Final Report
Fire Operations

City of Grand Rapids, Michigan
August 2012

ICMA CENTER FOR PUBLIC SAFETY MANAGEMENT

Submitted by:
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ICMA
Leaders at the Core of Better Communities

Background

About ICMA

The International City/County Management Association (ICMA) is the premier local government leadership and management organization. Since 1914, ICMA's mission has been to create excellence in local governance by developing and advocating professional local government management worldwide. ICMA provides an information clearinghouse, technical assistance, training, and professional development to more than 9,000 city, town, and county experts and other individuals throughout the world.

ICMA Center for Public Safety Management

The ICMA Center for Public Safety Management team helps communities solve critical problems by providing management consulting support to local governments. The Center's expertise in public safety encompasses the following areas and beyond: organizational development, leadership and ethics, training, assessment of calls-for-service workload, staffing requirements analysis, design of standards and hiring guidelines for police and fire chief recruitment, police/fire consolidation, community-oriented policing, and city/county/regional mergers.

Performance Measures

The reports generated by the operations and data analysis team are based upon key performance indicators that have been identified in standards and safety regulations and by special interest groups such as the International Association of Fire Chiefs, International Association of Fire Fighters, Association of Public Safety Communication Officials International, and through the Center for Performance Measurement of ICMA. These performance measures have developed following decades of research and are applicable in all communities. For that reason, comparison of reports will yield similar reporting formats, but each community's data are analyzed on an individual basis by the ICMA specialists and represent the unique information for that community.

Methodology

The ICMA Center for Public Safety Management team follows a standardized approach to conducting analyses of fire and other departments involved in providing safety services to the public. We have developed this standardized approach by combining the experience sets of dozens of subject matter experts experienced in data and operations assessment in the areas of police, fire, and EMS. Our collective team has more than a combined 100 years of conducting such studies for cities in the United States and internationally.

The Public Safety Management team begins most projects by extracting calls for service and raw data from an agency's computer-aided dispatch (CAD) system. The data are sorted and analyzed for comparison to nationally developed performance indicators. These performance indicators (e.g., response times, workload by time, multiple-unit dispatching) are valuable measures of an agency's performance regardless of its size. The findings are shown in tables and graphs organized in an

easy-to-follow, logical format. Most of the document's structure and categories for performance indicators are standard, but the data reported are unique to the cities. Given the size and complexity of the documents, structuring the findings in this way allows for simple, clean reporting.

The team conducts an operational review in conjunction with the data analysis. The performance indicators serve as the basis for the operational review. The review process follows a standardized approach comparable to that of national accreditation agencies. Prior to the arrival of an on-site team, agencies are asked to provide the team with key operational documents (e.g., policies and procedures, asset lists, etc.). The team visits each city on-site to interview fire agency management and supervisory personnel, rank-and-file officers, and local government staff.

The information collected during the site visits and through data analysis results in a set of observations and recommendations that highlight strengths, weaknesses, opportunities, and threats of the areas under review. To generate recommendations, the team reviews operational documents, interviews and observations from site visits, relevant literature, statutes, regulations, industry standards, and other areas specifically included in a project's scope of work.

This standardized approach ensures that the ICMA Center for Public Safety measures and observes all of the critical components of an agency, which in turn provides substance to benchmark against localities with similar profiles. Although agencies may vary in size, priorities, and challenges, there are basic commonalities that enable comparison. The approach also enables the team to identify best practices in use throughout the country.

In general, the standardized approach adopts the principles of the scientific method: We ask questions and request documentation upon project start up; confirm accuracy of information received; deploy operations and data analysis teams to research each unique environment; perform data modeling; share preliminary findings with the jurisdiction; assess inconsistencies reported by client jurisdictions; follow up on areas of concern; and communicate our results in a formal, written report.

ICMA Project Contributors

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Contents

Summary of Findings and Recommendations

This report is an analysis of fire service and emergency medical services (EMS) delivered by the Grand Rapids Fire Department (GRFD). Our report is accompanied by recommendations for ways to improve those services. The report also provides a benchmark of the city's existing service delivery performance. Benchmark performance information can be found in the Data Analysis section of this report.

ICMA executed a contract with the city of Grand Rapids to complete a comprehensive analysis of the city's fire services. This analysis is designed to provide the city with a thorough and unbiased review of all emergency services provided by the Grand Rapids Fire Department. The city staff then challenged ICMA to identify potential savings that would result in a major transformation of the department by June 30, 2015. This transformation was deemed necessary due to the pending expiration of federal (SAFER) funding, which had been used to pay for a total of 30 employees, the future expiration of local income tax funding, and the need for a 10 percent budget reduction resulting from reduced revenue due to the economic downturn. It is estimated that the department will have to be reduced by the equivalent dollar value of 64 employees to meet this financial challenge.

During our study, we analyzed performance data provided by the Grand Rapids Fire Department and undertook a firsthand review of the department's operations. This report seeks to identify ways the department can improve efficiency, effectiveness, and safety both for its members and for the community the department serves. The recommendations may be adopted in whole, in part, or rejected. ICMA recommends that specific objectives should be aligned with the recommendations and assigned to a specific person or group. A reporting/report card process should be used to deliver input to local government administrators and elected officials.

To begin the review, the project management staff reviewed documents, data, and information from the city of Grand Rapids and the fire department. The project management team members used this information to familiarize themselves with the fire department's structure, assets, and operations. The information also was analyzed in conjunction with raw performance data to assess the performance of the fire department in various areas and compare that performance to benchmarks developed by the National Fire Protection Association (NFPA), Center for Public Safety Excellence, the ICMA Center for Performance Measurement, and other national organizations.

ICMA's public safety team members conducted two site visits to observe fire department and support operations, interview key fire department staff, and review preliminary data and operations. The team also held follow-up telephone calls with personnel within the Grand Rapids Fire Department and other city agencies. Teleconferences between project staff and city officials helped clarify the city's needs, the scope of the project, and project data. During these on-site visits and through analysis of overall operations, ICMA found the Grand Rapids Fire Department to be on the cutting edge of staffing and deployment of several emergency resources. Through a committed and forward-thinking executive staff, this agency is well positioned to meet the challenges of the twenty-first century.

It should also be noted that while this report addresses the operations of the Grand Rapids Fire Department, a second phase of ICMA's evaluation will address the potential advantages of sharing resources and/or consolidation alternatives of the fire departments of Grand Rapids, Wyoming, and Kentwood.

Recommendations

The data derived during the 12-month study period (November 1, 2010, through October 31, 2011) were carefully analyzed in light of the information gleaned during site visits and interviews. The findings from this information are included in this report. In addition, the report includes several recommendations for the Grand Rapids Fire Department and the city of Grand Rapids. The following recommendations are based on best practices.

1. The fire department should consider greater use of less costly civilian personnel for administrative positions.

2. The city should investigate the possible merger of administrative functions for the police and fire departments.

3. The department should continue its efforts to develop goals and objectives for loss prevention and reduction and should incorporate these goals into departmental performance measurement systems.

4. Budget performance and measures related to specified goals and objectives should be part of the performance evaluation for departmental managers.

5. The city should ensure that salaries, pensions, and benefits are competitive with (but not more generous than) other public and private employers in the West Michigan regional market area.

6. The department should periodically review its fee schedule and consider whether there are additional areas where fees should be assessed to recover costs.

7. Five of the department's standard pumpers should ultimately be phased out and replaced with quick response vehicles. This would result in annual savings of roughly $2,100,000.

8. Because prevention is the least costly way of providing loss control, fire prevention staffing should be increased by adding one civilian staff member as part of a comprehensive investment in all types of prevention activities.

9. Engine companies should assume responsibility for inspections of existing structures and for educating the public about fire safety.

10. The mission of the fire prevention bureau should be expanded to include emergency medical education.

11. The number of automatic external defibrillators (AEDs) should be significantly increased through an ongoing program of purchasing AEDs for use in city vehicles and places of public

assembly. The fire prevention bureau should be charged with educating others in the use of AEDs.

12. Medical response units 1, 2, and 3 should be taken out of service. The city should allow most EMS response to be provided by private ambulance companies. GRFD should only respond to the most serious medical emergencies, such as cardiac arrest. This would result in annual savings in excess of $2.5 million.

13. GRFD should retain the current standard of basic life support (BLS) certification for CPR and AED and medical first responder (MFR) certification for firefighters who serve as medical first responders.

14. The department should develop a medical quality assurance program.

15. The city should implement medical priority dispatch system at the public safety answering point to include priority levels and response codes.

16. The city should develop and adhere to an appropriate replacement schedule for fire department apparatus.

17. The department should establish demand-based staffing using a combination of 12- and 24-hour shifts. The team calculates that this change would result in annual savings of at least $2,310,000.

18. Daytime 12-hour peak-load shifts should be established for the medical response unit downtown, for one engine, and for two of the QRVs that have been proposed to be placed in service. This would result in annual savings of an estimated $1,890,000.

19. Staffing in the training division should be expanded by one additional uniformed employee to handle routine training needs and support new prevention activities, such as company inspections and new fire tactics related to foam and quick response vehicles.

