medical situations. The presence of physician to serve as medical oversight is required by Oklahoma law. The medical director serves as the authority for MWCFD to provide emergency medical response. MWCFD utilizes one of its on-duty individuals certified at the paramedic level to serve as its EMS coordinator. This individual functions under the direction of the training chief.

The medical director for MWCFD is the same individual utilized by the ambulance service supporting Midwest City. This arrangement has many distinct advantages and is more preferable than MWCFD maintaining a separate medical director arrangement. It is generally understood that common medical direction reduces redundancies in protocol management and streamlines quality control issues relative to patient care.

It is worth noting that recent changes in protocols have allowed for individual MWCFD personnel holding advanced certifications to utilize those skills when supporting the ambulance service. Previously, MWCFD individuals holding a paramedic certification and working as a paramedic in their off-duty time were not allowed to utilize paramedic skills while on-duty with MWCFD. This change ensures the citizens are receiving the highest quality of care in a timely manner.

Quality Assurance/Quality Improvement

MWCFD does not have a formal quality assurance program that reviews 100 percent of its medical responses. MWCFD does review 10 percent of all medical calls and includes all "critical" incidents for adherence to medical protocols by its EMS committee. For the purposes of conducting quality assurance reviews, critical calls include cardiac arrest, respiratory arrest, stroke, and "trauma alert" incidents. The EMS committee meets on a quarterly basis. Additionally, MWCFD does not provide a formal "lessons learned" program resulting from the review of medical reports. It is recommended that MWCFD develop and implement a formal lesson learned program as a component of an intentional quality assurance program. Additionally, MWCFD should implement policies to ensure that a specific percentage of medical calls are reviewed by the medical director. MWCFD should consider having its internal review committee to meet more frequently to insure "advanced calls" are reviewed sooner. This more frequent review will allow for lessons learned to be developed and distributed quicker.

As an EMR agency, MWCFD is not required to complete specific patient care reports. As a licensed advanced life support agency, the ambulance service is the agency responsible for completing all patient care reports. However, MWCFD does require its staff to enter all personnel activities and interventions within the narrative section of its incident report. The expectations of MWCFD personnel is that they will enter a narrative that is clear and concise and allows everyone to clearly understand what occurred on the scene of each call, in the event a record is utilized in a court proceeding. It is generally believed that personnel are achieving this expectation and that the previous 12 months have seen significant improvement in the report writing skills of MWCFD personnel.

Figure 74: Survey Table—EMS System Integrity and Logistical Support Services

Survey Components	Midwest City Fire Department Observations	Recommendations
Certification/Recertification		
A. Ongoing Training and Evaluation System in Place?	Random skills training; done by shifts; EMS coordinator rides on ambulance and views other shifts when he is working.	MWCFD should establish a formal skill assessment program to augment the EMS coordinator's observation program.
B. Skills Assessment Performed by Qualified Evaluators?	No/Just CO	
C. Recertification Exams Administered by Qualified Testing Center?	No for Certs CPR AHA Training Site, sponsored by the hospital	
Medical Supplies		
A. Inventory Controls in Place	Carries state mandated equipment	
B. Controlled Meds Security	No	
C. Replenishment System in Place	Ambulance service stock in the field and stations	
D. Temperature Controlled Environment for Liquids	N/A	

EMS TRAINING AND SKILLS EVALUATION

MWCFD authorizes one individual per shift to serve as an EMS coordinator. These individuals are all trained EMS instructors and are responsible for providing EMS training to their respective shifts. At the time of this report, two (2) of these individuals are certified at the paramedic level and one (1) is certified as an Emergency Medical Technician—Intermediate level. In addition to serving as instructors, these individuals are responsible to serve as members of the EMS committee. The EMS committee conducts all quality assurance/quality insurance reviews and purchases all EMS related equipment. It is recommended that MWCFD establish a formal skills assessment program to augment the observations of the EMS coordinator.

MWCFD provides an appropriate amount of training hours in the renewal cycle for all EMS required certifications. This is well documented with the MWCFD written training plan. As an Emergency Response Agency, MWCFD does not provide a high level of technical training for its staff members. The training provided is suitable enough to ensure EMS certified individuals are properly trained and prepared for recertification. Should MWCFD establish a higher level of service through the addition of ALS skills to the department's capabilities, additional training will be needed and should be identified within the formal training program. All MWCFD recertification efforts are consistent with those required of other agencies to renew under the National Registry program.

EMS Call Prioritization

Ensuring emergency service arrive in a timely manner is only one component of an emergency services delivery system. Additional consideration must be given to ensuring the right resources arrive to assist.

The MWCFD dispatch center currently utilizes the Emergency Medical Dispatch (EMD) protocol when dispatching MWCFD units. As part of its ongoing quality assurance/quality improvement, MWCFD should continually review methods to ensure the appropriate types of units are responding to emergency medical calls. Many agencies have implemented programs to reduce the number of times larger apparatus are sent to medical calls, and other communities have established criteria under which fire department apparatus will be dispatched. This is a determination that MWCFD must make considering its community's needs and expectations. However, the issue needs to be part of the formal planning processes for MWCFD and city leadership.

Recommendations:

- Review historical emergency medical calls occurring within the MWCFD response area to determine if any gaps in the provision of advanced life support (ALS) service exist.
- Evaluate the efficiency of potential provision of ALS level service by MWCFD personnel.
- MWCFD should consider EMS review committee reviewing “advanced calls” more frequently than current standard.
- EMS committee should meet with medical director on a scheduled basis to facilitate improvements in QA/QI processes.
- MWCFD should implement a formal “lessons learned” program to improve the knowledge, skills, and abilities of MWCFD personnel.
- MWCFD should establish regularly scheduled medical director “coffee break” style review sessions to facilitate learning and skill improvement.

SERVICE DELIVERY AND PERFORMANCE

The most important aspect of any emergency services agency is its ability to deliver services when requested. This section of the report evaluates the current and historical service delivery elements of:

- Service demand;
- Resource distribution;
- Resource concentration; and
- Response performance.

The discussion begins with a summary of the current service delivery and performance elements that are in place at MWCFD:

Figure 75: Current Service Delivery and Performance Elements

Survey Components	Midwest City Fire Department Observations	Comments
Service Demand		
A. Current Service Demand		
i) Tracked by incident type and temporal variation	Yes, tracked for internal analysis.	
ii) Geographical call distribution	No geographical tracking other than by station response zones.	Expand the incident reporting capability to include geographical distribution working with City GIS unit.
iii) Demand zones based on population	No, city is considered urban density throughout.	
Resources		
A. Facilities		
i) Total area protected	26 square miles	
B. Number of Fire Stations	6	
i) Number of stations staffed	6	
ii) Number of stations unstaffed	0	
C. Apparatus		
i) Apparatus appropriate to risk (fire, medical, special)	Yes	
D. Staffing		
i) Adequate for initial attack of predominant risk	Minimally	
Response Force		
A. Effective response force	17	
i) Defined by call type	Yes, not target hazards.	Define target hazards and determine what is the necessary ERF.
ii) Actual performance monitored	Yes	Response data from all units assigned is necessary.

Survey Components	Midwest City Fire Department Observations	Comments
Response Reliability		
A. Workload Analysis		
i) Unit hour utilization	No	Response data from CAD for all units assigned is necessary.
ii) Failure rate by station area or response zone	No	Response data from CAD for all units assigned is necessary.
iii) Concurrent calls	No	
Response Performance		
A. Response Performance		
i) Call processing time	Call processing time not available in RMS. No established performance standard.	Collect call processing time in the RMS and establish a performance standard.
ii) Turnout time	Turnout time available for first arriving unit. No established standard.	Collect for all units. Establish a performance standard and monitor for compliance.
iii) Travel time	Travel time available in RMS. No established performance standard.	Collect for all units. Establish a performance standard and monitor for compliance.
iv) Total response time	Not including call processing time	Incorporate call processing time for accurate response times.
B. Response Time Goals	No	Set response time goals for city and by incident types as needed
i) By response zone	No	
ii) By incident type	No	
iii) Actual response performance documented and published	No	Report performance against the established goals.
Mutual/Automatic Aid		
A. Given/Received Balance	No automatic aid	Recommend closest unit response regardless of jurisdiction, if possible to do with surrounding departments.
i) Automatic aid incorporated in run cards/dispatch procedures	No, Mobile Command Post only	
ii) Inter-agency training and SOP's	None established	Establish automatic aid for major incidents and do interagency training.
iii) Signed mutual aid agreements and county plan	Statewide mutual aid agreement supersedes	
Incident Control and Management		
A. Incident Command System	Blue card/NIMS	
i) Incorporated in all emergency operations	Yes	
ii) Addressed in SOP or SOG	Yes	
iii) Addressed in training	Yes	

Discussion

The collection of accurate and complete data on the performance of the fire department is important, as is the utilization of this data for on-going analysis and determination of changes that should be done to improve performance. MWCFD is good at collecting the data for the National Fire Incident Reporting System (NFIRS) reporting. Additionally, the city GIS could plot incident location on the map to determine where the calls are occurring. Ultimately the department needs to use the data to analyze the fire department response performance against established standards. This should include response time components measured in percentile, unit hour utilization, and reliability, based on multiple simultaneous calls for service.

ESCI encourages the use of automatic aid and closest unit response to provide the best possible service to the community. MWCFD has presented information that makes dependence on automatic aid problematic, including multiple communications centers, levels of authorization for response (Tinker AFB), and departments with minimal staffing for their own jurisdiction that would have difficulty responding. It is rare for even large cities to be completely self-sufficient for major incidents. Large incidents may well exceed the number of personnel available and will demand the use of mutual aid. If possible in the computer aided dispatch (CAD) system, adding neighboring units into the multiple alarm scenario before the incident saves time and unnecessary distractions at the time of the call.

Recommendations:

- Define target hazards and determine what is the necessary ERF.
- Adopt response time goals for city and by incident types as needed and monitor for compliance.
- Establish a performance standard for travel time and monitor for compliance.
- Establish a performance standard for turnout time and monitor for compliance.
- Response data from all units assigned is necessary.
- Report performance against the established goals.
- Recommend closest unit response regardless of jurisdiction, if possible to do with surrounding departments.
- Establish automatic aid for major incidents and do interagency training.

SERVICE DEMAND ANALYSIS

ESCI analyzes the current and historical service demand of MWCFD by incident type and temporal variation. GIS software is used to provide a geographic display of service demand within the study area. Incident data collected in the MWCFD records management software (*Emergency Reporting Software®*) was utilized to provide a view of historical service demand and current temporal variations.

Incident Types

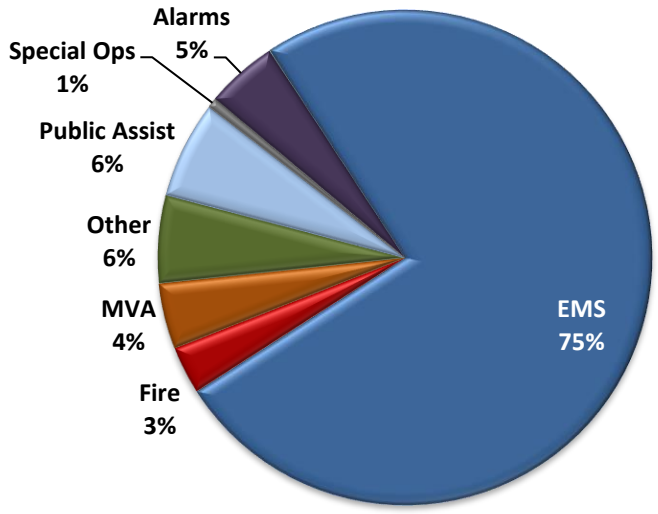
The following figure shows the number of responses, by types of service demand, to which MWCFD responded in 2015 in a different configuration than earlier in the report:

Figure 76: 2015 Incidents

2015 Incidents	
Incident Type	**Number of Calls**
Alarms	324
EMS	5218
Fire	216
MVA	298
Other	400
Public Assist	442
Special Ops	45

The percentages of total service demand are shown in the following figure:

Figure 77: Percentage of Total Service Demand

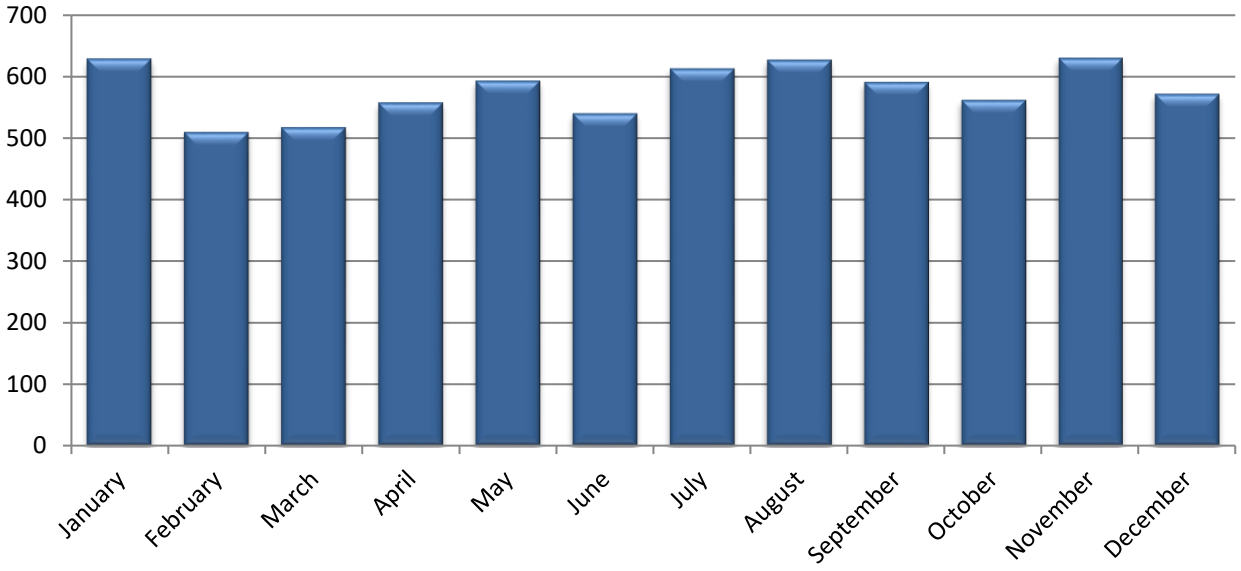


By far the greatest portion of the demand is for emergency medical calls. This amounts to 75 percent of all calls and, if motor vehicle accidents are included, would equals 80 percent of all calls. The next greatest category is public assist type service calls at 6 percent. Fire alarms make up 5 percent and actual fire calls make up 3 percent of all calls. Finally, special operations responses and all other calls result in 7 percent of the total.

Temporal Variation

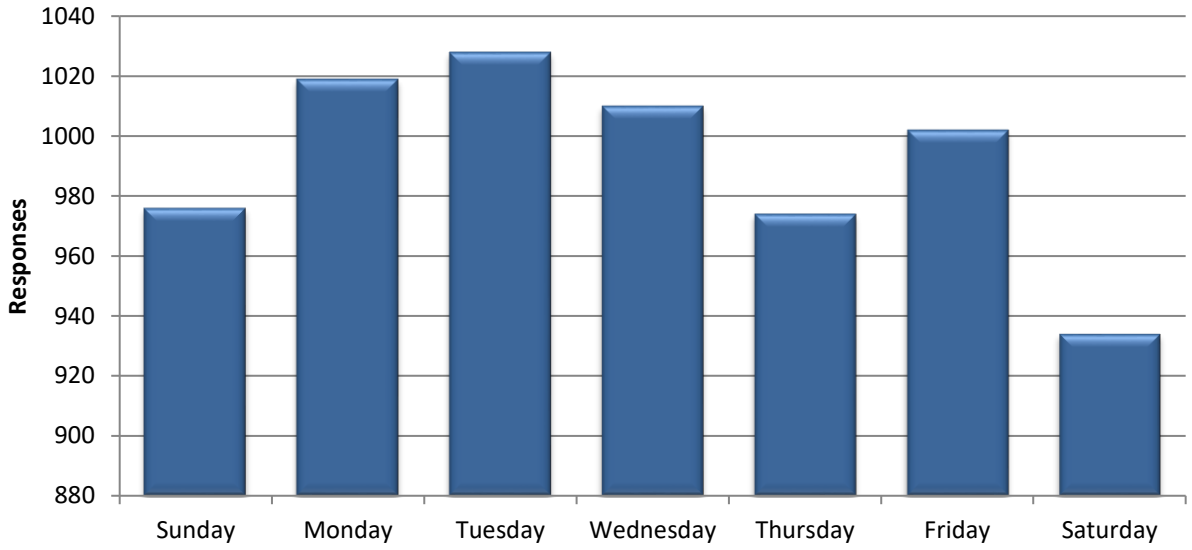
It is instructive to look at when calls are responded to see if there are identifiable trends. In the following figures the fire department incident responses are shown by month, day, and time of day:

Figure 78: Percentage of Total Service Demand



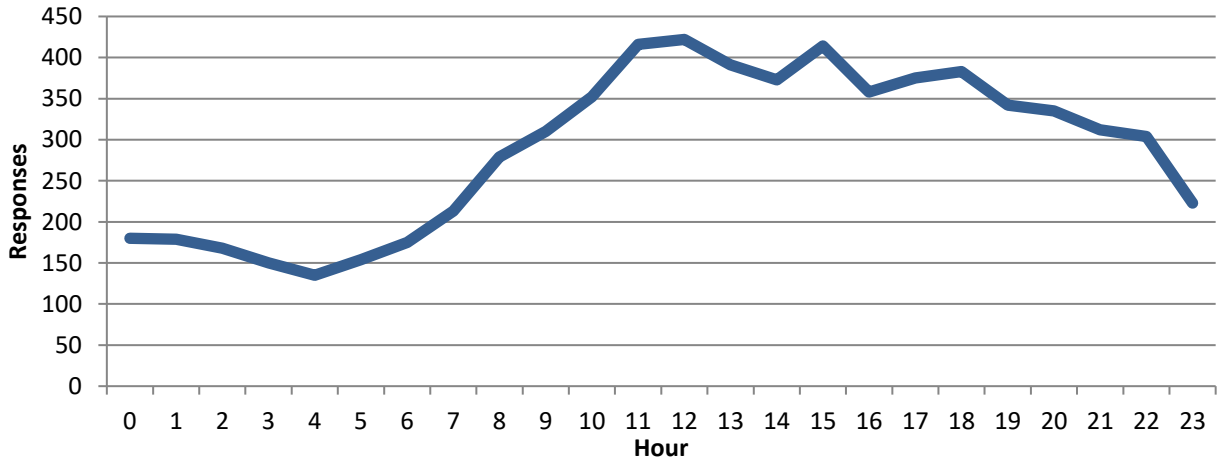
This chart demonstrates that the fire department responses are relatively even across the year. Slight increases in summer might reflect wildland fires, and perhaps unusual winter weather might instigate more auto accidents in the winter; generally, between 500–600 responses per month can be expected.

Figure 79: Frequency of Incidents by Day of the Week for 2015



On a daily basis, the responses are higher on the weekdays reflecting travel and greater potential injuries. While peak days appear to be Monday, Tuesday, and Friday, Saturdays and Sundays are lower, suggesting that the impact on the fire department is due to business activities within the city during the week, rather activities of the local population.

Figure 80: Frequency of Incidents by Hour of the Day for 2015

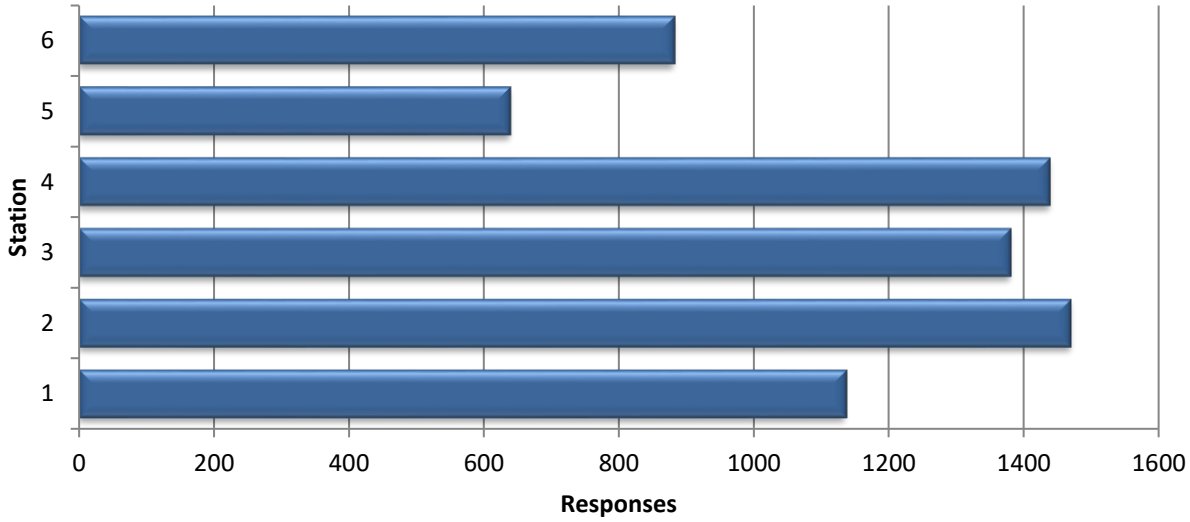


The trend during the day is typical with responses increasing during the day from seven in the morning until seven at night. Greatest potential for response is 10:00AM to 6:00PM. Looking at the temporal analysis, there are not any unusual trends that might need to be reviewed. If some additional resources such as a peak load unit were needed, it would potentially be for EMS support during the midday on Monday through Friday. Based on unit utilization, addressed later in the report, it does not appear this would be a recommendation for MWCFD.

Geographic Service Demand

In addition to the temporal analysis of workload, it is useful to examine the geographic distribution of service demand. The following figure shows the responses by station for the last year 2015:

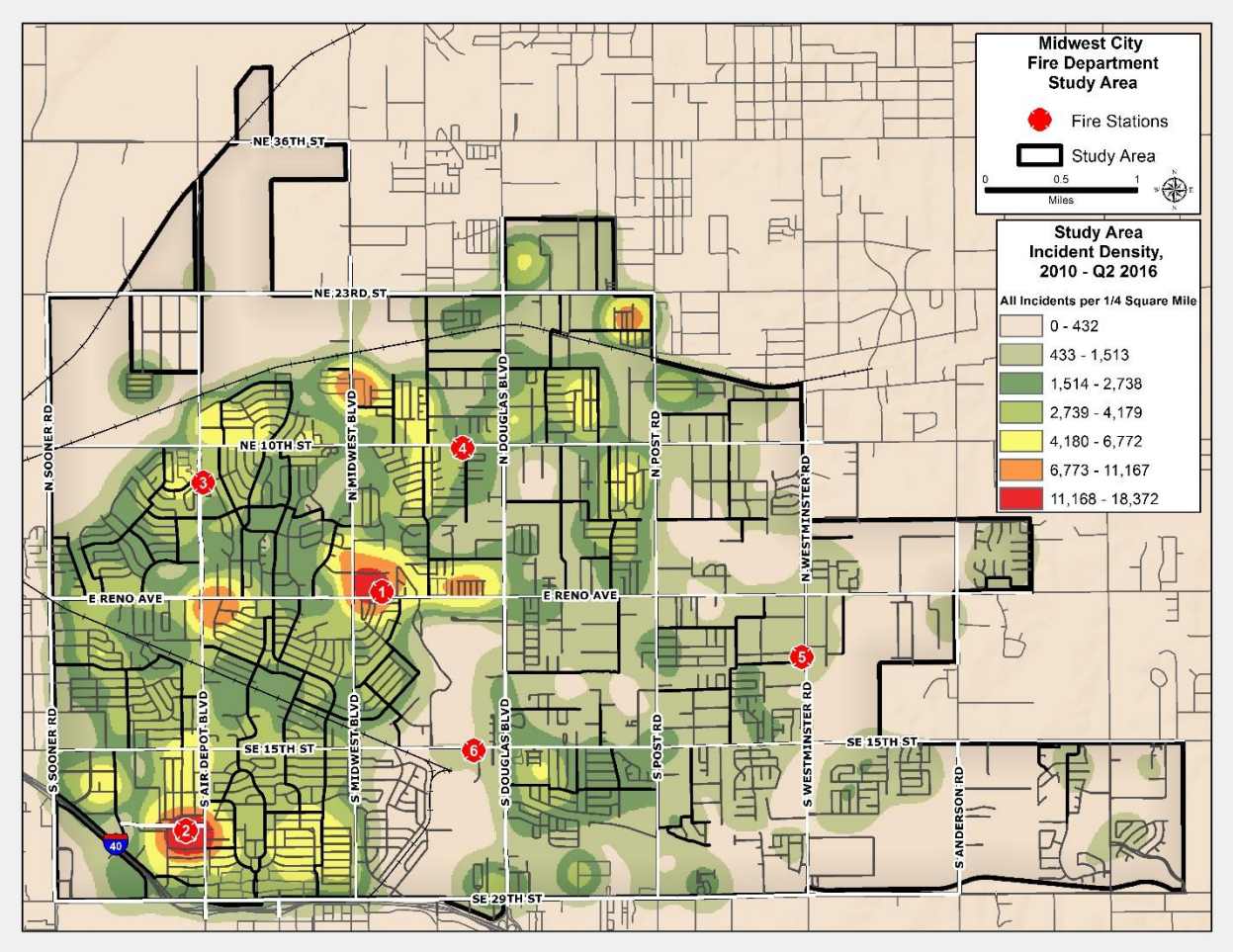
Figure 81: Responses by Station for 2015



Stations two, three, and four are the busiest stations on an annual basis. The percentages of total call volume run from station five at 9 percent to stations two and four at 21 percent each. Service demand is allocated by geographical location relative to the station location, so it is difficult to closely balance all stations. A unit utilization and reliability analysis will determine if units are overloaded and if a strategy to rebalance the call load is necessary. The following figures will show the locations of incident responses geographically.

ESCI uses geographic information systems software (GIS) to plot the location of incidents within the MWCFD study area, during 2010 to end of second quarter 2016, and calculated the mathematical density of incidents in the study area. The next figure shows incident density over the 5.5-year analysis period. This shows all incidents:

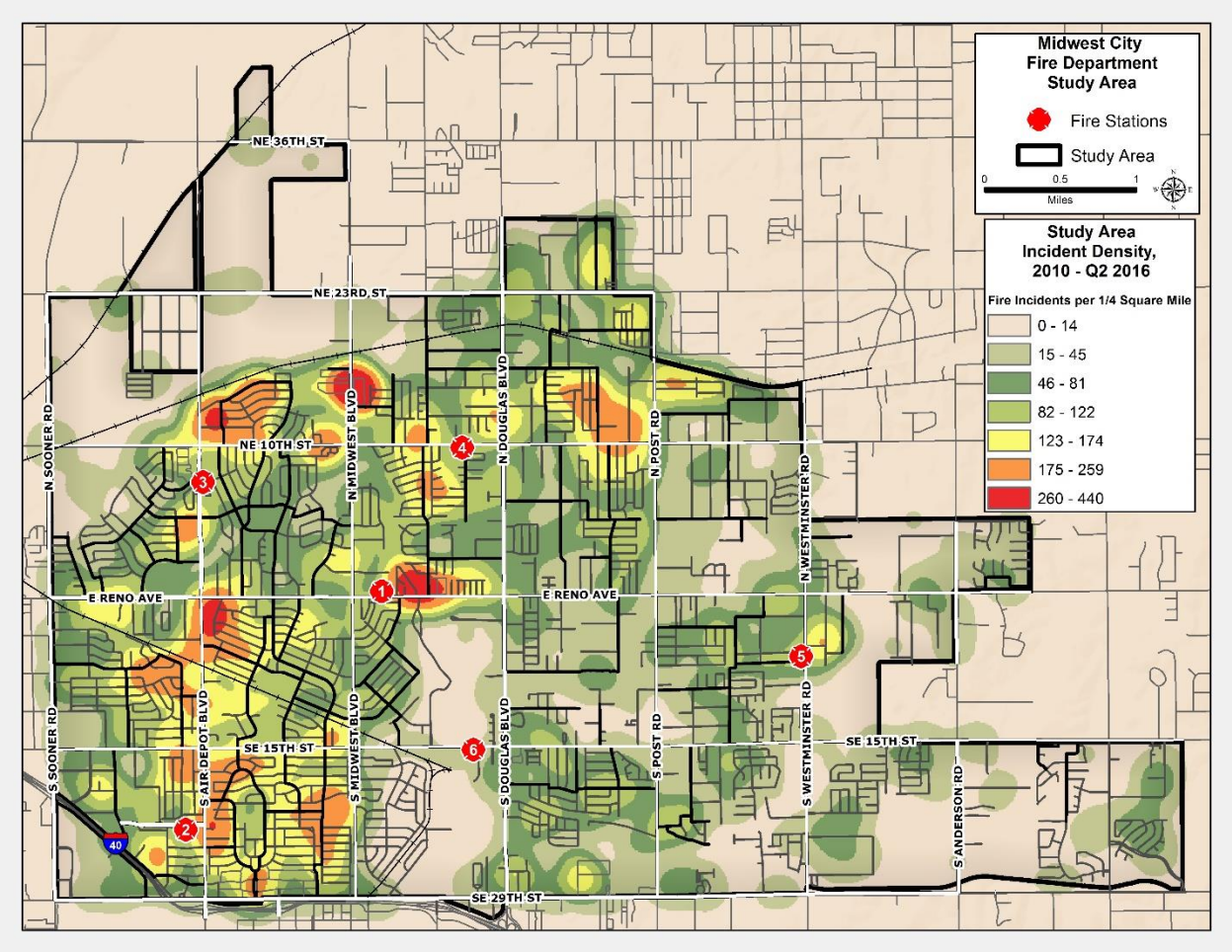
Figure 82: Incident Density Map for All Incidents



This figure shows the locations where incidents took place over the period of 2010 to the second quarter of 2016. Due to the five-and-a-half-year analysis period, the accuracy of the highest density locations is highly reliable. Note that the locations of highest density are located in close vicinity to stations one and two. This improves response times to the greatest number of service requests within those station response zones. Overall, the highest incident density areas are within the response zones of stations one, two, three, and four.

The following figure is similar but showing only fire responses during the five-and-a-half-year analysis:

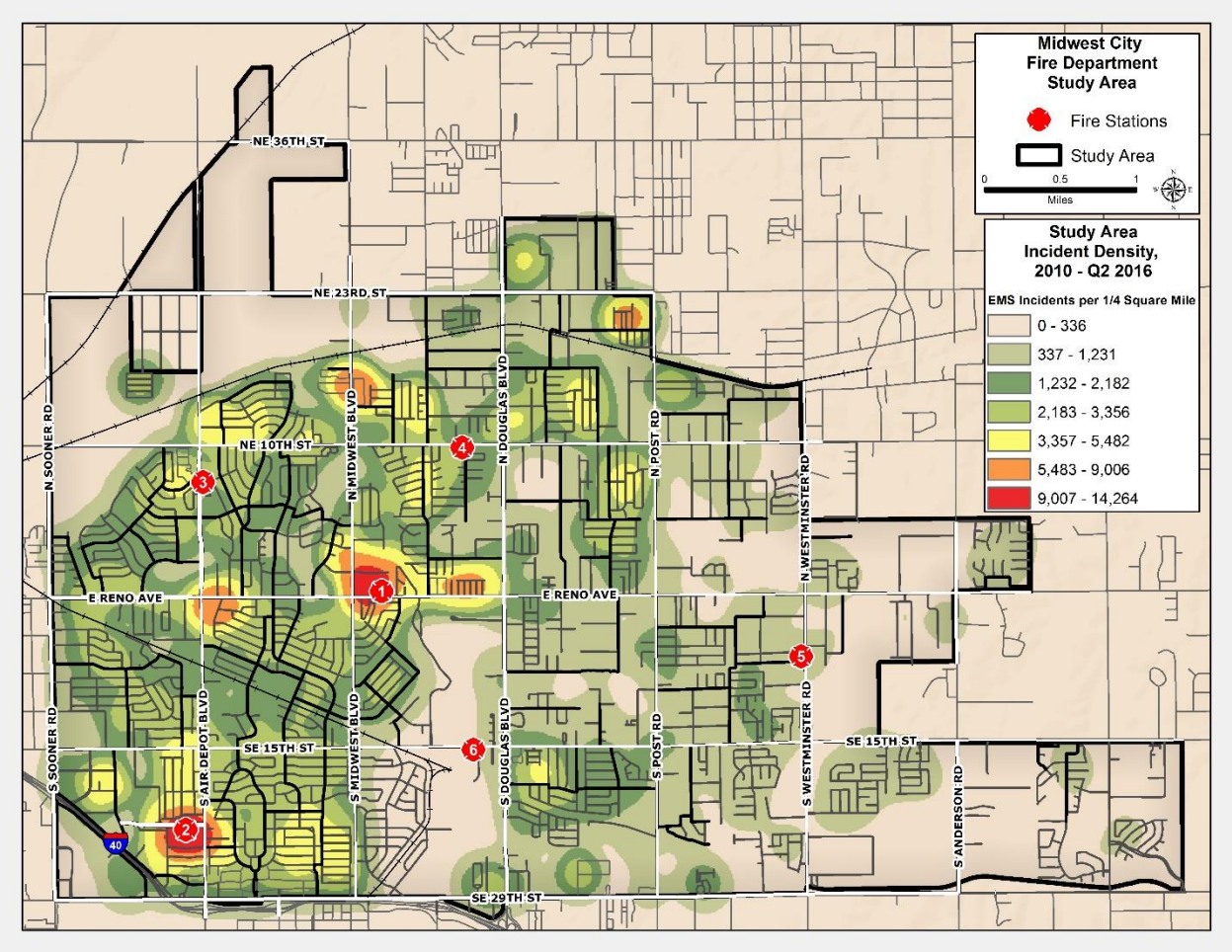
Figure 83: Incident Density Map for Fire related calls



Note the locations of fires concentration shows a somewhat different pattern of incident density, however these fires are generally located within the same four station area, with station five showing a higher level of fire activity as well.

