

# East Moline Fire Department

Effective Fire Department Staffing / Proposal for Implementation of  
Ambulance Transport Services to Existing Fire Department Advanced Life  
Support, Emergency Medical Services.

July 2009  
Robert DeFrance, Fire Chief

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## **Overview**

For many years the East Moline Fire Department has faced a significant shortage of firefighters responding to fire calls in the City. This situation potentially increases the magnitude of property loss. More importantly it places residents and firefighters at a greater risk of severe injury and death during structural fire events as compared to departments with firefighter staffing numbers compliant with industry standards.

The Fire Department has recognized the staffing problem for many years and has instituted internal policies, and made numerous attempts during labor negotiations to re-organize the department to maximize the number of firefighters available to combat fires.

The City's fire administration and the Union that represents its firefighters have long agreed the staffing of the fire department is a critical issue. Recently, the fire department presented information showing staffing of the department was below the industry standard. Significant adjustment could be made by increasing the working hours of the firefighting force to be more in norm with comparable cities, thereby increasing the minimum number of firefighters on duty at all times. Additionally, this schedule adjustment was needed to allow for more efficient growth of the fire department when the City's economic development initiatives in the I-5 corridor area materialize.

The fire department will reorganize its schedule in a manner that increases the minimum number of firefighters on duty each day from the current seven (7), to nine (9) beginning May 1, 2010.

As a result of this re-organization, the fire department is positioned to offset the costs of the increase in firefighter working hours and more effectively hire needed additional firefighters by generating revenue from an Ambulance Transport Program (ATP).

## **Fire Department Staffing Considerations - Full Initial Alarm Assignments**

The fire department's staffing is far below the industry standard as recommended by the National Fire Protection Association (NFPA) Standard 1710, "*Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*" (NFPA 1710).

Chapter 5, of this standard (NFPA 1710) addresses the minimum staffing requirements for career fire departments for firefighting performance. This minimum is determined by task analysis of specific tactical activities to be conducted simultaneously during a structure fire.

To properly combat a residential fire and make rescues from burning homes in East Moline, or any other city, a specific level of staffing is nationally recognized as the minimum requirements.

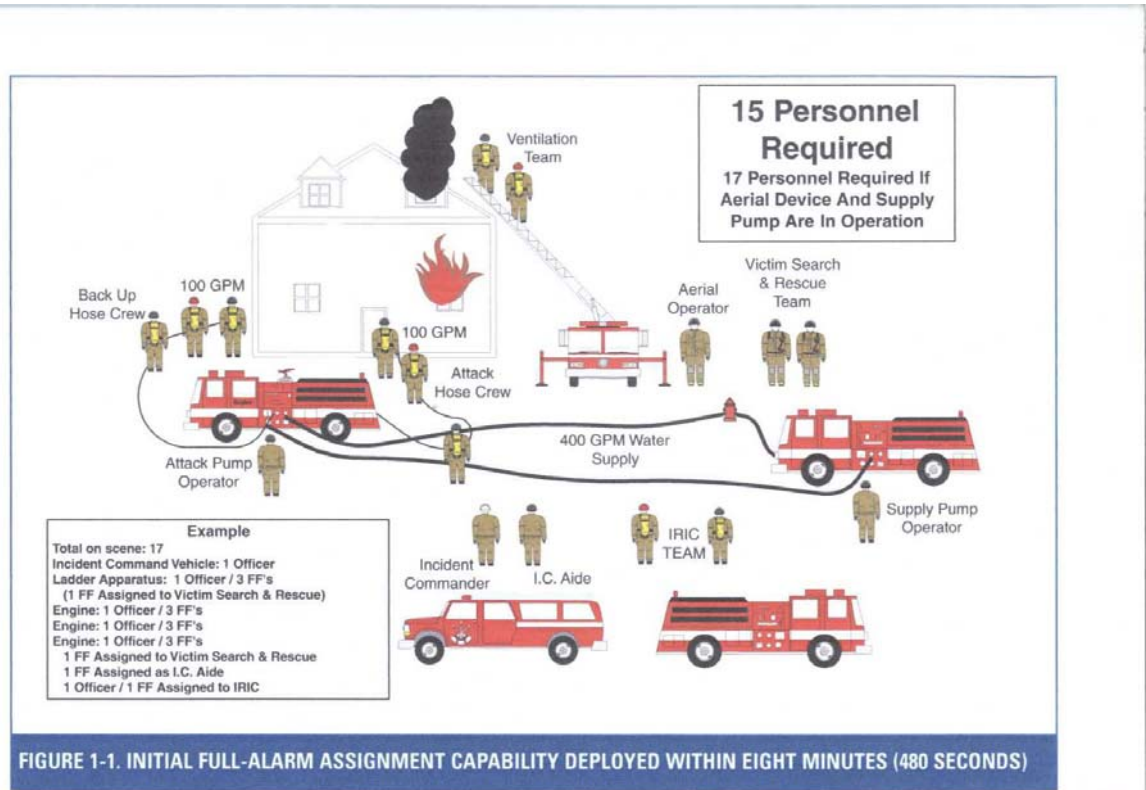
The NFPA 1710 Standard requires: (As a minimum)

1. Establishment of incident command outside of the hazard area for the overall coordination and direction of the initial full alarm assignment. A minimum of one (1) individual should be assigned to this task.
2. Establishment of an uninterrupted water supply of 400 gallons per minute for 30 minutes. Supply lines shall be maintained by a fire pump operator who shall ensure uninterrupted water flow application.
3. Establishment of an effective water flow application rate of 300 gallons per minute from two (2) hose lines. Attack and back-up lines shall be operated by a minimum of two (2) personnel each to effectively and safely maintain the line.
4. Provision for of one (1) support person for each attack and back-up line deployed to provide hydrant hook-up and to assist in line lays, utility control and forcible entry.
5. A minimum of one (1) victim search and rescue team shall be part of the initial full alarm assignment. Each search and rescue team shall consist of a minimum of two (2) personnel.
6. A minimum of one (1) ventilation team shall be part of the initial full alarm assignment. Each ventilation team shall consist of a minimum of two (2) personnel.