20. The city should commit to an upgraded fire department radio system with greater interoperability.

21. Negotiations should be undertaken with the fire union to establish 12-hour shifts for peak staffing purposes and to remove restrictions that limit the time available for station personnel to engage in training and public education activities.

22. The fire department and the water utility should jointly undertake a study of fire hydrant maintenance to ensure that operational needs are being met.

23. The transformation initiatives of the fire chief should be supported by the city's appointed and elected leaders.

When implemented, the staffing recommendations above will reduce the authorized strength of the department by 59 positions and will result in annual savings of *at least* $6.7million from the current $29.5 million budget.

These recommendations are discussed further in the body of this report.

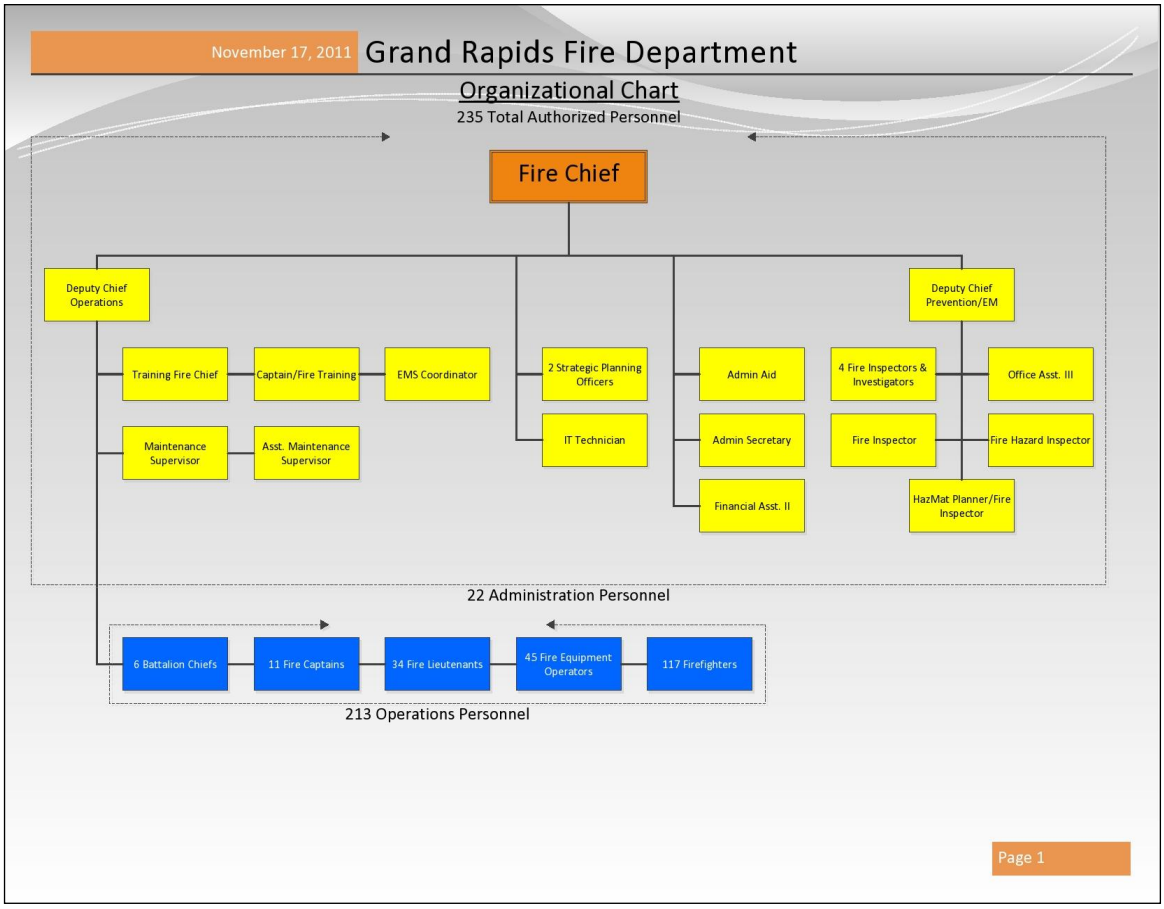
Fire Operations Review and Analysis

Governance and Administration

The Grand Rapids Fire Department operates as a department of the city of Grand Rapids reporting to the city manager in a council-manager government. The fire department was established by city ordinance in 1850. A fire chief serves as the head of the department. A deputy fire chief of operations is second in command; there is also a deputy chief in charge of prevention and emergency management.

The current fire chief, Laura Knapp, is a career professional who moved up through the ranks of the Grand Rapids Fire Department. The deputy fire chiefs and others in managerial positions have similar records of long-term service in the department and moved into increasingly responsible positions. The executive staff continually seeks improvement and expressed as forward thinkers. The department's formal organization chart reflects an authorized strength of 235 positions. Hierarchical and functional charts build on the standard chart to further visually communicate the relationships among positions. Figure 1 illustrates the organizational structure of the GRFD.

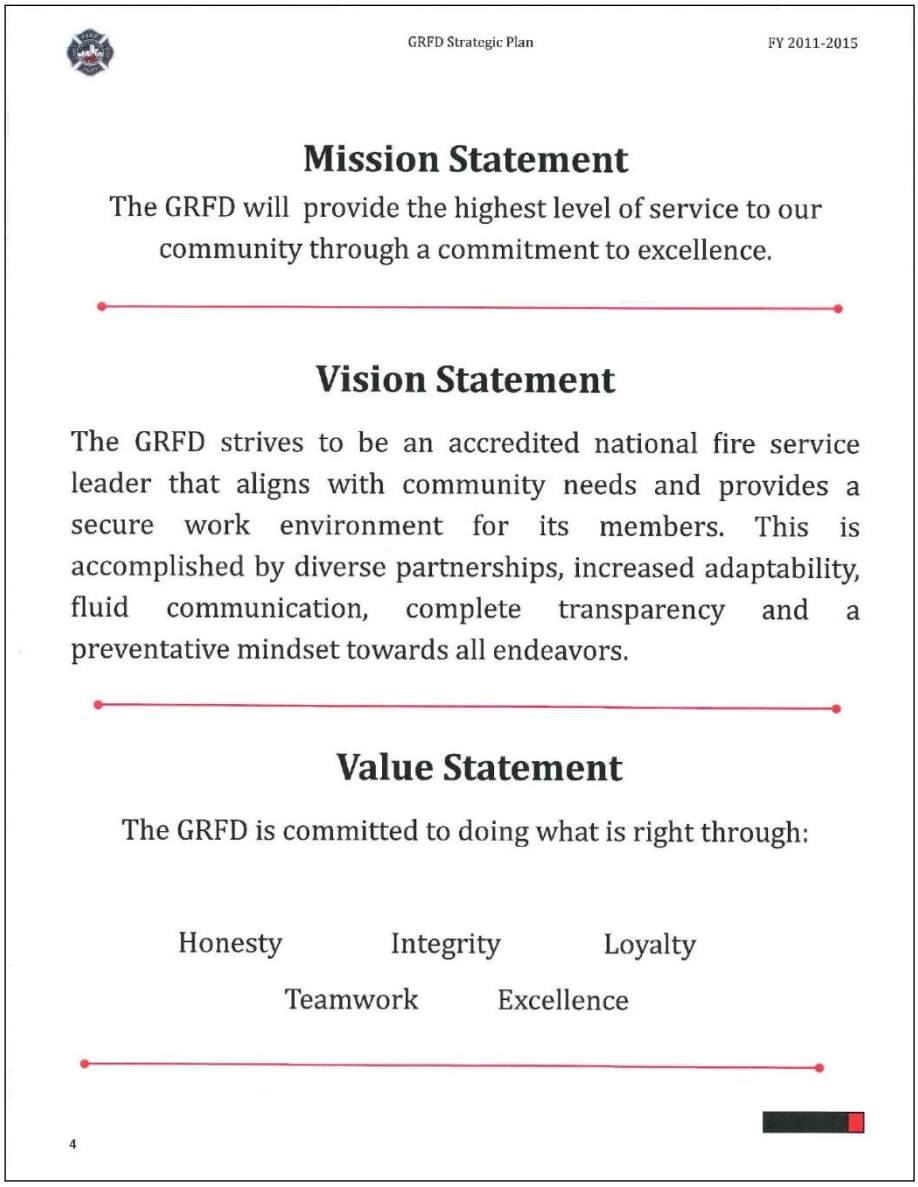
FIGURE 1: Organizational Chart



The Grand Rapids Fire Department has 213 operations personnel who work in eleven fire stations on a three-platoon system. Six battalion chiefs serve as the day-to-day supervisors of operations. There are two operational districts (North and South), and a battalion chief is in charge of each district each day providing leadership for each of the three platoons. Due primarily to financial constraints the fire department is operating with fewer managerial personnel than it had several years ago. As a result, the battalion chiefs have responsibilities beyond supervising the operations of the assigned district during their shifts.

The department has developed and keeps current a strategic plan, as well as mission, vision, and values statements. It also has in place the full range of operational policies, procedures and guidelines. Figure 2 depicts the GRFD's mission, vision, and values statements.