Finally, the following figure show the incident density for only EMS incidents:

Figure 84: Incident Density Map for only EMS incidents

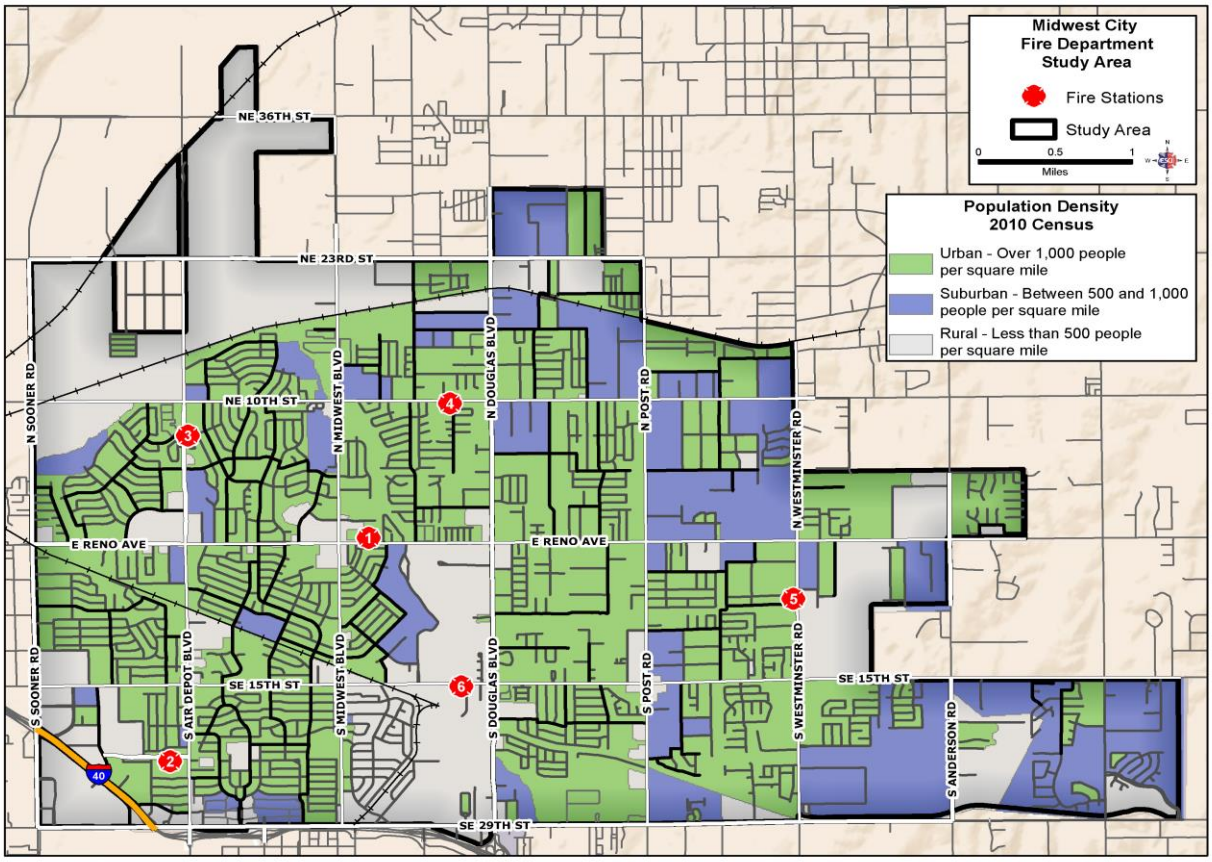


The total responses density map and EMS only density maps are very similar, due to the larger percentage of EMS calls within the total.

Population Density Areas

The number of incidents are usually directly correlated with the population densities. The following figure indicates the areas of levels of population density. These levels of densities are the same as those used in the NFPA standards to define areas where response time performance expectation may differ.

Figure 85: MWCFD Population Density Map

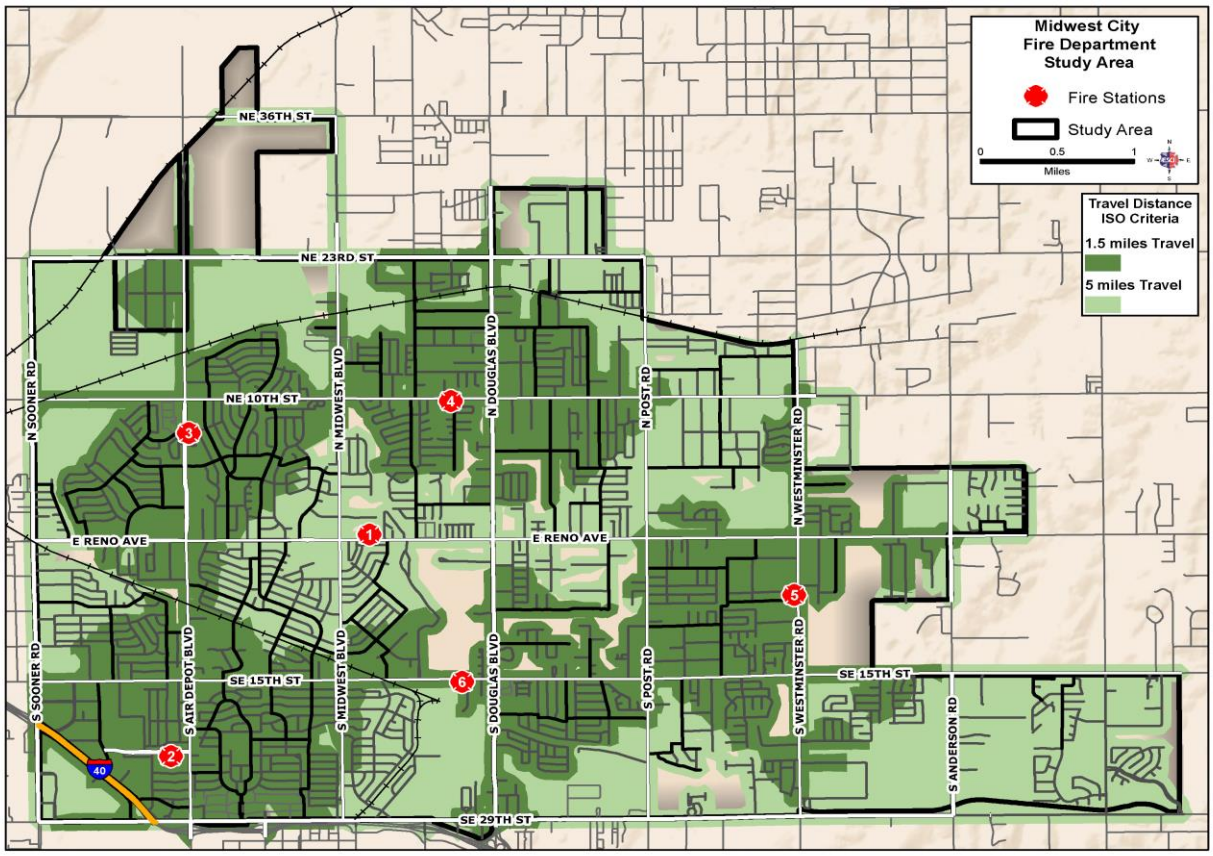


As mentioned previously, ESCI is considering the entire city to be urban density, as defined by NFPA. This is a practical matter, as the areas of suburban densities are interspersed within areas of urban densities. The rural density areas appear to be those with no streets or homes, so these areas are likely to either stay the same or develop into higher densities over time.

Resource Distribution Analysis

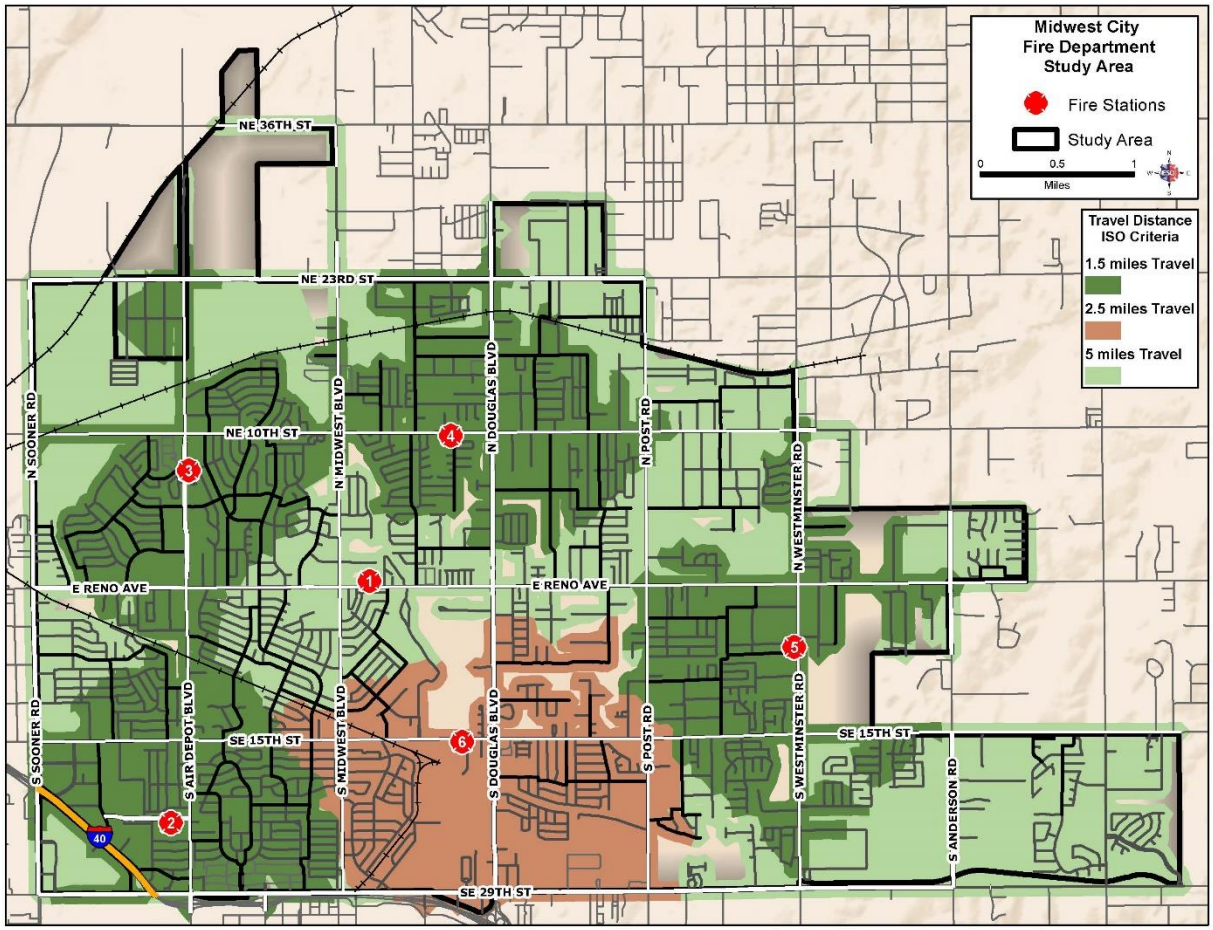
There are two standards commonly used in the fire service for response distribution. The Insurance Services Organization (ISO) is a national insurance industry organization that evaluates fire protection for communities across the country. A jurisdiction's ISO rating is an important factor when considering fire station and apparatus distribution, since it can affect the cost of fire insurance for individuals and businesses. To receive maximum credit for station and apparatus distribution, ISO recommends that in urban areas, all "built upon" areas in a community be within 1.5 road miles of an engine company. Additionally, ISO states that a structure must be within five miles of a fire station to receive any fire protection rating for insurance purposes. The following figures examine current MWCFD station and apparatus distribution, based on credentialing criteria for the Insurance Services Organization (ISO):

Figure 86: Engine Distribution per ISO Criteria



This map shows the area (dark green) that can be reached by an engine within a 1.5-mile travel distance. Station 1 currently has no engine response and hence no engine travel distance (dark green) in ISO criteria. Station 6 has a quint which can operate as a truck or engine and therefore fulfills the ISO requirement. The light green area is the five-mile travel distance from a fire station. Any structure outside that area would be a ten classification for insurance purposes. All structures within the city fall into the five-mile coverage.

Figure 87: Truck Distribution per ISO Criteria

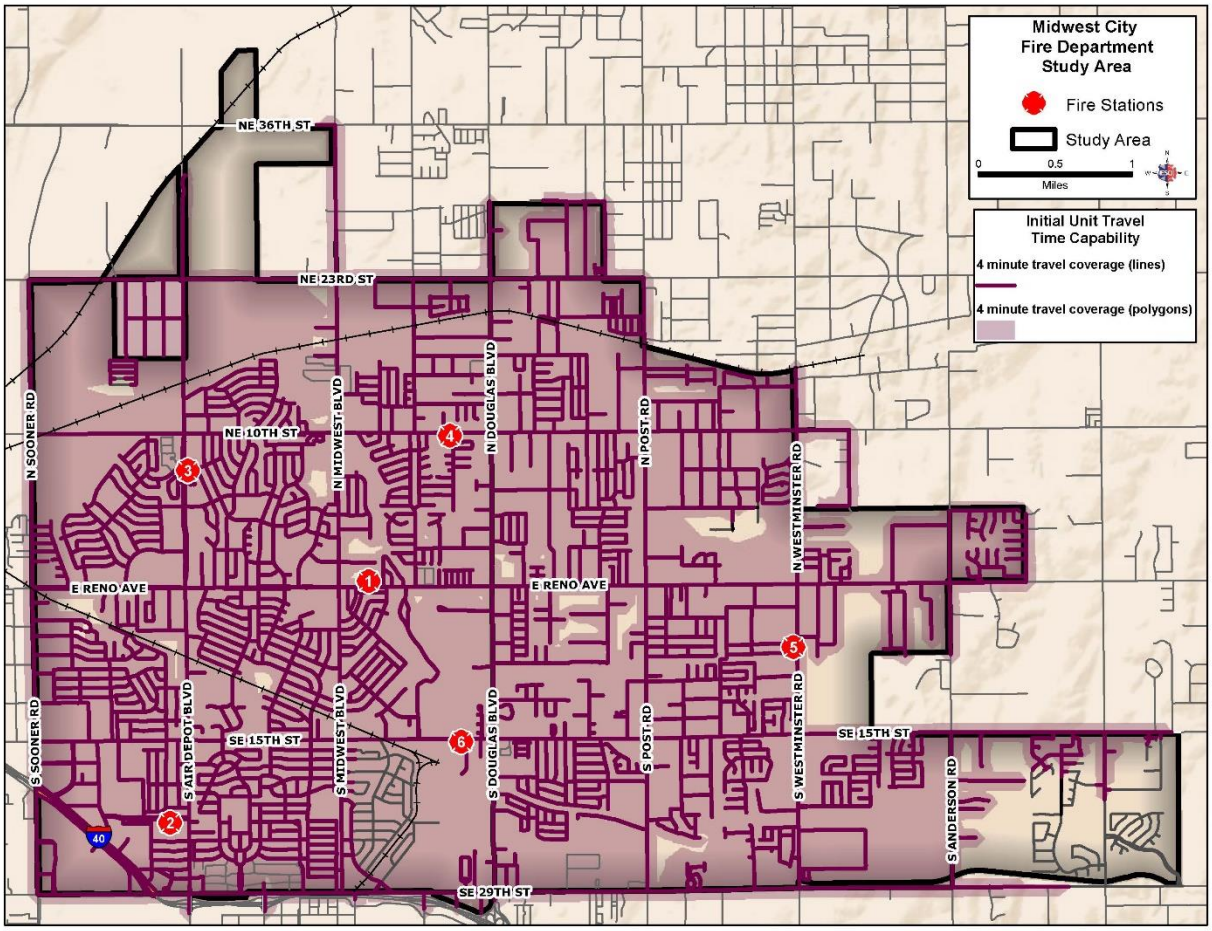


This figure shows the 1.5-mile engine travel criteria and the 2.5-mile truck company travel capability. The brown colored area is that to which the truck can respond with a 2.5-mile travel distance. Truck company response within that distance is recommended where there are buildings over three stories or where there is high fire suppression water flow required. Most of the buildings requiring a truck response are in within station one and two coverage areas.

The ISO Public Protection Classification criteria only address fire suppression activity and are primarily concerned with geographic coverage of property. For fire jurisdictions such as MWCFD that respond to all types of emergencies, the travel time required to respond from a fire station to any emergency call for service is of equal importance.

The second standard for resource distribution is using response time criteria. This method is used by NFPA standards and the Center for Public Safety Excellence accreditation of fire departments. The following figure presents a travel time model from the current station locations over the existing road network. Travel time is computer software calculated using the posted speed limit.

Figure 88: Four-Minute Travel Time Coverage



This map, generated by a computer analysis, demonstrates that nearly all parts of the jurisdiction can be reached in a four-minute travel time. There is a small section to the southeast that is outside of a four-minute travel from any station. This is an issue that deserves further discussion. Travel time is a component of the total response time and will also be discussed more fully later in the report.

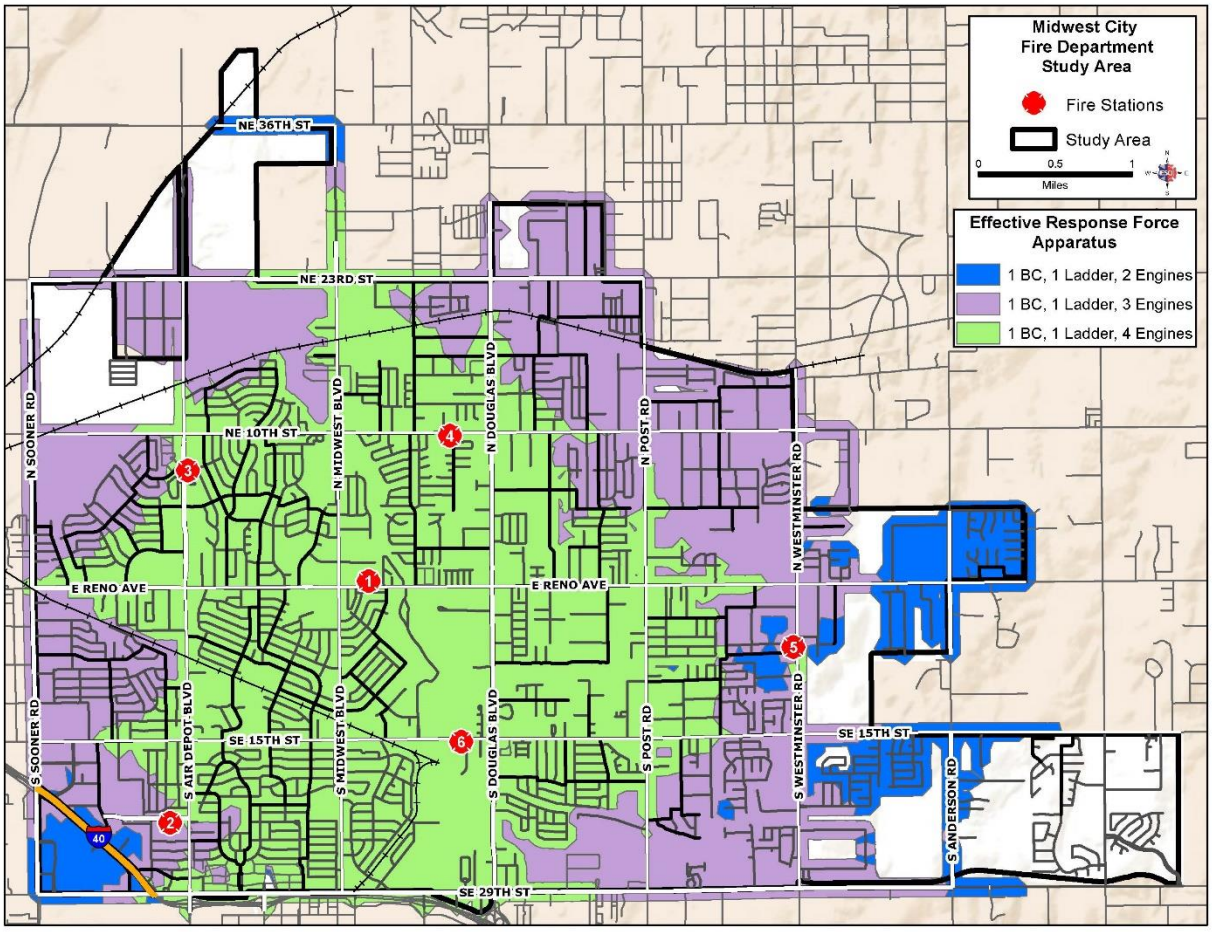
National consensus standards, such as NFPA 1710, specify that a career staffed, urban fire department's objective should deploy resources such that 90 percent of emergency service demand can be reached in four-minutes' travel or less.[7]

[7] *NFPA 1710, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments* (National Fire Protection Association 2016 ed.) Sections 4.1.2.1(3) and 4.1.2.4.

Resource Concentration Analysis

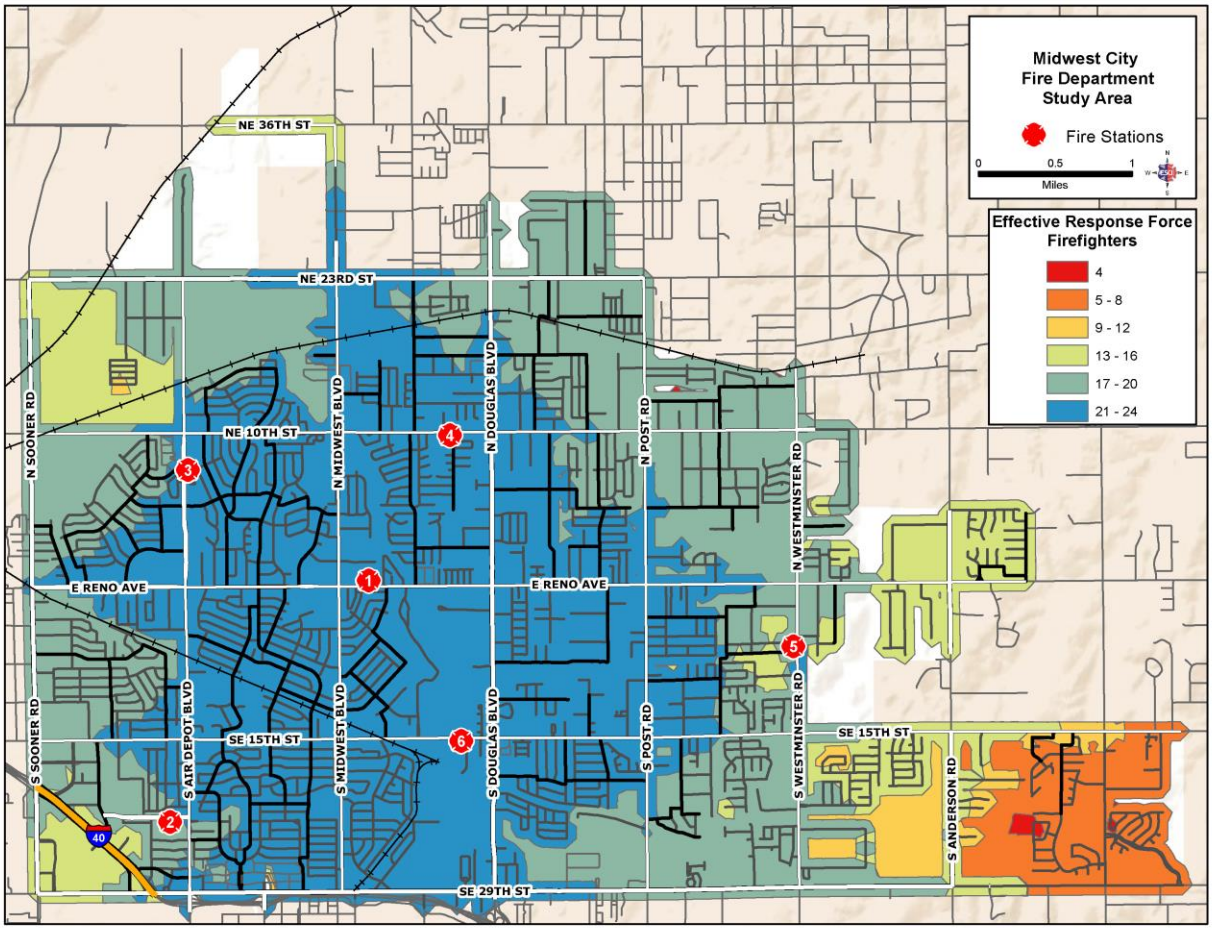
Accepted firefighting procedures call for the arrival of the entire initial assignment (sufficient apparatus and personnel to effectively deal with an emergency based on its level of risk) within a reasonable amount of time. This is to ensure that enough people and equipment arrive soon enough to safely control a fire or mitigate any emergency before there is substantial damage or injury. MWCFD operates from six stations. There is no automatic aid programed into the designated response and MWCFD relies upon its own resources to assemble multiple apparatus at the scene of incidents beyond the capabilities of a single apparatus. The following figure illustrates the concentration of MWCFD resources available within eight-minutes' travel or less, as specified by NFPA 1710:

Figure 89: Resource Concentration Analysis Based on An Eight-Minute Travel Time



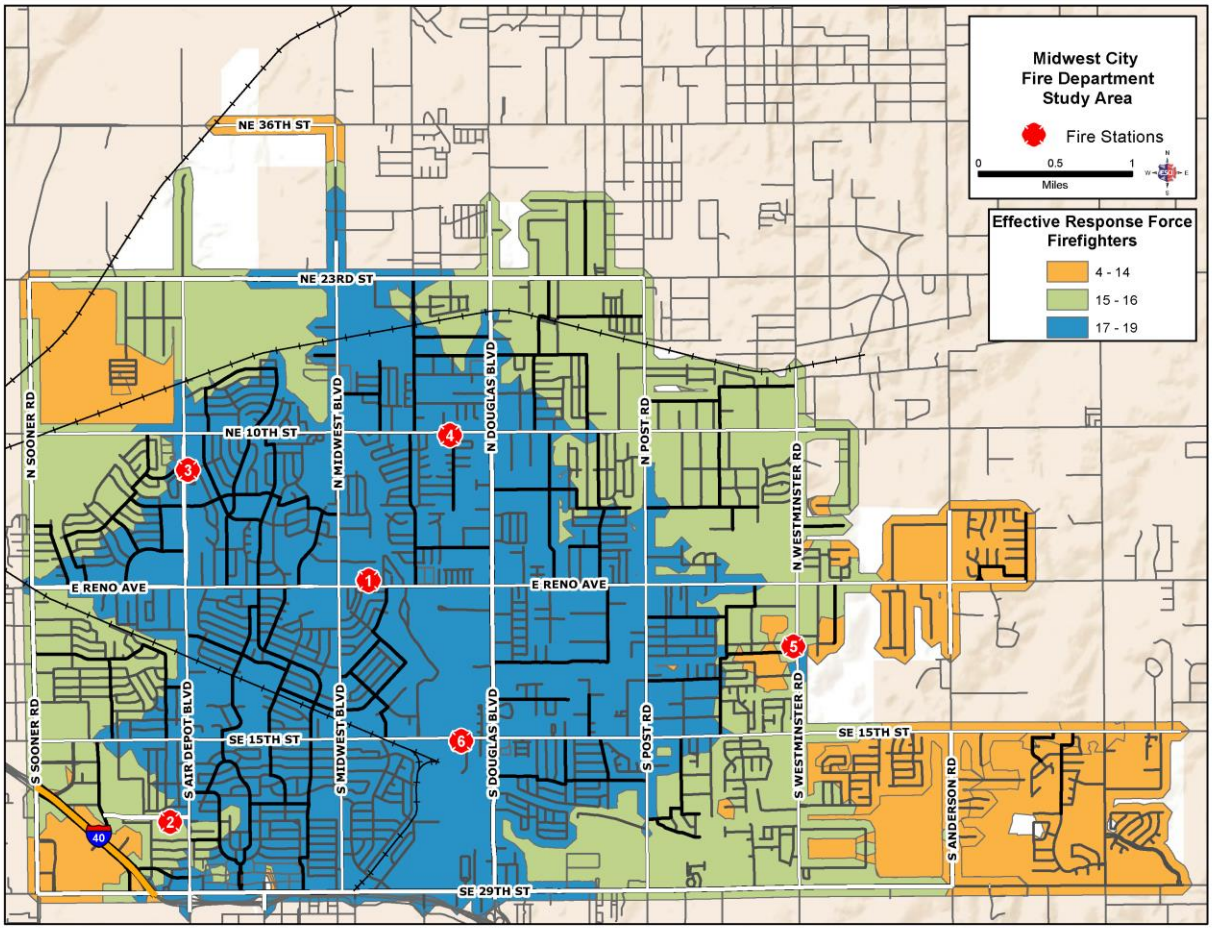
Eight minutes is the recommended objective for assembling an initial full alarm assignment (other than a high rise) under NFPA 1710. This map shows the apparatus available within eight minutes to the various parts of the jurisdiction. The far southeastern corner of the coverage area showed an inability to muster two engines and ladder within eight minutes. Personnel respond with apparatus and it is important to know what number of personnel will be able to respond in this timeframe. The following figure predicts the personnel available within the eight-minute travel time:

Figure 90: Resource Concentration of Personnel Within Eight-Minute Travel Time Full Staffing



This map assumes a full staffing available, i.e. 24 firefighters and one battalion chief. The green and blue areas indicate that a complement of 17 firefighters can be on-scene in eight minutes. The following figure demonstrates the same with a minimum staffing of 19 firefighters available:

Figure 91: Resource Concentration of Personnel Within Eight Minutes 19 On-Duty



With 19 firefighters on-duty staffing, the ability to place a minimum of 17 firefighters on scene in eight minutes is shown by the blue area. Throughout most of the jurisdiction (blue area) an effective firefighting force of at least 17 firefighters can be on the scene within eight minutes at full staffing or at 18 firefighters and one battalion chief. As reviewed in the Emergency Staffing section, NFPA 1710 advises that a minimum of 15 personnel be on scene of a residential structure fire to fulfill the necessary roles.[8] The reader should be aware this is a typical 2000 square foot, two-story home without basement and without exposures. Large homes or commercial buildings may demand a larger contingent of firefighters. Structures and risks demanding an effective response force greater than the number of on-duty personnel need to be identified as a target hazard in the computer aided dispatch (CAD) software. The number of firefighters responding should be determined through a critical task analysis which is part of a standards of cover analysis. ESCI recommends that the department undertake such an analysis. There will be more on standards of cover later in the report.

[8] *NFPA 1710, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments* (National Fire Protection Association 2016 ed.) Section 5.2.4.1.1 Single Family Dwelling Initial Full Alarm Assignments.

Response Analysis

Perhaps the most publicly visible component of an emergency services delivery system is that of response performance. Policy makers and citizens want to know how quickly they can expect to receive emergency services.

In the performance analysis, ESCI examines response performance within the MWCFD jurisdiction. The data for this analysis is 2015 incidents extracted from the department's records management software (RMS). Due to the unreliability of which calls are responded in an emergent and non-emergent mode, all were used in the total response time calculation. Calls for mutual aid incidents and any calls outside the city boundaries were not considered in the response time calculation nor were any calls cancelled prior to arrival. Calls cancelled prior to arrival were considered for turnout time calculations. Response time is measured from the time Midwest City Communications Center is notified of an alarm to when the first MWCFD apparatus arrives on scene.

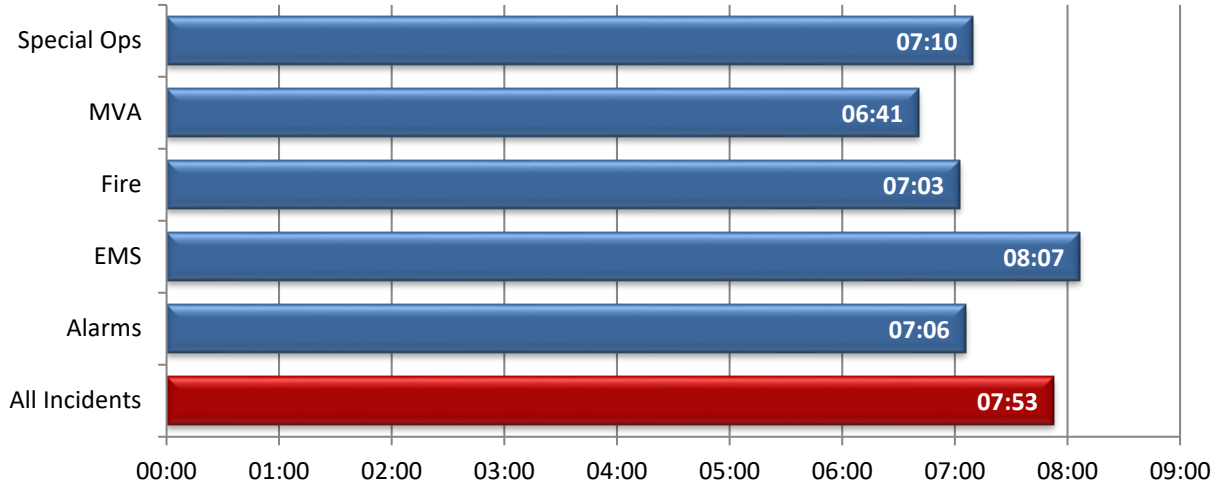
The time continuum (that is, the time between when the caller dials 911 and when assistance arrives) is comprised of several different components:

- Call Processing Time—The amount of time between when a dispatcher answers the 911 call and when resources are dispatched. NFPA 1710 recommends 1:04 (min:sec, or 64 seconds) at 90 percent.
- Turnout Time—The amount of time between when units are notified of the incident and when they are enroute. NFPA 1710 recommends 1:20 (min:sec, or 80 seconds) at 90 percent for fire and 1:00 (min:sec, or 60 seconds) at 90 percent for EMS calls.
- Travel Time—The amount of time the responding unit spends on the road to the incident. This is a function of speed and distance. NFPA 1710 recommends 4:00 (min:sec, or 240 seconds), at 90 percent.

Total Response Time equals the combination of "Call Processing Time," "Turnout Time," and "Travel Time."

ESCI generates the 90th percentile response times for all incidents unless otherwise specified. The use of percentile calculations for response performance follows industry best practices and is considered a more accurate measure of performance than "average" calculations. The most important reason for not using the "average" to measure response performance or establish performance goals is that it may not accurately reflect the performance for the entire data set and may be skewed by data outliers. A few extremely good or bad values can skew the "average" for the entire data set. Percentile measurements are a better measure of performance since they show that the large majority of the data set has achieved a particular level of performance. For instance, response performance measured at the 90th percentile demonstrates that the first apparatus arrived at 90 percent of incidents in the stated time or less. This can be compared to the desired performance objective to determine the degree of success in achieving the goal. The following two figures provide a graphic representation of MWCFD percentile response performance during 2015:

Figure 92: Total Response Time Performance



Due to the ambiguity in the database as to which responses were emergent, ESCI chose to remove all public assistance and other type calls. These types of calls are often not emergent in nature. After considering the remaining calls, the overall response time performance for MWCFD is 7 minutes, 53 seconds or less for 90 percent of the calls. Best performance was for fire and motor vehicle accidents, and the worst performance was for emergency medical responses.