7. If an aerial device is used in operations, one (1) person shall function as an aerial operator who shall maintain primary control of the aerial device at all times.
8. Establishment of an initial Rapid Intervention Team (RIT) that shall consist of two (2) properly equipped and trained personnel.
9. Supervisory Chief Officers shall have staff aids assigned to them for the purposes of Incident Management and operation of the personnel tracking and accountability system.

**This full initial alarm assignment should arrive within eight minutes to 90% of the incidents.**

As described above and illustrated in Fig 1-1 below, the East Moline Fire Department should respond to each residential fire with a minimum of fifteen (15) personnel as opposed to the minimum of seven (7) personnel we currently respond with or the minimum of nine (9) personnel we will be responding with beginning May 1, 2010.





The picture above is typical in size and construction of many older homes in the downtown and Watertown neighborhoods of East Moline. These homes are prevalent throughout most of the Quad City area. The vertically aligned narrow windows and entrance way, along with the age of this neighborhood indicate this is a balloon construction type residence. These homes do not have natural fire stops inherent to more modern construction and the exterior walls contain a void that allows fire to spread vertically from the basement to the attic very quickly. The second floor is obviously heavily engulfed and most contents and structural members are being destroyed by the advanced fire depicted.

1. The first floor appears tenable and should be searched for victims immediately by two (2) firefighters.

2. The basement also appears tenable and should also be searched by two (2) firefighters.
3. A hose line needs to be put in place between the fire and the search crews. This is usually placed in the stairwell leading to the second level. This will require a minimum of (2) firefighters but is accomplished faster and more effectively with three (3).
4. The incident commander must observe fire conditions and watch for signs of structural collapse, rapid fire spread to uninvolved parts of the dwelling and keep accountability of the six (6) personnel now operating inside the structure. One (1) fire officer serves as the Incident Commander.
5. The hose team in the stairwell will need a third member (one more firefighter) to advance the hose around doors, wall and furniture and any bends in the stairwell.
6. A minimum of two (2) personnel must be fully geared up and ready, positioned outside, near the entry way, to enter with a hose line should any of the now seven (7) interior firefighters become disoriented, trapped or suffer injury. OSHA, or in our case the Illinois Department of Labor requires these firefighters remain unassigned and immediately available to rescue firefighters working inside the structure.

*So far ten (10) personnel are committed and assigned tasks at this residential fire. If staffing is at the current minimum of seven (7) or the soon to be minimum of nine (9) we have either violated the Illinois Department of Labor's regulations and/or we have not assigned the third firefighter to the hose line making for its slow placement. Also, the search of the basement is not being conducted at this time.*

7. \*A pump operator is needed to establish water to the two (2) hose lines now operating at this fire.
  
8. \*Two personnel are needed to place a ladder to the second floor windows that are still intact. These windows need to be systematically opened or broken to allow the heat and smoke to lift from the stairwell, first floor, and basement. This ventilation permits the attack crew in the stairwell to advance the hose line to slow fire growth and improve visibility for the search crew and survivability of victims. *In this picture the fire venting from the second floor windows is helpful to protect any victims on the first floor but, will rapidly increase the rate of fire spread if the attack lines are not positioned quickly for applications of large volumes of water.*
  
9. \*Based on the amount of fire on the second floor, one (1) attack line is not expected to extinguish this fire. A second attack line should be sent to the stairwell to back-up the first team. This team should have three (3) personnel.

*East Moline does not have the proper staffing to execute the last three (3) tasks (#'s 7, 8, & 9). Moline and Rock Island Fire Departments are staffed to conduct these tasks.*



This picture depicts modern home construction with an attached garage. These homes may be found virtually anywhere south of 21<sup>st</sup> Avenue in East Moline. They are most prevalent south of 30<sup>th</sup> Avenue.

Firefighters are trained to read the structure and the smoke to determine the tactics to be employed at each fire. This fire appears to be oxygen deficient as evident by color and density of the smoke. It is has originated in the basement and involves a portion of the first floor.

The following tasks must be undertaken immediately.

1. A search for victims on the second floor must be accomplished by no less the two (2) personnel.

2. A hose line needs to be taken into the first floor to conduct a search for victims in this area. This team should have three (3) personnel assigned to it because they will be encountering fire during this search.
3. A third team of a minimum of (2) two firefighters is needed to take a hose line to the basement to conduct a primary search and begin extinguishment of the fire encountered in this area. These firefighters will face significant challenges of locating the basement stairwell in dense smoke and making the descent into the basement with intense heat.
4. With a minimum of six (6) firefighters now operating inside this residential fire, a team of two (2) must be ready and in position to rescue any firefighters that become disoriented or suffer injury.
5. A single incident commander is needed to coordinate all four (4) of the above tasks operate the accountability system, and monitor the fire conditions for changes that require additional assignments. *\*We now have nine (9) personnel operating at this fire but the following 4 tasks (# 6,7,8 & 9) have not been accomplished and are critical to the safety and success of the firefighting operations.*
6. *\*One (1) pump operator needs to operate the fire pumper and supply water to the two (2) hose lines now operating inside this residence.*
7. *\*A hydrant supply line and connections must be made by a minimum of one (1) firefighter. The pumper carries 500 gallons of water and with each hose line flowing up to 125 gallons per minute (GPM) both lines could be without water in as little as two (2) minutes without a hydrant supply established.*

8. \*Two (2) personnel are needed to open or remove the basement windows to allow the smoke and heat to ventilate from this area providing much needed relief to the hose line team in this area while increasing the likelihood of survivability of any victims in this dwelling.
  