FIGURE 2: GRFD Mission, Vision & Values Statements



GRFD Strategic Plan FY 2011-2015

Mission Statement

The GRFD will provide the highest level of service to our community through a commitment to excellence.

Vision Statement

The GRFD strives to be an accredited national fire service leader that aligns with community needs and provides a secure work environment for its members. This is accomplished by diverse partnerships, increased adaptability, fluid communication, complete transparency and a preventative mindset towards all endeavors.

Value Statement

The GRFD is committed to doing what is right through:

Honesty Integrity Loyalty

Teamwork Excellence

4

There appears to be an open flow of communication between the fire chief and the city manager. The main point of contact is the deputy city manager, who is both knowledgeable of and involved in ongoing issues in fire management and challenges faced by the fire department. The deputy city manager, with support from the chief financial officer, is the primary city staff responsible for reviewing departmental changes, requesting and reviewing budget and transformational issues in the department, and bringing these changes to the city manager, city council, and a citizen advisory group on transformation.

Fire Chief Knapp has proposed several administrative changes at the highest levels of the department to accomplish increasing administrative, transformational, and managerial outcomes. Among these is the establishment of a new battalion chief for planning, and establishing a fire marshal position to head the fire prevention bureau.

Based on our operational analysis, we agree that these are much-needed changes, but suggest an additional change. The department should hire a mid-level civilian management analyst. The primary skill set required for this position should be managerial skill and expertise, not firefighting experience. Because civilians generally are less expensive than uniformed personnel, this change would also help the department reduce the cost of the new position. Similar consideration should be given to the use of civilians in other administrative areas of the department. Consideration should be given to investigating the possible merger of administrative functions in the police and fire departments as a further cost-saving measure.

All uniformed personnel in the department, with the exception of the Fire Chief, are represented by Local 366 of the International Association of Firefighters (IAFF). (The relationship with the union is discussed further beginning on page 22.)

Recommendations:

- The fire department should consider greater use of less costly civilian personnel for administrative positions.
- The city should investigate the possible merger of administrative functions for the police and fire departments.

Assessment and Planning

The department has made a significant investment in and commitment to strategic planning. Risk assessments have been completed for the city of Grand Rapids and hazards have been targeted. The department routinely analyzes property loss, injury, and loss of life due to fire, and uses the analysis as the basis for prevention activities and deployment decisions. There is a major commitment to collecting and utilizing relevant data, including geographic information systems (GIS) data, in analyses undertaken by departmental staff. The recent addition of Firehouse recordkeeping software will help further the ongoing data collection and analysis efforts. Preplanning information and data are made available to personnel responsible for responding to incidents.

The department has prepared and adopted a formal strategic plan that is aligned with the organization's mission and vision statements. The department routinely develops long-term vehicle replacement plans and capital improvement plans and updates these plans as necessary.

Many organizations in the fire service are reluctant to investigate issues and implement change. The Grand Rapids Fire Department is a rare exception and is to be applauded for its willingness to embrace change. A telling example is the appointment of two firefighters as full-time strategic planning officers. The strategic planning office is physically located in close proximity to the fire chief, and the officers have significant access to and input on important issues faced by the department. The strategic planning research and analysis, along with the leadership of the fire chief, has provided a fundamental underpinning for a department that is meeting current challenges and will be prepared to meet future challenges. Few departments in the country can boast of the same level of excellence in these areas.

Goals and Objectives

The National Fire Protection Association (NFPA) suggests that response time should be used as a primary performance measure in fire departments. The Grand Rapids Fire Department has adopted the use of response time measurement. The department has adopted a goal of having the first unit on scene in 6.5 minutes 90 percent of the time and having a sufficient concentration of personnel on scene within 10.5 minutes 90 percent of the time.

The GRFD has made a serious commitment to establishing goals and objectives, particularly within the context of the department's strategic plan. The department has recently been developing specific goals for limiting property loss, injury, and other outcome data. These goals need to be incorporated into the strategic plan and performance measurement systems. In addition, there is not a system in place to hold personnel accountable for achieving the goals and objectives or that is connected to rewards (or lack of rewards) for individual employees.

Recommendation:

- The department should continue its efforts to develop goals and objectives for loss prevention and reduction and should incorporate these goals into departmental performance measurement systems.

Financial Performance

The Grand Rapids Fire Department had an adopted general fund budget of $29.5 million for fiscal year (FY) 2011–2012. The total budget for the department, including federal funds from the SAFER grant program, is $321.2 million.

With the exception of staying within the total approved departmental budget, there appears to be little monitoring or accountability for an individual manager's budget performance. The employee performance evaluation system does not include a requirement for management to be accountable for the financial management (including staying within budget) of their area of responsibility.

The department has aggressively and successfully pursued grant funding to supplement funds allocated by the city. Of special note are two federally funded SAFER grants, which were awarded to

fund thirty additional firefighters. These grants total $2.7 million dollars in FY 2012. Funding will expire in 2013 and 2014, and the city will have to guarantee employment for the new hires until then. However, there is little likelihood that the fire department will be able to afford to keep the positions added under the SAFER grant after the grant funding has ended. The department leadership is aware of this problem and is developing plans to downsize the organization.

In addition, the city of Grand Rapids is facing the loss of local income tax funding which has supported the fire department budget. Due to the overall financial problems facing the city as a result of the difficult economic climate, the department will have to reduce its budget by 10 percent. As a result of these financial issues, the ICMA team has been asked to develop a transformation plan for the fire department that will have the financially equivalent effect of a reduction of sixty-four positions in the department's authorized strength.

In FY 2011, 88.8 percent of the actual total departmental expenditures were for personnel salaries and related expenses. Care must be taken to ensure that personnel costs are kept at an acceptable level. The GRFD should routinely monitor pension and other fringe benefit costs to ensure that the city is competitive with, but not more generous than, other public and private employers in the community.

As fire departments expand their services, fees are becoming an increasingly important part of the revenue base.[1] Earlier this year the department revised its fee schedule. It is important that the department annually revisit its fee schedule to move toward full cost recovery for hazard abatement, fire alarms (particularly false alarms), fire inspection, downed electrical wires, special operations, and other services. The fire department should consider whether there are additional areas where fees should be assessed to recover costs.

Recommendations:

- Budget performance and measures related to specified goals and objectives should be part of the performance evaluation for departmental managers.
- The city should ensure that salaries, pensions, and benefits are competitive with (but not more generous than) other public and private employers in the West Michigan regional market area.
- The department should periodically review its fee schedule and consider whether there are additional areas where fees should be assessed to recover costs.

Programs

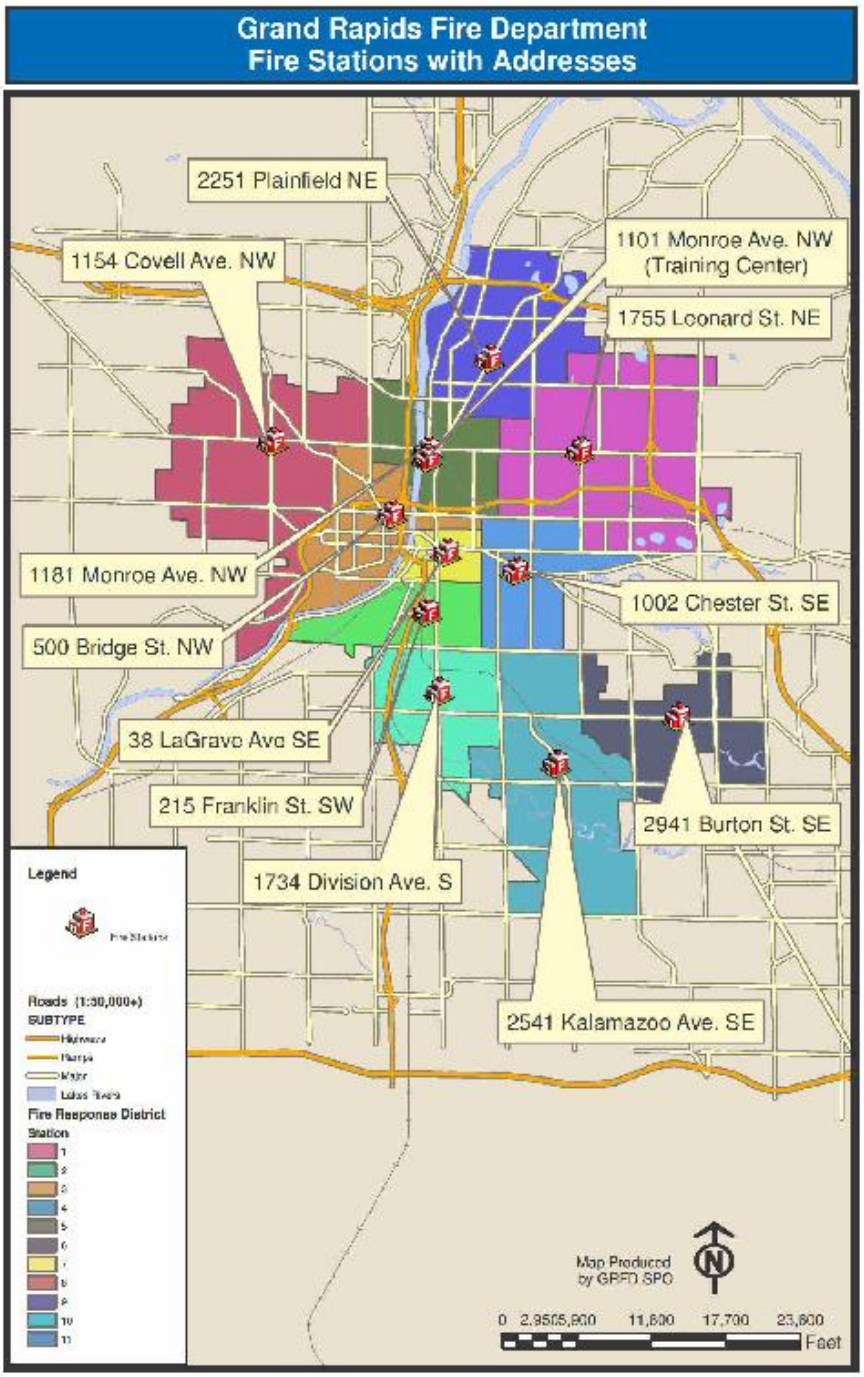
Four separate programs, each of which is integral to the mission and operations of the Grand Rapids Fire Department, are discussed below: (1) fire suppression; (2) prevention, investigation, and public education; (3) special operations; and (4) emergency medical services.