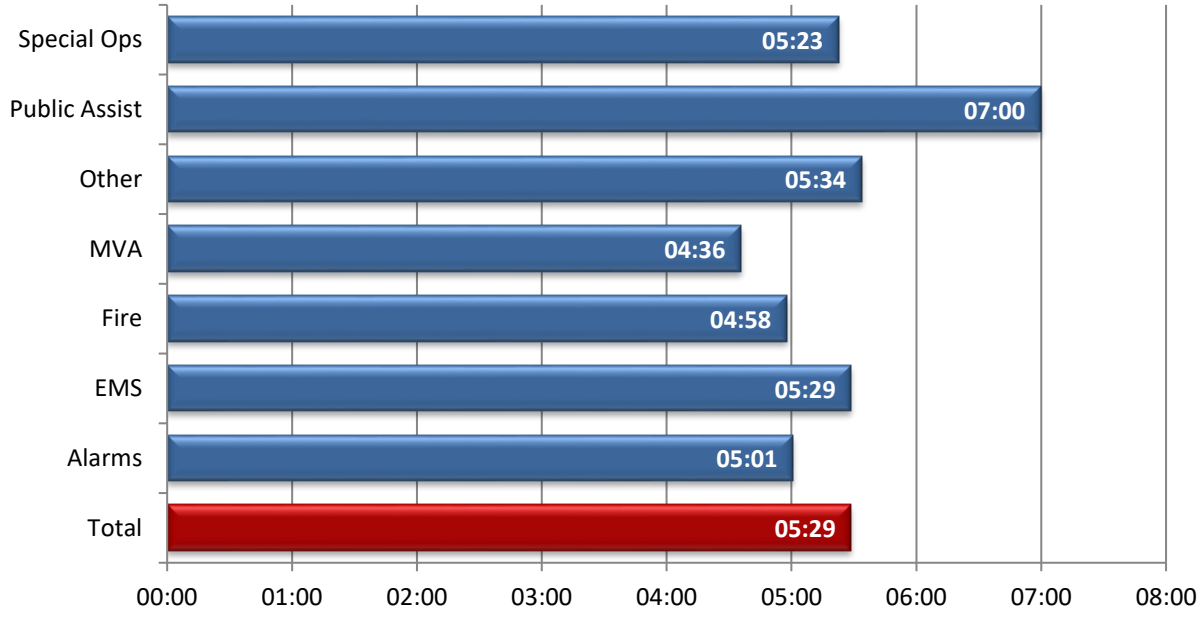
Only the 2015 data was used in this analysis as it was most complete; however, even in 2015, the call processing times are missing in 55 percent of the calls. Forty-five percent had something in excess of one second. Since a large number of responses have a zero call-processing time, ESCI believes that calculation of the total response time is therefore less (better) than actual performance. MWCFD does not have locally established response time objectives. ESCI recommends that MWCFD establish these locally by the governing body in collaboration with the city manager, fire chief, and labor officials.

In lieu of locally established response time objectives, there are those recommended by the NFPA 1710 standard. For this report, ESCI has used the NFPA 1710 standard objectives for all the component parts of response time.

Travel Time

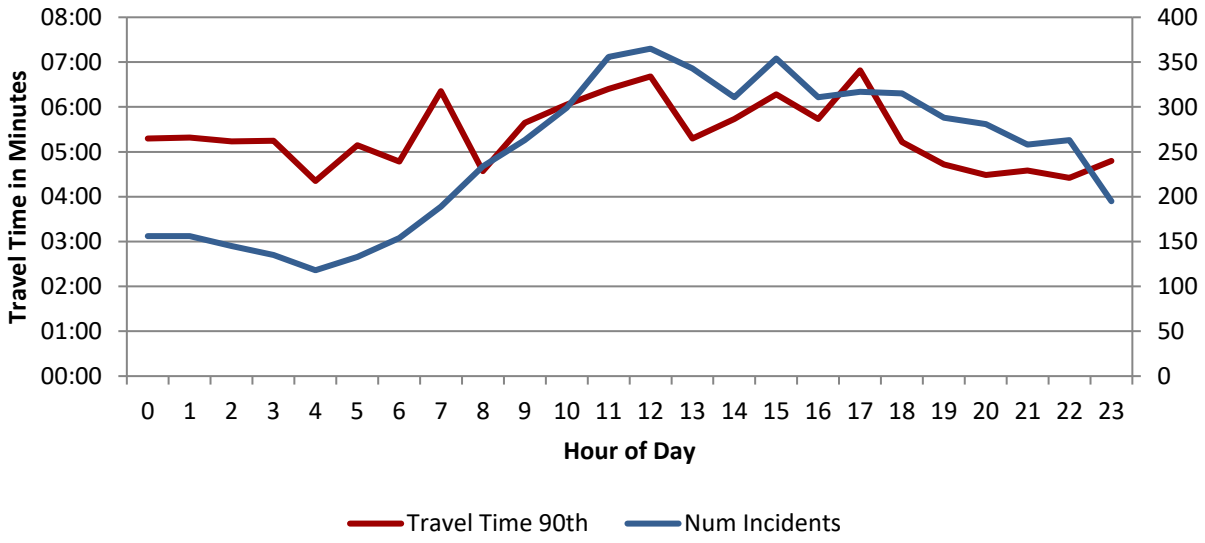
NFPA 1710 standard recommends a 240 second (four-minute) travel time for career staffed fire departments that serve urban densities. The following figure shows the outcomes of travel times by type of incident. Data used in this calculation is based on all 2015 incidents that were within the city boundaries and where a unit was not cancelled before arrival.

Figure 93: Travel Time Performance



Actual travel time performance for all types of incidents is 5 minutes, 29 seconds (329 seconds) at the 90th percentile level. Removing Public Assists and Other type calls, the overall travel time is only reduced to 5 minutes, 22 seconds (322 seconds). Travel time is a function of distance the unit/station is from the incident and the speed at which the unit is travelling. The speed is not overly significant in the overall response, unless the distance travelled is long. Travel time can also reflect delays due to heavy traffic, weather, road closures, and other similar circumstances; however, primarily, the times are reflective of the distance from the station to the scene of the incident.

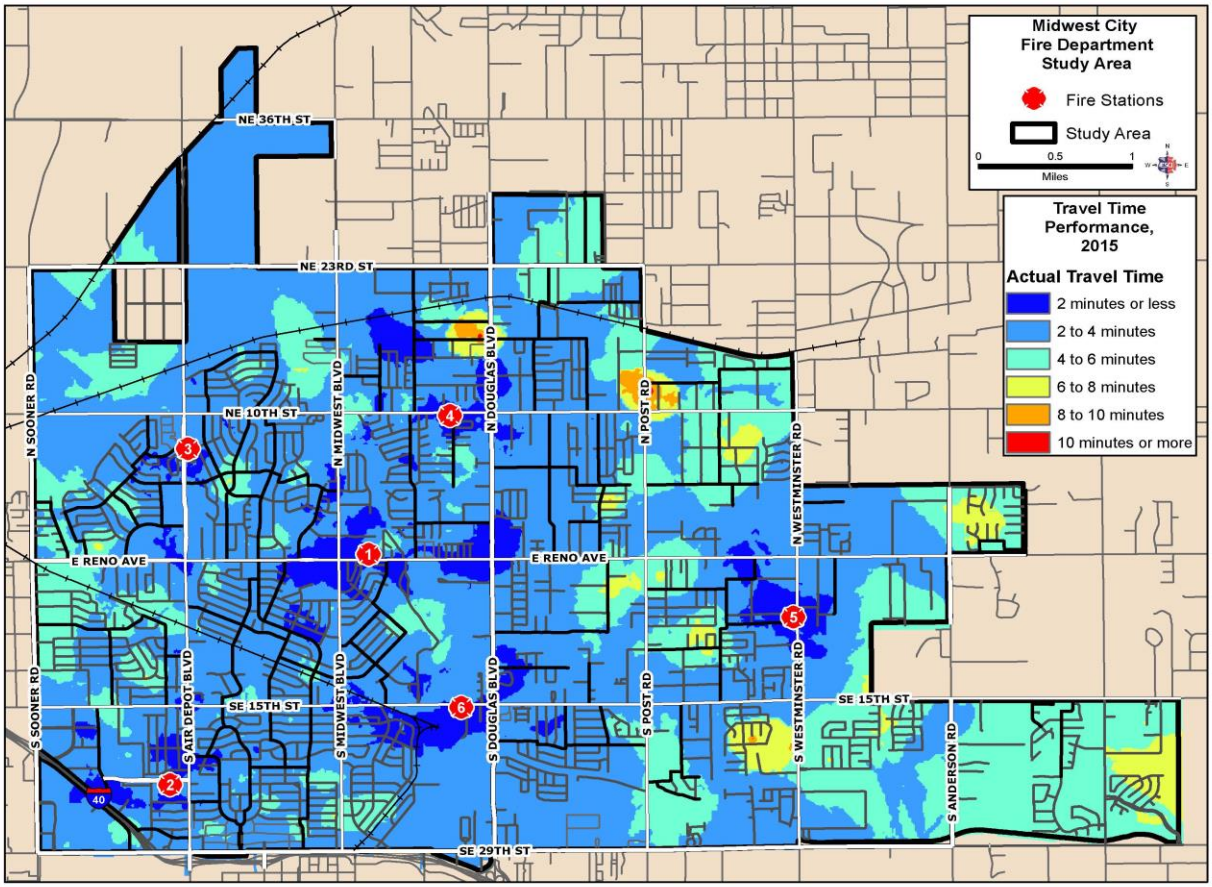
Figure 94: Travel Time by Hour of Day



Examining the travel time plotted against hour of the day demonstrates fairly consistent travel time around the clock with one to two minute peaks around rush hours and lunch time. This would suggest that traffic is not adding a great deal to the travel time normally. Even in the middle of the night, when traffic should be minimal, the travel times reflect around a 300 second (five minute) duration to the 90 percent level.

Another way of portraying the travel time results is shown in the following figure. This map depicts actual travel times to all areas of the jurisdiction. The areas of longer response times can be seen and this may be more informative about suggesting where the delays are occurring:

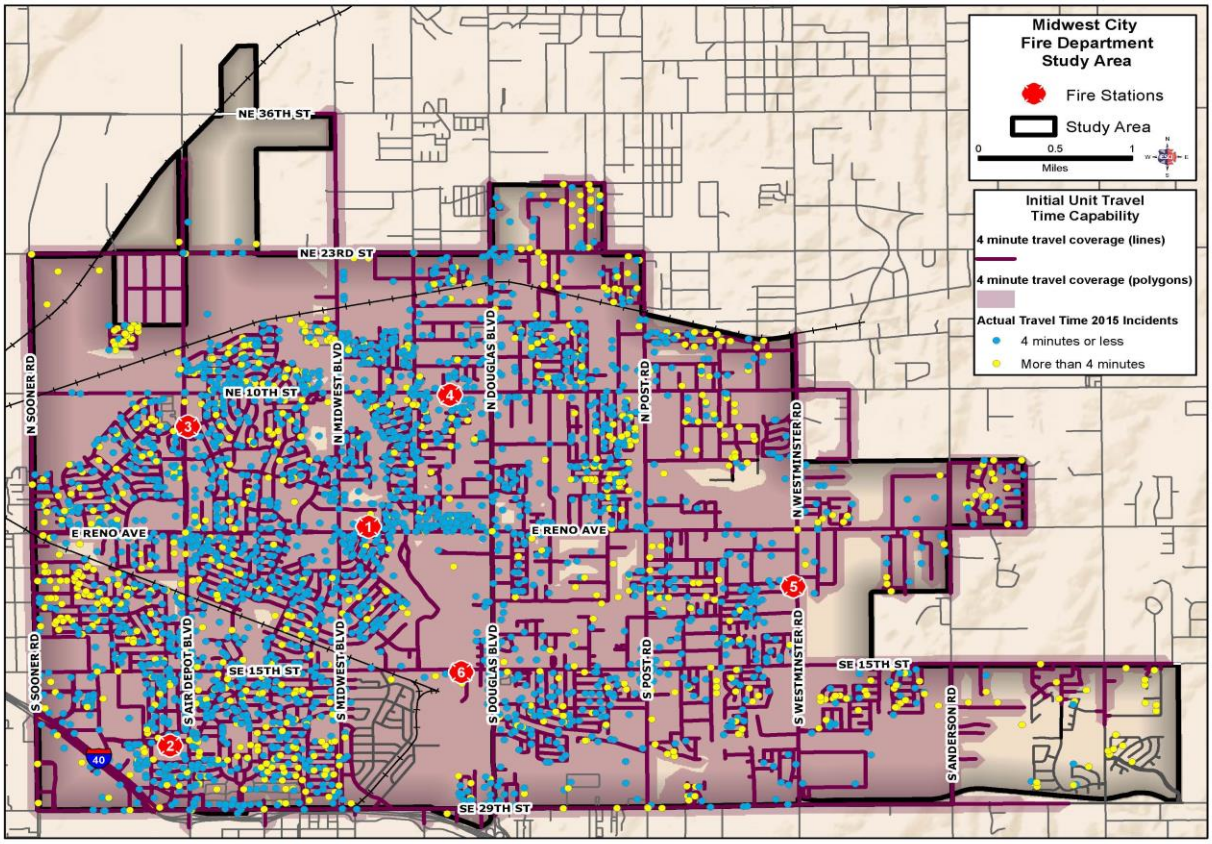
Figure 95: Actual Travel Time Performance in 2015



In reviewing the areas of longer travel times, the longest times are usually at the furthest distance from the station as would be expected. The question is whether the distances from the station are the cause of the extended travel times. Additional research was conducted to answer the question.

The following figure maps the area of four-minute travel time coverage in violet and locations of incidents within 2015 in colored dots. The blue dots represent calls that were reached within four minutes, and the yellow dots represents calls that were not reached within the four-minute time frame:

Figure 96: Predicted 4-minute travel time with 2015 incidents overlay



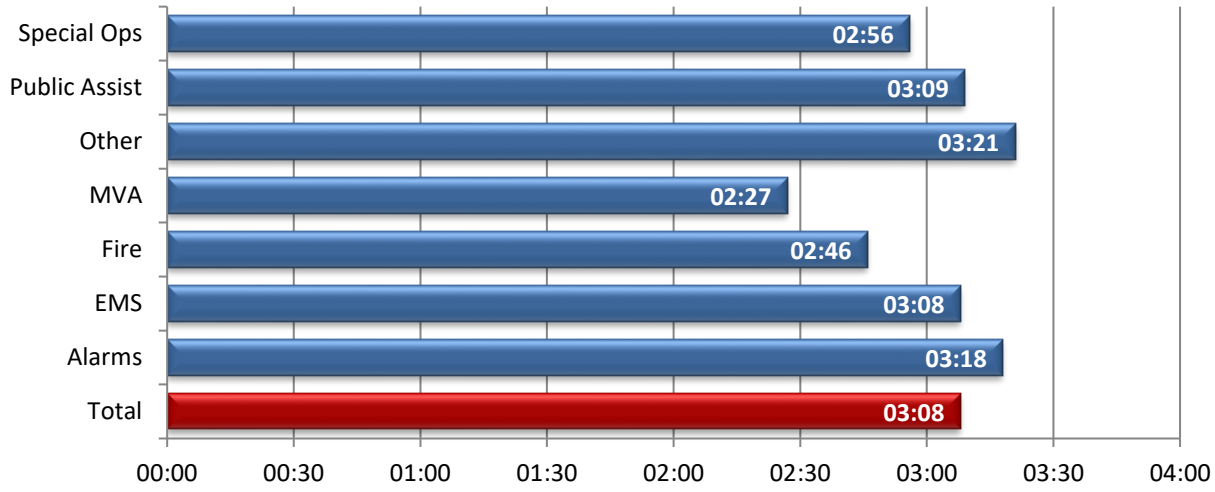
Again, the incidents that had more than the predicted travel time tend to be grouped in areas, mostly to the outside of a station district. However, one can see that there are numerous occasions in which the yellow dot is close to a station.

Researching travel times to the locations of 5.5 years of incidents gives a larger sample size to review. In this analysis, using a distance and posted speed calculation of 240 seconds (four minutes), the GIS program suggests incidents should be reached in a proportion greater than 99 percent of the time. This was determined to be true with all six stations or even with Station 1 removed from the analysis. The software uses actual roadway speed limits and does not account for other penalties in driving (slowing and stopping at red lights, left hand turns, etc.) Predicted time will be more optimistic than will be found in the actual performance, however ESCI finds the travel time to be significantly longer than we would expect, even assuming some reduction in speed by the factors noted.

Turnout Time

The last component of response time is turnout time. Turnout times are specified differently in NFPA 1710 for fire or special operations and for EMS calls. The rationale for this is that the firefighters have more protective clothing to put on for a fire or special operations, whereas station clothing, gloves, and safety glasses may well be acceptable for a medical call. The standard recommends an 80 second (1 minutes, 20 seconds) turnout for fire and special operations and a 60 second (1 minute, 0 seconds) turnout for EMS at the 90th percentile. MWCFD's actual turnout performance is shown in the following figure:

Figure 97: Turnout Time Performance at the 90th Percentile



Turnout for EMS calls is nearly three times the recommended objective. Turnout to fire calls is slightly over twice the recommended objective. Intuitively, EMS calls should be faster than fire calls, due to the required safety equipment to be donned. This is an area that needs focus in order to meet the NFPA 1710 standard. There may be several reasons for why this is occurring and will take some analysis by the fire department personnel to determine the time delays. ESCI recommends conducting an analysis on the cause of delays in turnout times.

Response Time Summary

Summary of response time performance compared to the NFPA 1710 standard is shown in the following figure:

Figure 98: NFPA 1710 Recommended Time Objectives

Response Time Component	Standard Recommended Time	Actual Performance
Call Processing Time	1:04 (min:sec, or 64 seconds) at 90%	Unable to determine
Turnout Time	Fire and Special Operations – 1:20 (min:sec, or 80 seconds) at 90% EMS – 1 minute (60 seconds) at 90%	Fire and Spec. Ops – 2:46 (min:sec, or 166 seconds) at 90% EMS – 3:08 (min:sec, or 188 seconds) at 90%
Travel Time	4 minutes (240 seconds) at 90%	5:29 (min:sec, or 329 seconds) at 90%
Total Response Time	Fire and Special Ops – 6:24 (min:sec, or 384 seconds) at 90% EMS – 6:04 (min:sec, or 364 seconds) at 90%	Fire – 7:03 (min:sec, or 423 seconds) at 90% Special Ops – 7:10 (min:sec, or 430 seconds) at 90% EMS – 8:07 (min:sec, or 487 seconds) at 90%

All measured times that could be analyzed are in excess of the NFPA standard. In fairness, ESCI believes that the times recorded may not be accurate. Often during busy times, units reporting status changes may need to wait for air time to make their report, or the dispatchers will record the change in status sometime after hearing the report on the air as they are busy with other important activities. There is no way to determine if this truly the cause of the longer than normal times without accurate timestamps. A solution that provides timestamps as the firefighters process the change in status is possible to implement but not without citywide support. This effort needs to include the emergency manager/communications director as well as the fire department. The solution will require changes in the computer aided dispatch (CAD) and equipment within the fire apparatus themselves. Mobile data terminals (MDT) in the fire department vehicle is the most accurate way to record data. The MDT transmits a signal indicating a change in status when the button is activated by the firefighters, and it is time stamped into the computer aided dispatch (CAD) system data without intervention of dispatch personnel.

The analysis of the response performance has been made with several disclaimers about the quality, completeness, and accuracy of the data collected. ESCI recommends that efforts be made to collect accurate and complete response data to compare against response performance standards.

Response Reliability

The workload of emergency response units can be a factor in response time performance. Concurrent incidents or the amount of time individual units are committed to an incident can affect a jurisdiction's ability to muster sufficient resources to respond to additional emergencies.

Unit hour utilization (UHU) describes the amount of time that a unit is not available for response because it is already committed to another incident. The larger the number, the greater its utilization and the less available it is for assignment to subsequent calls for service. The following figure analyzes the total time MWCFD apparatus were committed to an incident during 2015 and expresses this as a percentage of the available time in the total year:

Figure 99: MWCFD Unit Hour Utilization (UHU) for 2015

Unit	Total Time Committed	UHU Rate
Engine 2	104:02:03	1.19%
Engine 3	406:11:15	4.64%
Engine 4	446:46:06	5.10%
Engine 5	232:14:03	2.65%
Engine 6	251:16:57	2.87%
Haz-Mat 1	002:28:33	0.03%
Ladder 1	292:26:57	3.34%
Ladder 2	300:18:26	3.43%
Ladder 6	107:05:37	1.22%
Brush Pumper 2	002:10:06	0.02%
Brush Pumper 3	008:41:42	0.10%
Brush Pumper 4	012:05:58	0.14%
Brush Pumper 5	007:02:40	0.08%
Brush Pumper 6	005:02:10	0.06%
Squad	100:13:41	1.14%

Units that exceed a 10 percent unit utilization hour begin to fail to achieve the desired response time criteria and should be reviewed for an alternative response strategy. The CPSE/CFAI *Standards of Cover, 8th Edition* suggests that UHU rates in the range of 25 to 30 percent for fire and EMS units can lead to employee burnout issues and can negatively affect station and unit reliability. Currently, UHU rates in the study area do not exceed these levels. Note that as unit hour utilization increases, not only are units less available for emergency responses but also less likely to complete other duties, such as inspections, training, public education, and maintenance. The highest unit hour utilization is Engine 4 at just over 5 percent. If changes are made that would increase the workload of the stations, this would be an important parameter to monitor.

The other factor that can affect a fire department's ability to muster sufficient resources to respond to additional emergencies is simultaneous or concurrent incidents. The following figure shows the station and the number of concurrent responses compared to total responses. The number of multiple incidents for each station area is shown as a percentage. This demonstrates that citywide there is only a 1.5 percent chance of concurrent calls. The highest station for concurrent calls is station two at 2.2 percent.

Figure 100: MWCFD Concurrent Incidents 2015

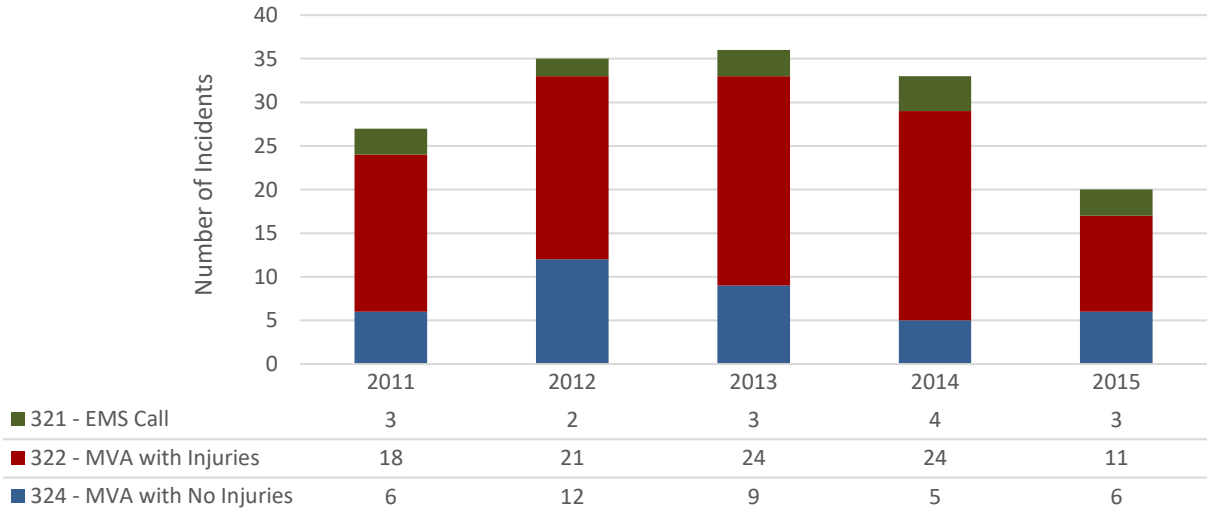
Station Number	Concurrent	Non Concurrent	Total Number Incidents Counted	Percentage of Concurrent Incidents
1	17	1118	1135	1.5%
2	32	1438	1470	2.2%
3	20	1360	1380	1.4%
4	21	1418	1439	1.5%
5	6	632	638	0.9%
6	8	873	881	0.9%
Total	**104**	**6839**	**6943**	**1.5%**

The unit hour utilization and percentage of concurrent calls indicate that units are not in danger of exceeding workload capability.

I-40 Reponses

MWCFD has only about one mile of I-40 running through the jurisdiction, yet approximately ten percent of the motor vehicle accidents each year are on I-40. There is an average of three EMS calls on the highway each year that MWCFD responds to as well. The department covers from Douglas Boulevard to Sooner Road as first due. The responses for the five-year period from 2011 to 2015 is shown in the following figure:

Figure 101: Historical Response to I-40



This is a commitment of at least two apparatus on the highway, using one for a safety blocker of traffic while crews are working on patients. In some instances, there is a higher commitment of apparatus. ESCI understand that MWCFD is the primary response and that this can require a large commitment of resources. This would be a perfect situation to use automatic aid. ESCI examined the location of stations near the stretch of highway. Besides Midwest City Fire Department Stations 2 and 6, there are three other stations that might be able to respond.

Figure 102: Distances from Various Stations to I-40

Department/ Station	Distance from Sooner Road egress	Distance from Air Depot egress	Distance from Town Center egress	Distance from Douglas Boulevard egress
Del City 4501 SE 15th	0.8 miles	2.2 miles		4.1 miles
Tinker FS 1 North side TAFB		1.4 miles	0.9 miles	2.4 miles
Tinker FS 3 East side TAFB			2.9 miles	1.3 miles
OKC Station 23 Eastern Ave and 29th	3.7 miles	4.1 miles		7.6 miles
OKC Station 13 Air Depot Blvd. and SE 74th	4.6 miles	4.9 miles		4.9 miles
MWCFD Station 2	1.4 miles	0.6 miles		2.7 miles
MWCFD Station 6	3.2 miles	2.9 miles		1.2 miles

In order to have not have one department supply the two engines, the following scenarios would provide the two nearest departments responding:

Direction	Eastbound	Westbound
Sooner Road–Air Depot Blvd.	Del City, MWCFD 2	MWCFD 2, TAFB 1
Air Depot Boulevard–Town Center	MWCFD 2, Del City	MWCFD 6, TAFB 1
Town Center–Douglas Boulevard	MWCFD 2, TAFB 1	MWCFD 6, TAFB 3

ESCI recommends that MWCFD enter agreements with Del City and Tinker AFB to respond on I-40 for auto accidents.

Recommendations:

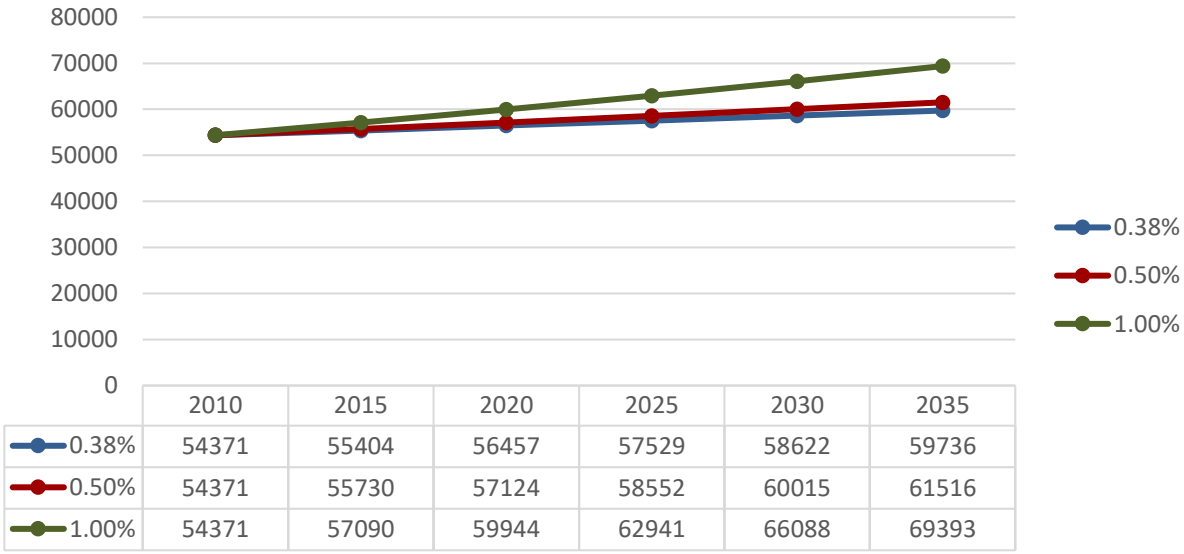
- Adopt jurisdiction response time objectives.
- Conduct an analysis of turnout time delays.
- Collect accurate and complete response time data to compare against adopted standard.
- Enter agreements with departments to respond to I-40.

FUTURE SYSTEM DEMAND PROJECTIONS

Population Growth Projections

The Midwest City Comprehensive Plan (2008) established an annual rate of population growth of 0.5 percent to project the population growth through 2035. The plan projection for 2010 was 56,854 and the census count was 54,371, which fell somewhat short of the actual in 2010. This is a compound rate of growth of about 0.12 percent for the years 2000 to 2010. However, using the 2015 census estimate (57,249), there was a compound rate of growth from 2010 to be 1.04 percent. The compound growth rate for the 15 years from 2000 to 2015 is .38 percent. The following figure shows the projected population at three rates: .38 percent, .5 percent, and 1 percent:

Figure 103: Population Projections

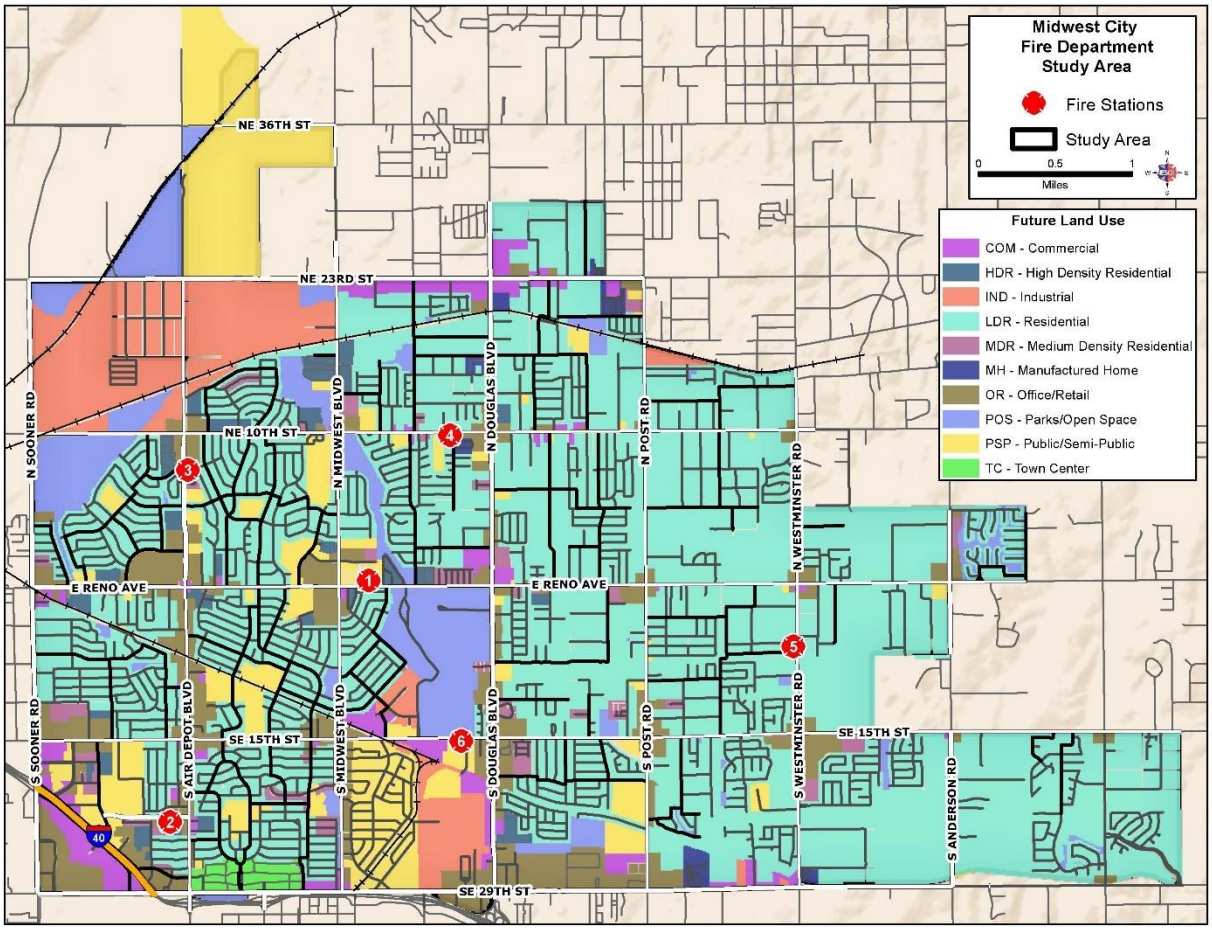


	2010	2015	2020	2025	2030	2035
0.38%	54371	55404	56457	57529	58622	59736
0.50%	54371	55730	57124	58552	60015	61516
1.00%	54371	57090	59944	62941	66088	69393

Based on the various growth assumptions, the twenty-year population for Midwest City will be most likely in 60,000 to 70,000 range. This is not a dramatic increase, and the assumption can be made that the commensurate service demand will not change dramatically either. This assumes a consistent and moderate growth. Redevelopment in the city may produce a higher population growth over the 20-year period. Also, the demographics may change during the period. If one assumes the current population stays in Midwest City, there will be fairly high increase in those over 65 years old as they continue to age. This will put an increased demand on the EMS system.

The future land use map is shown in the next figure:

Figure 104: Midwest City Future Land Use Map

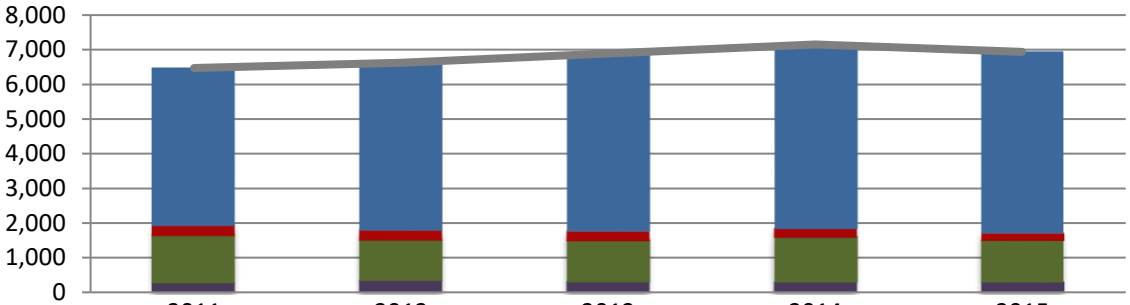


Higher density residential and more commercial growth is proposed in areas of the city. As this redevelopment takes place the population rate of increase will likely increase. This may cause the rate of population to be at the one percent projection or perhaps higher. Growth in the area east of Anderson Road and south of 15th Street will place higher demand on system that is beyond the four-minute travel time distance.

Service Demand Projections

As population changes, so will the service demand. To determine a historical demand, ESCI considered the last five years of service demand, which is shown in the following figure. For this analysis, alarms, public assists, and special operations are grouped together as "Other." EMS responses, fire calls, and motor vehicle accidents are kept separate for more detailed analysis.