9. \*This fire may involve electrical or gas equipment common to basements. A minimum of one (1) firefighter is needed to disconnect gas and electric services to this home. If entry into the home is required to accomplish this, two (2) firefighters are required.

As described in the scenario above, the fire department needs at least fourteen (14) personnel on scene to complete all nine (9) tactical functions. With a minimum of nine (9) personnel some tasks will be severely delayed or not accomplished.

These two fire scenarios and staffing requirements are related to single family residential fires only. The standard calls for many more firefighters to respond when dealing with commercial or industrial occupancies. Larger buildings can develop larger fires and present more challenges to extinguishment. A higher capacity for occupants, as found in apartment buildings and the high rise facilities in East Moline require more firefighters be dedicated to search and rescue efforts. Larger diameter hose lines capable of delivering 200 GPM or more may be needed to combat commercial fires. The larger lines require a minimum of three (3) personnel to operate inside a building and often four (4) are required to advance it.

Fires in larger buildings require mutual aid assistance. Mutual aid is intended for these extraordinary events. While large commercial fires sometimes result in multiple fatalities at a single event, the frequency of fires in these facilities is less than single family home fires. Nationally, over 4000 people are killed in single family home fires each year.

### Staffing the Initial Company

Another consideration for staffing the fire department is the capabilities of the first arriving engine to the scene of a fire. East Moline's fire stations are strategically located to provide quick response times to most areas of the city. To be effective at any structure fire, firefighters from the closest station need to arrive quickly and in adequate numbers to begin a fire attack and make quick rescues.

#### **The NFPA 1700 standard sets the requirements for initial arriving fire engine as follows:**

1. The fire department's fire suppression resources shall be deployed to provide for the arrival of an engine company within a 240-second travel time to 90 percent of the incidents.
2. Personnel assigned to the initial arriving company shall have the capability to implement an initial rapid intervention crew (IRIC).

The East Moline Fire Department, with its three (3) fire stations, is well positioned to arrive at structure fires with one (1) Engine Company within 240 seconds (4 minutes) to 90% of the incidents. **The department is not capable of meeting the criteria of establishing a rapid intervention crew (IRIC) with personnel arriving with the initial engine company.** This has serious implications on the fire departments ability to control fires. To accomplish this task the engine company would need to have four (4) personnel assigned to it. This never occurs on the current schedule and will rarely occur on the increased working hour schedule commencing May 1, 2010.

Further contributing to this problem is the Illinois Department of Labor regulation that require two (2) personnel be available outside the structure before two (2) may enter. The only exception to this is when an obvious rescue must be made to avoid imminent death.

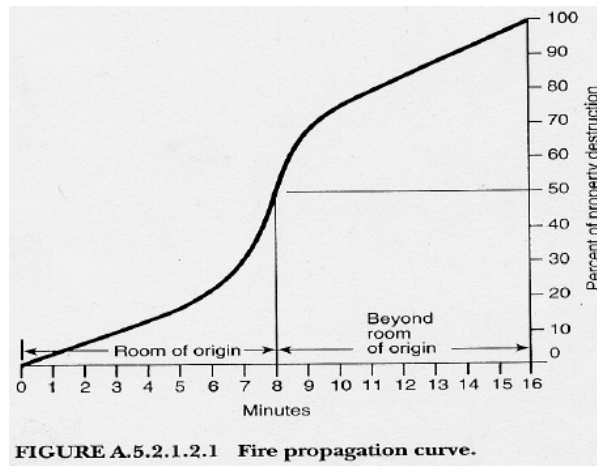
### *So what does this mean?*

When a fire engine arrives at a resident's home and there is not a known rescue to be made, the firefighters cannot enter the structure to combat the fire until at least two (2) more firefighters arrive on scene. This usually takes several minutes. This delay is contrary to public expectations of fire department service and may lead to criticism for not acting immediately to mitigate the situation.

The firefighters are trained to aggressively combat fires and protect property. Delays lead to frustrations when the firefighting crew is poorly staffed and the fire becomes more difficult to manage.

Another problem with short staffing on the first engine company is the well documented phenomenon of fire growth. When the first fire engine arrives on scene quickly, the firefighters are capable of extinguishing single room fires during what's known as the incipient or pre-flashover stage. The average duration of this stage is eight (8) minutes from ignition. During these early stages the fire will continue to grow exponentially as it approaches the flashover stage. Firefighters delayed in response or to assemble the legal staffing requirements may enter the structure near the eight (8) minute mark and face extreme danger as a flashover event ignites everything in the room of origin simultaneously. The flashover raises the ambient temperature of the area to 1000-1500 degrees fahrenheit. After the flashover, the fire extends beyond the room of origin and survivability of occupants is greatly diminished and property damage is extensive. Firefighting slang for this damage is "*gutted*".

The figure below helps describe this critical timeline:



NPFA 1720 Appendix A, 2010 Ed.

### National Staffing – “Studies to Standard”

The NFPA 1710 Technical Committee reviewed numerous studies and reports containing data on departmental response resources and the mitigation of fire. These studies clearly demonstrate that for safe, effective and efficient fire suppression, each responding company needs a minimum of four (4) fire fighters.

These staffing and resource studies led to the development and approval of NFPA 1710 as an American National Standard on May 16, 2001. Chapter 4 & 5, of the 2004 edition is attached to the end of this document.