[1] Bruce J. Moeller, "Fiscal Management," *Managing Fire and Emergency Services* (Washington, D.C.: ICMA, 2012), 347–350.

Fire Suppression

The Grand Rapids Fire Department provides emergency service from eleven fire stations located in two districts. A battalion chief is in charge of each district. Figure 3 illustrates the location of Grand Rapids fire stations.

FIGURE 3: Grand Rapids Fire Station Location



Staffed front-line apparatus responding to emergency calls includes pumpers, quints (combination engine/ladder units), platforms or ladders, rescue engines, and medical response units. All of the front-line firefighting ladder units include water supply and pumping capability, as well as ladders. However, the reserve aerial trucks do not have water supply or pumping capability. The department has proposed retrofitting existing trucks to add water-pumping capacity to those units that do not have it. This proposal is an excellent one that will greatly increase the department's flexibility.

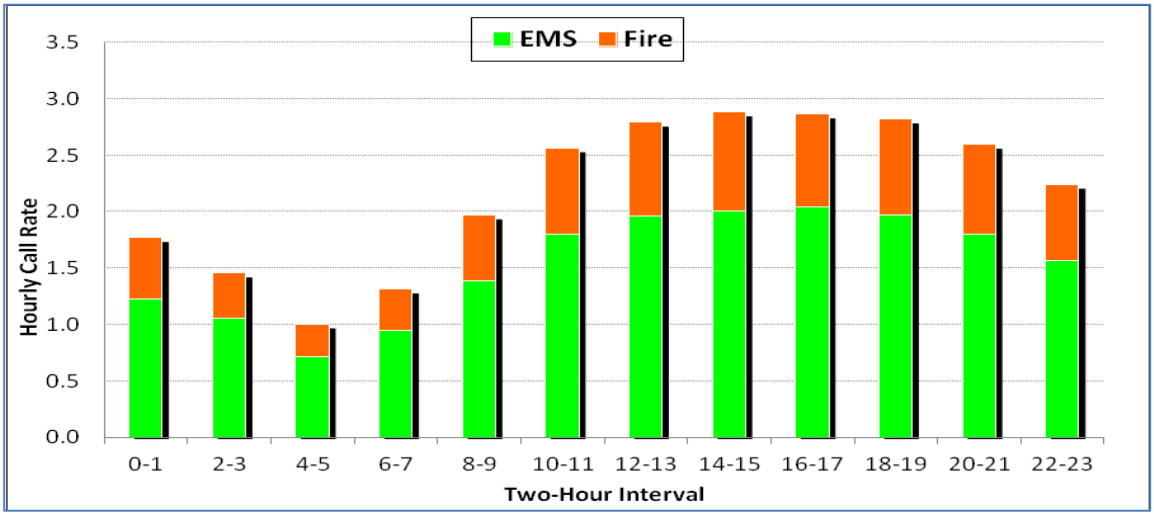
Firefighting apparatus are dispatched to both fire calls and medical emergencies. The fire department uses large SUV vehicles equipped with medical first responder (MFR) supplies as medical response units. These units are not capable of transporting patients. They respond to fire calls and emergency medical calls. Pumpers, quints, ladders, and rescue units are staffed with three or four personnel; medical response units are staffed with two personnel. Personnel are trained to serve on any of type of unit. The department operates with an efficient and cost saving flexible staffing plan that does not require minimum staffing levels for each day of operation. Instead, the department has a state-of-the-art staffing matrix that identifies in advance which units will be in service depending on how many employees are on duty on a given day. This can mean that on any given day a different combination of firefighting and emergency medical response units will be in service. This is an extremely useful management tool because it helps the department avoid the cost of calling in extra personnel and paying overtime to meet staffing needs. In FY 2011 the department spent less than $135,000 for staffing overtime, which is significantly less than the average for departments of this size. This unique and efficient approach to staffing is a strength of the department and shows the modern management techniques the executive staff executes.

The fire department received 21,132 emergency calls during the 12-months studied for this report. The department responded to 19,179 fire and EMS calls. The remaining 1,953 calls were cancelled. Roughly 64 percent of the emergency calls were for emergency medical service, 27 percent were fire category calls, and the remaining 9 percent were cancelled calls.

According to the policies of the Kent County Medical Control Authority, emergency medical response is the primary responsibility of private ambulance companies in Kent County. In addition to emergency medical response by the ambulance companies (AMR and LifeEMS), however, the Grand Rapids Fire Department responds with either a medical response unit or a piece of fire apparatus. The private ambulance companies are the only agencies authorized to provide patient transport resulting from an emergency medical call. These facts suggest a possible duplication of service and warrant a serious review of EMS services. (For further discussion, see the section on emergency medical services beginning on page 15.)

As shown in Figure 4, the number of calls varies considerably by time of day. Call rates were the highest between noon and 8:00 P.M. and lowest between 4:00 A.M. and 8:00 A.M. The data and best practices suggest that the department should consider dynamic, or demand-based, staffing in which some employees work less than a 24-hour shift. Research has shown that a 12-hour shift provides both flexibility for the department and greater employee acceptance than either 8- or 10-hour shifts. A shorter shift would enable the department to have more personnel and units in service during peak hours of the day and a smaller number at night. It is estimated that this change could reduce the departmental budget by at least $1,890,000 per year with little impact on service levels.

FIGURE 4: EMS and Fire Incidents, by Hour of Day



(For more information, see the section on Human Resources and Staffing beginning on page 19.) Previous collective bargaining agreements allowed for a 12-hour shift arrangement for dispatchers; however, negotiation with and agreement of the Local 366 of the IAFF would be required to make these changes.

As mentioned earlier, the GRFD has established a goal of arriving at the scene of an emergency within 6.5 minutes 90 percent of the time and having a large enough contingent assembled at the scene to fight a structure fire within 10.5 minutes 90 percent of the time. According to the data derived during from the 12-month study period, the 90th percentile response time for the GRFD first-arriving unit is 9.0 minutes. (See Figure 5 on the next page.)

Total response time and total reflex time, although sometimes used interchangeably, are not the same. Total response time consists of a number specific response time intervals that include dispatch time, turnout time, and response time. However, *total reflex time* includes also access time and set-up time, both of which can add considerably to incident outcome. Access time is the time required for crews to move from where the apparatus stops to the emergency. Access time can be minimized through a pre-fire planning process that familiarizes firefighters with access points, automatic system controls, annunciator panel locations, and travel routes through a building. Set-up time is the time required for fire department units to set up, connect to hose lines, position ladders, and otherwise prepare to extinguish the fire.[2]

The NFPA 1710, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations, provides recommendations for firefighter turnout time (1.3 minutes), first fire suppression travel time (4 minutes), and an initial full alarm assignment at the fire suppression incident of 8 minutes. When added to the NFPA recommended

[2] Cote, A. E., et al, (eds.) *Fire Protection Handbook, Volume II,* (Quincy, MA: National Fire Protection Association, 2008), pages 212–218.