Figure 105: MWCFD Historical Service Demand 2011–2015

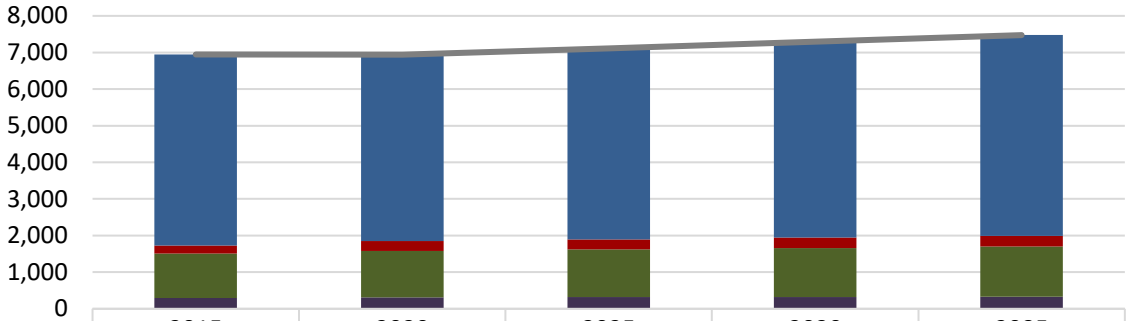


	2011	2012	2013	2014	2015
EMS	4,539	4,820	5,123	5,306	5,218
Fire	298	289	275	251	216
Other	1,366	1,173	1,190	1,294	1,211
MVA	271	342	308	302	298
Total	6,474	6,624	6,896	7,153	6,943

In the four years (2012–2015), total service demand increased at an annual rate of 1.8 percent. This correlates closely with an annual population growth during that same time of 1.04 percent. What is unusual is the average annual rate of growth in service demand over the years 2012, 2013, and 2014 is 3.5 percent per year. In 2015 the service demand dropped by nearly three percent. The reason for this change is unknown and may be an aberration in the data. Additionally, there is a 27.5 percent decrease in fire calls each year over the four-year period. This is certainly a positive trend. Based on the projected population growth, service demand within MWCFD will continue to rise over the next 20 years.

Using the one-half percent per year population projection and the historical (2011–2015) average per capita rate for each type of service demand, the following figure was created. It projects the number of calls for service into the future:

Figure 106: MWCFD Projected Service Demand by Incident Category, 2015–2035



	2015	2020	2025	2030	2035
EMS	5,218	5090	5217	5348	5481
Fire	216	271	278	285	292
Other	1,211	1270	1302	1335	1368
MVA	298	310	318	325	334
Total	6943	6941	7115	7292	7475

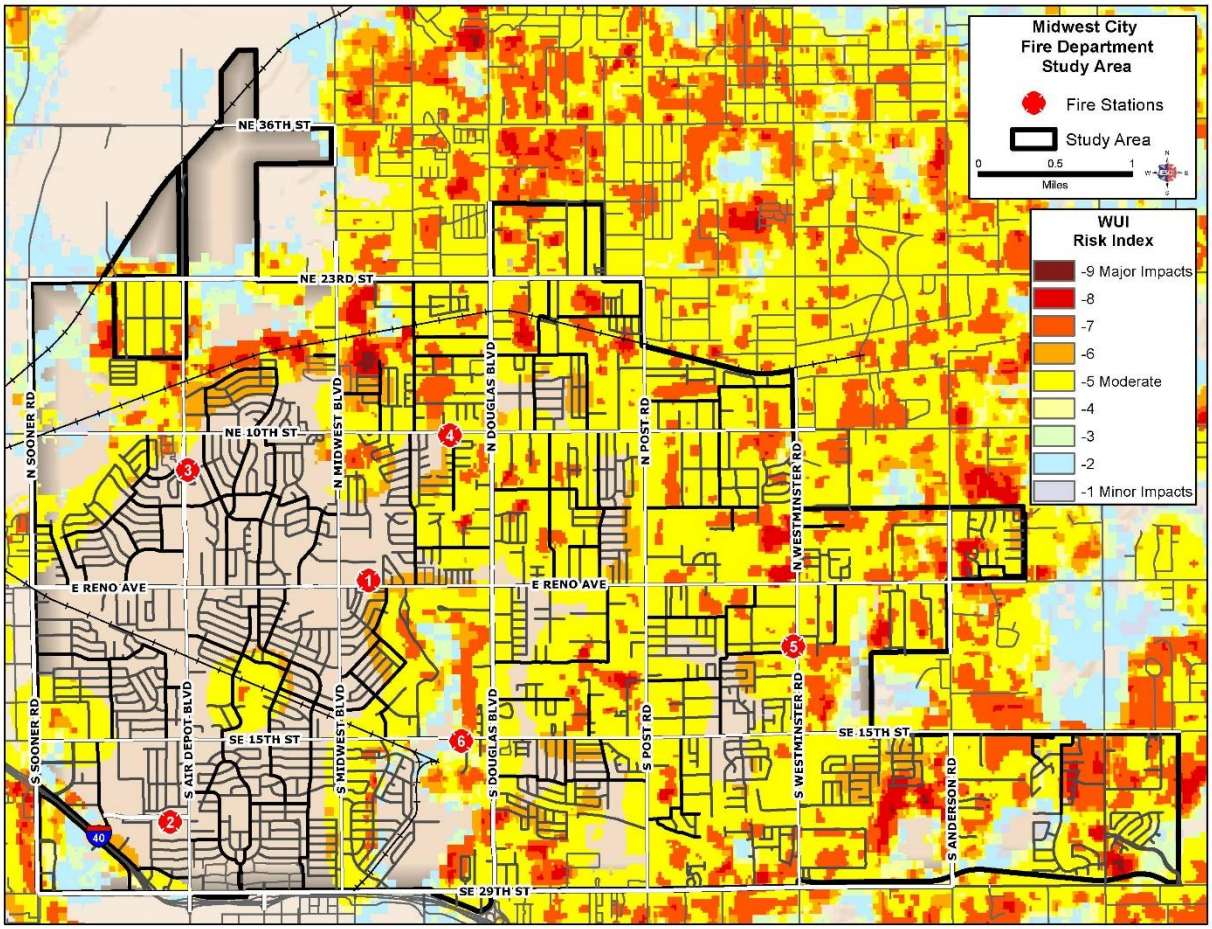
This predicts a slightly growing number of all types of calls. The overall number of calls is projected to climb 7.7 percent over a 20-year period. While this chart shows an increasing fire calls for service, the trend of decreasing fire calls may continue and offset a portion of the rise in fires expected due to population growth. EMS calls will continue to be the major type of call for service for the MWCFD.

COMMUNITY RISK ANALYSIS

ESCI examined the risk factors for Midwest City. While not all hazards of individual occupancies can be considered, there are risks that seem to be relevant to the city. The first category of risk considered was that of wildland fires and the risk to homes and citizens. Modelling is available that gives some indication of this risk.

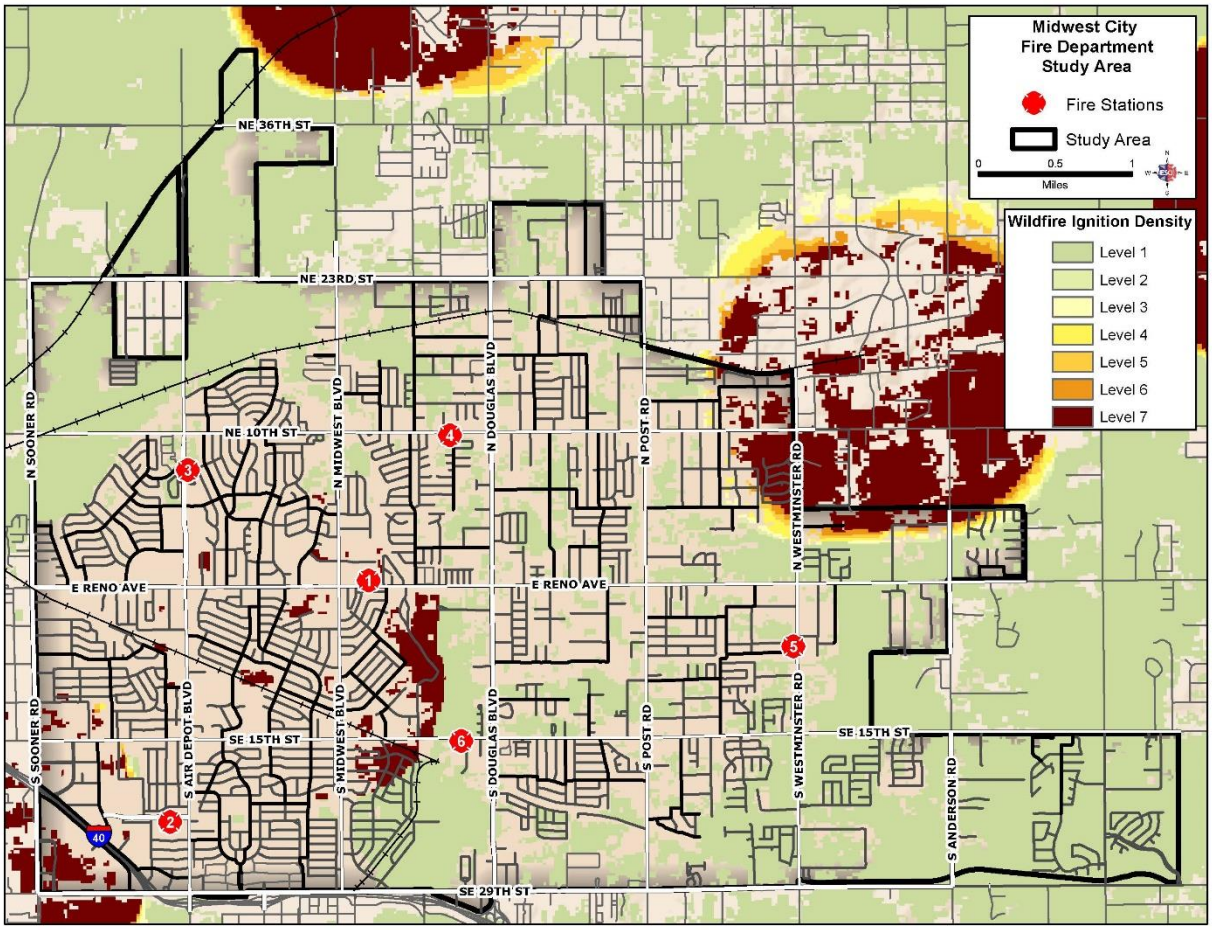
The following figure depicts relative the risk from a wildland fire:

Figure 107: Wildland Urban Interface Risk index



The scale from -1 to a -9 indicate the risk associated with intensity of fires and housing densities. Those areas that are prone to high flame lengths and high housing densities are categorized as a -9. Those with the shortest flame lengths and lowest densities are a -1. Areas in the eastern part of the city are at the highest risk. Although mostly moderate risk, there are small pockets of higher risk. Most of the areas of highest risk are small and broken into small tracts. These fires are potentially fast moving with high intensity but will likely run out of fuel, such as when hitting streets or other topography not conductive to supporting the fire. The risk has been addressed with the brush truck availability. The next figure is of wildland fire ignition potential:

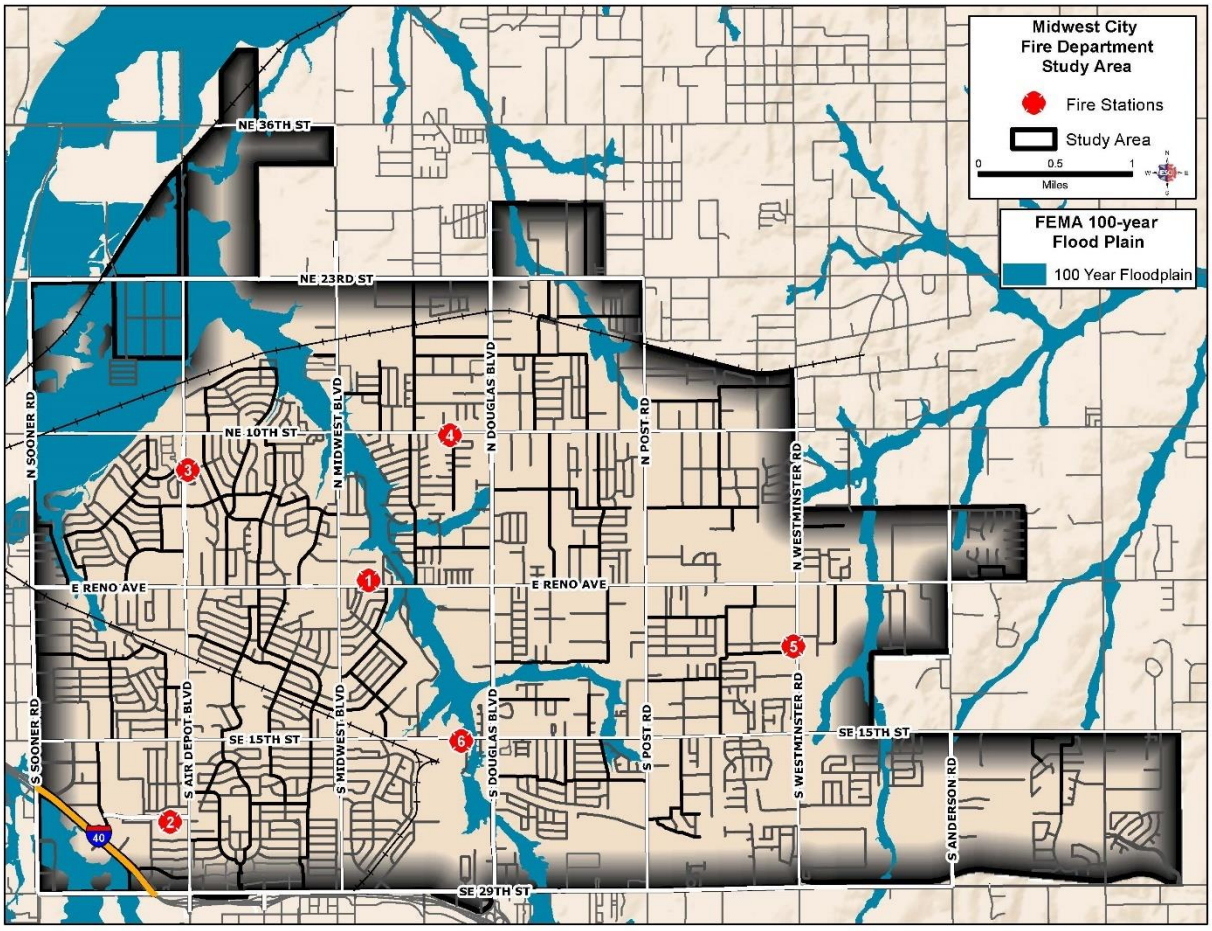
Figure 108: Wildfire Ignition Density



The Wildfire Ignition Density map shows the average ignition rate. Based on six years of reporting, the map shows the number of fires per 1000 acres. Areas of highest fire starts are south of I-40 and between Midwest Boulevard and Douglas Boulevard. There is also a high level of fire starts along the northeastern edge of the city.

Another potential risk for the city is from flooding shown in the following figure:

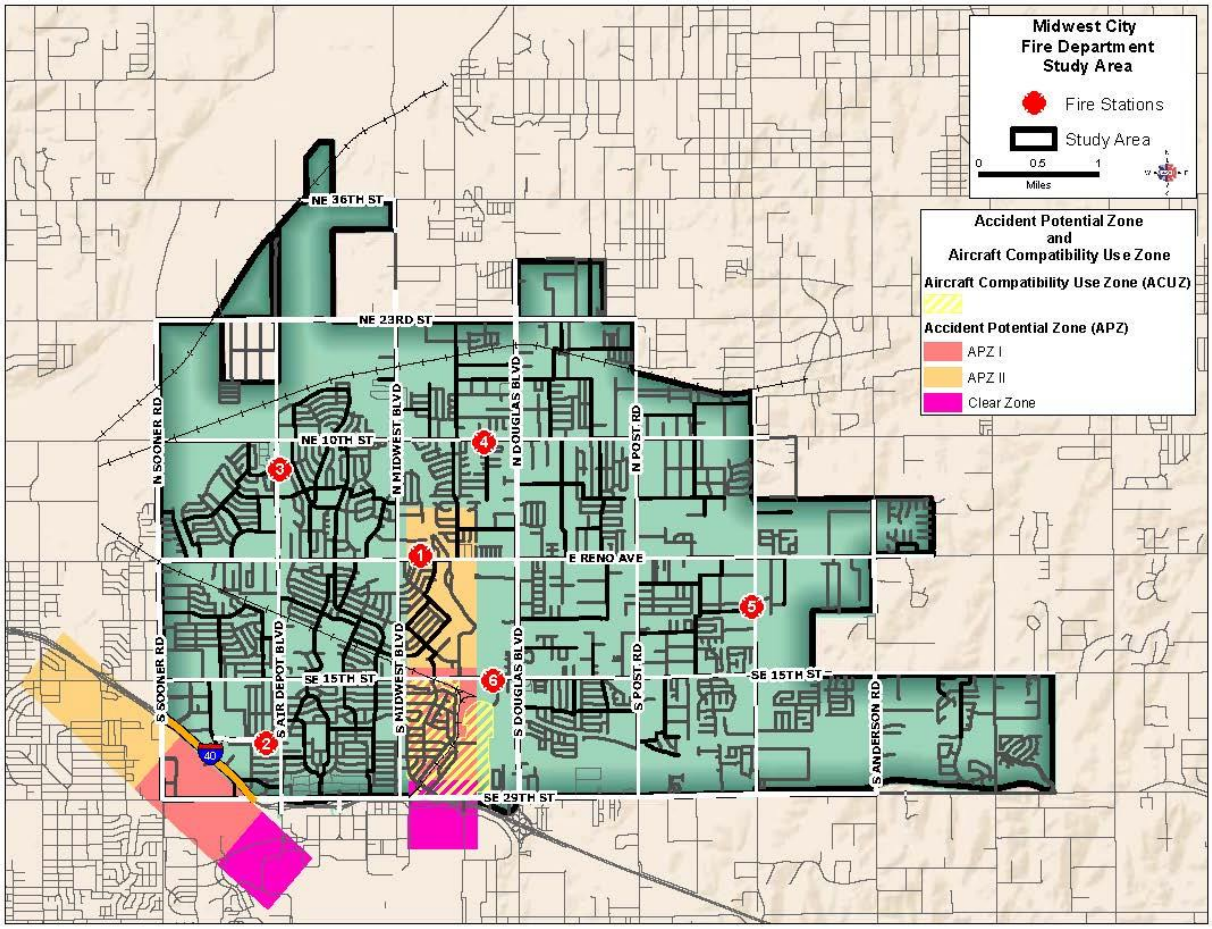
Figure 109: FEMA 100-year Floodplain Map



It appears that there is the potential for flooding in various parts of the city. Concerning is the potential for the city to be divided by an intense flood. The impacts are something that should be considered if several east-west streets are rendered impassable. The two stations east of the flood zone may be the only resources available in that half of the city. A preplan for moving more resources east during high flood potential should be considered. Additionally, depending on the watershed involved, the east-west streets could be cut between Westminster and Anderson, leaving some areas in the far east part of the city to be cut off from service until the water would recede.

A unique potential exists for aircraft crashes in areas shown in the following figure:

Figure 110: Aircraft Crash Potential Zone Map



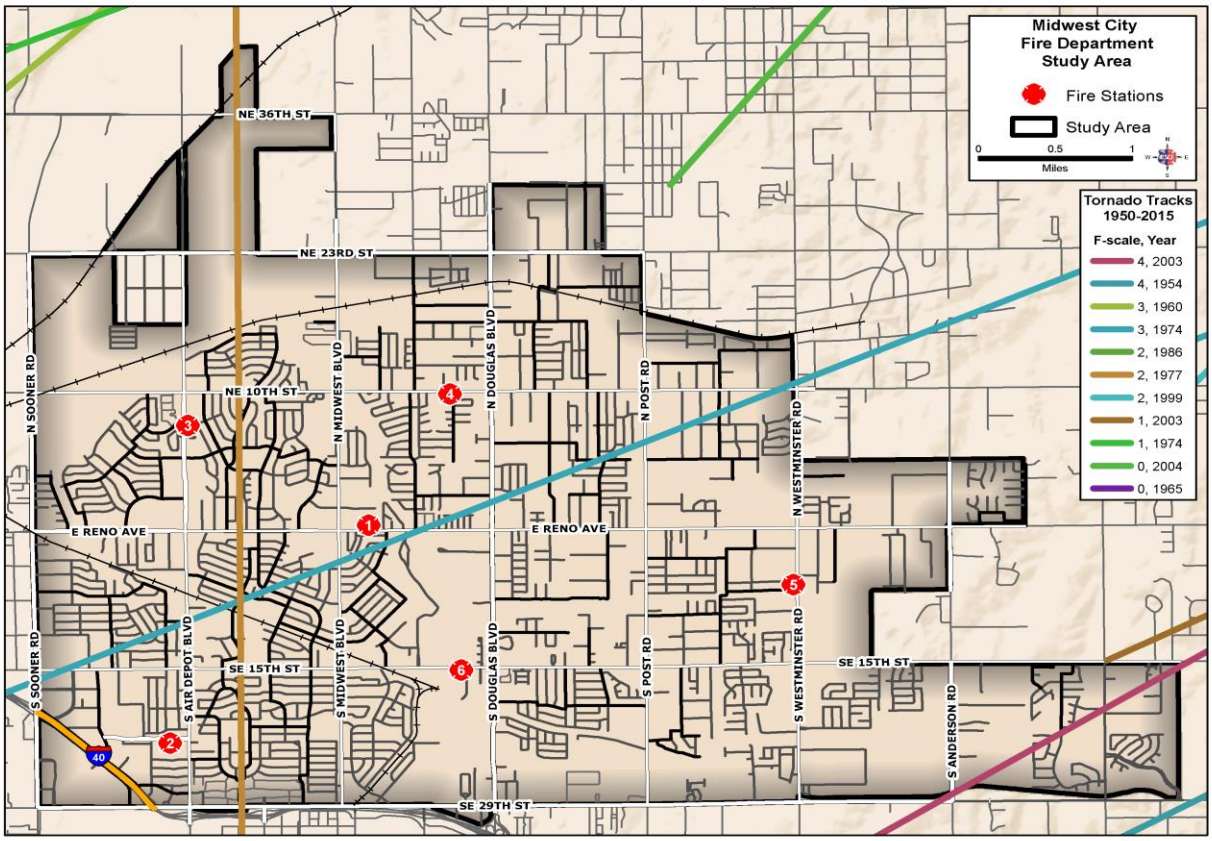
The map above shows the areas of restriction due to aircraft crash potential. Three zones are defined: Clear Zone (CZ), and Accident Potential Zones I and II (APZ-I and APZ-II). Within these zones, development is constrained in some way by zoning ordinance. Areas CZ and APZ-I do not allow new construction of residential dwellings but do allow for the existing residences to remain. Allowable densities within APZ-I is 25 persons per acre and APZ-II is 50 persons per acre.

The zone areas are defined by a study of military crash landings from 1968–1995. APZ-I zones define the location where approximately 10.1 percent of the crash landings occurred. APZ-II zones define where approximately 5.6 percent of the crash landings have occurred historically. The Clear Zone defines where 27.4 percent of all crash landings has occurred historically.

There is little prevention or mitigation that can be done prior to an event other than what has been done by limiting the number of individuals living in the potential crash zones. The fire depatment should train for military aircraft crashes, as there are specifics that need to be considered that are different from commercial or general aviation crashes. This would be an event that likely would immediately

involve aircraft firefighting and rescue personnel and equipment from Tinker Airforce Base. Training for appropriate interaction between the two departments during a crash scenario is recommended prior to the event.

Figure 111: Midwest City Historical Tornado Occurrences



This figure, the paths of past tornados that have crossed the city since 1950, demonstrates the very high probablity of future occurences. Increased growth since the 1970s has increased the potential danger to lives. While preventing tornadoes is not possible, being prepared for the potential of another tornado should be considered as a high priority. Mass casualty drills using the NIMS system are a necessity.

ESCI did not analyze all hazards within the MWCFD, that is beyond the scope of the study. However, it is recommended that MWCFD know and rate the hazard risk of the structures and processes within the jurisdication. Further, these should be ranked and each should have the amount of resources and any special requirements that will be needed for an incident involving the property.

Future Delivery System Models

This report has considered current conditions, projected future population growth, and considered specific risks that may affect the city. In this section, some options for future evaluation will be proposed. Some of these may have been mentioned previously in the report but bear further discussion in consideration of long term recommendations.

DEVELOPMENT OF RESPONSE STANDARDS AND TARGETS

ESCI emphasizes the importance of MWCFD establishing response performance metrics. Once established, these standards become measurable goals for service delivery, which then form the foundation upon which planning for deployment of resources is based. Absent these processes, the organization is not able to determine where it needs to go, nor is it able evaluate when it is achieving its goals or meeting the community's expectations. Currently, MWCFD follows the requirements of ISO, which have been static requirements. Future ISO evaluations will analyze the data for turnout and travel times compared to NFPA 1710 response time objectives. If maintaining the ISO Class 1 rating is important to the City and fire department, then adopting and monitoring these objectives should be a priority.

Response standards must be developed by each community, based on the expectations of elected officials and citizens and balanced against the financial aspect of what a community is able and willing to afford. For this reason, ESCI cannot establish these standards for MWCFD but rather will provide guidance in this process.

Response performance metrics revolve around two key factors: staffing and speed of rendering aid. This is part of what is called standards of cover. Not only response time and its components are part of NFPA 1710, but so are staffing levels as discussed in the Staffing and Personnel section of this report on risk. All fire departments undergoing the accreditation process are required to do a performance based analysis on required staffing for all types of service requests likely to occur in their jurisdiction.

The next sections address the suggested process for a department to determine critical tasks, based on local risk and setting response time standards.

Critical Tasks, Risk, and Staffing Performance

While not part of the NFPA standard, best practices in the fire service is to assess the relative risk of properties and occurrences, based on several factors. Properties with high fire risk often require greater numbers of personnel and apparatus to effectively mitigate the fire emergency. Staffing and deployment decisions should be made with consideration of the level of risk involved. The level of risk categories used in the fire service industry are as follows:

- Low risk—Areas and properties used for agricultural purposes, open space, low-density residential, and other low intensity uses.
- Moderate risk—Areas and properties used for medium-density single-family residences, small commercial and offices uses, low intensity retail sales, and equivalently-sized business activities.
- High risk—Higher density businesses and structures, mixed-use areas, high-density residential, industrial, warehousing, and large mercantile structures.

Here is a sample of critical tasking analysis for the number of personnel required on scene for various levels of risk. This information is shown in the following chart, illustrating an example of critical tasking only and is not intended to conclusively define the actual personnel necessary based on risk:

Figure 112: Sample of Critical Task Staffing by Risk

Sample Critical Tasking Analysis				
Firefighter Personnel Needed Based On Level of Risk				
	Structural Maximum Risk	**Structure Significant Risk**	**Structure Moderate Risk**	**Non-Structure Low Risk**
Attack Line	4	4	2	2
Back-Up Line	4	2	2	(2)
Support for Hose Lines	4	3	2	
Search and Rescue	4	4	2	
Ventilation	4	2	2	
Rapid Intervention Team	4	4	2	
Pump Operator	2	1	1	1
2nd Apparatus/Ladder Operator	1	1	(1)	
Command	2	1	1	1#
Safety	2	1	1#	
Salvage	4			
Rehabilitation	2			
Division/Group Supervisors	(2)			
Total	**37-39**	**23**	**14-16**	**3-6**

() indicates tasks may not be required at all such incidents
 # indicates task may, at times, be completed concurrently with other position

The first 15 minutes is the most crucial period in the suppression of a fire. How effectively and efficiently firefighters perform during this period has a significant impact on the overall outcome of the event. This general concept is applicable to fire, rescue, and medical situations.

Critical tasks must be conducted in a timely manner to control a fire or to treat a patient. Three scenarios of commonly encountered emergencies are routinely utilized by fire departments when conducting field validation and critical tasking: a moderate risk structure fire, a traffic collision with a trapped victim, and a cardiac arrest. Each scenario is conducted using standard operating procedures and realistic response times, based on actual system performance. Each scenario is normally run multiple times with a variety of fire companies to validate and verify observations and times.

To further validate the analysis process, results are compared with records from actual working fires and similar incidents from previous years. Overall results are reviewed to determine if the actions taken within the early minutes of an incident resulted in a stop-loss or not, and if additional resources were required. The critical task analysis process demonstrates the rate in which the current deployment plan results in stopping loss a high percentage of time within initial critical time goals.

Again, critical tasks are those activities that must be conducted in a timely manner by firefighters at emergency incidents to control the situation, stop loss, and to perform necessary tasks required for a medical emergency. MWCFD is responsible for assuring that responding companies can perform all the described tasks in a prompt, efficient, and safe manner.

All Risk Critical Resource Tasking

Fire departments respond to many incidents other than structure fires, including hazardous materials (dangerous goods) releases, motor vehicle collisions, basic and advanced life support medical emergencies, and non-structural fires. Personnel responding to these types of incidents should be assigned tasks similar to structure fires.

The following figures are provided as an example for these types of incidents, although ESCI recommends MWCFD conduct its own field validation exercises with its crews, including mutual aid resources, to verify the critical tasking analysis provided. After field validation is complete, the MWCFD may find that the critical tasking can be adjusted appropriately upward or downward for each incident type.

Figure 113: Sample Non-Structure Fire Critical Tasking

Task	Personnel
Command	1
Pump Operator	1
Primary Attack Line	2
Total	**4**

Figure 114: Sample Hazardous Materials Incident Critical Tasking

Task	Personnel
Command	1
Pump Operator	1
Primary Attack Line	2
Back-Up Line	2
Support Personnel	7
Total	**13**

Figure 115: Sample Motor Vehicle Collision with Entrapment Critical Tasking

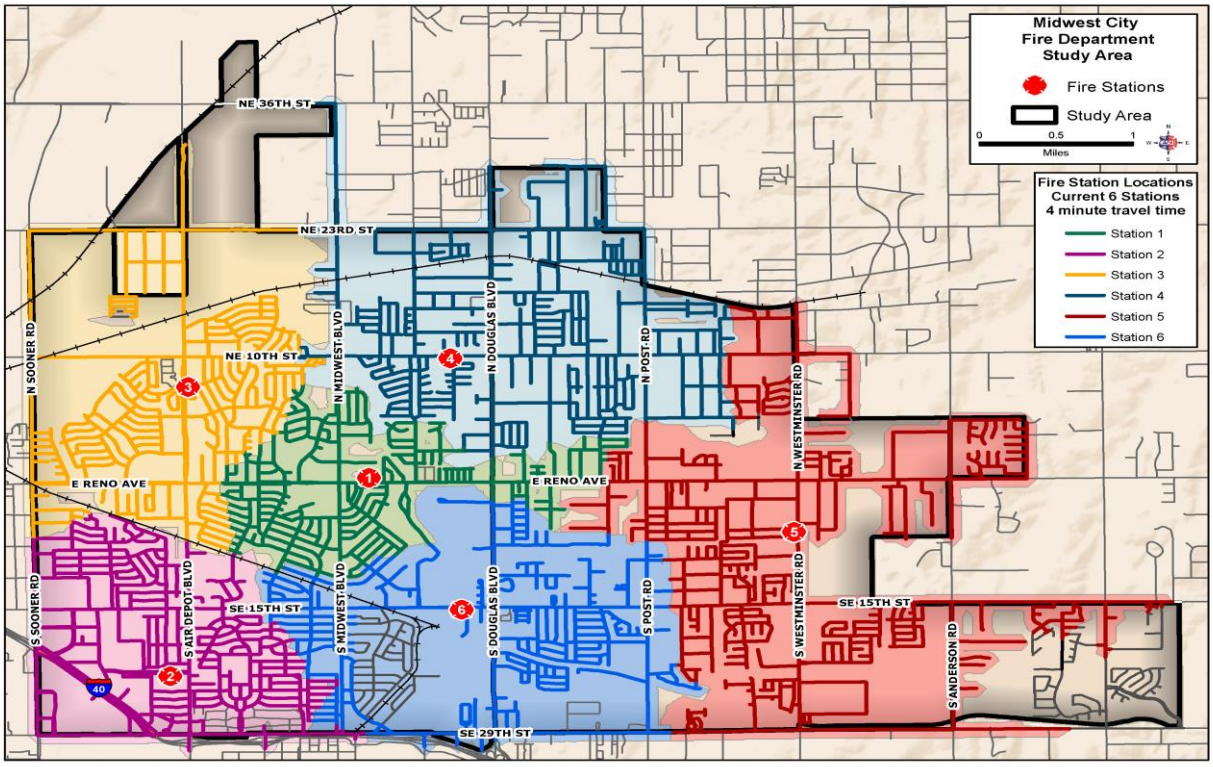
Task	Personnel
Command	1
Pump Operator	1
Primary Attack Line	2
Extrication	3
Patient Care	2
Total	**9**

DEPLOYMENT COVERAGE ANALYSIS

Consideration has been given to the location of the existing stations and potential need for additional station(s). ESCI analyzed the response coverage for a four-minute response from the existing six stations, with five of the existing stations, and an analysis of where the best location might be with a mix of existing stations and relocated stations. The completed analysis is discussed in this section. The following figures show the four-minute coverage of the district, with six and five stations using the current station locations. This is a computer predictive analysis based on achieving roadway speeds. Further, using the location data of incidents from the previous five years, ESCI calculated what percentage of the incidents could have been reached with a four-minute travel time.

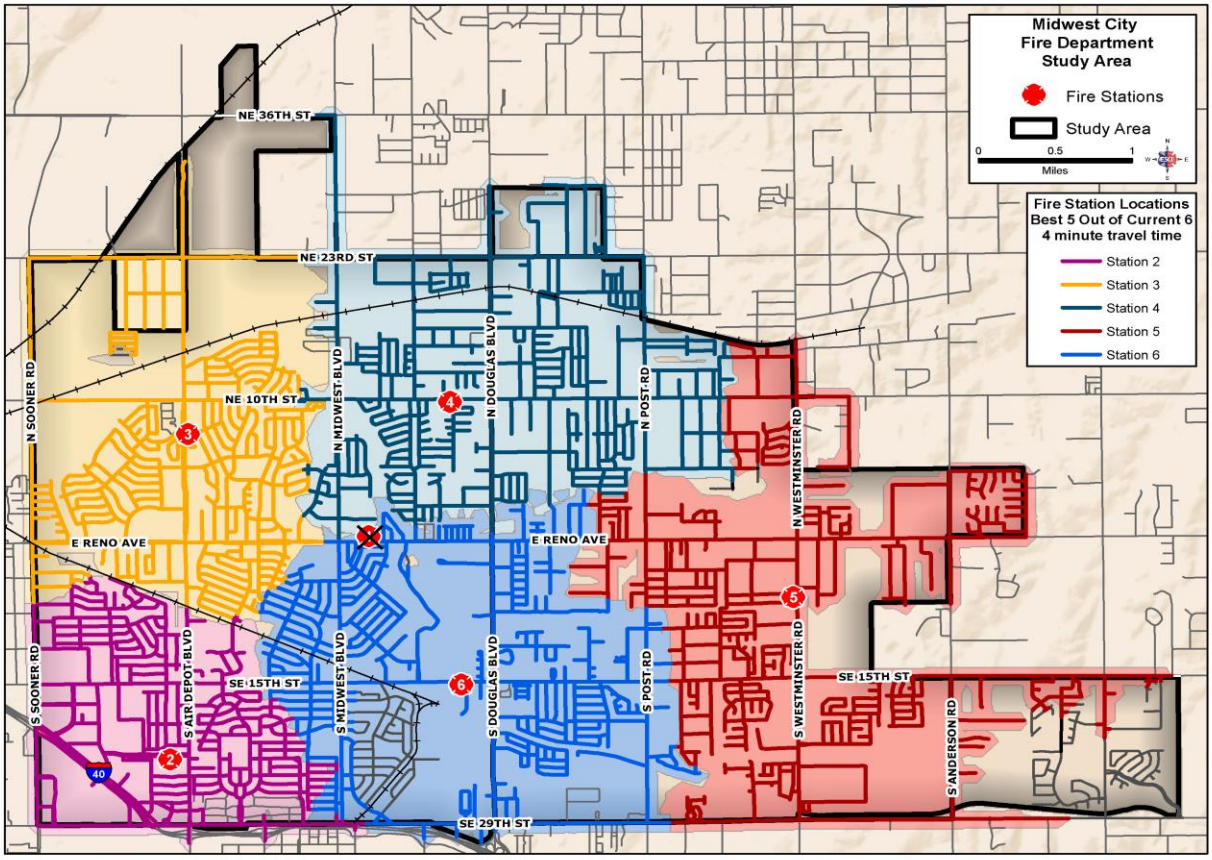
These maps are produced at posted roadway speeds. Slowing for a number of turns can cause the computer prediction to be more optimistic than actual performance. If the department's safety policies require slowing at all intersections or stopping for red lights, this will cause the actual results to be slower. Also, the use of traffic control systems for emergency response will cause the predicted to be closer to the actual performance. Therefore, ESCI recommends that MWCFD does its own analysis to verify how travel times differ for actual driving while complying with all safety policies. Additionally, there are other situations that may affect the accuracy of the predictions that do not occur on a regular frequency such as auto accidents, weather caused issues, or construction zones.