*Several excerpts from studies that support the four-person minimum, now part of the NFPA recommendations have been included near the end of this document beginning on page 34.*

East Moline Fire Department Staffing for Deployment

**The current minimum staffing of the department is seven (7) deployed as follows:**

<i>Watertown Fire Station -</i>	<i>1 Shift Commander &amp; 2 Firefighters</i>
<i>Downtown Fire Station-</i>	<i>2 Firefighters</i>
<i>Avenue of Cities Fire Station-</i>	<i>2 Firefighters</i>

**The minimum staffing of the department will be nine (9) personnel as of May 1, 2010:**

<i>Watertown Fire Station-</i>	<i>1 Shift Commander &amp; 2 Firefighters</i>
<i>Downtown Fire Station-</i>	<i>1 Officer &amp; 2 Firefighters</i>
<i>Avenue of Cities Fire Station –</i>	<i>1 Officer &amp; 2 Firefighters</i>

**The needed minimum staffing is (11) personnel if approved for December 1, 2010:**

<i>Watertown Fire Station -</i>	<i>1 Officer &amp; 3 Firefighters</i>
<i>Downtown Fire Station -</i>	<i>1 Shift Commander &amp; 2 Firefighters</i>
<i>Ave of Cities Fire Station-</i>	<i>1 Officer &amp; 3 Firefighters</i>

**To achieve the needed minimum staffing of eleven (11) on the current work schedule (4-shift 24/72) the department would need to hire sixteen (16) firefighters.**

**As a result of the May 1, 2010 working hours change (3 shifts - 24/48) the department could achieve this minimum staffing level by hiring seven (7) firefighters.**

## Incorporating Ambulance Transports as a Fire Department Staffing Solution

This proposal seeks to provide options to the City of East Moline to address deficient staffing levels within the East Moline Fire Department by adding ambulance transports to the existing emergency medical care services provided by the fire department,

### Proposed Option 1:

**Institute the operation of one (1) East Moline Fire Department based ambulance beginning on May 1, 2010.**

### Proposed Option 2:

**Institute the operation of one (1) East Moline Fire Department based ambulance beginning on May 1, 2010 and a 2<sup>nd</sup> ambulance beginning December 1, 2010.**

### Cost Comparison of Proposed Options 1 or 2 (Corrected 19-Jul-09)

	1 May 2010	1 May 2011	1 May 2012	1 May 2013
234 Hours Suppression Inc. * 32 Current FF	\$ (188,018.00)	\$ (201,931.33)	\$ (216,874.25)	\$ (232,922.95)
<b>1 Ambulance Profit/(Loss)</b>	<b>\$ 143,942.11</b>	<b>\$ 222,455.72</b>	<b>\$ 228,159.23</b>	<b>\$ 234,512.92</b>
Savings / (Additional Cost)	\$ (44,075.89)	\$ 20,524.38	\$ 11,284.98	\$ 1,589.98
<b>2 Ambulances Profit/Loss</b>	<b>\$ (332,951.15)</b>	<b>\$ (171,361.38)</b>	<b>\$ (198,798.49)</b>	<b>\$ (223,226.10)</b>
Savings/ (Additional Cost)	\$ (520,969.15)	\$ (373,292.71)	\$ (415,672.74)	\$ (456,149.04)
<b>Cost of Additional FF's without Ambulance</b>				
<b>7 New plus 234 Hour Suppression Increase</b>	<b>\$ 666,719.25</b>	<b>\$ 654,466.66</b>	<b>\$ 705,547.75</b>	<b>\$ 755,465.23</b>
<b>1 New plus 234 Hour Suppression Increase</b>	<b>\$ 256,403.89</b>	<b>\$ 266,579.24</b>	<b>\$ 286,684.75</b>	<b>\$ 307,571.85</b>

## Overveiw of Current Fire Department Emergency Medical Services

The East Moline Fire Department currently operates an Emergency Medical Services delivery system responding to over 2000 medical emergency calls per year. This system is comprised of the personnel, equipment, and organizational structure to continue to provide immediate high quality emergency care to the residents of East Moline and our visitors. The current delivery system provided by the fire department includes the following components:

1. A fully equipped Advanced Life Support (ALS) engine, located in each of our three (3) strategically located fire stations.
2. A City controlled 911 dispatching system, staffed with trained Emergency Medical Dispatchers familiar with East Moline.
3. Thirty-two (32) cross trained and licensed firefighter paramedics, currently delivering Advanced Life Support in East Moline in with an average response time of **less than 4 minutes**. These firefighters have a combined experience level of over 237 years as paramedics and over 73 years operating an ambulance. *The fire department has provided paramedic level services to East Moline residents over 20,000 times in the last 11 years. The cost of these services has been borne solely by taxpayers whom also receive a bill from the hospital based ambulance service providers.*
4. A full time EMS Coordinator/Training Officer responsible for management and operation of the EMS program including, quality assurance and improvement, standing medical orders compliance, pharmaceuticals and medical equipment inventory and control.

5. The EMS Coordinator also provides monthly medical refresher training and liaisons with the system resource hospital and the Illinois Department of Public Health.

**Fire Department Annual Cost of Current EMS Delivery**

<b>ALS Fire Engine Fuel and Maintenance</b>	\$ 20,000.00
<b>EM Equipment and Defibrillator Contracts</b>	\$ 7,000.00
<b>Paramedic Additional Wages</b>	\$ 57,600.00
<b>EMS / Software Support</b>	\$ 1,000.00
<b>ACLS Training</b>	\$ 1,200.00
<b>*Paramedic/EMT-Initial Education</b>	
<b>32 Paramedics * \$ 5000.00 / 23 years</b>	\$ 6,956.52
<b>Annual Total</b>	<b>\$ 93,756.52</b>

*\*Paramedic/EMT education is acquired within the first two (2) years of employment. The cost of this education, for all members of the suppression team, is divided by the average career length of 23 years.*

## Study of Ambulance Feasibility

To determine feasibility of initiating an Ambulance Transport Program (ATP), the fire department administration conducted a study of services provided by:

- Rock Island Fire Department
- Moline Fire Department
- Muscatine Fire Department, IA

Financial information was collected from the City of Moline and Rock Island and analyzed to determine the receipts from each city's ambulance transports over the last three (3) fiscal years.