FIGURE 5: EMS and Fire Response Times (Call Type Specific)

Call Type	Dispatch Time	Turnout Time	Travel Time	Response Time	Sample Size
Cardiac and stroke	3.3	1.5	4.7	8.2	744
Seizure and unconsciousness	3.4	1.5	4.7	8.3	455
Difficulty breathing	3.2	1.6	5.0	8.4	913
Overdose and psychiatric	3.6	1.7	5.2	9.7	105
Motor vehicle accident	3.9	1.6	5.2	9.2	380
Fall and injury	3.7	1.5	5.4	9.4	692
Illness and other	3.6	1.6	5.0	9.0	4,240
EMS Total	3.6	1.6	5.0	8.9	7,529
Structure fire	3.3	1.6	4.5	7.8	144
Outside fire	3.5	1.6	5.2	8.4	141
Hazard	4.2	1.8	6.3	10.9	313
False alarm	3.7	1.9	5.6	9.3	87
Good intent	3.6	1.7	5.3	9.2	300
Public service	3.8	1.7	4.9	9.1	622
Fire Total	3.8	1.7	5.3	9.5	1,607
TOTAL (EMS & Fire)	**3.6**	**1.6**	**5.0**	**9.0**	**9,136**

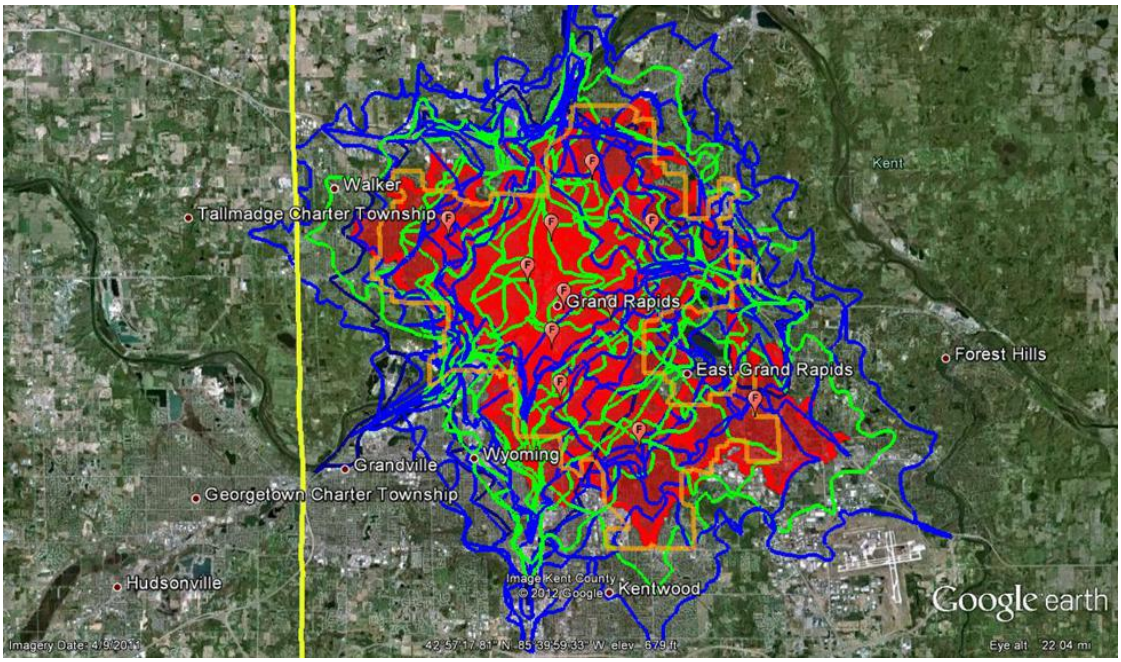
standard for dispatch time for a primary public safety answering point of 1 minute for 90 percent of all calls (as is the case with the GRFD), the total recommended response time is 6.3 minutes for the first arriving fire suppression unit and 10.3 minutes for the initial full alarm assignment. It must be added here that NFPA recommendations for response times are just that: *recommendations*. Each community must decide which response time sequence (total response time or total reflex time) to use, as well as the desired goal for response time for each response time interval. The goals established by the Grand Rapids Fire Department are roughly equivalent to the recommended goals from NFPA 1710.

Figure 6 shows travel times for each station location. The lighter shades of red indicate overlaps for four-minute drive times as determined by GIS mapping software. It is important to note these areas within the core area of the city. This represents good station location deployment for the busiest areas.

In an effort to stay abreast of changing technology and to keep costs at a minimum the department is ordering three quick response vehicles (QRVs) to add to the fleet. Each QRV is significantly smaller and less expensive than existing engines in the department. While a QRV has a much smaller water tank, it will be equipped with a compressed air foam system (CAFS), which allows for fire extinguishment approximately ten times faster than water alone. Whereas the current pumpers need to be staffed by a company officer and two or three firefighters, the smaller QRVs will be staffed by a lieutenant and an equipment officer. Final decisions have not been made about the

specific location and assignment of these units, but it is likely that the QRVs initially will replace three medical response units.

FIGURE 6: Drive Times for Grand Rapids Fire Stations



Red lines = 4 minutes; Green lines = 6 minutes; Blue lines = 8 minutes

It is our recommendation that, rather than replacing medical response units, the three new QRVs should replace existing pumpers at the three least busy stations. A review of run data and managerial assessment of citywide coverage should determine which three pumpers should be replaced first. Two additional QRVs should be phased in over time, for a total of five QRVs in service. A greater reliance on QRVs would result in estimated annual savings of roughly $2,100,000 in staff costs, in addition to the savings accrued by purchasing less costly apparatus.

Recommendation:

- Five of the department's standard pumpers should ultimately be phased out and replaced with quick response vehicles.

Prevention, Investigations, and Public Education

The Grand Rapids Fire Department has a fire prevention bureau headed by a deputy chief. Faced with budget cuts a few years ago, the city reduced the size of its prevention bureau. Fire investigations of origin and cause are provided by company officers, battalion chiefs, and, in serious cases such as suspected arson, certified investigators of the fire prevention bureau. Fire inspections and plan review remain an integral responsibility of the prevention bureau, but the department has only a modest commitment to other prevention activities, including educating the public about fire prevention.

The current chief is committed to expanding prevention activities. National best practices suggest that prevention activities can pay huge dividends. If a small amount of resources can eliminate the need for a huge and expensive fire response and the related risk of loss of property and life, prevention is an investment well made.

The fire prevention bureau provides a variety of services associated with plan review. The bureau partners with the city's building, electrical, and mechanical departments to provide technical expertise in the requirements of the International Fire Code as it relates to building construction, renovation, and remodeling. Given the importance of built-in fire protection in life safety, this is a critical part of fire prevention services that needs to remain a priority for the fire prevention bureau.

Engine companies do not routinely provide inspection services, but given the importance of prevention, this could be a way to extend the service offering without adding additional staff. The program should begin with an offer of courtesy inspections for commercial, institutional, and multifamily structures. With additional training, personnel could undertake fee-based mandatory inspections, which could help to offset the increasing expenditures in the fire department budget. Company inspections also offer the benefit of pre-fire planning for fire personnel. Pre-fire planning has the important advantage of reducing access and set-up time at a fire scene, which improves the likelihood of positive incident outcome.

Engine company personnel also could be used for an ongoing scheduled public education program offered to schools and other organizations. Public education programming need not be limited to fire prevention. It could also include education on issues such as diabetes, hypertension, heart disease, water safety, and cardiopulmonary resuscitation (CPR). An expanded educational program could be provided by existing personnel with a relatively modest expense of the purchase of educational materials. If additional employees are needed, civilian personnel should be considered. School teachers may be well qualified for positions within the prevention bureau. An additional civilian employee could be added for an annual cost of approximately $75,000, including salary and fringe benefits, a much less expensive option than $105,000 for an additional uniformed firefighter.

Best practices show that an important way to prevent cardiac medical events from becoming fatalities is to ensure that there is ready access to defibrillators. AEDs should be carried in all police vehicles and other city vehicles in the community. The fire prevention bureau, in conjunction with the fire department's training division, should provide training in use of AEDs for local government personnel and citizens who work in facilities with AEDs. Prevention activities should also include a goal to make AEDs available in all public assembly buildings and ensure that citizens are trained to use them. Experience in other communities demonstrates that a modest investment in AEDs yields a huge dividend in saving lives. AEDs can be purchased for approximately $1,100 each.

Recommendations:

- Because prevention is the least costly way of providing loss control, fire prevention staffing should be increased by adding one civilian staff member as part of a comprehensive investment in all types of prevention activities.

- Engine companies should assume responsibility for inspections of existing structures and for educating the public about fire safety.
- The mission of the fire prevention bureau should be expanded to include emergency medical education.
- The number of AEDs should be significantly increased through an ongoing program of purchasing AEDs for use in city vehicles and places of public assembly. The fire prevention bureau should be charged with educating others in the use of AEDs.

Special Operations

The department has a very good response capability for hazardous material events, water rescue, and machine extrication. Grant funds have been used to enhance training for Chemical, Biological, Radiological, Nuclear and Enhanced Conventional Weapons (CBRNE) events. In addition, a new Zodiac boat was acquired to improve the department's capacity for river rescue.

The Grand Rapids Fire Department does not have responsibility for aircraft fire response at the Gerald R. Ford International Airport, but part of the airport property is located within city limits. The department does have the response capability for all events except crash-rescue. Areas of the airport property also are in the jurisdiction of the city of Kentwood and the township of Cascades. (Fire and EMS services to the airport are discussed in more detail in a Phase II report on fire department consolidation to be completed at a later date.)