Figure 116: Predicted Four-minute Travel Times from Six Existing Stations



This map shows the coverage of each existing station in a four-minute travel time. It does not, however, show overlap of four-minute travel coverage. Rather, the figure demonstrates which station can arrive first. Using the location of the nearly 42,000 incidents in the past five years, a prediction of the incidents that would have be reached by the first unit within the four-minute travel time is 99.26 percent.

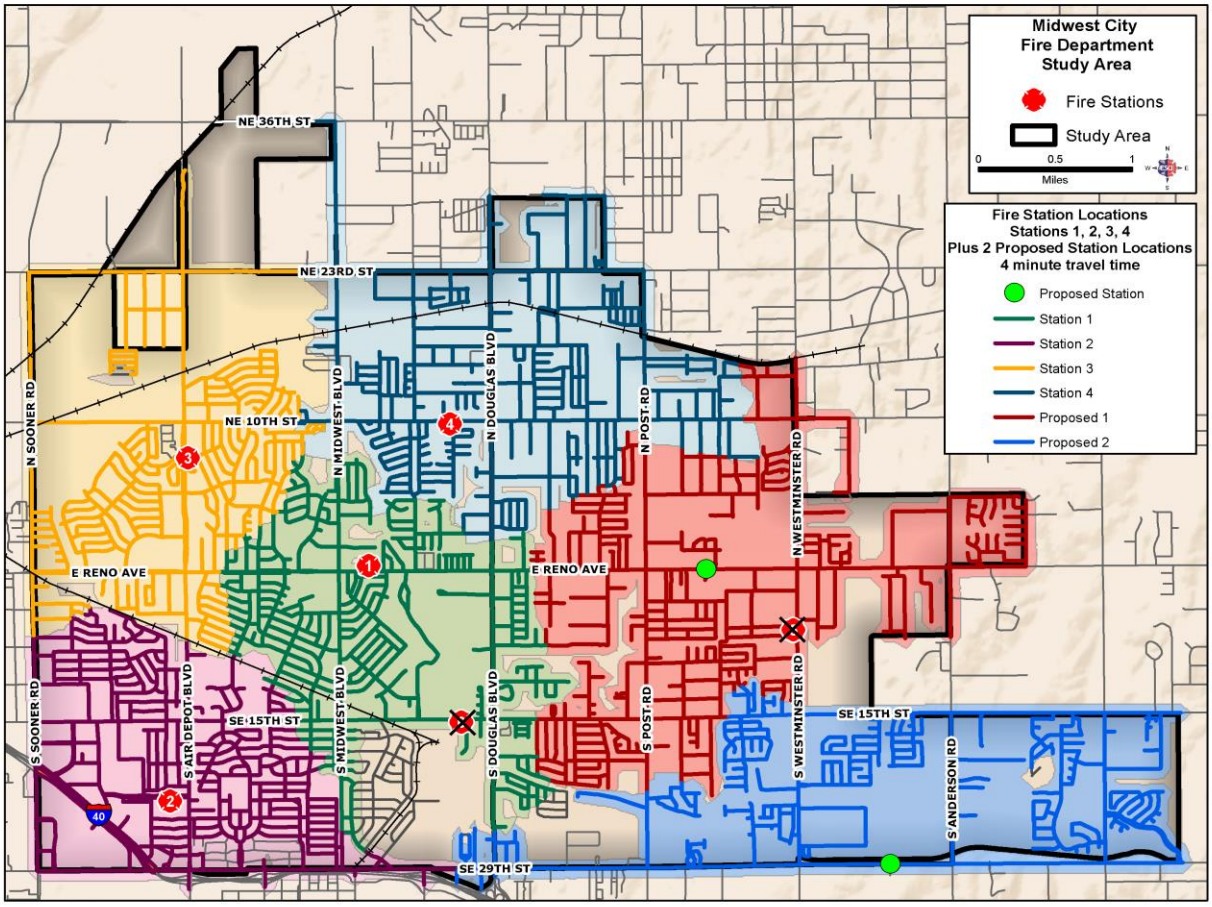
Figure 117: Predicted Four-minute Travel Times from Five Existing Stations



This analysis is the same as the previous one, however it removes the station that makes the least overall contribution to the travel time. In other words, it calculates which calls can be reached by other stations within the four-minute time frame and eliminates the least productive station. With five stations, the overall coverage is 99.26 percent or the same percentage of responses reached from six stations. Station 1 provided the least overall contribution. It is shown closed in the figure above. The initial decision to close Station 1 was not ill-advised, however this station was shown to be located in one of the highest density areas for incidents (Figure 82). In addition, removing this station and the engine caused some area to be outside of the ISO for the 1.5-mile distance requirement (Figure 86). For these reasons, Station 1 is not recommended for closure. As mentioned previously, staffing must remain at current levels as a minimum to meet an effective response force.

In these analyses the far southeastern part of the city is not covered with a four-minute travel time. It does not make a difference in percentage of incidents reached at the 90 percent level as it has not had a high level of incidents over the last five years. Knowing that this area is developing and will have a larger population in the future, any future solution must consider providing the four-minute travel to this area as well. To this end, we chose a couple of analyses to determine a more optimal solution. The first was to consider keeping the existing stations 1, 2, 3, and 4 and projecting the best position for two relocated stations. The following figure displays that scenario:

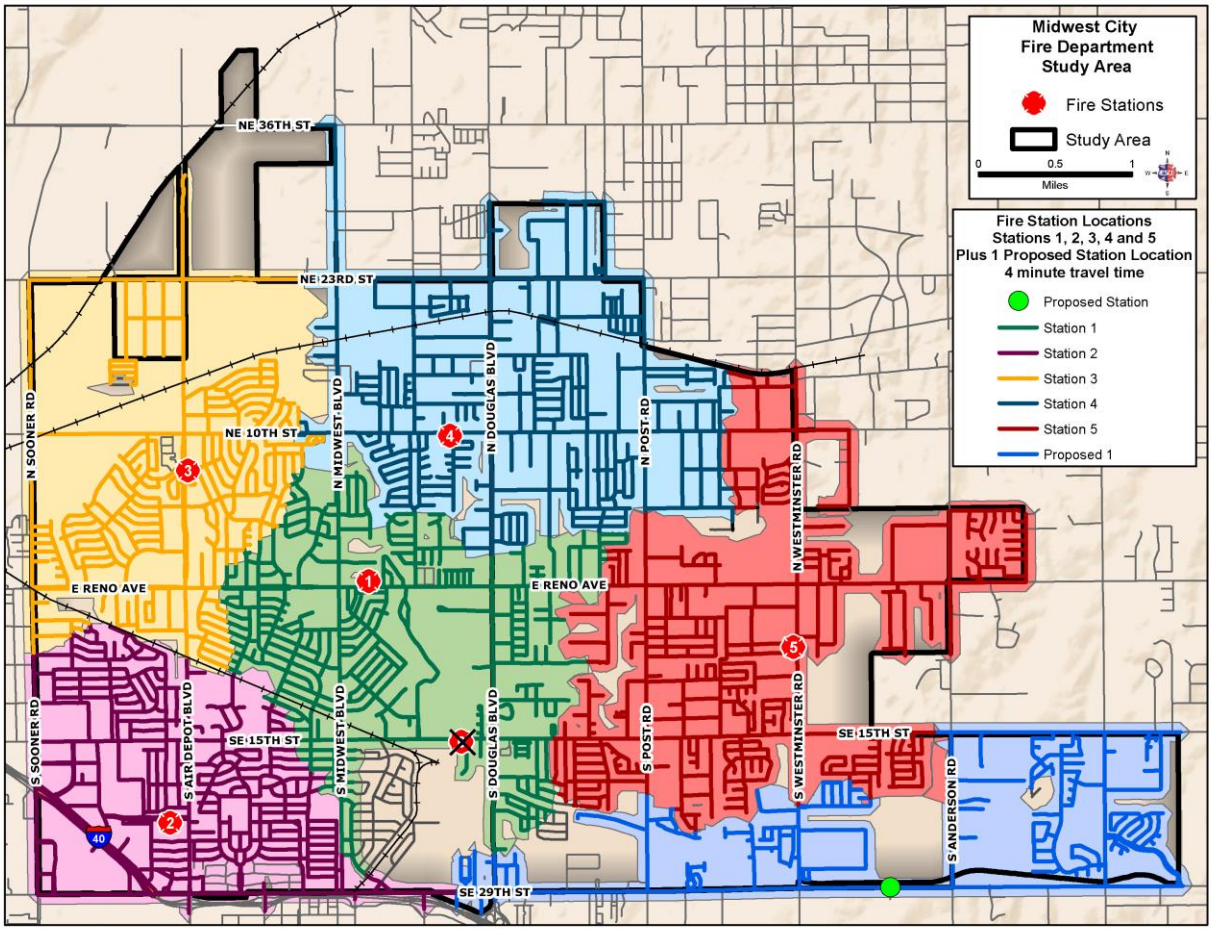
Figure 118: Projected Best Locations for Two Stations with Existing Station 1, 2, 3, and 4



The stations that are not considered are shown with an "X" through the station symbol. The new stations are represented by the green dots. This scenario provides the optimal locations for the relocation of stations 5 and 6. Two issues are apparent: first, Station 5 is only moved a short distance and likely would not result in a significant gain for the cost of relocation. Second, Station 6 is relocated to a location on the city border. A station located on the edge of a service area is inherently inefficient as it serves only half the area it normally could. There are three reasons for this happening: the configuration of existing stations, the long narrow service area, and the lack of road configurations beyond the borders of the city. The station may have benefit in mutual aid with neighboring stations, but that cannot be confirmed.

If it is not feasible to relocate two stations, we chose Station 6 for moving to a better location that would serve the southeast corner. That scenario is shown in the following figure:

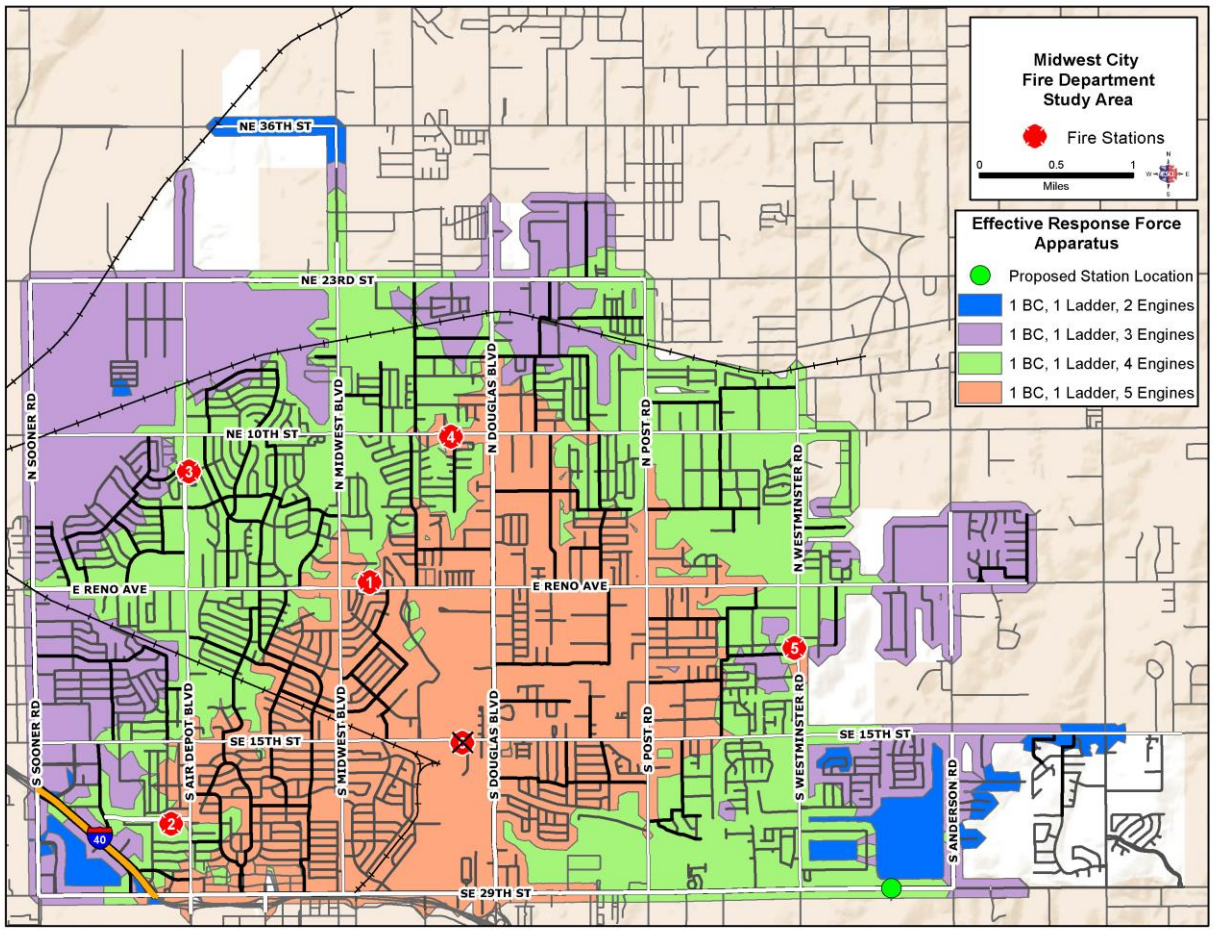
Figure 119: Existing Stations 1, 2, 3, 4, and 5 with a Relocation of Station 6



This series of maps has been provided to demonstrate potentials in building or relocating a station to cover an area that may not receive the same response time standard as other areas of the jurisdiction. Closing stations and moving them is not without a great deal of emotion and political pressure, so ESCI would recommend the relocation of the minimum number of fire stations to achieve the city's goal. While Station 6 has a reduced service area, Station 1 has expanded its service area within a four-minute travel.

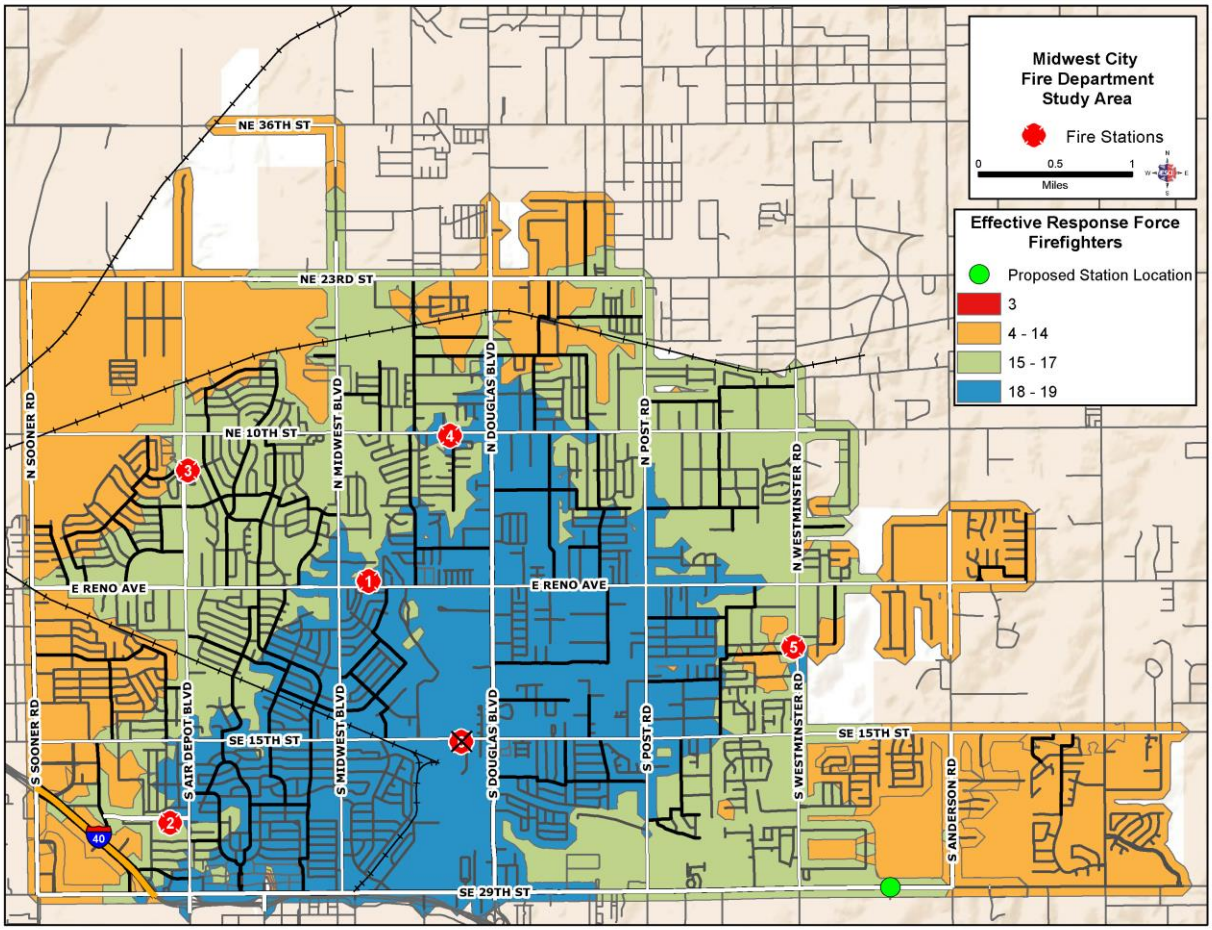
First, due response within four minutes is one important criterion. Getting rapid help to a resident of the city is very important. Also, knowing the changes to the effective response force for apparatus and for personnel is also important. The ERF for apparatus is shown in the following figure. This model assumes a ladder in Station 1 and engines in all the other stations:

Figure 120: ERF Apparatus with Relocated Station 6—Ladder Station 1 and Engines in Stations 2–6



This figure shows the number of units that are part of the effective response force. The core area of the city is able to have five engines, one ladder, and a battalion chief on scene within an eight-minute travel time. The minimum that can be assembled except for the very southeast and southwest corners is three engines, one ladder, and one battalion chief. This shows the number of units but not the number of firefighters on scene within eight minutes, as suggested by NFPA 1710. The ERF for personnel on scene is shown in the following figure:

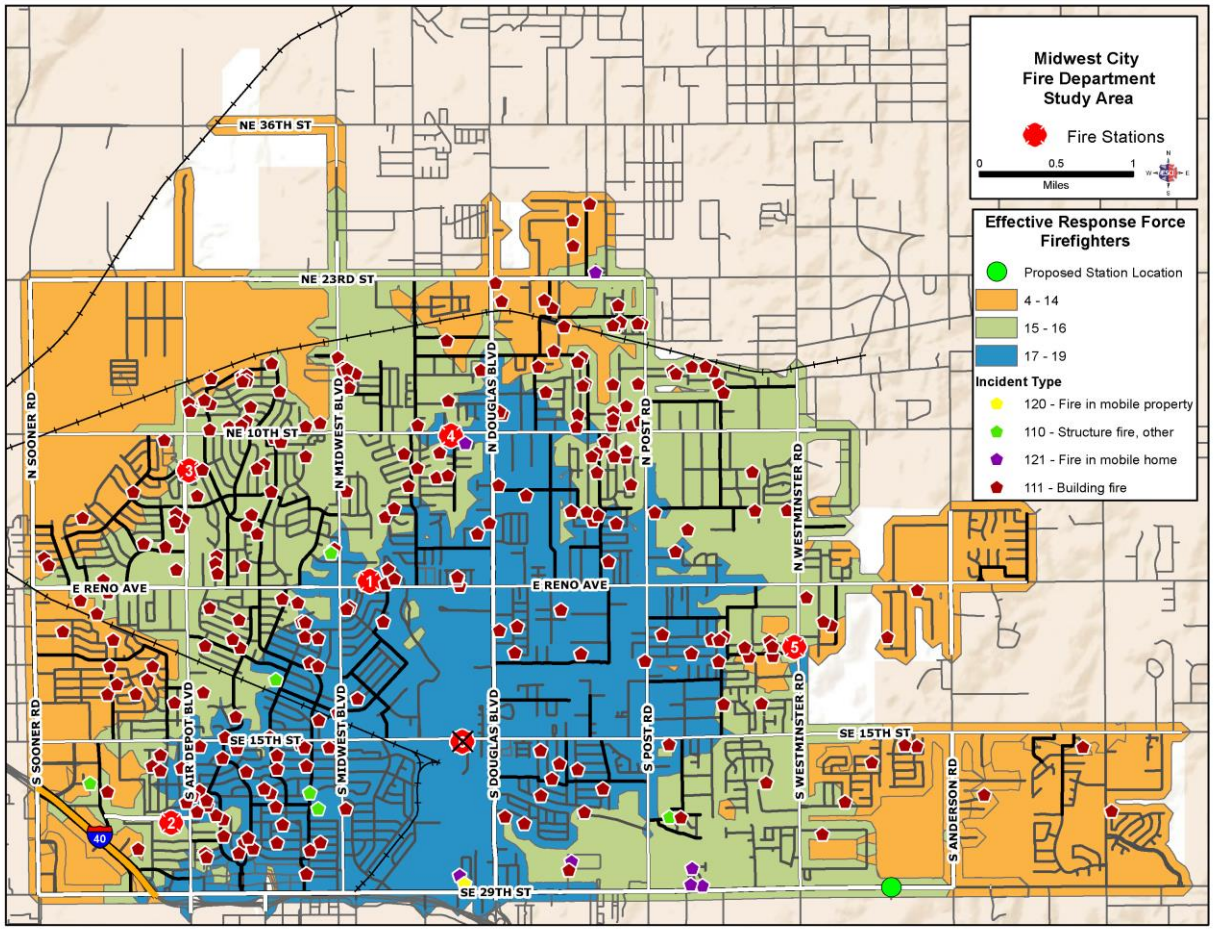
Figure 121: Effective Response Force—Firefighters with Relocated Station 6



This map demonstrates the number of firefighters that can be assembled on the incident scene in an eight-minute travel time with the relocated of Station 6. This demonstrates the ERF response with a minimum staffing of 19 firefighters on duty with three firefighters distributed at each station.

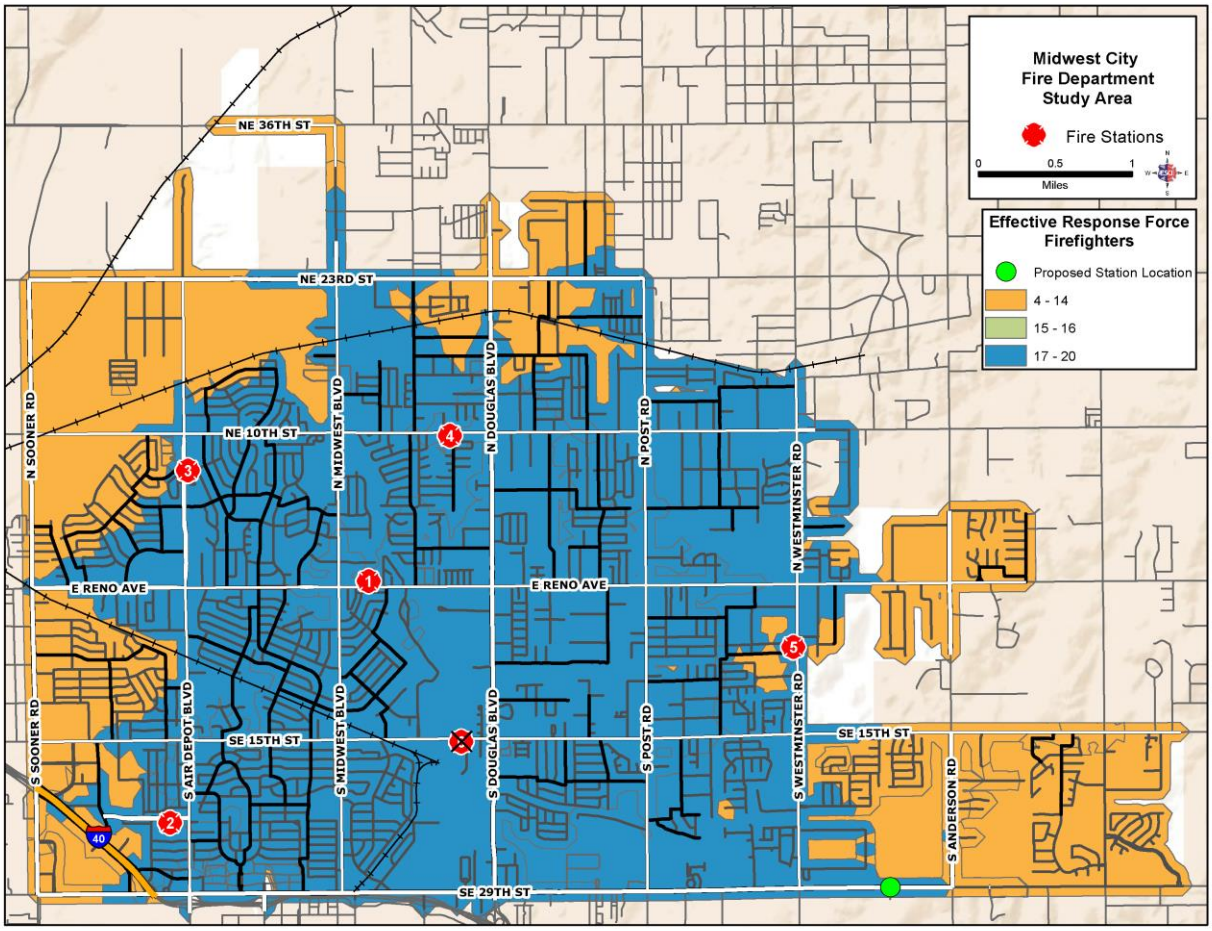
The next figure superimposes the historical structure fires to show relationship with the level of ERF available:

Figure 122: Effective Response Force—Firefighters with Relocated Station 6 and Historic Structure Fires



This figure shows the same as the previous map: the ERF in personnel but with the locations of building fires for the previous 5.5 years superimposed. This shows the personnel levels available in the eight-minute time frame for those fires. In the next figure, one additional firefighter is added to the minimum staffing (20):

Figure 123: Effective Response Force—Firefighter with Staffing of Twenty



Adding one more to minimum staffing (or 20) and deploying a minimum of four firefighters on the ladder truck at Station 1 would provide a minimum of 17 firefighters on scene with an eight-minute travel time in the area shown in blue. This is a significant improvement with a small change in staffing.

STAFFING DEPLOYMENT OPTIONS

This study has also shown what appears to be a trend of decreasing number of fires. It has identified the increasing number of calls for public assistance and particularly higher use of the EMS system. It has identified the strain on fire prevention to accomplish their mission due to lack of adequate personnel. The following are examples of ideas that have been used in other departments that may resolve the need for additional personnel through novel strategies. While these ideas may not fit MWCFD exactly, they could be appropriately modified through innovative thinking by MWCFD's personnel.

EMS Challenges for the Future

Midwest City, as other parts of the country, are observing the EMS system being used to replace individual healthcare. This puts pressure on the EMS and the hospital to serve the true emergencies. It also creates greater cost for individuals by using a system that was not designed for ordinary care. Frequently, the patient does not pay this expense. Emergency transportation and treatment in the emergency department at a hospital may not be reimbursed if deemed medically unnecessary.

Additionally, as has been noted previously, population is projected to increase at a relatively slight rate overall. However, the percentage of individuals in the city over 65 at the 2010 census will increase over 100 percent by 2025. This will also impact the service demand on the Midwest City EMS system. National medical industry studies suggest that the patients over 65 years of age are three times more likely to access local emergency services than other age groups. ESCI did not attempt to factor in this impact in the projected EMS service demand. Considering the potential impact of the aging population, it suggests that EMS will become, even more, the predominate service provided by MWCFD over the next 20 years. ESCI recommends that MWCFD begin to determine their role in that process.

Many changes are occurring within the United States healthcare system that may impact the demand placed on local government. Departments are evaluating the criticality of the calls and determining if a mobile healthcare unit is a cost-effective alternative to transporting every call to the hospital. Different models are being used across the country. The service ranges from a community paramedic, to a paramedic/physician assistant, or even a paramedic/nurse practitioner able to do suturing, prescribe medications, and run various diagnostic tests for patients in the field. In some locations, the local hospital is also using the unit to check on recently discharged patients.

This service is billed similar to an office visit, and that revenue can be applied towards provision of the service. The ability to collect will probably not offset the entire cost of operations but other cost avoidance, such as not having to put another 24/7/365 transport unit on the street and reducing the calls to which fire apparatus need to respond.

Currently, the fire department supports, but does not provide, ambulance transport. There may be ways to work together to streamline responses. ESCI recommends meeting with the hospital to determine if there are ways the fire department can partner to serve community needs better in the future.

Medical Priority Dispatch System (MPDS) is currently implemented by Midwest City's communication center but only for giving pre-arrival instructions to the caller for life saving care. MPDS has the capability to categorize the severity of the medical need to advise the units responding. This can separate potentially life threating calls from those needing minor medical care or just transportation to a medical facility. Structuring the fire department response differently can eliminate response to non-emergent calls. Midwest City's communication center is currently using the MDPS system for pre-arrival instructions but not for categorization of call acuity. There would be little additional cost to implement the categorization, however there may be a problem using the existing computer-aided dispatch system to recommend the appropriate units for response based on the category.

Special Response Unit

Another option would be to implement a special response unit. Although at present, unit busyness is not an issue for MWCFD, but there may be innovative options to address some of the issues with the large number of service calls. Progressive departments around the country are looking for new and innovative ways to serve their communities better. Sending an engine or truck with a crew of four to assist a citizen may be inefficient. Instead. departments are implementing a specialized unit which responds to fire alarms, code issues, and other requests for service with one or two firefighters in a SUV or pick-up. This could be structured many ways, depending on the needs of the department. The assigned firefighter(s) could be cross trained as a code inspectors allowing them to do follow-ups on identified code violations found by the company inspectors. Further, they can be cross trained to do fire investigations. These firefighters would be responsible to do the fire investigation report or assist the law enforcement with cause and origin investigations. Further, with appropriate training, this individual could respond with emergency units on automatic alarms to assist with resetting the system or determining if there is a malfunction that needs to be fixed.

This person should have firefighter training and maintain his or her ability to respond as a firefighter. On large incidents, this individual would be available to respond to fill a position in the command system or be assigned to a duty on the incident scene. This would add an additional person on scene. However, if this car is operational only during weekday hours, initially, this person should not be considered as a part of the effective response force at night.

SHORT- AND MID-TERM STRATEGIES

The previous sections of this report detail a considerable volume of observations and recommendations relating to MWCFD current conditions in management and operations. The process of understanding, prioritizing, and implementing the recommended enhancements can be daunting, simply due to the amount of work that may be involved. To help the organization navigate through the process, the following discussion further defines the short- and mid-term priorities that ESCI has identified.

Response Performance Reporting

The importance of knowing how the department is performing on responses to incidents has been discussed. Several recommendations have been made to improve data collection and reporting. The recommendations are listed here:

- Set citywide response time goals by incident types as needed. Response time goals should include call processing time, turnout time, and travel time.
- Council should adopt jurisdictions response time objectives.
- Collect accurate and complete response time data for all units assigned to an incident. These times should include call processing and turnout times. This may require working with Emergency Management (Midwest City Emergency Communications Center) to implement Automatic Vehicle Locator (AVL) technology and Mobile Data Terminals (MDT) in the apparatus reporting directly to the Computer Aided Dispatch System (CAD).
- Conduct regular reporting of turn out times with on-going analyses of turnout time delays, if these continued to be observed.
- Measure first unit due response time at four minutes for all first due responses against 90 percent compliance. First due response area and the entire department should be tracked and reported.
- Measure the Emergency Response Force (ERF) achieved on all structure fire calls at eight minutes at 90 percent compliance.
- Fire chief reports performance against the established goals to department and to city management.
- Expand the incident reporting capability to include geographical distribution working with City GIS unit. Include graphical data in annual report.

Response Deployment

There are several opportunities for improving the response deployment model. Some opportunities are discussed in the long-term recommendations.

- Place a ladder truck in service at Station 1 in lieu of the squad.
- Place the second ladder in service at Station 2 to maximize aerial device capabilities. Address the current risk profile and aerial master stream and rescue capabilities within the city. (This recommendation needs to take ISO requirements for a reserve ladder truck under consideration, also the increased wear on the ladder truck due to freeway responses with the rescue tool. Consider which is best for service delivery and ISO classification.)
- Set minimum staffing based on an Emergency Response Force (ERF) of 17 firefighters arriving within eight minutes travel time, 90 percent of the time and adjust staffing as needed (19 personnel).
- Determine structures that require additional effective response force personnel and plan for automatic aid to accomplish the adopted ERF. ERF compliance should be monitored and compared against the NFPA 1710 requirement of 24 personnel on scene within eight minutes of travel time.
- Establish automatic aid agreements for the greater ERF needs and do interagency training, ensure compliant and integrated equipment is provided, and coordinated policies and procedures are in place and jointly exercised on a regular basis.
- Define fire target hazards and determine what is the necessary ERF for these hazards. This may require conducting a critical task analysis.
- Utilize closest unit response regardless of jurisdiction, if possible, with surrounding departments.
- Pursue implementation of Medical Priority Dispatch with associated tiered response time standards for non-emergency “Alpha” and “Bravo” call designations.