Annual budget information was obtained from each city to determine expenses for operating the transport program.

Professional Billing Services of Orion, IL, conducts the ambulance billing for Moline and Rock Island Fire Departments. For the purposes of this study, the East Moline Fire Department received permission to collect historical billing data directly from Professional Billing Services.

The Muscatine Fire Department, IA was studied as a unique model of fire department based ambulance service. This department serves a community of 23,000 and operates five (5) ambulances to provide both Emergency 911 services and scheduled non-emergency transports (Transfers) to and from the local hospital to resident's homes and other facilities, including nursing homes, Iowa City and Quad City area hospitals.

Although Muscatine Fire Department is a good example of collecting revenue from fire based ambulance transports, their revenue and expenditures are not included in this study due to differing variables from Quad City area hospital capabilities and the Muscatine Fire Departments role as the exclusive ambulance provider in their City.

## Moline and Rock Island Fire Department Transport Historical Data

	FY -2006	FY-2007	FY-2008	Average
<b>Rock Island</b>				
AO429 BLS	1059	1083	1165	1102.33
AO427 ALS	1695	2100	2427	2074
AO433 ALS II	53	59	62	58
<b>R I - Total Transport</b>	<b>2807</b>	<b>3242</b>	<b>3654</b>	<b>3234.33</b>
Billed	\$ 1,528,291.45	\$ 1,776,722.43	\$ 2,432,354.33	\$ 1,912,456.07
Adjustments	\$ 945,738.64	\$ 715,331.02	\$ 1,239,706.31	\$ 966,925.32
Receipts	\$ 771,089.36	\$ 774,565.31	\$ 1,057,551.20	\$ 867,735.29
Collection Rate %	50%	44%	43%	45.84%
<b>Revenue Per Transport</b>	\$ 274.70	\$ 238.92	\$ 289.42	\$ <b>267.68</b>
<b>Moline</b>				
AO429 BLS	557	644	705	635.33
AO427 ALS	1754	2170	2518	2147
AO433 ALS II	11	18	34	21
<b>Moline Total Transport</b>	<b>2322</b>	<b>2832</b>	<b>3257</b>	<b>2803.67</b>
Billed	\$ 1,406,329.05	\$ 1,862,613.81	\$ 2,233,546.00	\$ 1,834,162.95
Adjustments	\$ 537,208.65	\$ 722,483.53	\$ 930,408.27	\$ 730,033.48
Receipts	\$ 727,408.65	\$ 877,771.91	\$ 1,303,137.73	\$ 969,439.43
Collection rate %	52%	47%	52%	50%
<b>Revenue Per Transport</b>	\$ 313.27	\$ 310.39	\$ 358.33	\$ <b>327.33</b>

The determination of revenue derived from a fire department based ambulance transport system is based on several factors. These factors include:

<u>Services Provided-</u>	Basic, Advanced or More Advanced Emergency Medical Care
<u>Billing Rate -</u>	Fees set by the municipality for transport services for each level of care
<u>Payer Category -</u>	Personal medical insurance of the patient (Commercial policy, Medicare, Medicaid)
<u>Documentation -</u>	Accuracy of reporting, coding and billing for service

## Moline and Rock Island Fire Departments Revenue Factors

### Percentage of Transport Services Provided by Type of Care (Fiscal Years– 2006-2008)

	Moline	Rock Island
BLS	22%	34%
ALS	<b>76%</b>	<b>64%</b>
ALS II	2%	2%

### Current Billing Rates:

	Moline	Rock Island
BLS	\$600	\$600
ALS	<b>\$700</b>	<b>\$650</b>
ALS II*	\$700	\$750

\*ALS II indicates the patient was intubated or at least three (3) intravenous medications were given.

### Average Payer Category Percentage (Payer Mix)

	Moline	Rock Island
Medicare	48%	47%-51%
Medicaid	15%	16%-22%
Commercial Insurance	22%	12%-17%
Self-Pay	15%	18 - 20%

### Documentation:

**Moline** - EMS Manager Software – Electronic Submission to Trinity Hospital and Professional Billing Services

**Rock Island** – Firehouse Software Ver.7 – Electronic Submission to Trinity Hospital and Professional Billing Services

## East Moline Fire Department Call Volume

	2006		2007		2008	
<b>Fire Incidents</b>	124	5.67%	114	4.90%	84	3.09%
<b>Over Pressure, Explosion,</b>	3	0.13%	12	0.12%	1	3.00%
<b>EMS Incidents</b>	1518	69.47%	1702	73.71%	2029	74.73%
<b>Service Calls</b>	140	6.40%	120	5.19%	167	6.15%
<b>Good Intent Calls</b>	237	10.84%	193	5.16%	207	7.62%
<b>False Alarms &amp; False Calls</b>	120	5.49%	119	5.15%	142	5.23%
<b>Weather Related</b>	0	0.00%	0	0.00%	3	0.11%
<b>Special</b>	8	0.36%	4	0.17%	7	0.25%
<b>Hazardous Condition</b>	34	1.55%	54	2.30%	74	2.72%
<b>Total</b>	2184		2318		2714	

### East Moline Calls Less than 1 Hour Apart

	0700-1259	1300-1859	1900-0059	0100-0659	TOTAL
<b>May 1, 2008- April 24, 2009</b>	99	151	118	66	<b>432</b>
<b>April 25, 2009 – June 20,2009</b>	12	27	23	15	<b>77</b>

### East Moline Overlapping Calls

	2006	2007	2008	2009*
<b>Total Overlapping Calls</b>	208	246	331	470*
	9.5%	10.61%	12.2%	16.4%*

\* Calendar Year 2009 Assumption Based on 1,429 calls with 235 overlaps thru June 30 2009.