Emergency Medical Services

All Grand Rapids Fire Department personnel are trained to the medical first responder level, but some department personnel hold higher-level certification such as emergency medical technician (EMT) or paramedic certifications that authorize providing the highest level of care, advanced life support (ALS).

The department operates up to four medical response units based on available staffing. The units operate from eleven fire stations and use a flexible staffing model. Fire suppression units also respond to medical-related emergencies.

EMS Response Times

The Grand Rapids Fire Department operates under the response interval standards of the Kent County Medical Control Authority, which has adopted the NFPA 1710 standard for career fire departments. According the ICMA data analysis, the 90th percentile travel time for EMS calls was 5.0 minutes. Although this is outside the recommended standard of 4.0 minutes suggested by the NFPA, recent studies have concluded there are certain limitations associated with this time standard—specifically that there was less emphasis on response time, but only time to defibrillation. The standard applied only to cardiac arrest patients. Further, the article used by the NFPA in its deliberations was published over thirty years ago and supported defibrillation within 8 minutes—

unacceptable under today's standards now that public access and first responder defibrillation programs have been established.[3]

The data analysis also observed a 90th percentile response time for EMS calls of 8.9 minutes. The previously mentioned study indicated that perhaps a better method of setting standards would be to establish response time standards for certain interventions, and not applied to EMS calls universally. Setting response time standards for initiation of CPR for cardiac arrest, epinephrine administration for anaphylaxis, manual maneuvers for foreign body obstruction, basic life support (BLS) or advanced life support (ALS) ventilation for a compressed airway likely represents a better clinical outcomes-based model.[4]

Recent research at the University of Oklahoma suggests that a new EMS response model should be adopted by emergency medical service providers. The model should provide a response only to the most serious medical emergencies. Adopting this type of demand management strategy should lead to a reduction in expenses by providers because of a reduction in the number of response vehicles necessary to serve the citizenry.

EMS Workload

Review of the current EMS workload of the Grand Rapids Fire Department reveals that approximately 64 percent of the all calls are EMS related. This is not unusual in fire departments that have expanded their service delivery model to include medical emergencies. The move to expand the range of service to include emergency medical response is an understandable approach to providing a needed service to the community. Fire facilities are strategically located within the community, so they are well-suited for deploying emergency response resources. The fact that fire calls have dramatically declined also gives reason to situate an emergency medical response from within the fire service. However, over time fire departments have expanded their EMS response to include many minor medical emergencies. In the study undertaken by the Kent County EMS Authority, it was noted that many EMS calls have minimal benefit from medical first responders (such as the Grand Rapids Fire Department). In the current emergency medical response model in Kent County, in which a private ambulance company has the primary responsibility for emergency response and exclusive responsibility for patient transport, the response by GRFD represents an unnecessary duplication of effort.

FIGURE 7: Daily Runs

Unit	Total	Runs per Day
M1	515	1.4
M2	277	0.8
M3	393	1.1

[3] Jeffrey M. Goodloe and Stephen H. Thomas (eds.), "Emergency Medical Services Evidence-Based System Design," *EMSA White Paper* (University of Oklahoma School of Community Medicine, July 2011), 21.
[4] Goodloe and Thomas, "Emergency Medical Services Evidence-Based System Design," 24.

M7	2,780	7.6

An important measure in operating efficiency in emergency medical services is unit hour utilization (UHU). An individual UHU is the ratio of time that an EMS unit is engaged on calls compared to the total on-duty time of the unit. The departmental UHU is the figure for all units combined. If a unit was on duty for 24 hours and was engaged in calls for 8 of those hours, its UHU for that period is 0.33. This is an approximation based on an assumption of one hour per call. Although not all agree, most EMS experts consider the desirable range for UHU to be between 0.25 and 0.50, with an optimum being around 0.40.[5]

Due to the staffing model used by GRFD, which frequently takes medical response units out of service, data were not available to conduct a normal UHU analysis. However, Figure 7 clearly shows an underutilization of medical, of the GRFD response units 1, 2, and 3, with total runs for the year of just 515, 277, and 393, respectively.

This review of utilization on an annual basis suggests an underutilization of EMS resources within the Grand Rapids Fire Department. Based on these findings, the ICMA evaluators suggest elimination of medical units 1, 2, and 3. This reduction in unit deployment would result in annual savings of $2,500,000 to $2,600,000. This recommendation is further supported by the discussion of priority medical response below.

Clinical Service Levels

The Grand Rapids Fire Department has chosen to limit its medical response capability to that of medical first responder. Today, more fire departments are upgrading the level of care provided to its citizens to the ALS level, but recent literature suggests this is unnecessary. According to the Goodloe and Thomas report from the University of Oklahoma research, only about 5 to 10 percent of an urban EMS system's calls require interventions at an ALS level. [6] The decision not to pursue ALS licensure on the part of department administration is a good choice.

Quality Management

Identifying local levels of performance that are considered acceptable by a recognized authority to evaluate EMS activities is critical to the adequate functioning of all EMS systems.[7] The Grand Rapids Fire Department only recently received funding to fill its vacant EMS coordinator position. This missing administrative staff component is in part responsible for the lack of oversight of its medical response system. However, as stated in the Kent County EMS report, the Grand Rapids Fire Department is not alone in the need to establish a quality improvement program. Although the department has developed various standards for vehicle maintenance, medical supplies and training, the ongoing assessment of medical treatment has not been addressed.

[5] David Ammons, *Tools for Decision Making: A Practical Guide for Local Government (2nd edition),* (Washington, D C: ICMA, 2009), 220.
[6] Goodloe and Thomas, "Emergency Medical Services Evidence-Based System Design," 21.
[7] Robert Swor, et al, *Quality Management in Prehospital Care* (St. Louis: National Association of EMS Physicians, 1993).

Medical Call Prioritization

The findings support the Kent County report recommendation for restructuring of the 911 dispatch service to implement the medical priority dispatch system (MPDS) at the two public safety answering points (city of Grand Rapids and Kent County Sheriff 's Office). Although it will take time for staff to learn a new medical priority dispatch system, the design of the system minimizes this downside. Concerns about the possibility of the mishandling of some calls are also minimal based upon medical priority dispatch system design. It is important that the MPDS priority levels and codes be fully implemented to set responses in line with the patient's condition and the actual need for EMS resources. This will result in a safer and more efficient EMS system.[8]

This priority dispatch system recommendation is consistent with the recommendation above to eliminate staffing of three medical units in the Grand Rapids Fire Department. In the future model for EMS calls, a private ambulance company should be the exclusive responder on most EMS calls. Highly trained GRFD personnel, usually on fire apparatus, would be dispatched only on the most serious life-threatening EMS calls, such as cardiac arrest, where they could make a major difference if arriving first on the scene. These recommendations are also consistent with the findings and recommendations of the EMS study conducted for the Kent County Emergency Medical Services Authority.

Recommendations:

- Medical response units 1, 2, and 3 should be taken out of service. The city should allow most EMS response to be provided by private ambulance companies. GRFD should only respond to the most serious medical emergencies, such as cardiac arrest. This change would result in annual savings in excess of $2.5 million.
- GRFD should retain the current standard of BLS certification for CPR and AED and MFR certification for firefighters who serve as medical first responders.
- The department should develop a medical quality assurance program.
- The city should implement medical priority dispatch system at the public safety answering point to include priority levels and response codes.

Physical Resources

As noted, the Grand Rapids Fire Department operates from eleven fire stations (see Figure 3 on page 9). One of the stations is located in conjunction with the headquarters facility in downtown Grand Rapids. Based on visits to the stations and other buildings, the facilities appear to be reasonably well maintained, although some are quite old. Care should to be taken to ensure that fire stations are carefully maintained.

Replacement schedules are in place for apparatus, but funding constraints have resulted in delays and the inability to replacement some apparatus according to the schedule. NFPA 1911, Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus, includes guidance on retirement criteria for fire apparatus. There is no national standard governing the replacement of emergency vehicles, but it is critical to replace these and other apparatus before

[8] Goodloe and Thomas, "Emergency Medical Services Evidence-Based System Design," 12.

they become unreliable. Over the long term, delaying the replacement is inadvisable because it will add to the overall costs of the apparatus. The city and department need to place a higher priority on adhering to the apparatus replacement schedules that have been developed.

Recommendation:

- The city should develop and adhere to and invest in an appropriate schedule for both the replacement and the rehabilitation of fire department apparatus that extends the useful life of the fleet.

Human Resources and Staffing

The Grand Rapids Fire Department's formal organization chart reflects an authorized strength of 235 positions. The ICMA fire team has been requested to develop a transformation plan for the department that reduces authorized strength to 171 positions or that identifies an equivalent amount of savings. Several significant changes have been proposed in fire suppression and EMS sections above. Additional changes are presented in this section. The recent downturn in the economy has resulted in the loss of some positions in previous budget years, most notably in the prevention and training. The city should look for opportunities to reestablish some of the previous capacity in these important areas.

Meanwhile, an opportunity for cost savings exists in the area of staffing of apparatus. Traditionally, the fire service has staffed equipment at the same level for all hours of a 24-hour period regardless of the demand. The Grand Rapids Fire Department utilizes 24-hour shifts for all full-time fire suppression and medical response units.