Fire Prevention

- Building and fire departments both should use 2015 IBC and IFC codes.
- Cross train fire inspectors to perform plan review functions to ensure no gaps in service occur when fire protection engineer position is vacant.
- Establish a weekly work plan that supports efforts to achieve the stated goals for annual inspection.
- Consider option(s) to achieve 100 percent inspection rate again (if desired).
    - Implement a company-level inspection program for non-high risk occupancies and ensure adherence to NFPA 1620 for pre-incident planning program.
    - Evaluate the potential effectiveness of implementing self-inspection program for non-high risk occupancies.
    - Consider addition of one new fire inspector position to accomplish 100 percent inspections.

- Establish formal training program to ensure the individual performing public education is trained to NFPA 1031 standards.
- Identify school age appropriate fire prevention curriculum.
- Review all fire and life safety education materials to ensure relevancy to non-English speaking populations within the community.
- Develop and implement tracking and reporting mechanisms relative to fire and life safety activities.
- Create an annual report to communicate the activities of the fire and life safety function to the city's residents and business owners.
- Establish a task force between law enforcement and fire department to jointly investigate suspicious fires.
- Explore potential options available to utilize incentive programs to encourage builders to voluntarily install residential sprinklers.

Emergency Medical Services (EMS)

- Review historical emergency medical calls occurring within the MWCFD response area to determine if any gaps in the provision of advanced life support (ALS) service exist.
- Evaluate the possible implementation of benchmarks and performance data for ALS provider.
- Establish benchmark performance measures for MWCFD personnel.
- Evaluate the efficiency of potential provision of ALS level service by MWCFD personnel.
- Consider an EMS review committee reviewing "advanced calls" more frequently than current standard.
- EMS committee should meet with medical director on a scheduled basis to facilitate improvements in QA/QI processes.
- Implement a formal "lessons learned" program to improve the knowledge, skills, and abilities of MWCFD personnel.
- Establish regularly scheduled medical director "coffee break" style review sessions to facilitate learning and skill improvement.

Personnel Management

- Consider the addition of analyst function to the department to support planning activities.
- Consider the creation of a deputy chief of operations position to serve as number two administrator and day to day overseer of department operations.
- Evaluate the current roles and responsibilities of the administrative major and whether this position should remain at the rank of major.
- Review and update applicable fire department human resource rules, policies, and procedures, to ensure currency and effective processes.
- Finalize updating of all policies and procedures.
- Complete a comprehensive job task analysis and implement results.

- Establish standardized job description format to facilitate clarity in the roles and responsibilities.
- Establish timetable for regular review and revision of all job descriptions.
- Develop and implement a formal recruitment program.
- Determine if selection process through the Vo Tech meets the following:
  - Baseline physical ability standards for hiring.
  - Uses a qualified testing process to select best possible candidates in cognitive area.
  - Uses NFPA 1581 as basis of initial physical.
- Update health and safety related policies to be current with the most recent applicable NFPA standards, adopted in accordance with NFPA 1581.
- MWCFD management and the collective bargaining unit work to provide more frequent annual physicals.
- Include cancer screenings as a part of the new hire and incumbent annual physicals.

Management, Administration, and Finance

- Create a strategic plan following the master plan. Establish goals and objectives as a part of the strategic plan.
- Create a vision statement for the department.
- Create a values statement for the department. Use the values statement to develop a code of ethics for the department.
- Display mission, vision, and values statements throughout the department.
- Periodically review the mission statement for updates.
- Ensure safety committee activities are in alignment with NFPA 1500, chapter 4.
- Safety Committee should review accidents, injuries, near-miss incidents and workplace safety suggestions; report analysis and results to fire chief; promote member safety self-awareness.
- Establish SOGs review committee to provide member input.
- Determine a procedure of periodic review and update to SOGs and Policies and Procedures.
- Establish a process to determine critical issues within the fire department and propose solutions.
- Consider establishing an advisory panel from the community.
- Use multiple methods when communicating with department personnel.
- Report compliance with established performance standards in annual report.
- Evaluate effectiveness of having the current fire and life safety specialist position outside of the Fire Prevention Bureau.
- Review the master plan every ten years or as significant change occurs.
- Establish a capital improvement plan for replacement/refurbishment fund, if not included in the City's capital improvement plan.
- A capital apparatus replacement plan should be developed with a funding mechanism.

Training

- Establish a training committee.
- Further develop training opportunities with mutual aid partners.
- Develop and exercise mutual and automatic aid policies and procedures for high-risk/low-frequency events and incidents.
- Train periodically on SOGs and Policies and Procedures.

Organizational Development

Establish a process to determine critical issues within the fire department and propose solutions. Implementation of Labor Management Collaboration Initiative (LMCI) is recommended. A sample framework of a LMCI process is described below:

Key elements in the LMCI process are:

- Having a systematic approach for identifying topics and recommending solutions from any individual, committee, or team;
- Receiving input from other members of organization;
- Ensuring the periodic review of all policies and procedures.

Labor Management Meetings:

- There is a designated Labor Management Leadership Team in the LMCI model. The Leadership Team provides oversight, coordinates team assignments, monitors achievements and progress, and makes final decisions regarding topics and recommendations that have moved through the process.
- The Leadership Team is co-chaired by the fire chief and the union president.
- The Fire Administration Executive Team, and labor leadership, along with the on-duty battalion chief comprise the remaining membership of the Leadership Team.
- Responsibilities:
    1. The Leadership Team members will have ongoing contact and coordination with the appropriate individuals, committees for major functions (i.e., apparatus, health and welfare, Haz-Mat, EMS, etc.). These committees deal with a wide variety of programs, projects, and topics within their scope and forward policy and input directives to the Leadership Team for consideration.
    2. Leadership Team meetings are held monthly. All meetings and meeting agendas are announced to the entire organization one week in advance of the meetings. There may be both open and closed sessions of the meetings. For the purpose of this process, “open sessions” are open to any member of the organization, and may include any department members for input when appropriate. “Closed sessions” are work sessions for Leadership Team members only to discuss proposals, assign proposals for additional work and vetting, or to decide upon proposals that are on the agenda for approval.

LMCI PROCESS

Step 1

1. Topics can enter the process at the Leadership Team level from any individual department member, committee, or team via any Labor or Management Leadership Team member.
2. Decisions regarding the prioritization of topics will be made by the Leadership Team C co-chairs. Some topics may not be addressed immediately. Workload and appropriateness will be factors considered when prioritizing topics.
3. Proposal sponsoring Individuals or teams are responsible for completing a draft proposal with supporting documentation. A copy of the draft must be sent to a Leadership Team Member who will introduce the proposal for consideration. Individuals may be asked to provide more information and research for the process to move forward.

Step 2

The Leadership Team Member will receive relevant proposed topics and/or proposals and forward to the Leadership Committee co-chairs. The Leadership Team co-chairs are responsible for getting the topic on the agenda, ensuring meeting minutes are taken, and involving the appropriate committees, teams, and individuals as needed.

Step 3

The Leadership Team will review each topic prior to deciding on whether to assign the topic or proposal back to the sponsoring individual or team for additional staff work, research, or vetting, if necessary.

Step 4

1. Upon acceptance, the Leadership Team shall ensure the draft proposal is posted via e-mail for a 15-day comment period. The e-mail shall list the topic, title, and contain the entire text of the proposal as an attachment.
2. The sponsoring individual or committee who developed the proposal will then review all the input received during the 15-day comment period.

Step 5

Based upon the input received and any additional research, the sponsoring individual or committee makes the necessary modifications to the draft proposal. The sponsoring Individual or team is responsible for responding to those who have provided input on the draft proposal.

Step 6

The draft proposal packet is then sent to the Leadership Team for final review. The Leadership Team may accept further input at the scheduled open session before acceptance.

Step 7

The leadership team will review the recommendations and provide final approval or denial in accordance with established committee procedures.

Step 8

1. If approved for implementation, an Official Action Guide (OAG) and/or Official Memorandum shall be issued.
2. New or revised policy will be distributed to all stations within 15 working days of command team approval.

The LMCI process works because the fire administration and labor leadership is working toward a common goal. Everyone works hard to make it successful. The most important part of the process is the relationship between labor and management and the relationships established by each of the participants. No single topic is worth destroying a relationship. Strong, effective relationships allow the MWCFD to tackle and solve the most difficult problems. The LMCI process is dynamic in that it will grow and change to be more effective as the relationship develops resulting in the need for this procedure to change. While this process may take more time than traditional policy development and revision, it will save countless hours of debate and contentious challenges over partially informed and supported policies and procedures.

The LCMI process requires all participants to trust and respect one another. Both sides must consider each other as legitimate participants. As stated earlier, LCMI does not replace negotiations/collective bargaining between Management and Union. Both sides maintain their autonomy and responsibility. However, both sides recognize the importance of providing a process for everyone to participate at the level they desire. Each member has his or her own unique point of view. The diversity of skills, talents, and viewpoints strengthens the problem-solving process and improves the quality of the service we provide for our customers both inside and outside the department. LCMI is intended to be a mutually beneficial process for everyone.

RECOMMENDED LONG-TERM STRATEGIES

Phase One: MWCFD Station 6 Relocation

As the development in the southeastern corner of the city grows, it will begin to affect the response time performance pushing out of compliance response times greater than 10 percent. As that trigger point is approached, a new station construction process should begin on land already obtained for this future need. When the new station opens, engine 6 should be moved to the new station. Also, ESCI recommends that upon the re-location Station 6, Midwest City add three firefighters to increase staffing on the ladder at Station 1 to a minimum of 4 personnel each day. This will provide the staffing necessary to meet the NFPA 1710 effective response force coverage of 17 firefighters, within eight minutes, for a structure fire in the city.

Phase Two: Increasing Service Demand

As call load increases in the developing area, additional firefighters can be added to engines five and six. Making these engines minimum staffed with four firefighters will provide an improved effective response force in the east and southeast portions of the city within eight minutes of travel time. This will also allow for MWCFD units to be available to handle additional incidents if there is a working fire being handled within the city. Monitoring fire call data for an effective response force within the response areas of station 5 and 6 should serve as a trigger for adding additional personnel. When the first unit due and effective response force standards are not met within district five and or six and it effects the effects overall city-wide compliance of 90 percent response time standards, incremental increased staffing should be considered.

Cost Projections

REVENUE AND EXPENDITURE FORECAST

ESCI developed a forecast of revenues and expenditures to assess the near term financial sustainability of current operations and test various service level improvements. The forecast is based upon historical actual revenues and expenditures and informed assumptions about how those revenues and expenditures will change in the future. The key assumptions used in the forecast are presented below followed by the forecast results and selected metrics.

Since the Midwest City Fire Department resides in two separate funds (Fund 40 for general operating expenses and Fund 41 for capital expense and debt service), the forecast looks at the two budgets separately and in aggregate. However, some of the assumptions used are common to both budgets. For example, sales and use tax should increase in the same manner for each budget.

Five separate forecast scenarios have been prepared for council and staff consideration. The first two scenarios keep service levels the same as it is currently and are considered status quo. The difference between the two is that, in Scenario A, revenue projections are based upon historical performance. In Scenario B, revenue is increased to fully fund the increased cost of expenditures to maintain the status quo service level into the future. This scenario would require additional funding above what is currently allowed by ordinance as General Fund transfer into Fund 40 for fire department operations. A discussion of various alternative funding options is presented in the Forecast Summary.

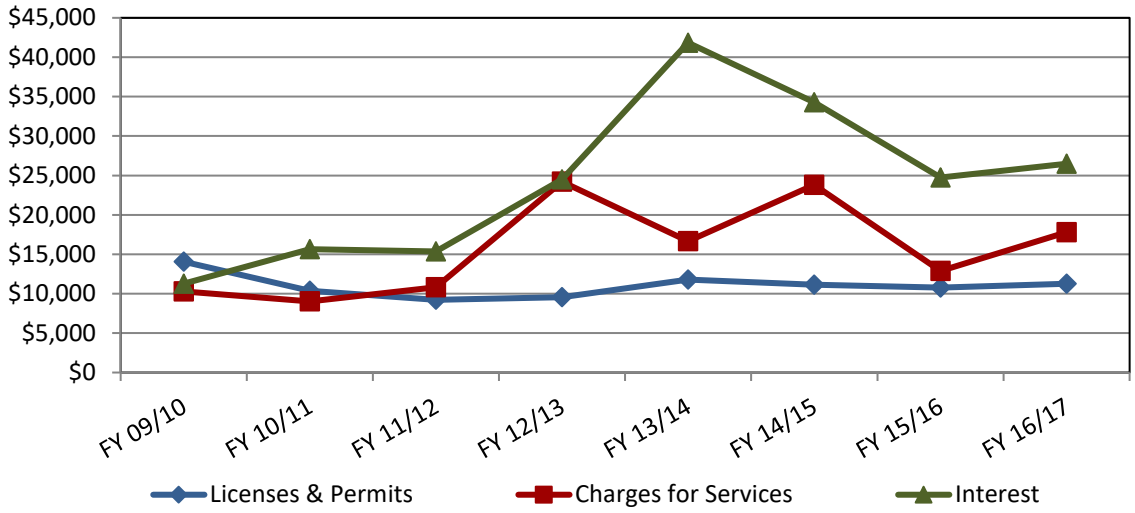
The three subsequent scenarios each contemplate some increased level of service and are shown separately, so that management and elected officials can see the impact of each change upon the overall need for additional revenue. Scenario C would bring the minimum daily staffing level from 18 firefighters and the shift commander up to 24 firefighters plus the shift commander. Scenario D would add a deputy fire chief, a fire inspector, and a staff analyst. Scenario E would move Station 6 to a new location and add an additional firefighter on each of three shifts to staff the ladder truck at Station 1. While it is unknown if or when the City would plan to build a new station and how it would finance the project, very rough figures have been included for land acquisition, design, and construction in the capital cost forecast. It is assumed that the recurring costs of staffing and operating this station will remain the same as for the current station.

Forecast Assumptions

Revenue Assumptions

- Sales/Use Tax (Fire Operating Fund 040 and Capital Fund 041)
  - Sales and use tax forms the bulk of recurring revenue in the Fire Operating (040) and Capital Funds (041) driving their rate of change.
  - Following the first full year of revenue received at the current tax rate (increased from 3.30 to 3.85 percent in FY 12/13), it appears that, with some variability, this revenue source has increased slightly at an average annual rate of 1.5 percent.
  - The forecast assumes sales/use tax revenue will continue to increase at 1.5 percent annually.
- General Fund Transfer
  - The General Fund (GF) transfer into the fire budget, with the exception of a decline in FY 14/15, has increased steadily at an average annual rate of 1.89 percent per year. Over the entire period, the average rate of increase is slightly less at 1.46 percent per year.
  - The forecast assumes that, for Scenario A, the GF transfer will increase at 1.89 percent annually.
  - It is recommended that the transfer of $166,000 for 3.5 FTEs (full time employees) in the code enforcement function be eliminated as a fire department expense in the forecast, therefore a like reduction in transfer revenue from the GF into the fire department is made in Scenario A to offset that elimination.
  - In all other scenarios, the GF transfer amount is varied as needed to cover the additional cost of service level improvements and maintain the required five percent reserve. However, it should be noted that the transfer amount cannot be increased unless the ordinance governing that transfer is amended. This and other alternatives for increased funding are discussed in the Forecast Summary.
- Other Revenue Sources (see following figure):

Figure 124: Fire Budget (Fund 040) Other Revenue Sources FY 09/10–FY 16/17



- Licenses and Permits (shown in blue in the above figure), after decreasing from a high in FY 09/10, have remained relatively unchanged.
- Forecast assumes that this source will remain flat through the forecast period at the FY 16/17 rate of $11,243.
- Charges for Services (shown in red in the above figure) have been quite variable with an average annual rate of change of 19.31 percent.
- Forecast assumes an annual rate of increase of 15 percent using the FY 16/17 amount of $17,783 as a base amount.
- Interest (shown in green in the above figure), with the exception of a spike peaking in FY 13/14 through FY 14/15, has generally increased at an average annual rate of 18.34 percent between FY 09/10 and FY 16/17.
- Forecast assumes an annual rate of increase of 15 percent using the FY 16/17 amount of $26,501 as a base amount.
- Miscellaneous revenue has varied considerably but has averaged approximately $10,000 per year.
- Forecast assumes that miscellaneous revenue will remain flat at $10,000 per year.
- The forecast does not contemplate any grant funding.

- Fire Department Reserve Fund
  - City emergency reserve requirement for the Fire Fund is equal to five percent (5%) of the fund's budgetary operating expenditures [less transfers] each fiscal year.
  - Forecast maintains the required five percent reserve for all scenarios.

- Fire Fund (040) Transfer into Capital Fund (041)
  - Fire Fund transfer has fluctuated widely from FY 09/10 to FY 16/17, ranging from highs of around $300,000 to lows between $25-50,000.
  - Scenario A assumes a transfer in the amount of $100,000 each year of the forecast period as initially indicated by the department.
  - All other scenarios assume a transfer sufficient to fund annual debt service of $234,143 and an annual capital replacement plan, with a base amount of $398,520 as adopted in FY 16/17, which grows at an annual rate of 5 percent.

Expense Assumptions

- Salaries/Wages
  - No change in staffing levels is contemplated for status quo Scenarios A and B.
  - From FY 12/13 to present, salaries/wages slowly climbed over a four-year period, with an average annual increase of 1.8 percent to their FY 16/17 level.
  - The City has settled their current Collective Bargaining Agreement (CBA) negotiations with a wage increase to be implemented in FY 16/17.
  - Per department communication dated 10/5/16, a 2.3 percent increase should be applied to adopted FY 16/17 wages and retirement benefits for covered employees.
  - For purposes of this forecast, it is assumed that the adopted wages/salaries will increase by 2.3 percent. Benefits for FY 16/17 are 29.7 percent of the total compensation package and are proportionally scaled to derive an adjusted wage/benefit amount for FY 16/17.
  - All forecast scenarios assume an average annual increase of 1.8 percent using the CBA-adjusted FY 16/17 amount as the base.
  - A rookie firefighter with an adjusted FY 16/17 salary will make approximately $40,000 annually.
  - One-time on-boarding costs per employee are assumed to be $5,000 for the first year and are included in operating costs for all scenarios adding firefighters (C and E).
  - Scenario C brings the department minimum daily staffing from 18 plus the shift commander to 24 plus the shift commander.
  - Per department communication dated 10/5/16 the department allows a maximum of six firefighters off to maintain current minimum staffing.
  - It is recommended that the department complete an analysis of vacation usage to determine how many positions per shift will actually be required to meet the 24-firefighter minimum staffing.

- With 24 shift positions (excluding the shift commander), it will take up to six additional firefighter positions for each shift to cover sick/vacation time off in order to maintain a minimum daily staffing of 24 rather than 18.

- It is assumed that the department would have to hire 18 Rookie Firefighter positions at $40,000 (plus an additional $11,900 in benefits) to increase minimum staffing in Scenario C. Total added wages would be $720,000 and benefit total would be $214,200. Total additional recurring cost for FY 17/18 would be $934,200 plus on-boarding costs of $90,000.

- Scenario E would add three additional firefighters, one per shift, in order to increase staffing on the department's ladder truck. Total added wages would be $120,000 with $35,700 in benefits for a total cost of $155,700.

- Benefits
  - Historical personnel benefits have increased from FY 12/13 to FY 16/17 in a generally linear manner at an average annual rate of 9.7 percent.
  - Benefit rate increase driven largely by annual increases in employer contribution to the state retirement system as well as health care costs.
  - Forecast uses a 9.7 percent increase each year for benefits with the CBA-adjusted FY 16/17 amount as the base.

- Materials and Services
  - The historical Materials and Services expense has varied somewhat over time but has generally increased at an average annual rate of 8.95 percent.
  - The forecast uses an annual increase of 8.95 percent with the FY 16/17 amount of $341,449 as the base.

- Other Services/Charges
  - Other Services and Charges have varied somewhat as well, dropping gradually to a low in FY 11/12 before gradually climbing back to a sustained and linear annual growth rate of 2.6 percent from FY 13/14 through FY 16/17.
  - The forecast assumes an average annual increase of 2.6 percent from the FY 16/17 amount of $254,534.
  - The Capital Fund (041) contains a charge of $289 in FY 15/16 actual and adopted FY 16/17.
  - The forecast carries this same charge throughout the forecast in Fund 041 for all scenarios.

- Fire Fund (040) Transfer into Capital Fund (041)
  - Fire Fund transfer fluctuated widely from FY 09/10 to FY 16/17, ranging from highs of around $300,000 to lows between $25-50,000.
  - Of the annual transfer, $166,000 has historically been transferred back to the General Fund to pay for 3.5 FTEs in the code enforcement function.
  - The forecast assumes that this transfer will no longer be made and that a corresponding reduction in the amount transferred from the GF into the Fire Fund will occur for Scenario A.
  - The department has proposed an annual transfer of $100,000 to help replace capital equipment. Scenario A maintains that amount throughout the forecast.
  - All other scenarios allow the transfer amount to fluctuate in order to maintain both debt service and a capital replacement program funded at the base FY 16/17 amount of $398,520 inflated at five percent annually, which reflects ESCI experience with fire service and related equipment cost escalation.
- Capital
  - All future capital costs are forecast to reside within the fire department Capital Fund (041).
  - Capital equipment/apparatus replacement has averaged $475,349 over the last four years.
  - As stated above, all scenarios utilize the capital replacement amount for FY 16/17 (which may be too low) with an annual rate of increase of five percent.
  - Forecast for all scenarios assumes a base case amount of $398,520. The base amount is increased at five percent annually.
- Debt Service
  - Debt service in the amount of $234,143 is currently estimated to last through FY 21/22.
  - Forecast for all scenarios assumes no additional debt service will be added and that the current debt will not be refinanced but will be retired with the final payment in FY 21/22.

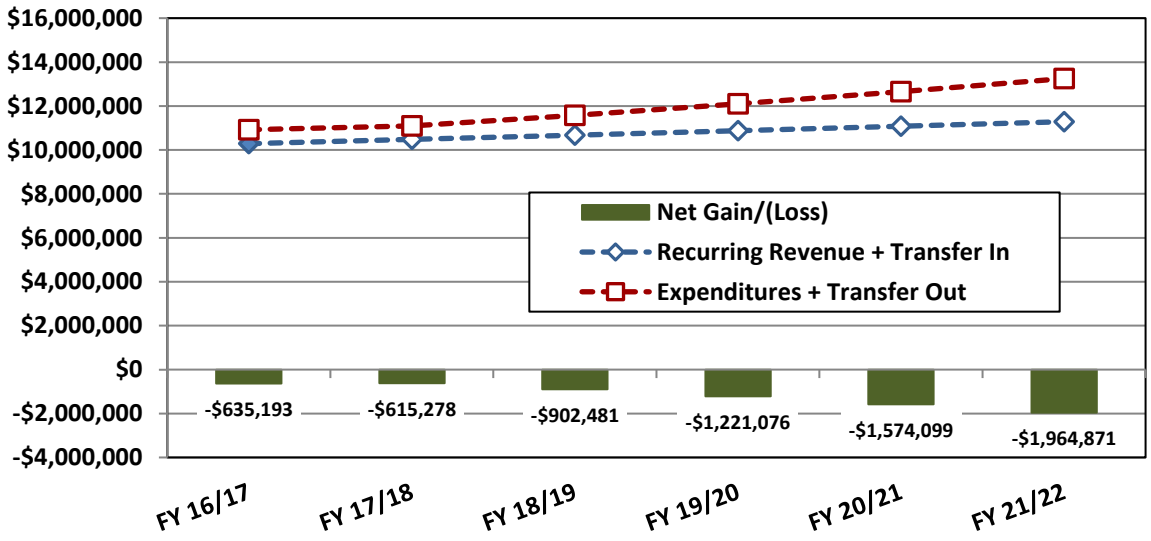
- Fire Fund (040) 5 Percent Emergency Reserve
  - The City requires the department to maintain an emergency reserve of five percent of its annual operating fund (040), less transfers, each fiscal year.
  - Cash reserves in the Fire Fund, while fluctuating quite a bit throughout the period, have generally been more than sufficient to provide a five percent emergency reserve as required.
  - The forecast for each of the following scenarios attempts to maintain this five percent reserve.

Financial Forecast Results

Scenario A—Service Level Remains Status Quo

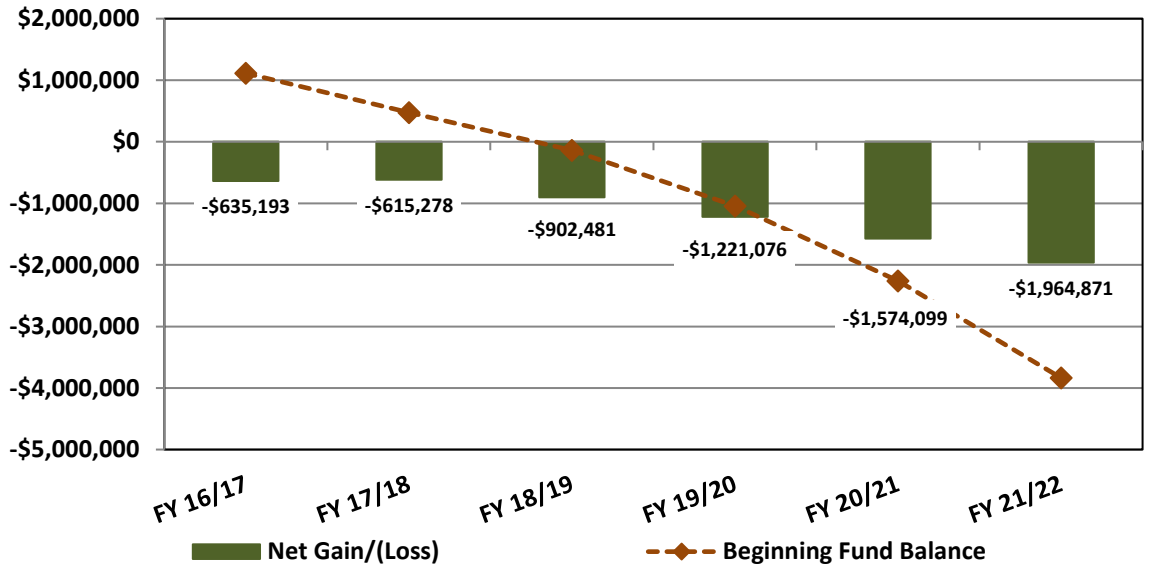
As mentioned above at the beginning of this section, two status quo scenarios are offered using most of the same expenditure assumptions but varying the General Fund transfer to the Fire Department Operating Fund (040) and the Fire Fund transfer into the Fire Capital Fund (041). Scenario A is not financially viable but shows how expenditures will outpace historical revenue increases. Scenario B will require an additional transfer from the General Fund into the Fire Fund to maintain the same level of service.

Figure 125: Scenario A—Status Quo Forecast (Graphical) – Fire Operating Budget (Fund 040)



Utilizing the assumptions presented above, recurring fire-specific revenues and transfers in are expected to increase from $10,284,900 in FY 16/17 to $11,285,444 in FY 21/22 at an average annual rate of 1.87 percent for the forecast period. Recurring expenditures are expected to increase from $10,920,093 in FY 16/17 adjusted to $13,250,316 in FY 21/22 at an average annual rate of 3.95 percent for the forecast period. As shown in the above figure, recurring expense exceeds recurring revenue resulting in an annual operating deficit (green bars), which reduces fund balance as shown in the figure below:

Figure 126: Scenario A—Fund Balance FY 16/17 Through FY 21/22



Because the recurring expenses are expected to increase at a higher rate than the recurring fire-specific revenues, the annual operating deficit continues to grow each year. Clearly, the requirement for a five percent emergency reserve cannot be met after FY 16/17.

The following figure shows in tabular format how the various components of the recurring expenditure and revenue budgets increase during the forecast period given the assumptions previously detailed:

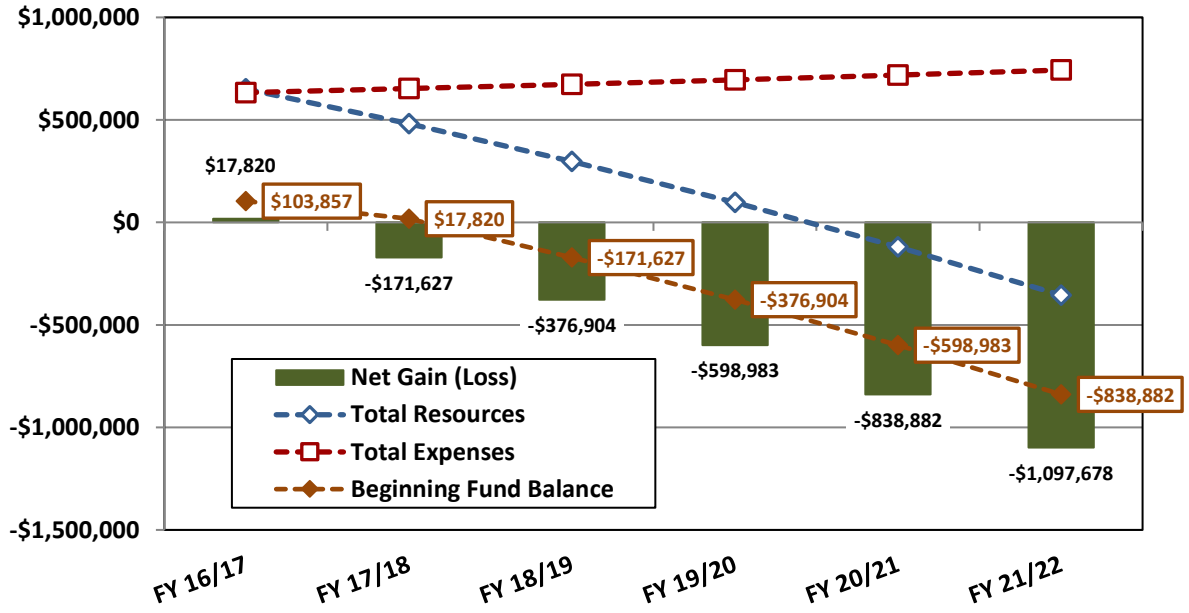
Figure 127: Scenario A—Status Quo Forecast (Tabular) – Fire Operations Budget (Fund 040)

FINANCIAL RESOURCES	Adopted FY 16/17	Adjusted FY 16/17	Forecast FY 17/18	Forecast FY 18/19	Forecast FY 19/20	Forecast FY 20/21	Forecast FY 21/22
Taxes	$2,261,885	$2,261,885	$2,295,813	$2,330,250	$2,365,204	$2,400,682	$2,436,693
Licenses & Permits	$11,243	$11,243	$11,243	$11,243	$11,243	$11,243	$11,243
Charges for Services	$17,783	$17,783	$20,450	$23,518	$27,046	$31,103	$35,768
Interest	$26,501	$26,501	$30,476	$35,048	$40,305	$46,350	$53,303
Miscellaneous	$9,628	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000
Intergovernmental	$0	$0	$0	$0	$0	$0	$0
Recurring Revenue	$2,327,040	$2,327,412	$2,367,983	$2,410,059	$2,453,798	$2,499,378	$2,547,006
Grants	$0	$0	$0	$0	$0	$0	$0
Transfers In	$7,957,488	$7,957,488	$8,107,885	$8,261,124	$8,417,259	$8,576,345	$8,738,438
Beginning Fund Balance	$1,112,435	$1,112,435	$477,242	-$138,037	-$1,040,518	-$2,261,593	-$3,835,692
Total Resources	**$11,396,963**	**$11,397,335**	**$10,953,109**	**$10,533,146**	**$9,830,539**	**$8,814,130**	**$7,449,752**

EXPENSE	Adopted FY 16/17	Adjusted FY 16/17	Forecast FY 17/18	Forecast FY 18/19	Forecast FY 19/20	Forecast FY 20/21	Forecast FY 21/22
Personal Services	$9,722,264	$9,945,610	$10,357,985	$10,800,418	$11,275,646	$11,786,667	$12,336,769
Wages	$6,834,569	$6,991,764	$7,117,616	$7,245,733	$7,376,156	$7,508,927	$7,644,088
Benefits	$2,887,695	$2,953,846	$3,240,369	$3,554,685	$3,899,490	$4,277,740	$4,692,681
Materials and Supplies	$341,449	$341,449	$372,009	$405,303	$441,578	$481,099	$524,158
Other Services and Charges	$254,534	$254,534	$261,152	$267,942	$274,908	$282,056	$289,389
Capital Outlay	$0	$0	$0	$0	$0	$0	$0
Transfers Out	$378,500	$378,500	$100,000	$100,000	$100,000	$100,000	$100,000
Total Expenditures	**$10,696,747**	**$10,920,093**	**$11,091,146**	**$11,573,663**	**$12,092,132**	**$12,649,822**	**$13,250,316**

The following figure illustrates how the Fire Capital Fund (041) behaves under Scenario A. The relationship between net gain or loss and beginning fund balance clearly shows that the department is unable to fund its current debt service requirement and a realistic capital replacement program given the available revenue stream. The beginning fund balance in FY 17/18 is only $17,820 and declines rapidly. While there is no requirement for fund balance in this fund, the annual net loss shows how much additional revenue would be required each year to sustain the capital replacement program as forecast.