## Anticipated Revenue from Ambulance Transport Program

Average Revenue of \$ 267.68 per Transport (Historical):

Billed Per Transport	\$ 600.00	\$ 618.00	\$ 636.54	\$ 655.64
<b>1 Ambulance Transports</b>				
	1400	1450	1500	1550
Total Billed	\$ 840,000.00	\$ 896,100.00	\$ 954,810.00	\$ 1,016,236.11
<b>Collected \$267.68</b>	<b>\$ 374,752.00</b>	<b>\$ 388,136.00</b>	<b>\$ 401,520.00</b>	<b>\$ 414,904.00</b>
Less Billing Fee- 6 % of Collections	\$ 22,485.12	\$ 23,288.16	\$ 24,091.20	\$ 24,894.24
<b>Revenue to City</b>	<b>\$ 352,266.88</b>	<b>\$ 364,847.84</b>	<b>\$ 377,428.80</b>	<b>\$ 390,009.76</b>
<b>2 Ambulances Transports</b>				
	1800	1850	1900	1950
Total Billed	\$ 1,080,000.00	\$ 1,143,300.00	\$ 1,209,426.00	\$ 1,278,490.59
<b>Collected \$267.68</b>	<b>\$ 481,824.00</b>	<b>\$ 495,208.00</b>	<b>\$ 508,592.00</b>	<b>\$ 521,976.00</b>
Less Billing Fee -6% of Collections	\$ 28,909.44	\$ 29,712.48	\$ 30,515.52	\$ 31,318.56
<b>Revenue to City</b>	<b>\$ 452,914.56</b>	<b>\$ 465,495.52</b>	<b>\$ 478,076.48</b>	<b>\$ 490,657.44</b>

Average Revenue at 43% Collection Rate with Expected Increase in Call Volume:

Billed Per Transport	\$ 600.00	\$ 618.00	\$ 636.54	\$ 655.64
<b>1 Ambulance Transports</b>				
	1400	1450	1500	1550
Total Billed	\$ 840,000.00	\$ 896,100.00	\$ 954,810.00	\$ 1,016,236.11
<b>Collected 43%</b>	<b>\$ 361,200.00</b>	<b>\$ 385,323.00</b>	<b>\$ 410,568.30</b>	<b>\$ 436,981.53</b>
Less Billing Fee- 6 % of Collections	\$ 21,672.00	\$ 23,119.38	\$ 24,634.10	\$ 26,218.89
<b>Revenue to City</b>	<b>\$ 339,528.00</b>	<b>\$ 362,203.62</b>	<b>\$ 385,934.20</b>	<b>\$ 410,762.64</b>
<b>2 Ambulances Transports</b>				
	1800	1850	1900	1950
Total Billed	\$ 1,080,000.00	\$ 1,143,300.00	\$ 1,209,426.00	\$ 1,278,490.59
<b>Collected 43%</b>	<b>\$ 464,400.00</b>	<b>\$ 491,619.00</b>	<b>\$ 520,053.18</b>	<b>\$ 549,750.95</b>
Less Billing Fee -6% of Collections	\$ 27,864.00	\$ 29,497.14	\$ 31,203.19	\$ 32,985.06
<b>Revenue to City</b>	<b>\$ 436,536.00</b>	<b>\$ 462,121.86</b>	<b>\$ 488,849.99</b>	<b>\$ 516,765.90</b>

*On the pages that follow please note:*

*For the purpose of this proposal a collection rate of 43% is used.*

*The number of transports used for this proposal is 1450 maximum for one (1) ambulance and 1850 maximum for two (2) ambulances.*

## Ambulance and Equipment Expenses

<b>EXPENSES</b>			
<b>Start Up</b>			
	<b>Ambulance 1</b>	<b>Ambulance 2</b>	<b>Reserve Ambulance</b>
New Ambulance	\$ 130,000.00	\$ 130,000.00	\$ 80,000.00
12 Lead/Life pack	\$ 12,000.00	\$ 12,000.00	
Radio Equipment	\$ 7,000.00	\$ 7,000.00	\$ 7,000.00
Medical Supplies	\$ 25,000.00	\$ 25,000.00	\$ 25,000.00
Misc Equipment	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00
<b>Total Each</b>	<b>\$ 184,000.00</b>	<b>\$ 184,000.00</b>	<b>\$ 122,000.00</b>
<b>Total 1 New Ambulance &amp; 1 Reserve</b>	<b>\$ 306,000.00</b>		
<b>2 New Ambulances &amp; 1 Reserve</b>	<b>\$ 490,000.00</b>		
<b>Operating Costs</b>			
Fuel @ \$ 9.00 per call	\$ 12,600.00	\$ 16,200.00	\$ 500.00
Medical Supplies @ \$ 24.00 per call	\$ 33,600.00	\$ 43,200.00	\$ 500.00
Maintenance @ \$ 5.00 per call	\$ 7,000.00	\$ 9,000.00	\$ 500.00
<b>Total @ 1400 Transports</b>	<b>\$ 53,200.00</b>		
<b>Total @ 1800 Transports</b>	<b>\$ 68,400.00</b>		

The fire department has \$134,000 in the Vehicle and Equipment fund that would be used toward some of these expenses.