The recent downturn of the economy and subsequent budget problems for local governments have forced communities to look at other staffing options for their fire departments, including staffing that is based on the demand for service as determined by how many calls for service are expected at different times of the day. Law enforcement agencies have used differential staffing for years, in recognition of a far greater need for staffing levels on Friday at midnight than on Sunday morning, for instance. Similar demand-based, or dynamic, staffing would be of great benefit to the Grand Rapids Fire Department.

FIGURE 8: Hourly Call Rate

Two-Hour Interval	Hourly Call Rate		
	EMS	Fire	Total
0–1	1.2	0.5	1.8
2–3	1.1	0.4	1.5
4–5	0.7	0.3	1.0
6–7	0.9	0.4	1.3
8–9	1.4	0.6	2.0
10–11	1.8	0.8	2.6
12–13	2.0	0.8	2.8

As shown in Figure 8, 63 percent of the fire calls took place from 10:00 A.M. to 10:00 P.M.; only 37 percent of the fire calls occurred between 10:00 P.M. to 10:00 A.M. This suggests that staffing could be reduced during the nighttime period without impacting response capability.

14–15	2.0	0.9	2.9
16–17	2.0	0.8	2.9
18–19	2.0	0.8	2.8
20–21	1.8	0.8	2.6
22–23	1.6	0.7	2.2
Calls per day	**36.9**	**15.6**	**52.5**

The team recommends that that the GRFD establish a staffing arrangement that utilizes fewer personnel at night by having some employees work only a 12-hour daytime shift, either 8 A.M. to 8 P.M. or 10 A.M. to 10 P.M. Adding a 12-hour daytime shift would require the department to establish two separate staffing matrices: one for the day shift and one for the night shift. The least busy engine would likely be removed from service during some of the night shifts. Data suggests that Engine 9 would be the best unit to take out of service. Coverage should be adequate without this engine, but the department's leaders should weigh this proposal carefully to ensure that any potential implications are considered.

Twelve-hour daytime peak-load shifts should be established for the medical response unit located downtown, for one engine company, and for two of the QRVs that have been proposed to be placed in service. These staffing changes would allow for the reduction of the authorized strength by 18 positions and would require converting 18 other positions from 24- to 12-hour shifts. While many details would have to be worked out, it is anticipated that 12-hour shift personnel would work an average of four 12-hour shifts per 7-day week, rather than the 50.4-hour average workweek currently used with 24-hour shifts. The personnel would be compensated at the same annual salary as present. This dynamic staffing model would save the department an estimated $1,890,000 per year. It is further suggested that every effort should be made to implement personnel reductions through attrition rather than layoff.

Recommendations:

- The department should establish demand-based staffing using a combination of 12- and 24-hour shifts.
- Daytime 12-hour peak-load shifts should be established for the medical response unit downtown, for one engine, and for two of the QRVs that have been proposed to be placed in service. This would result in annual savings of an estimated $1,890,000.

Training

The Grand Rapids Fire Department has limited training capacity. When budget problems forced departmental cuts several years ago, reductions in personnel were made in training and other administrative areas. As a result, the training division is woefully understaffed. There are currently only two positions assigned to the training division: a chief and a captain. The captain's position was added back only recently.

In spite of limited resources, the division conducts an aggressive training schedule. Every operational employee is trained in positive pressure attack fire-ground tactics. This training utilizes a makeshift burn site because the department does not have a burn facility.

The training regimen meets the bare minimum of training needs of department personnel. The fire chief has made recommendations for expanding staff in the training area. Best practices support this recommendation. Expanding the training program will help the GRFD stay on top of all the changes taking place in the department, protect against the erosion of skills, and help ensure the safety of firefighters.

In addition to providing training for fire department employees, the GRFD training division also has participated in a number of regional training activities. Training would definitely benefit from a regional approach. Many communities have benefited greatly from regional partnerships.[9] The fire department may benefit from a regional partnership that allows access to a burn site or other specialized structure, for instance. (This issue will be addressed in more detail in the Phase II report on fire department merger.)

Recommendation:

- Staffing in the training division should be expanded by one additional uniformed employee to handle routine training needs and support new prevention activities, such as company inspections and new fire tactics related to foam and quick response vehicles.

Communications

Dispatch services for the Grand Rapids Fire Department are provided by the Kent County Dispatch Authority, a relatively new organization that was created when five separate dispatching agencies were combined. The authority is governed by a board consisting of local government officials from the agencies receiving service and supervises two dispatching organizations in the community. The dispatch center at the police headquarters building handles all Grand Rapids Fire Department dispatches; another center located at the Kent County Sheriff's Office handles calls for the county. Employees at the police location are employees of the city of Grand Rapids.

The dispatch facility at police headquarters is in the process of developing and implementing a new computer-aided dispatch (CAD) system to serve the fire department. It anticipates having the upgrade in place by September 2012. Included will be upgraded mobile data terminals (MDT) in fire apparatus.

The upgrade does not include an adequate interoperable radio communication system by which different fire agencies can communicate directly with one another. An increasing number of mutual aid agreements are requiring greater reliance of fire departments on one another to meet emergency needs. The Grand Rapids Fire Department has automatic aid agreements with the cities of Kentwood and Walker and with Plainfield Township, in which the closest unit is dispatched without regard to political boundaries. Mutual aid agreements, which provide aid to another agency when requested, are also in place with the city of Wyoming and other fire departments. These factors make interoperability critical. The city of Grand Rapids should seriously consider providing funding for an improved radio communication system.

[9] See Adam K. Thiel, "Fire and Emergency Services Professional Development," in *Managing Fire and Emergency Services,* ed. Adam K. Thiel and Charles R. Jennings (Washington, D.C.: ICMA, 2012), 261.

Dispatch for fire calls is fairly simple and straightforward. A more complex arrangement exists for EMS calls. When a medical emergency call is received, the dispatcher notifies both the Grand Rapids Fire Department and the private ambulance company that provides emergency medical response and transport to local hospitals. The dispatcher keeps the private ambulance company and the caller on the line while the ambulance company discusses the nature of the emergency. Neither the dispatch center nor the private ambulance company uses a formal priority medical dispatch system, such as the one developed by Jeff Clawson. Clawson's research has shown that priority medical dispatch can help communities provide better service with fewer resources by matching clinical needs with scaled response configurations.

The Kent County Dispatch Authority should consider including priority medical dispatch. This would lead to a more efficient utilization of Grand Rapids Fire Department and private ambulance company personnel and units. (A number of additional recommendations for the Kent County Emergency Medical System are included in a separate report.)

Recommendation:

- The city should commit to an upgraded fire department radio system with greater interoperability.

Relationship with the Union

All uniformed personnel in the department, from the firefighter rank through the deputy fire chief, are represented by Local 366 of IAFF. The fire chief is the only position not represented by the union. The department has a good working relationship with the union's leaders. The fire chief has placed a high priority on establishing open communication with the president of the Local 366 and schedules regular meetings to discuss matters of common interest. The union has agreed to concessions in labor agreements totaling 8.2 percent.

A comprehensive review of collective bargaining issues is beyond the scope of this study, but some of the opportunities to improve public service may require negotiation with the union. In addition to the introduction of 12-hour shifts discussed above, the city and the union should consider amending provisions of the collective bargaining agreement that limit to daytime hours training, public education, non-emergency response, and other required activities. This limitation makes it impossible to utilize station personnel for training during the late afternoon and early evening. There also needs to be expanded opportunities for company personnel to make appearances at neighborhood meetings to speak about fire safety.

Recommendation:

- Negotiations should be undertaken with the fire union to establish 12-hour shifts for peak staffing purposes and to remove restrictions that limit the time available for station personnel to engage in training and public education activities.

Water Supply

The GRFD is provided an adequate public water supply by the city water utility. One of the most important aspects of water supply is ensuring that all fire hydrants are in working order. Over the years responsibility for hydrant maintenance has shifted back and forth between the fire

department and the water utility. It is suggested that a joint study be undertaken by the fire department and the water utility to determine which agency should maintain the hydrants and to ensure that the needs of fire operations personnel are adequately met.

Recommendation:

- The fire department and the water utility should jointly undertake a study of fire hydrant maintenance to ensure that operational needs are being met.

Insurance Services Office Rating

In the summer of 2011, Insurance Services Office (ISO) representatives visited the Grand Rapids Fire Department for its first rating visit since 1996. The ISO is an arm of the insurance industry that rates the fire protection systems in cities all over the country. Its representatives visit the community, collect records, and observe the components of the local fire protection system, including such elements as hydrants and other water supply systems, apparatus and equipment, staffing, training records, and dispatch facilities. Their observations are combined with inspections of selected properties to determine fire flows needed for fire suppression. The ISO then uses this data to determine a numerical grade for the fire department. The grades range from 1 to 10 (with 1 being the best). The ratings and associated data are made available to insurance companies to help them determine fire insurance rates.