Figure 128: Scenario A—Status Quo Forecast (Graphical) – Fire Capital Budget (Fund 041)



The following figure shows in tabular format how the various components of the recurring expenditure and revenue budgets increase during the forecast period given the assumptions previously detailed:

Figure 129: Scenario A—Status Quo Forecast (Tabular) – Fire Capital Budget (Fund 041)

FINANCIAL RESOURCES	Adopted FY 16/17	Adjusted FY 16/17	Forecast FY 17/18	Forecast FY 18/19	Forecast FY 19/20	Forecast FY 20/21	Forecast FY 21/22
Taxes	$323,593	$323,593	$328,447	$333,374	$338,374	$343,450	$348,602
Intergovernmental	$0	$0	$0	$0	$0	$0	$0
Interest	$10,822	$10,822	$10,984	$11,149	$11,316	$11,486	$11,658
Miscellaneous	$0	$0	$0	$0	$0	$0	$0
Recurring Revenue	$334,415	$334,415	$339,431	$344,523	$349,691	$354,936	$360,260
Asset Retirement	$0	$0	$24,000	$24,000	$24,000	$24,000	$24,000
Loan Proceeds	$0	$0	$0	$0	$0	$0	$0
Transfers In	$212,500	$212,500	$100,000	$100,000	$100,000	$100,000	$100,000
Beginning Fund Balance	$103,857	$103,857	$17,820	-$171,627	-$376,904	-$598,983	-$838,882
Total Resources	**$650,772**	**$650,772**	**$481,251**	**$296,896**	**$96,786**	**-$120,047**	**-$354,622**

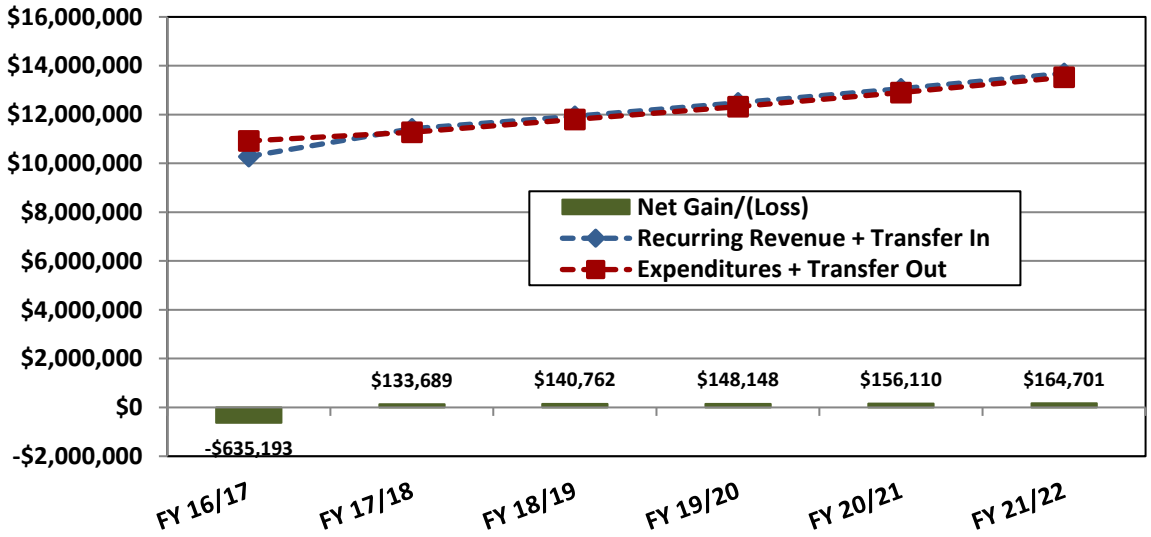
EXPENSE	Adopted FY 16/17	Adjusted FY 16/17	Forecast FY 17/18	Forecast FY 18/19	Forecast FY 19/20	Forecast FY 20/21	Forecast FY 21/22
Other Services	$289	$289	$289	$289	$289	$289	$289
Capital Outlay	$398,520	$398,520	$418,446	$439,368	$461,337	$484,404	$508,624
Debt Service	$234,143	$234,143	$234,143	$234,143	$234,143	$234,143	$234,143
Total Expense	**$632,952**	**$632,952**	**$652,878**	**$673,800**	**$695,769**	**$718,836**	**$743,056**

Scenario B—Service Level Remains Status Quo

Scenario B is also a service level status quo scenario, with many of the same assumptions for expense as in Scenario A with several key exceptions. First, the transfer from the Fire Operating Fund (040) into the Fire Capital Fund (041) is increased to maintain a reasonable level of capital replacement while also keeping a positive fund balance and funding the annual debt service. For FY 17/18, the transfer amount is the difference between total capital expense and the recurring revenue plus estimated asset retirement. In subsequent years, the transfer amount is calculated the same way, but is inflated by five percent each year.

The second key exception to Scenario A involves the transfer into the Fire Operating Fund (040) from the General Fund, which is calculated as the difference between total expense and recurring revenue inflated annually by 1.5 percent. This is done in order to maintain at least a five percent emergency reserve and to allow unrestricted reserves to grow.

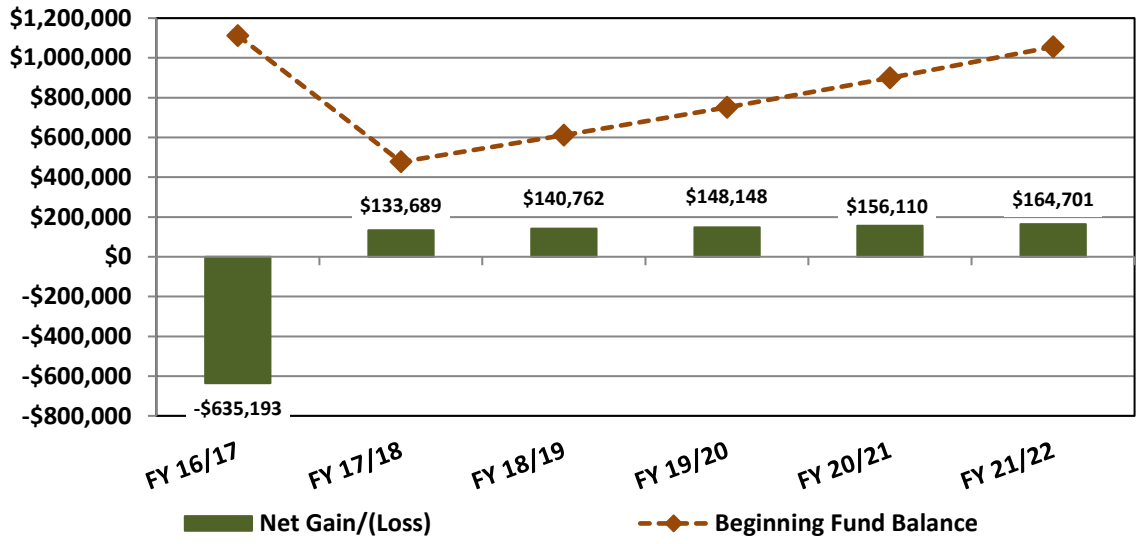
Figure 130: Scenario B—Status Quo Forecast (Graphical) – Fire Operating Budget (Fund 040)



Utilizing the assumptions presented above, recurring fire-specific revenues and transfers in are expected to increase from $10,284,900 in FY 16/17 to $13,691,752 in FY 21/22 at an average annual rate of 5.92 percent for the forecast period. Recurring expenditures are expected to increase from $10,920,093 in FY 16/17 adjusted to $13,527,051 in FY 21/22 at an average annual rate of 4.38 percent for the forecast period.

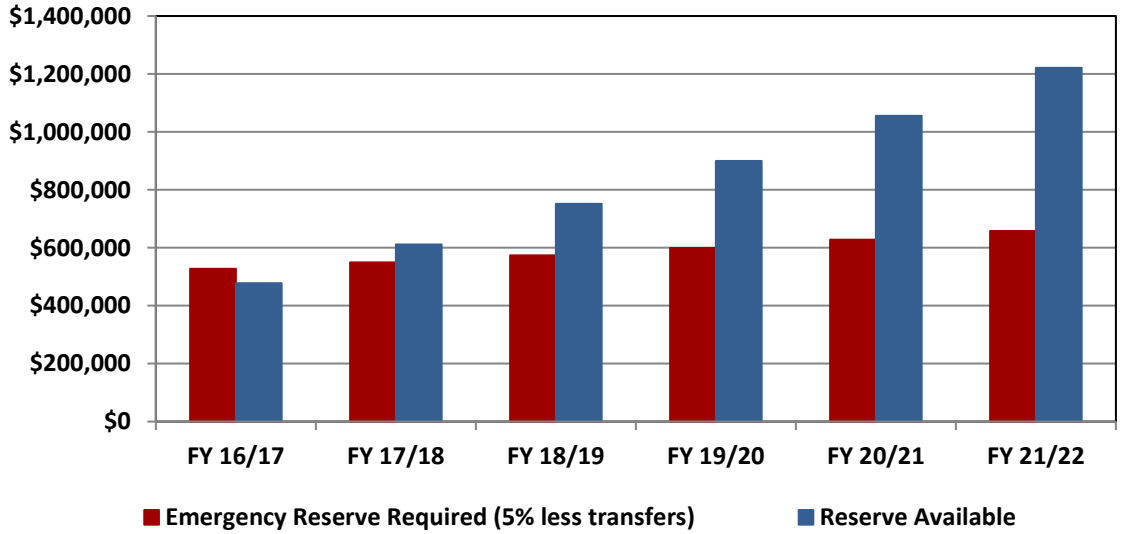
As shown in the above figure, recurring revenue slightly exceeds recurring expense for the forecast period resulting in an annual operating surplus (green bars) which increases fund balance as shown in the figure below. This fund balance increase will provide the Fire Operating Fund with a reserve for cash forward that will cover several months of operating expenses. A cash flow analysis would provide the City with a better picture of how much unrestricted reserve this fund should carry each year. Once the unrestricted reserve reaches a certain point, the transfer amount would no longer need to be inflated each year and could be stabilized.

Figure 131: Scenario B—Fund Balance FY 16/17 Through FY 21/22



Because the recurring fire-specific revenues and transfer are forecast to increase at a higher rate than the recurring expenses, the fund balance forward continues to grow each year. The following figure shows how this increase in fund balance affects the five percent reserve requirement for the Fire Operating Fund (040). In FY 16/17, as adjusted for the CBA settlement, the reserve requirement cannot be met. However, as of FY 17/18, the forecast shows that not only is the five percent reserve met, but there is a small amount of unrestricted reserve available ($61,374). This unrestricted reserve continues to grow, reaching $563,136 in FY 21/22.

Figure 132: Scenario B—Status Quo Forecast (Tabular) – Fire Operations Budget (Fund 040)



The following figure shows in tabular format how the various components of the recurring expenditure and revenue budgets increase during the forecast period given the assumptions previously detailed:

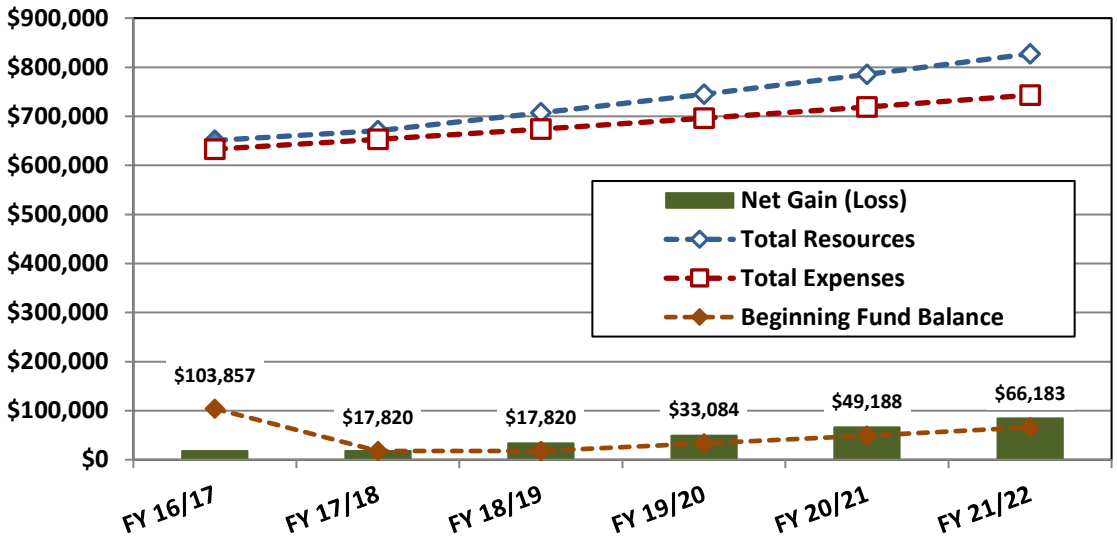
Figure 133: Scenario B—Status Quo Forecast (Tabular) – Fire Operations Budget (Fund 040)

FINANCIAL RESOURCES	Adopted FY 16/17	Adjusted FY 16/17	Forecast FY 17/18	Forecast FY 18/19	Forecast FY 19/20	Forecast FY 20/21	Forecast FY 21/22
Taxes	$2,261,885	$2,261,885	$2,295,813	$2,330,250	$2,365,204	$2,400,682	$2,436,693
Licenses & Permits	$11,243	$11,243	$11,243	$11,243	$11,243	$11,243	$11,243
Charges for Services	$17,783	$17,783	$20,450	$23,518	$27,046	$31,103	$35,768
Interest	$26,501	$26,501	$30,476	$35,048	$40,305	$46,350	$53,303
Miscellaneous	$9,628	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000
Intergovernmental	$0	$0	$0	$0	$0	$0	$0
Recurring Revenue	$2,327,040	$2,327,412	$2,367,983	$2,410,059	$2,453,798	$2,499,378	$2,547,006
Grants	$0	$0	$0	$0	$0	$0	$0
Transfers In	$7,957,488	$7,957,488	$9,046,299	$9,524,908	$10,024,664	$10,563,449	$11,144,746
Beginning Fund Balance	$1,112,435	$1,112,435	$477,242	$610,931	$751,693	$899,841	$1,055,951
Total Resources	**$11,396,963**	**$11,397,335**	**$11,891,523**	**$12,545,898**	**$13,230,155**	**$13,962,668**	**$14,747,703**

EXPENSE	Adopted FY 16/17	Adjusted FY 16/17	Forecast FY 17/18	Forecast FY 18/19	Forecast FY 19/20	Forecast FY 20/21	Forecast FY 21/22
Personal Services	$9,722,264	$9,945,610	$10,357,985	$10,800,418	$11,275,646	$11,786,667	$12,336,769
Wages	$6,834,569	$6,991,764	$7,117,616	$7,245,733	$7,376,156	$7,508,927	$7,644,088
Benefits	$2,887,695	$2,953,846	$3,240,369	$3,554,685	$3,899,490	$4,277,740	$4,692,681
Materials and Supplies	$341,449	$341,449	$372,009	$405,303	$441,578	$481,099	$524,158
Other Services and Charges	$254,534	$254,534	$261,152	$267,942	$274,908	$282,056	$289,389
Capital Outlay	$0	$0	$0	$0	$0	$0	$0
Transfers Out	$378,500	$378,500	$289,447	$320,541	$338,182	$356,895	$376,736
Total Expenditures	**$10,696,747**	**$10,920,093**	**$11,280,593**	**$11,794,205**	**$12,330,314**	**$12,906,717**	**$13,527,051**

The following figure illustrates how the Fire Capital Fund (041) behaves under Scenario B. The relationship between net gain or loss and beginning fund balance shows that the department is able to fund its current debt service requirement and a realistic capital replacement program. In fact, it is able to do so while slightly increasing the available fund balance each year. The beginning fund balance in FY 17/18 is only $17,820 and grows slowly to $66,183 by FY 21/22. Since there is not requirement to maintain a specific fund balance in this fund, the excess fund balance could be used for additional capital replacement since this target is a bit lower than recommended.

Figure 134: Scenario B—Status Quo Forecast (Graphical) – Fire Capital Budget (Fund 041)



The following figure shows in tabular format how the various components of the recurring expenditure and revenue budgets increase during the forecast period given the assumptions previously detailed:

Figure 135: Scenario B—Status Quo Forecast (Tabular) – Fire Capital Budget (Fund 041)

FINANCIAL RESOURCES	Adopted FY 16/17	Adjusted FY 16/17	Forecast FY 17/18	Forecast FY 18/19	Forecast FY 19/20	Forecast FY 20/21	Forecast FY 21/22
Taxes	$323,593	$323,593	$328,447	$333,374	$338,374	$343,450	$348,602
Intergovernmental	$0	$0	$0	$0	$0	$0	$0
Interest	$10,822	$10,822	$10,984	$11,149	$11,316	$11,486	$11,658
Miscellaneous	$0	$0	$0	$0	$0	$0	$0
Recurring Revenue	$334,415	$334,415	$339,431	$344,523	$349,691	$354,936	$360,260
Asset Retirement	$0	$0	$24,000	$24,000	$24,000	$24,000	$24,000
Loan Proceeds	$0	$0	$0	$0	$0	$0	$0
Transfers In	$212,500	$212,500	$289,447	$320,541	$338,182	$356,895	$376,736
Beginning Fund Balance	$103,857	$103,857	$17,820	$17,820	$33,084	$49,188	$66,183
Total Resources	**$650,772**	**$650,772**	**$670,698**	**$706,884**	**$744,957**	**$785,018**	**$827,178**

EXPENSE	Adopted FY 16/17	Adjusted FY 16/17	Forecast FY 17/18	Forecast FY 18/19	Forecast FY 19/20	Forecast FY 20/21	Forecast FY 21/22
Other Services	$289	$289	$289	$289	$289	$289	$289
Capital Outlay	$398,520	$398,520	$418,446	$439,368	$461,337	$484,404	$508,624
Debt Service	$234,143	$234,143	$234,143	$234,143	$234,143	$234,143	$234,143
Total Expense	**$632,952**	**$632,952**	**$652,878**	**$673,800**	**$695,769**	**$718,836**	**$743,056**

Scenario C—Service Level Improved by Increased Minimum Staffing

Scenario C offers a significant service level improvement as discussed elsewhere in this report, bringing the department's minimum daily staffing from 18 firefighters plus the shift commander (19 total) to 24 firefighters plus the shift commander (25 total).

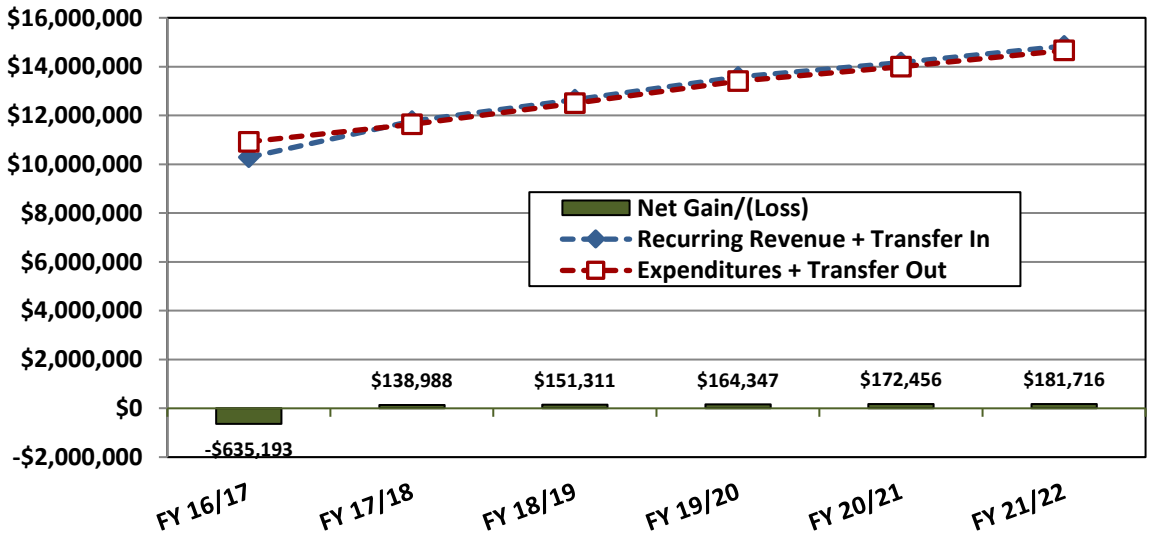
Per department communication dated 10/5/16, the department allows a maximum of six firefighters off to maintain current minimum staffing of 18 firefighters.

With 24 shift positions (excluding the shift commander), it will take up to six additional firefighter positions for each shift to cover sick/vacation time off at the maximum allowed off in order to ensure minimum daily staffing of 24 can be maintained every day.

It is assumed that the department would have to fill 18 rookie firefighter positions at $40,000 (plus an additional $11,900 in benefits) to increase minimum staffing in Scenario C. Total added wages would be $720,000 and benefit total would be $214,200. Total additional recurring cost for FY 17/18 would be $934,200 plus on-boarding costs of $90,000.

In order to give the city time to generate sufficient additional revenue to fund the positions needed to fully provide for this level of minimum staffing, Scenario C adds positions incrementally over a three-year period. Specifically, six firefighters (two per shift) would be added each of the first three years of the forecast period.

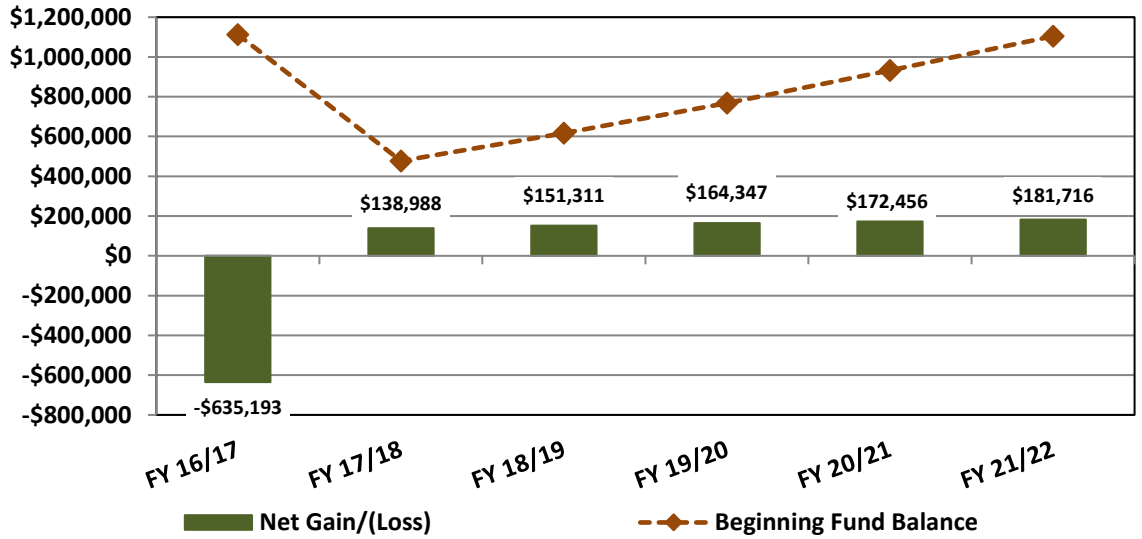
Figure 136: Scenario C—Minimum Staffing Increase Forecast (Graphical)



Utilizing the assumptions presented above, recurring fire-specific revenues and transfers in are expected to increase from $10,284,900 in FY 16/17 to $14,843,092 in FY 21/22 at an average annual rate of 7.67 percent for the forecast period. Recurring expenditures are expected to increase from $10,920,093 in FY 16/17 adjusted to $14,661,377 in FY 21/22 at an average annual rate of 6.08 percent for the forecast period.

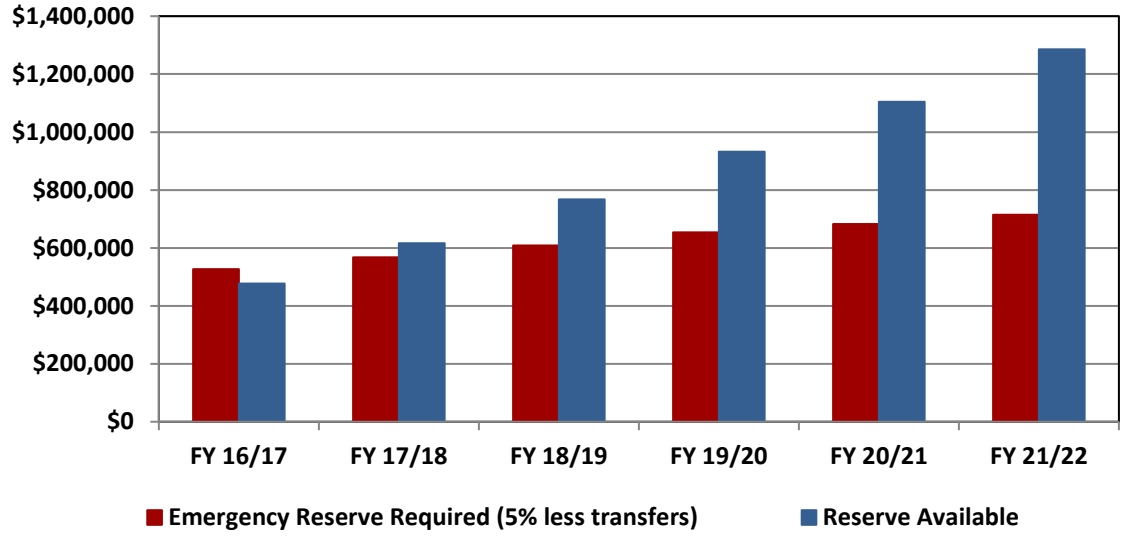
As shown in the previous figure, recurring revenue slightly exceeds recurring expense for the forecast period resulting in an annual operating surplus (green bars) which increases fund balance as shown in the next figure. This fund balance increase provides the Fire Operating Fund with a reserve for cash forward that will cover several months of operating expenses.

Figure 137: Scenario C—Fund Balance FY 16/17 Through FY 21/22



Because the recurring fire-specific revenues and transfer are forecast to increase at a higher rate than the recurring expenses, the fund balance forward continues to grow each year. The following figure shows how this increase in fund balance affects the five percent reserve requirement for the Fire Operating Fund (040) in Scenario C. In FY 16/17, as adjusted, the reserve requirement is not met. As of FY 17/18, the forecast shows that the five percent reserve is met and that there is a small amount of unrestricted reserve available ($49,009). This unrestricted reserve continues to grow, reaching $571,827 in FY 21/22.

Figure 138: Scenario C—Minimum Staffing Increase Forecast (Tabular) Fire Operations Budget (Fund 040)



The following figure shows in tabular format how the various components of the recurring expenditure and revenue budgets increase during the forecast period given the assumptions previously detailed:

Figure 139: Scenario C—Minimum Staffing Increase Forecast (Tabular) – Fire Operations Budget (Fund 040)

FINANCIAL RESOURCES	Adopted FY 16/17	Adjusted FY 16/17	Forecast FY 17/18	Forecast FY 18/19	Forecast FY 19/20	Forecast FY 20/21	Forecast FY 21/22
Taxes	$2,261,885	$2,261,885	$2,295,813	$2,330,250	$2,365,204	$2,400,682	$2,436,693
Licenses & Permits	$11,243	$11,243	$11,243	$11,243	$11,243	$11,243	$11,243
Charges for Services	$17,783	$17,783	$20,450	$23,518	$27,046	$31,103	$35,768
Interest	$26,501	$26,501	$30,476	$35,048	$40,305	$46,350	$53,303
Miscellaneous	$9,628	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000
Intergovernmental	$0	$0	$0	$0	$0	$0	$0
Recurring Revenue	$2,327,040	$2,327,412	$2,367,983	$2,410,059	$2,453,798	$2,499,378	$2,547,006
Grants	$0	$0	$0	$0	$0	$0	$0
Transfers In	$7,957,488	$7,957,488	$9,404,843	$10,238,690	$11,120,835	$11,669,549	$12,296,086
Beginning Fund Balance	$1,112,435	$1,112,435	$477,242	$616,229	$767,540	$931,887	$1,104,344
Total Resources	**$11,396,963**	**$11,397,335**	**$12,250,068**	**$13,264,978**	**$14,342,173**	**$15,100,815**	**$15,947,436**

EXPENSE	Adopted FY 16/17	Adjusted FY 16/17	Forecast FY 17/18	Forecast FY 18/19	Forecast FY 19/20	Forecast FY 20/21	Forecast FY 21/22
Personal Services	$9,722,264	$9,945,610	$10,680,631	$11,469,700	$12,318,004	$12,870,127	$13,464,236
Wages	$6,834,569	$6,991,764	$7,361,936	$7,743,168	$8,135,740	$8,282,183	$8,431,263
Benefits	$2,887,695	$2,953,846	$3,318,695	$3,726,532	$4,182,264	$4,587,943	$5,032,974
Materials and Supplies	$341,449	$341,449	$402,609	$439,254	$479,192	$487,394	$531,015
Other Services and Charges	$254,534	$254,534	$261,152	$267,942	$274,908	$282,056	$289,389
Capital Outlay	$0	$0	$0	$0	$0	$0	$0
Transfers Out	$378,500	$378,500	$289,447	$320,541	$338,182	$356,895	$376,736
Total Expenditures	**$10,696,747**	**$10,920,093**	**$11,633,838**	**$12,497,438**	**$13,410,286**	**$13,996,471**	**$14,661,377**

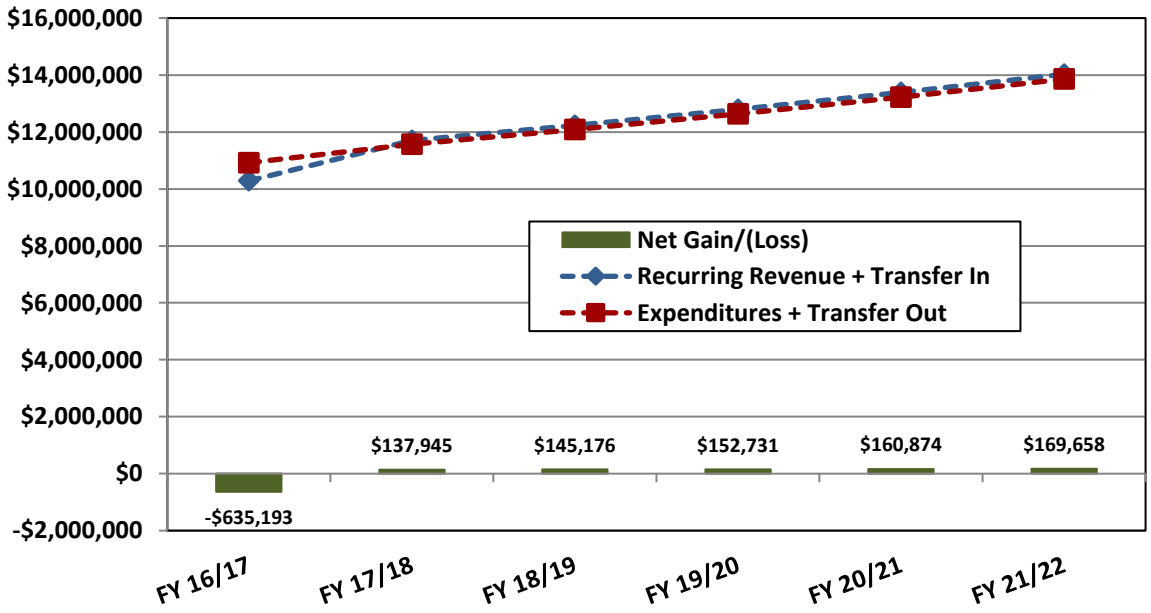
There is no change to the forecast for the Fire Capital Budget (041) under Scenario C.

Scenario D—Service Level Improved by Adding Administrative/Command Staff

Scenario D also adds additional staff aimed at improving service level, albeit to a much lesser degree than Scenario C and in command and administrative roles rather than directly in the field responding to emergency calls. Again, this change is discussed in greater detail elsewhere in this report; however, in short, it involves the addition of a deputy fire chief, a fire inspector, and a staff analyst to assist with data collection, analysis, and planning for the department.

To model these positions, ESCI reviewed the city FY 15/16 pay plan to develop pay assumptions. With respect to the deputy chief position, it should be at least equivalent to the shift commanders, fire marshal, and training chief. There are three shift commanders with an average FY 15/16 salary of $95,708, the fire marshal is at $92,372, and the training chief is at an annual salary of $94,097. The assistant chief of police is a pay grade R position. It is recommended that the deputy fire chief be a pay grade R and be placed at Step 7 with an annual FY 15/16 salary for modeling purposes of $95,142.10. The fire inspector is already a current position in the fire department. There are currently three inspectors with an average salary of $74,743. The model adds one more inspector at that rate. A staff analyst position that would involve data collection, analysis, and planning would be equivalent to the police crime analyst/UCR statistician position that is a pay grade G. It is felt that a strong analyst would command a salary up to Step 7 ($41,255.96), which is used in the modeling.

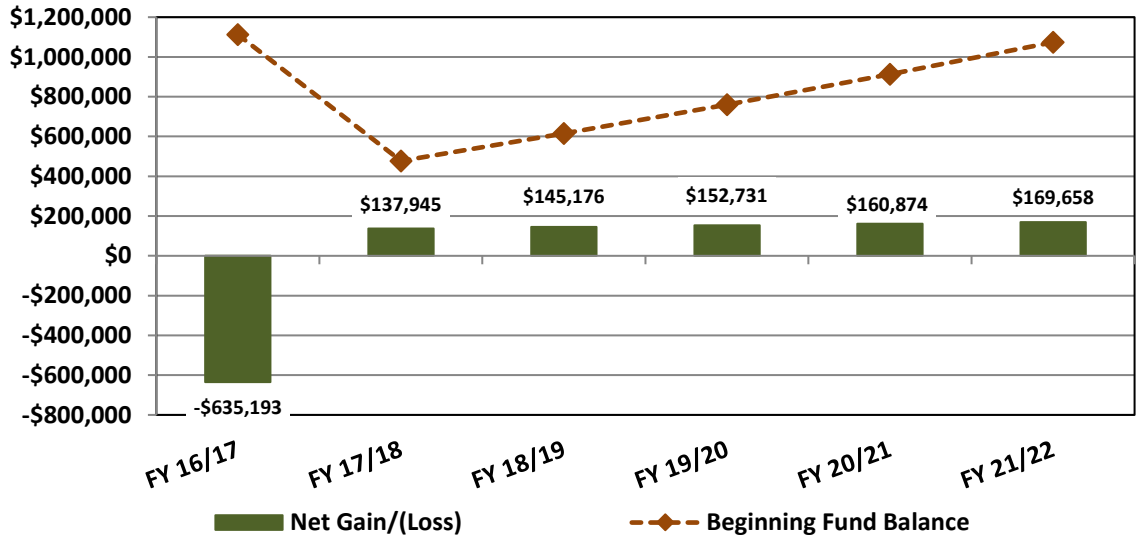
Figure 140: Scenario D—Staffing Increase Forecast (Graphical) – Fire Operating Budget (Fund 040)



Utilizing the assumptions presented above, recurring fire-specific revenues and transfers in are expected to increase from $10,284,900 in FY 16/17 to $14,027,173 in FY 21/22, at an average annual rate of 6.46 percent for the forecast period. Recurring expenditures are expected to increase from $10,920,093 in FY 16/17 adjusted to $13,857,513 in FY 21/22 at an average annual rate of 4.88 percent for the forecast period.

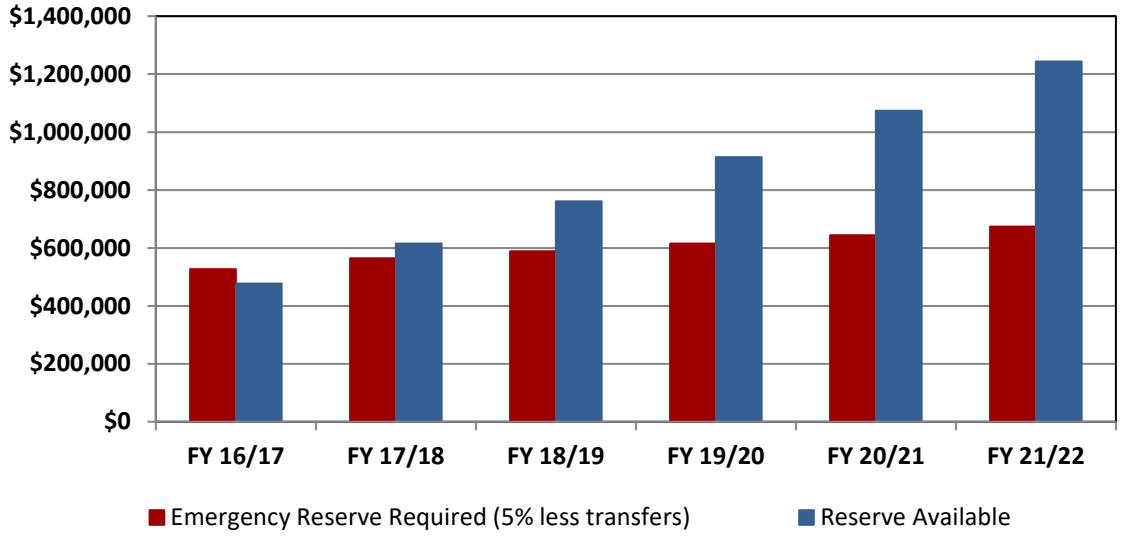
As shown in the previous figure, recurring revenue slightly exceeds recurring expense for the forecast period resulting in an annual operating surplus (green bars), which increases fund balance as shown in the following figure. This fund balance increase provides the Fire Operating Fund with a reserve for cash forward that will cover several months of operating expenses.