## One Ambulance (Corrected 19 July 09)

EXPENSES	1-May-10	1-May-11	1-May-12	1-May-13
Firefighter Salary	\$ 41,441.07	\$ 44,684.82	\$ 48,343.35	\$ 51,767.10
3% Across the Board		\$ 1,340.54	\$ 1,450.30	\$ 1,553.01
Paramedic Allowance	\$ 1,807.74	\$ 1,861.97	\$ 1,917.83	\$ 1,975.37
Adjusted Salary	\$ 43,248.81	\$ 47,887.34	\$ 51,711.48	\$ 55,295.48
35% Insurance @ Benefits	\$ 15,137.08	\$ 16,760.57	\$ 18,099.02	\$ 19,353.42
Costs Per Firefighter	\$ 58,385.89	\$ 64,647.90	\$ 69,810.50	\$ 74,648.90
Fire Academy and Paramedic Training	\$ 10,000.00			
<b>1 New Firefighter</b>	<b>\$ 68,385.89</b>	<b>\$ 64,647.90</b>	<b>\$ 69,810.50</b>	<b>\$ 74,648.90</b>
Fuel @ \$ 9.00 per call	\$ 12,600.00	\$ 13,050.00	\$ 13,050.00	\$ 13,050.00
Medical Supplies @ \$ 24.00 per call	\$ 33,600.00	\$ 34,800.00	\$ 34,800.00	\$ 34,800.00
Maintenance @ \$ 5.00 per call	\$ 7,000.00	\$ 7,250.00	\$ 7,250.00	\$ 7,250.00
<b>Start Up Equipment</b>				
New Ambulance Payment	\$ 20,000.00	\$ 20,000.00	\$ 20,000.00	\$ 20,000.00
12 Lead/Life pack	\$ 12,000.00			
Radio Equipment	\$ 7,000.00			
Medical Supplies	\$ 25,000.00			
Misc Equipment	\$ 10,000.00			
<b>Total Expenses</b>	<b>\$ 195,585.89</b>	<b>\$ 139,747.90</b>	<b>\$ 144,910.50</b>	<b>\$ 149,748.90</b>
<b>REVENUE</b>				
Billed Per Transport	\$ 600.00	\$ 618.00	\$ 636.54	\$ 655.64
1 Ambulance Transports	1400	1450	1450	1450
Total Billed	\$ 840,000.00	\$ 896,100.00	\$ 922,983.00	\$ 950,672.49
Adjustments	\$ 478,800.00	\$ 510,777.00	\$ 526,100.31	\$ 541,883.32
<i>Collected 43%</i>	\$ 361,200.00	\$ 385,323.00	\$ 396,882.69	\$ 408,789.17
Less Billing Fee- 6 % of Collections	\$ 21,672.00	\$ 23,119.38	\$ 23,812.96	\$ 24,527.35
<b>Revenue to City</b>	<b>\$ 339,528.00</b>	<b>\$ 362,203.62</b>	<b>\$ 373,069.73</b>	<b>\$ 384,261.82</b>
<b>Profit/(Loss)</b>	<b>\$ 143,942.11</b>	<b>\$ 222,455.72</b>	<b>\$ 228,159.23</b>	<b>\$ 234,512.92</b>

## Two Ambulances

<b>EXPENSES</b>	1-May-10	1-May-11	1-May-12	1-May-13
Firefighter Salary	\$ 41,441.07	\$ 44,684.82	\$ 48,343.35	\$ 51,767.10
3% Across the Board		\$ 1,340.54	\$ 1,450.30	\$ 1,553.01
Paramedic Allowance	\$ 1,807.74	\$ 1,861.97	\$ 1,917.83	\$ 1,975.37
Adjusted Salary	\$ 43,248.81	\$ 47,887.34	\$ 51,711.48	\$ 55,295.48
35% Insurance @ Benefits	\$ 15,137.08	\$ 16,760.57	\$ 18,099.02	\$ 19,353.42
Costs Per Firefighter	\$ 58,385.89	\$ 64,647.90	\$ 69,810.50	\$ 74,648.90
Fire Academy and Paramedic Training	\$ 10,000.00			
New Firefighter	\$ 68,385.89	\$ 64,647.90	\$ 69,810.50	\$ 74,648.90
<b>7 New Firefighters</b>	<b>\$ 478,701.25</b>	<b>\$ 452,535.33</b>	<b>\$ 488,673.50</b>	<b>\$ 522,542.28</b>
Fuel @ \$ 9.00 per call	\$ 16,200.00	\$ 16,650.00	\$ 16,650.00	\$ 16,650.00
Medical Supplies @ \$ 24.00 per call	\$ 43,200.00	\$ 44,400.00	\$ 44,400.00	\$ 44,400.00
Maintenance @ \$ 5.00 per call	\$ 9,000.00	\$ 9,250.00	\$ 9,250.00	\$ 9,250.00
<b>Start Up Equipment</b>				
2 New Ambulance Payment	\$ 46,000.00	\$ 46,000.00	\$ 46,000.00	\$ 46,000.00
12 Lead/Life pack	\$ 24,000.00			
Radio Equipment	\$ 14,000.00			
Medical Supplies	\$ 50,000.00			
Misc Equipment	\$ 20,000.00			
<b>Total Expenses</b>	<b>\$ 769,487.15</b>	<b>\$ 633,483.24</b>	<b>\$ 674,784.00</b>	<b>\$ 713,491.18</b>
<b>REVENUE</b>				
Billed Per Transport	\$ 600.00	\$ 618.00	\$ 636.54	\$ 655.64
2 Ambulances Transports	1800	1850	1850	1850
Total Billed	\$ 1,080,000.00	\$ 1,143,300.00	\$ 1,177,599.00	\$ 1,212,926.97
<i>Adjustments</i>	<i>\$ 615,600.00</i>	<i>\$ 651,681.00</i>	<i>\$ 671,231.43</i>	<i>\$ 691,368.37</i>
<i>Collected 43%</i>	<i>\$ 464,400.00</i>	<i>\$ 491,619.00</i>	<i>\$ 506,367.57</i>	<i>\$ 521,558.60</i>
Less Billing Fee -6% of Collections	\$ 27,864.00	\$ 29,497.14	\$ 30,382.05	\$ 31,293.52
<b>Revenue to City</b>	<b>\$ 436,536.00</b>	<b>\$ 462,121.86</b>	<b>\$ 475,985.52</b>	<b>\$ 490,265.08</b>
<b>Profit/(Loss)</b>	<b>\$ (332,951.15)</b>	<b>\$ (171,361.38)</b>	<b>\$ (198,798.49)</b>	<b>\$ (223,226.10)</b>

## East Moline Ambulance Implementation Procedure

### Proposed Option 1

The Fire Department will operate one (1) ambulance commencing on May 1, 2010.