The city of Grand Rapids has had a Class 3 rating for the past sixteen years. In March 2012 the city was notified that ISO was increasing its rating to a Class 2, making Grand Rapids one of the few communities in the country with a rating of Class 2 or higher. (In 2011, just 647 localities—fewer than 2 percent of those rated by the ISO—had a Class 1 or Class 2 rating.) In spite of the positive rating change, ISO anticipates that the city's insurance rates will increase in the coming years.

The ISO rating schedule's efficacy as a guide to deployment of fire apparatus and prediction of community fire loss has been questioned, however. Whereas some studies have supported the notion that better ISO ratings correspond to lower fire losses, others have found a weak correlation between ratings and results.[10] However, the schedule remains highly influential in fire service deployment and is frequently used as an assumption within planning methodologies or as a rationale for retention of personnel, stations, or apparatus. The ISO has clearly stated that their ratings are for insurance purposes only and are not intended to analyze all aspects of a comprehensive structural fire suppression delivery system. Moreover, it should not be used for the purpose of determining compliance with state or local laws or making loss prevention or life safety recommendations.

Transformation

One of the great strengths of the Grand Rapids Fire Department is the commitment of the fire chief and other fire managers to exercise transformational leadership. There is clear recognition that the fire department of the twenty-first century will face vastly different challenges than those in the

[10] Charles Jennings, ed., *Proceedings of First International Conference on Fire Service Deployment Analysis* (Alexandria, VA: Institution of Fire Engineers, 1999), 1–2.

past. In general, the fire service is often resistant to change. The Grand Rapids Fire Department exhibits exemplary leadership in change management.

Several specific examples of transformation are worthy of mention. The department has committed to use positive pressure attack, a rapid ventilation process at a structure fire, as a routine firefighting tactic. The department also is implementing a plan to add to its lineup of pumper apparatus QRVs, which are less costly to own and operate than larger pumpers. These units will be equipped with the capacity to utilize compressed air foam systems (CAFS), which can more quickly control a fire than simply using water. Class A foam is being used in other situations. The use of foam results in using less water and therefore less water damage and also serves to more quickly reduce the temperature in a burning structure. The department has designed and placed into service a traffic attenuator, a specialized piece of equipment that protects fire apparatus and personnel when working in a high-speed, high-volume traffic environment. Lacking a live burn facility, the department developed a temporary facility to demonstrate to the public the advantages of sprinkler systems.

The fire chief and other leaders continue to look for opportunities to improve public safety service delivery and safety. By embracing change, the department is positioned well for the future.

Recommendation:

- The transformation initiatives of the fire chief should be supported by the city's appointed and elected leaders.

External Relationships

The Grand Rapids Fire Department has good working relationships with other fire departments in Kent County and surrounding jurisdictions. The department has automatic aid agreements with the cities of Kentwood and Walker and with Plainfield Township, in which the closest unit is dispatched without regard to political boundaries. Mutual aid agreements, which provide aid to another agency when requested, are in place with the Wyoming Fire Department. Some training is conducted with other fire agencies in the region.

The cities of Grand Rapids, Wyoming, and Kentwood have entered into serious discussions over the past year regarding the possible merger of the fire departments of the three cities. The issue of fire department merger is the subject of a Phase II report to be completed in June 2012.

Transformation Savings

This section provides further explanation of the savings that the ICMA fire team anticipates would result from the implementation of the recommendations found in this report. All savings related to the reduction in personnel are calculated based on the full cost of a firefighter being $105,000 in 2012 dollars. This cost includes salary and benefits such as health insurance and pension. The number of positions to be reduced by an action is increased by a factor of 1.32 in recognition of a 50.4 hour average workweek in the department plus an allowance for vacation, sick leave, and other leave. As an example, taking one medical response unit out of service would result in the elimination of 8 positions. This number is achieved by eliminating 2 positions on duty each day for each of the three 24-hour shifts for a total of 6 positions; then multiplying this number by 1.32 to provide the total staffing need for that unit, resulting in 7.92 (rounded to 8). At a cost of $105,000 per position, taking one medical response unit out of service therefore results in an annual savings of $840,000.

Figure 9 identifies the sixty-two (62) positions proposed to be eliminated which are then offset by the three (3) positions recommended to be added for a net reduction of fifty-nine (59) positions in the authorized strength.

FIGURE 9: GRFD Proposed Staffing Reductions

Current authorized strength	**235**
Replace 5 engines with 5 QRVs	(20)
Eliminate 3 medical response units	(24)
Change remaining medical response unit to peak staffing	(4)
Change 1 engine to peak staffing	(6)
Change 2 QRVs to peak staffing	(8)
Add prevention staff	1
Add training staff	1
Add administrative support staff	1
Net staffing change	(62) + 3 = (59)
Proposed authorized strength	**176**

Figure 10 provides a summary of the changes in the number and type of apparatus in service comparing the present to the proposed. It must be noted that the reduction in staffing from the current deployment as shown in Figure 10 will require that the fire department revise the flexible staffing matrix in use today. This revision will require that additional units be taken out of service on a daily basis as determined by the number of personnel on duty that day. There will be more ladder companies and more engine companies out of service on a routine basis. At certain hours of the day the fourth medical response unit may also be out of service. The specifics of this plan will require further analysis and judgment by the leadership of the department. Figure 11 identifies the $6,755,000 budgetary savings resulting from the implementation of all of the recommendations in this report.

FIGURE 10: Apparatus in Service at Maximum Daily Staffing

	Current Deployment	Proposed Deployment	
	All 24 hrs/day	24 hrs/day	12 hrs/day
Engines	7	1	1
QRVs	0	3	2
Rescue engines	3	3	0
Trucks	4	4	0
Battalion chiefs	2	2	0
Medical squads	4	0	1

FIGURE 11: GRFD Net Annual Savings

Replace 5 engines with 5 QRVs	(2,150,000)	
Eliminate 3 medical response units	(2,520,000)	
Change remaining medical squad to peak staffing	(420,000)	
Change 1 engine to peak staffing	(630,000)	
Change 2 QRVs to peak staffing	(840,000)	
Add prevention staff		75,000
Add training staff		105,000
Add administrative support staff		75,000
Reduced operating and equipment expenses	(500,000)	
Total change	(6,755,000)	

The savings resulting from the reduction of authorized strength by 59 positions coupled with operational savings resulting from fewer and more efficient apparatus being in service is financially equivalent to the target we were given of developing a transformation plan with an authorized strength of 64 fewer positions.

Alternatives

If the city wishes to consider other options to this staffing proposal, two alternatives are offered:

Alternative One

The department could decide up front to permanently take additional units out of service beyond those recommended in this report. If this option is followed, it is recommended that at least one ladder truck be taken out of service. This action would transfer fifteen (15) personnel from permanent assignment to a ladder to be available to handle relief each day that so not as many units would have to be taken out to service or have the number of personnel assigned to a unit reduced through the staffing matrix process. Due to the platoon system, having these fifteen personnel translates into adding five employees each day for relief.

Alternative Two

This option addresses a revenue option to the recommended plan. If the city does not wish to pursue a staffing plan that leads to either taking different units out of service each day in addition to the elimination of three (3) medical response units, the conversion of five (5) engine companies to QRV companies and the introduction of peak staffing as in the recommended plan, this option would avoid that. This option would allow the city to avoid taking an engine company and a ladder company out of service on a permanent basis in addition to conversion to QRVs, the elimination of medical response units, and the introduction of 12-hour peak shifts (as in Alternative One). In this option, the city would retain fifteen (15) of the firefighting positions proposed to be eliminated and make a decision to raise additional tax revenue sufficient to fund these thirty employees. These fifteen additional employees would allow the department to reach the proposed relief factor of 0.32 and therefore mean that reducing the apparatus in service below those identified in the recommendation should be a rare occurrence. It is estimated this represents $1,575,000 of new tax revenue.

Conclusion

Depicted below Figure 12 is the deployment of GRFD staff under four different scenarios: the current staffing arrangement, the recommended option and the two alternative options. The staffing deployment for the current column is taken from the highest level of staffing identified in the current GFRD staffing matrix which shows 18 companies in service and a total of 65 suppression personnel on duty on that day. That deployment is based on having six of the seven engines staffed with four personnel, while the seventh is staffed with three employees. All rescue engines and trucks are staffed with four. The medical squads are staffed with two employees, while the battalion chief vehicles are staffed with one. In the recommended option and the two variations staffing is changed to three personnel on all engines, including rescue engines. All other staffing assignments remain the same as in the “65 on duty” current staffing model. Staffing requirements shown include personnel for all three platoons.

Figure 12 A Comparison of GFRD Staffing Deployment for Four Options

Apparatus	Current	Recommended	Alternative #1	Alternative #2
Engines	81	9	9	9
QRVs	0	18	18	18
Rescue engines	36	27	27	27
Trucks	48	48	36	48
Battalion chiefs	6	6	6	6
Medical squads	24	0	0	0
12-hour FTEs	0	15	15	15
Relief	15	25	37	40
40-hour	25	28	28	28
Total	235	176	176	191

It continues to be the recommendation of the ICMA fire team that the City of Grand Rapids pursue the strategy found in the basic recommendation, rather than either of the two alternatives.