Figure 141: Scenario D—Fund Balance FY 16/17 Through FY 21/22



Because the recurring fire-specific revenues and transfer are forecast to increase at a higher rate than the recurring expenses, the fund balance forward continues to grow each year. The following figure shows how this increase in fund balance affects the five percent reserve requirement for the Fire Operating Fund (040) in Scenario D. In FY 16/17, as adjusted, the reserve requirement is not met. As of FY 17/18, the forecast shows that the five percent reserve is met and that there is a small amount of unrestricted reserve available ($51,443). This unrestricted reserve continues to grow, reaching $569,586 in FY 21/22.

Figure 142: Scenario D—Staffing Increase Reserve Analysis – Fire Operations Budget (Fund 040)



The following figure shows in tabular format how the various components of the recurring expenditure and revenue budgets increase during the forecast period given the assumptions previously detailed:

Figure 143: Scenario D—Staffing Increase Forecast (Tabular) – Fire Operations Budget (Fund 040)

FINANCIAL RESOURCES	Adopted FY 16/17	Adjusted FY 16/17	Forecast FY 17/18	Forecast FY 18/19	Forecast FY 19/20	Forecast FY 20/21	Forecast FY 21/22
Taxes	$2,261,885	$2,261,885	$2,295,813	$2,330,250	$2,365,204	$2,400,682	$2,436,693
Licenses & Permits	$11,243	$11,243	$11,243	$11,243	$11,243	$11,243	$11,243
Charges for Services	$17,783	$17,783	$20,450	$23,518	$27,046	$31,103	$35,768
Interest	$26,501	$26,501	$30,476	$35,048	$40,305	$46,350	$53,303
Miscellaneous	$9,628	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000
Intergovernmental	$0	$0	$0	$0	$0	$0	$0
Recurring Revenue	$2,327,040	$2,327,412	$2,367,983	$2,410,059	$2,453,798	$2,499,378	$2,547,006
Grants	$0	$0	$0	$0	$0	$0	$0
Transfers In	$7,957,488	$7,957,488	$9,334,288	$9,823,597	$10,334,781	$10,885,785	$11,480,166
Beginning Fund Balance	$1,112,435	$1,112,435	$477,242	$615,187	$760,363	$913,094	$1,073,968
Total Resources	**$11,396,963**	**$11,397,335**	**$12,179,512**	**$12,848,843**	**$13,548,942**	**$14,298,258**	**$15,101,140**

EXPENSE	Adopted FY 16/17	Adjusted FY 16/17	Forecast FY 17/18	Forecast FY 18/19	Forecast FY 19/20	Forecast FY 20/21	Forecast FY 21/22
Personal Services	$9,722,264	$9,945,610	$10,641,718	$11,094,693	$11,581,179	$12,104,240	$12,667,232
Wages	$6,834,569	$6,991,764	$7,332,557	$7,464,543	$7,598,905	$7,735,685	$7,874,928
Benefits	$2,887,695	$2,953,846	$3,309,161	$3,630,150	$3,982,274	$4,368,555	$4,792,304
Materials and Supplies	$341,449	$341,449	$372,009	$405,303	$441,578	$481,099	$524,158
Other Services and Charges	$254,534	$254,534	$261,152	$267,942	$274,908	$282,056	$289,389
Capital Outlay	$0	$0	$0	$0	$0	$0	$0
Transfers Out	$378,500	$378,500	$289,447	$320,541	$338,182	$356,895	$376,736
Total Expenditures	**$10,696,747**	**$10,920,093**	**$11,564,326**	**$12,088,480**	**$12,635,848**	**$13,224,290**	**$13,857,515**

There is no change to the forecast for the Fire Capital Budget (041) under Scenario D. It remains the same as in Scenario B.

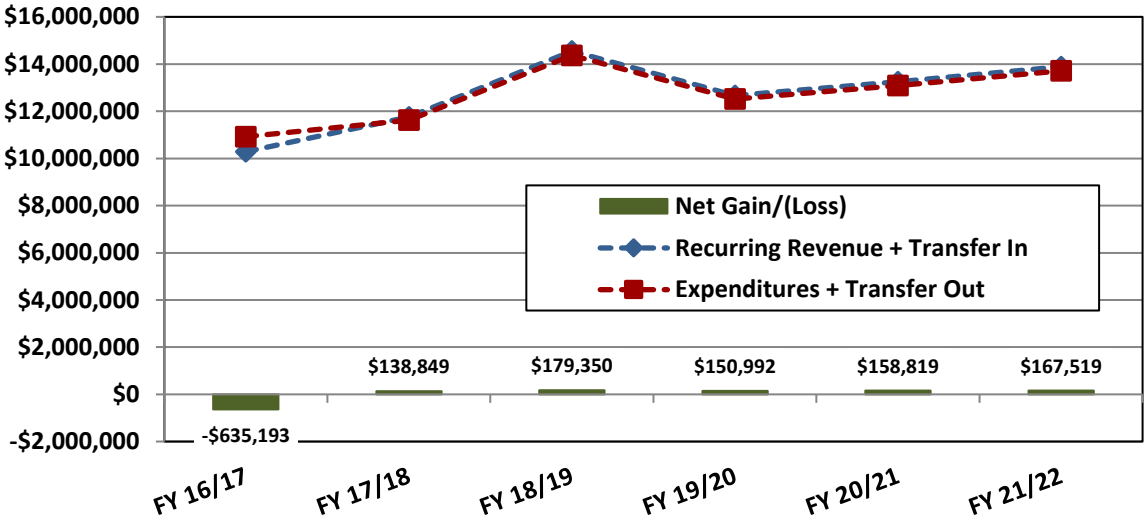
Scenario E—Station 6 Relocation

In Scenario E, Station 6 is relocated to better serve the city by improving response times for both single unit and multiple unit responses. It is essentially the same as Scenario B, with the exception that the costs of rebuilding the station in a different location are estimated while all other assumptions remain the same. In this scenario, three additional firefighter positions are added at the time of station completion (FY 19/20) which increases staffing for the department ladder truck. For the purposes of forecasting, several assumptions were made about costs associated with building a new fire station.

- It is assumed that all apparatus and equipment will be moved from the current location to the new station.
- Cost for land, if any, is unknown but $200,000 is included in the forecast to acquire at least two acres for the building footprint, drainage, and parking.
- It is assumed that the fire station will be approximately 10,000 sq. ft. with three apparatus bays in a drive-through configuration. It is assumed that the construction materials will be concrete block or poured concrete walls with a metal roof.
- Construction costs vary considerably across the country and with design features, materials chosen, and finishes desired. ESCI has seen costs range anywhere from $180-310 per square foot for fire stations in this size range. The forecast assumes a construction cost of $240 per sq. ft. for a total facility cost of $2.4 million.
- Professional fees generally range from 4.5-7.5 percent of construction cost. The forecast assumes six percent for a total cost of $144,000.
- FF&E (Furniture, Fixtures and Equipment) costs also vary considerably. The forecast assumes an FF&E cost of $50,000.
- Total cost of this project are estimated at $2,594,000 for the purposes of the forecast.
- Land acquisition and professional fees are shown in FY 16/17 while construction costs are forecast in FY 17/18.

As in Scenarios B-D, the transfer from the Fire Operating Fund (040) into the Fire Capital Fund (041) is increased to maintain a reasonable level of capital replacement, while also keeping a positive fund balance and funding the annual debt service. In Scenario E, the transfer also includes the estimated costs to build the new station, including land and professional fees. For FY 17/18, the transfer amount is the difference between total capital expense and the recurring revenue plus estimated asset retirement. In subsequent years, the transfer amount is calculated the same way, but is inflated by five percent each year. The transfer into the Fire Operating Fund (040) from the General Fund, which is calculated as the difference between total expense and recurring revenue inflated annually by 1.5 percent.

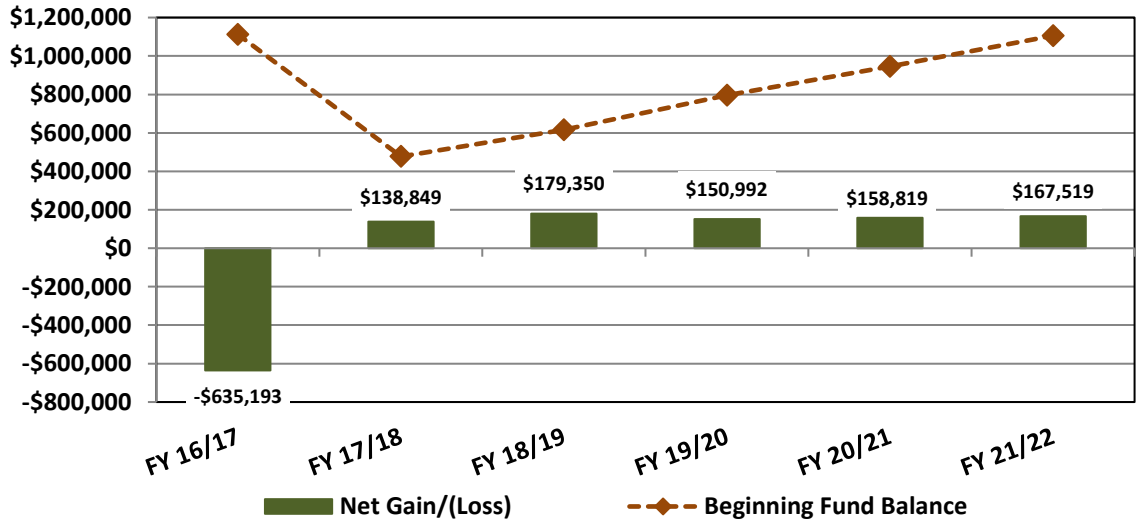
Figure 144: Scenario E—Station #6 Relocation Forecast (Graphical) – Fire Operating Budget (Fund 040)



Utilizing the assumptions presented above, recurring fire-specific revenues and transfers in are expected to increase from $10,284,900 in FY 16/17 to $13,882,482 in FY 21/22 at an average annual rate of 6.9 percent for the forecast period. Recurring expenditures are expected to increase from $10,920,093 in FY 16/17 adjusted to $13,714,963 in FY 21/22 at an average annual rate of 5.3 percent for the forecast period. While this scenario models a one-time transfer of funding into the Fire Fund for the purpose of constructing the new fire station, it could also be funded through bond proceeds or commercial paper with subsequent debt service payments.

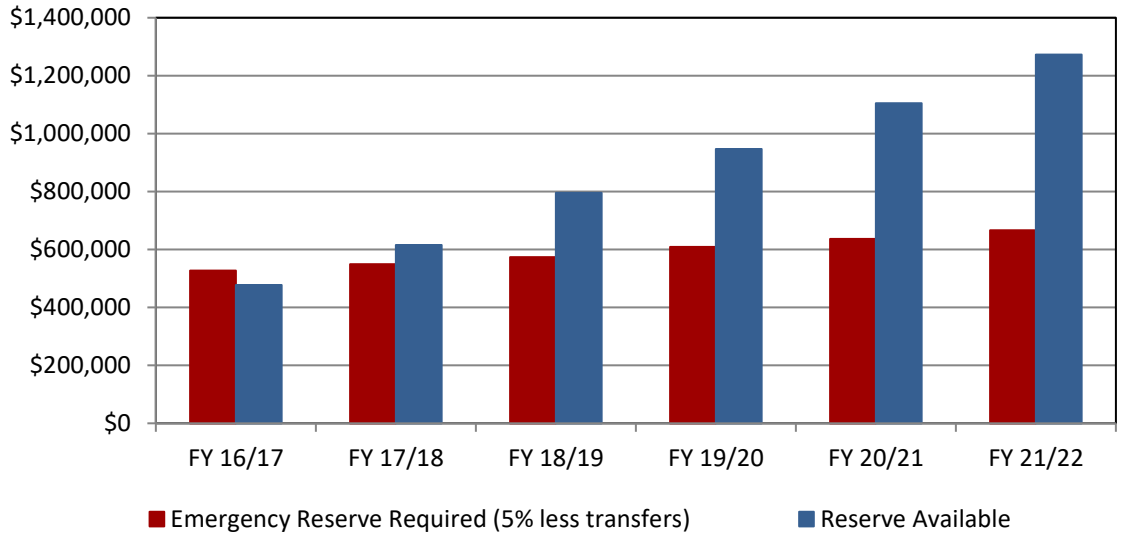
As shown in the above figure, recurring revenue slightly exceeds recurring expense for the forecast period resulting in an annual operating surplus (green bars) which increases fund balance as shown in the figure below. This fund balance increase will provide the Fire Operating Fund with a reserve for cash forward that will cover several months of operating expenses.

Figure 145: Scenario E—Fund Balance FY 16/17 Through FY 21/22



Because the recurring fire-specific revenues and transfer are forecast to increase at a higher rate than the recurring expenses, the fund balance forward continues to grow each year. The following figure shows how this increase in fund balance affects the five percent reserve requirement for the Fire Operating Fund (040). In FY 16/17, as adjusted for the CBA settlement, the reserve requirement cannot be met. However, as of FY 17/18 the forecast shows that not only is the five percent reserve met, but there is a small amount of unrestricted reserve available ($66,534). This unrestricted reserve continues to grow, reaching $605,860 in FY 21/22.

Figure 146: Scenario E—Station 6 Relocation Reserve Analysis – Fire Operations Budget (Fund 040)



The following figure shows in tabular format how the various components of the recurring expenditure and revenue budgets increase during the forecast period given the assumptions previously detailed:

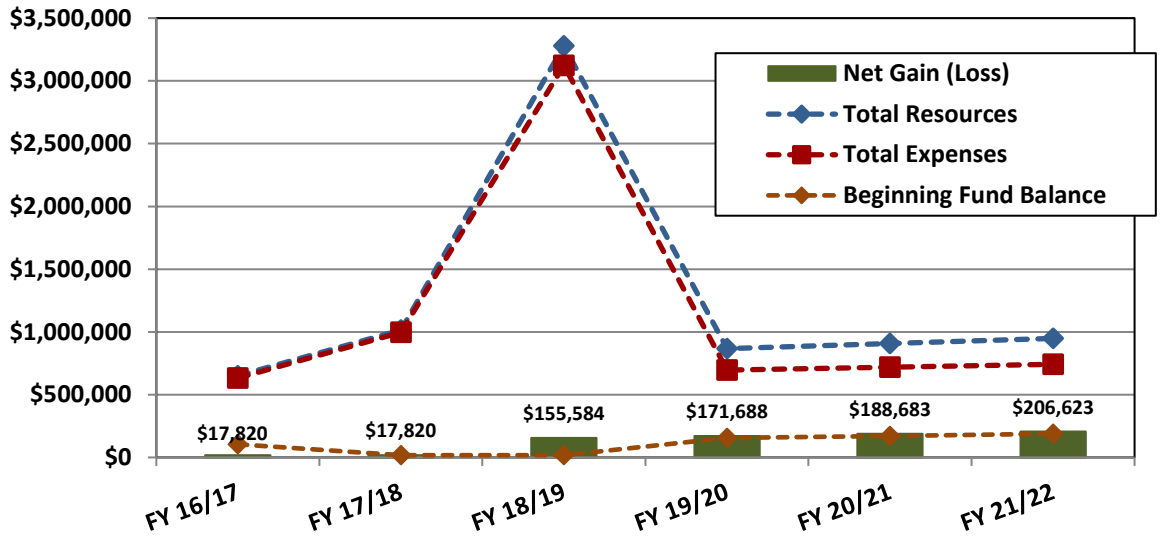
Figure 147: Scenario E—Station 6 Relocation Forecast (Tabular) – Fire Operations Budget (Fund 040)

FINANCIAL RESOURCES	Adopted FY 16/17	Adjusted FY 16/17	Forecast FY 17/18	Forecast FY 18/19	Forecast FY 19/20	Forecast FY 20/21	Forecast FY 21/22
Taxes	$2,261,885	$2,261,885	$2,295,813	$2,330,250	$2,365,204	$2,400,682	$2,436,693
Licenses & Permits	$11,243	$11,243	$11,243	$11,243	$11,243	$11,243	$11,243
Charges for Services	$17,783	$17,783	$20,450	$23,518	$27,046	$31,103	$35,768
Interest	$26,501	$26,501	$30,476	$35,048	$40,305	$46,350	$53,303
Miscellaneous	$9,628	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000
Intergovernmental	$0	$0	$0	$0	$0	$0	$0
Recurring Revenue	$2,327,040	$2,327,412	$2,367,983	$2,410,059	$2,453,798	$2,499,378	$2,547,006
Grants	$0	$0	$0	$0	$0	$0	$0
Transfers In	$7,957,488	$7,957,488	$9,395,459	$12,135,996	$10,217,154	$10,746,734	$11,335,475
Beginning Fund Balance	$1,112,435	$1,112,435	$477,242	$616,091	$795,440	$946,433	$1,105,252
Total Resources	**$11,396,963**	**$11,397,335**	**$12,240,683**	**$15,162,145**	**$13,466,392**	**$14,192,545**	**$14,987,734**

EXPENSE	Adopted FY 16/17	Adjusted FY 16/17	Forecast FY 17/18	Forecast FY 18/19	Forecast FY 19/20	Forecast FY 20/21	Forecast FY 21/22
Personal Services	$9,722,264	$9,945,610	$10,357,985	$10,800,418	$11,449,372	$11,967,244	$12,524,680
Wages	$6,834,569	$6,991,764	$7,117,616	$7,245,733	$7,502,753	$7,637,803	$7,775,283
Benefits	$2,887,695	$2,953,846	$3,240,369	$3,554,685	$3,946,619	$4,329,441	$4,749,396
Materials and Supplies	$341,449	$341,449	$372,009	$405,303	$457,496.24	$481,099	$524,158
Other Services and Charges	$254,534	$254,534	$261,152	$267,942	$274,908	$282,056	$289,389
Capital Outlay	$0	$0	$0	$0	$0	$0	$0
Transfers Out	$378,500	$378,500	$633,447	$2,893,041	$338,182	$356,895	$376,736
Total Expenditures	**$10,696,747**	**$10,920,093**	**$11,624,593**	**$14,366,705**	**$12,519,959**	**$13,087,294**	**$13,714,963**

The following figure illustrates how the Fire Capital Fund (041) behaves under Scenario E. The relationship between net gain or loss and beginning fund balance shows that the department is able to fund its current debt service requirement and a realistic capital replacement program. In fact, it is able to do so while slightly increasing the available fund balance each year. The beginning fund balance in FY 17/18 is only $17,820 and grows slowly to $206,623 by FY 21/22. Since there is not requirement to maintain a specific fund balance in this fund, the excess fund balance could be used for additional capital replacement since this target is a bit lower than recommended.

Figure 148: Scenario E—Station 6 Relocation Forecast (Graphical) – Fire Capital Budget (Fund 041)



The following figure shows in tabular format how the various components of the recurring expenditure and revenue budgets increase during the forecast period given the assumptions previously detailed:

Figure 149: Scenario E—Station 6 Relocation Forecast (Tabular) – Fire Capital Budget (Fund 041)

FINANCIAL RESOURCES	Adopted FY 16/17	Adjusted FY 16/17	Forecast FY 17/18	Forecast FY 18/19	Forecast FY 19/20	Forecast FY 20/21	Forecast FY 21/22
Taxes	$323,593	$323,593	$328,447	$333,374	$338,374	$343,450	$348,602
Intergovernmental	$0	$0	$0	$0	$0	$0	$0
Interest	$10,822	$10,822	$10,984	$11,149	$11,316	$11,486	$11,658
Miscellaneous	$0	$0	$0	$0	$0	$0	$0
Recurring Revenue	$334,415	$334,415	$339,431	$344,523	$349,691	$354,936	$360,260
Asset Retirement	$0	$0	$24,000	$24,000	$24,000	$24,000	$24,000
Loan Proceeds	$0	$0	$0	$0	$0	$0	$0
Transfers In	$212,500	$212,500	$633,447	$2,893,041	$338,182	$356,895	$376,736
Beginning Fund Balance	$103,857	$103,857	$17,820	$17,820	$155,584	$171,688	$188,683
Total Resources	**$650,772**	**$650,772**	**$1,014,698**	**$3,279,384**	**$867,457**	**$907,518**	**$949,678**

EXPENSE	Adopted FY 16/17	Adjusted FY 16/17	Forecast FY 17/18	Forecast FY 18/19	Forecast FY 19/20	Forecast FY 20/21	Forecast FY 21/22
Other Services	$289	$289	$289	$289	$289	$289	$289
Capital Outlay	$398,520	$398,520	$762,446	$2,889,368	$461,337	$484,404	$508,624
Debt Service	$234,143	$234,143	$234,143	$234,143	$234,143	$234,143	$234,143
Total Expense	**$632,952**	**$632,952**	**$996,878**	**$3,123,800**	**$695,769**	**$718,836**	**$743,056**

Forecast Summary

As discussed at the beginning of this section, five separate forecast scenarios are presented; the first two of which keep service level the same as it is currently and are considered status quo. The difference between the two is that in, Scenario A, revenue projections are based upon historical performance. With revenue increasing at historical rates, there is insufficient revenue to fund future expenditures, let alone maintain the required five percent emergency reserve in the Fire Operating Fund (040). Therefore, while

Scenario B expenditures follow the same status quo forecast as in Scenario A, revenue is increased to maintain financial viability of the fire fund through an as yet unidentified alternative funding source (see discussion below). This increase funds in the required five percent reserve and allows the fund to grow an excess fund balance carry forward that can be used to cover several months of operating costs, in the event that tax revenues are not received in a timely manner.

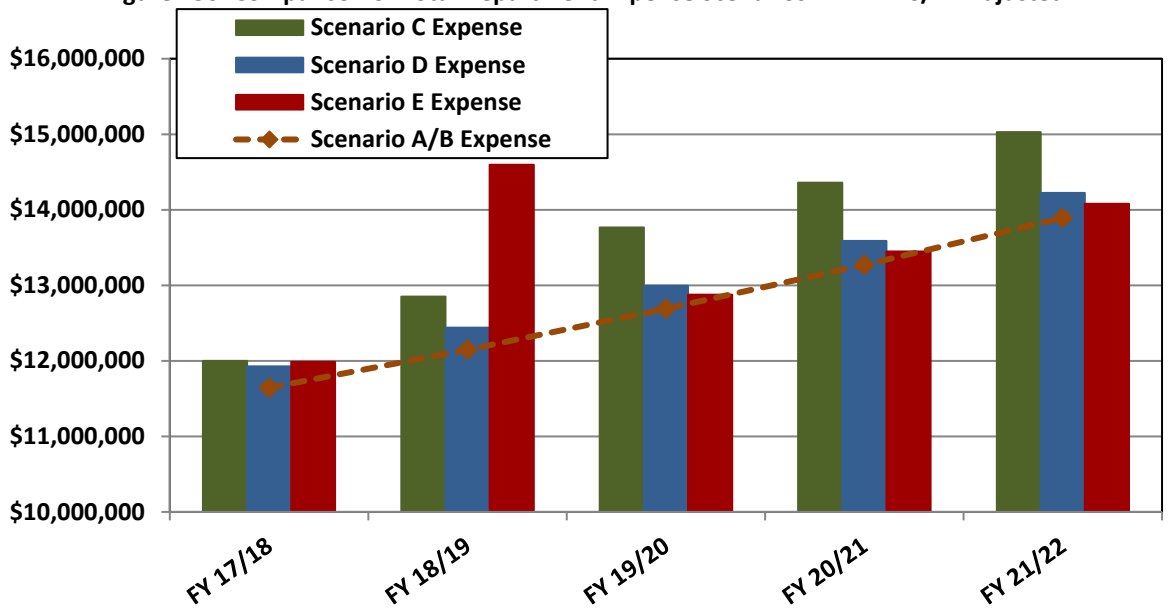
It is important to point out here that the City is currently constrained by City Code (Section 40-39), as discussed extensively in an earlier section of this study, from increasing the funding provided for fire services without changing City Code and/or enacting an additional, dedicated sales tax levy. This point was clarified further by the city attorney in a November 4, 2016 opinion letter to the city manager entitled, "Use of General Fund Revenues for Fire and Police Departments." The attorney opinion states that, "There is no provision to increase the contribution from the General Fund from the one set forth in the ordinance." There are three potential options that would allow the City to increase financial resources to the fire department and sufficiently fund the scenarios as discussed in this section.

1. Increase city sales/use tax (such as with a tax levy or portion thereof specifically earmarked for fire protection as was done in 1993, 2004 and 2012), and/or
2. Revise Ordinance 2540 (Section 40-39 of the City Code) to amend the method of allocation (although as discussed, this change alone has potentially negative implications for other city services), and/or
3. Provide additional funding through other non-General Fund revenue sources which have not, as yet, been identified.

Three subsequent scenarios are presented, each with some increased level of service requiring increased personnel, operating and/or capital costs. Each of these is analyzed separately so that management and elected officials can see the impact of each change upon the overall need for additional revenue.

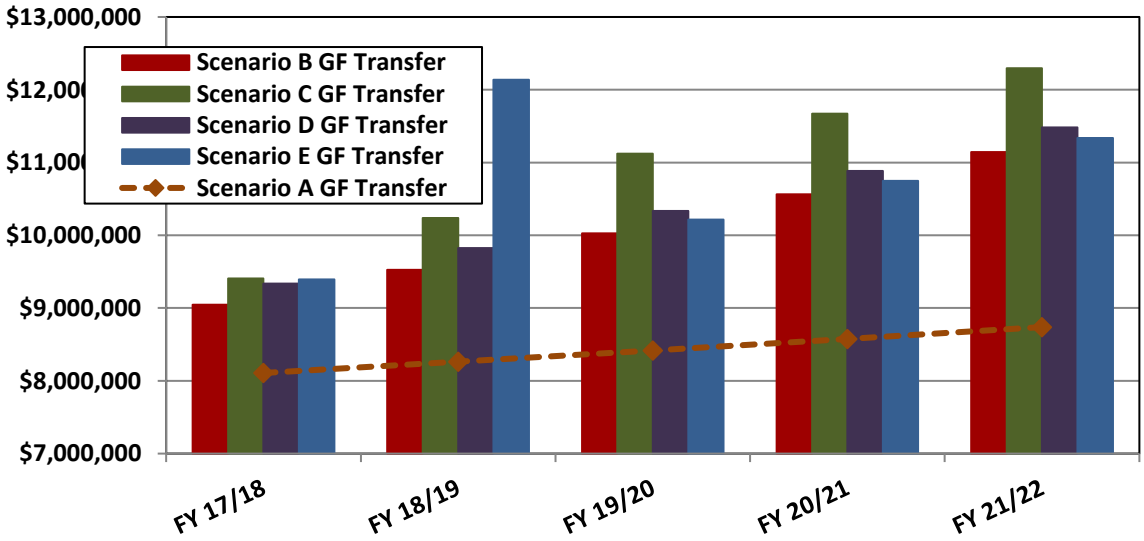
Scenario C increases minimum daily staffing from 18 firefighters and the shift commander up to 24 firefighters plus the shift commander. To spread out the impact of these added positions, Scenario C adds six firefighters each year, two per shift, in FY 16/17, FY 17/18 and FY 18/19. Scenario D adds a deputy fire chief, a fire inspector, and a staff analyst. Scenario E moves fire Station 6 to a new location and adds an additional firefighter on each of three shifts to staff the ladder truck at Station 1. While it is unknown if, and when, the City would plan to build a new station and how it would finance the project, very rough figures have been included for land acquisition and design in FY 17/18 and construction in the FY 18/19 capital cost forecast. The additional firefighters in this scenario are added in FY 19/20. It is assumed that the recurring costs of staffing and operating this station will remain the same as for the current station.

Figure 150: Comparison of Total Department Expense Scenarios A–E FY 16/17 Adjusted



The figure above is a comparison of total department expense as forecast from adjusted FY 16/17 through FY 21/22. The orange line represents the status quo service level expense of Scenarios A and B. The green bars represent Scenario C showing the impact of an increase in minimum staffing. By FY 19/20 when all 18 additional positions are in place, the difference between the status quo expense in Scenarios A and B and Scenario C is approximately $1.1 million annually. Scenario D is shown in blue, and Scenario E is shown in red. The spike in Scenario E expense in FY 18/19 represents the one-time cost of construction for Station 6 at its new location.

Figure 151: Comparison of GF Transfer Required to Fund Scenarios A–E FY 16/17



As discussed, the forecast increases the amount of funding transferred from the City General Fund (GF) or other funding mechanism as outlined above to fund the expenses in each scenario as well as provide at least the required five percent emergency reserve in the Fire Operating Fund (040). The orange line represents the GF transfer using the average historical increase of this revenue stream. From the analysis above, it is clear that this does not provide adequate funding to sustain a status quo level of service. The following figure shows how Scenario A is severely underfunded, while all other scenarios not only provide the five percent reserve but also a healthy unrestricted reserve for cash forward.

The red bars in the previous figure represent the additional funding that would be required from the GF or alternative funding mechanism as discussed previously just to sustain status quo and maintain a five percent reserve. For example, in FY 17/18 the GF transfer plus the needed additional revenue would need to be increased from the historical forecast amount of $8,107,885 to $9,046,299; a difference of $938,414. Although it is understood that an increase in revenue could be developed from other sources, the forecast models all derive increased revenue from the GF transfer for consistency (which is only an option if the ordinance was changed to allow an additional transfer as discussed above).

Figure 152: Comparison of Five Percent Reserve Requirement Fund 040, Scenarios A–E FY 16/17 Adjusted

Unrestricted Reserve in Excess of 5% Required	Forecast FY 17/18	Forecast FY 18/19	Forecast FY 19/20	Forecast FY 20/21	Forecast FY 21/22
Scenario A	-$687,594	-$1,614,201	-$2,861,200	-$4,463,184	-$6,458,080
Scenario B	$61,373	$178,010	$300,234	$428,460	$563,136
Scenario C	$49,010	$158,695	$278,282	$422,365	$571,827
Scenario D	$51,443	$171,966	$298,211	$430,598	$569,586
Scenario E	$66,533	$221,757	$337,344	$468,732	$605,860

Conclusion

This document provides an enormous amount of technical and financial data, much of which was provided by the department, and allows the reader to gain a clear understanding of the services provided by MWCFD as well as an indication of how *well* those services are provided. This document is not intended to be a critical evaluation of the organization but rather provide fire department personnel and City policymakers' information from which to make informed decisions about the future of the department.

Based on information obtained throughout this process, MWCFD is functioning at a level commensurate with community expectations. While response performance analysis indicates that the department could improve, it is possible that improved data collection will give more accurate and precise performance measurements. Stated and adopted performance standards will give added direction. There are many short- and mid-term recommendations that are offered to help the MWCFD personnel improve and reach for the industry best practices. The long-term recommendations give a number of options for improving service and meeting the objectives of NFPA 1710. The information is provided for the fire department and City management to decide what will help Midwest City reach a new level of service to the community. Finally, the adoption of a labor-management cooperative process will focus on what can be accomplished by everyone working together.

ESCI began collecting data and information for this project in August 2016, and the analysis presented in this report is comprised of months of data review and evaluation, including one-on-one interviews with department and City personnel; evaluation of internal documents, policies, rules and regulations; assessment of current service delivery; and the creation of projected service demand and alternative service delivery models. It is ESCI's sincere hope that the information contained within this document is found to be useful and provides policymakers with the information necessary to meet the emergency services needs of the citizens of Midwest City.

Appendix A

MEMO FROM FIRE CHIEF NORTON

Bert Norton, Fire Chief
8201 E. Reno Avenue
Midwest City, OK 73130
(405)739-1340
bnorton@midwestcityok.org

MIDWEST CITY
Where the Spirit Flies High

MEMO

To: Honorable Mayor and Council

From: Bert Norton, Fire Chief

Date: January 30, 2017

Subject: ESCI Master Study of the Fire Department

On June 14, 2016, the Mayor and City Council approved entering into a contract with ESCI (Emergency Services Consulting International) to conduct a fire department master plan study for the City of Midwest City. A committee was created to oversee the progress and to provide information to ESCI. This committee was made up of Mayor Dukes, City Manager Guy Henson, Assistant City Manager Tim Lyon, Fire Chief Bert Norton, Administration Major David Richardson, Major Doug Beabout, Senior Firefighter Daniel Herren.

Collection of data for the study started immediately after Council approval of awarding the study to be completed by ESCI. Phone calls, email, site visits, and data exchange through dropbox occurred throughout the summer and fall of 2016. Areas of information covered four core areas. These included agency information, financial data, emergency response information, and electronic files of records and GIS data. ESCI utilized the use of the NFPA 1710 standard for response times, staffing, and station locations in lieu of the ISO standard methodology.

Agency information included contacts, annual reports, population and service area covered, ISO information, and mutual aid. **Financial data** covered 5 years of budgets, audits, debt, capital, revenue, and wages and benefits. **Emergency response data** included response history, staffing, apparatus, response procedures, polices, dispatch information, fire prevention activities, training, and apparatus maintenance. **Electronic files** submitted included 2 years worth of NFIRS (National Fire Incident Reporting System) files. The NFIRS files break down each and every call down to the minute and what apparatus and staffing was assigned. The GIS files requested included street centerlines, city boundaries, station locations, zoning/planning, hydrants, railroads, addresses and parcels.

Midwest City Fire Department
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Please keep in mind that the final report presented by ESCI was a "snapshot" of the department in June 2016. As the study developed and pieces of the study were completed, management simultaneously was conducting business as usual and some of the observations ESCI found had changed. Some of these changes are NOT reflected in the final draft due to the impact a change may have throughout the entire document. For example, fire station 1 only had a squad in service at the time of the survey. A ladder company has since been put back in service based upon the real time results coming from the ESCI feedback being received and recommending that a pumping apparatus be in service at fire station 1. Another item was a brush pumper had been purchased prior to the study, but was not received and put in service until near completion of the ESCI study. The ESCI document will state a brush pumper is overdue for replacement due to age. Lastly, a Fire Protection Engineer vacancy was recommended to be filled, which was already in process prior to ESCI's visit, and thus has also since been filled. Other items may be discovered in the final draft similar to those previously mentioned. We would encourage anyone with questions as to the current status on a subject or item, to speak with a member of the committee to verify or validate the status.

In conclusion, the overall Master Study was well worth the investment to have an outside view into our department from seasoned industry professionals. The committee established to follow ESCI's progress worked very well together and everyone involved provided input to help provide accurate and consistent information each step of the way. We feel we can use this Master Plan study to assist the department in the future. All recommendations by ESCI will be evaluated and weighed by a Strategic Planning Committee for future implementation. This Strategic Planning committee will be made up of fire department command staff to examine and evaluate the direction and needs the ESCI master study has presented to Midwest City.

Bert Norton, Fire Chief

Midwest City Fire Department

We exist to reduce risk, provide emergency assistance, and add value to our community.

Table of Figures