*The service delivery standard of this option is to arrive at emergency medical calls within the City of East Moline with; (1) ALS Engine within four (4) minutes dispatch and one (1) ALS transport ambulance within eight (8) minutes of dispatch. This standard should be complied with 90% of the time.*

1. The fire department will hire one (1) new firefighter for the fire academy commencing on September 14, 2009.
2. The fire department will purchase order a Type III ambulance in August of 2009. The department will take delivery of this unit by March of 2010.
3. By December 15, 2009, the fire department will purchase a used Type III ambulance to be used as a reserve unit. This unit will be licensed and fully equipped and maintained response ready at all times. Fire department policy will require six (six) personnel be called in to staff the department reserve apparatus for every working structure fire. The staffing of reserve units shall be as follows:
  - a) 4 – Firefighters - Reserve Engine 24
  - b) 2 – Firefighters –Reserve Ambulance
4. Beginning at 0700 on May 1, 2010 the primary ambulance shall be placed in service at Station 21. An officer and three (3) firefighters shall be assigned to this station each shift. The Company Officer with consultation of the Shift Commander will make assignments for the ambulance and Engine Company at this station. The Company Officer may rotate personnel on the ambulance and Engine Company as need to address fatigue or other concerns. The Shift Commander shall make modification to station assignments as need to accommodate vacation, personal time, Kelly days and other staffing shortfalls while maintaining one (1) officer and three (3)

firefighters at Station 21 (The officer will be filled by a move-up position as needed).

5. One Captain will be regularly assigned to Station 21 on one (1) of the three (3) shifts and will function as the Company Officer with the additional responsibility of assisting the departments EMS coordinator with supply equipment inventory, and other issues related to the departments EMS delivery. This position shall be filled by the seniority bidding provisions of the current bargaining agreement.
6. All 911 calls for medical emergencies shall be received by the City's Consolidated Communication Centre. The department ambulance will be dispatched directly from Centre whenever its status is listed as available in the Computer Aided Dispatch (CAD). The Centre will initiate Emergency Medical Dispatch (EMD) instruction to the caller.

The ambulance will be deemed available when it clears an Illinois Quad City Hospital en-route back to East Moline. Whenever the CAD indicates the East Moline Ambulance is not available the Consolidated Communication Center will transfer the call to MEDCOMM and dispatch an ALS Engine as is the current protocol. The Illini Ambulance District shall continue to have a duty to promptly respond to all emergency calls they receive within East Moline.

7. The fire department ambulance will make transports to Iowa Quad City Hospitals, as needed. The ambulance will be deemed available when it crosses the river into Illinois.

## Proposed Option 2

The Fire Department will operate two (2) ambulances commencing on December 1, 2010.

***The service delivery standard of this option is to arrive at emergency medical calls within the City of East Moline with; (1) ALS Engine within four (4) minutes of dispatch and one (1) ALS transport ambulance within six (6) minutes of dispatch. This standard should be complied with 90% of the time.***

1. The Option 1 criteria as described in # 1-7 above will be implemented within stated timeline.
2. The fire department will hire six (6) firefighters for the September 2010 fire academy.
3. The fire department will order one (1) new Type III Ambulance by May 1, 2010. The department shall take delivery of this unit by October of 2010.
4. Beginning December 1, 2010 the second ambulance will be placed in service at Station 22. The Station shall be staffed as follows:
  - i. Quint 22 – (1 Officer – 1 Firefighter Minimum)
  - ii. Ambulance -22 (2 Firefighters)
5. The Shift Commander will be re-assigned to Station 21. Station 21 will be staffed as follows:
  - i. Engine 21- (2 –Firefighters Minimum)
  - ii. Rescue 21- ( 1 Shift Commander)
6. Ambulance 21 will be re-assigned from the Station 21 to Station 23 and will operate as Ambulance 23. Station 23 will be staffed as follows:
  - i. Engine 23 – (1 Officer and 1 Firefighter Minimum)
  - ii. Ambulance 23 - (2 Firefighters)
7. The fire department will allow for a special re-bidding prior to the

implementation of the 2nd ambulance. This bidding will be conducted in accordance with the Article 6, of the Collective Bargaining Agreement and initiated upon request by the Union.

## Preparation for Ambulance Transport Service

1. The current training schedule will be modified to have two (2) EMS training sessions per month instead of the current one (1) session.
2. The firefighters will receive refresher training on all aspects of pt care. To include but not be limited to: Pt assessment, Skills training and evaluation, EMS report writing.
3. The firefighters will be conducting refresher training in the clinical setting in order to renew skills in “live” situations to include but not be limited to: Pt assessment, IV’s, Intubations.
4. The firefighters will conduct drivers training in an ambulance that will be used by the East Moline Fire Department.
5. The firefighters will conduct ergonomics training to deal with the added work load of carrying pts.
6. The firefighters will undergo SMO training and testing to ensure compliance with system guidelines.
7. The firefighters will undergo Pharmacology refresher training to reacquaint themselves with drugs that are not used very often.
8. The firefighters will undergo 12 lead interpretation training.
9. The firefighters will be certified by the EMS Resource System as preceptors in order to be able to evaluate EMS students.
10. Two (2) personnel from each shift along with the EMS Coordinator/Training Officer will be certified by the EMS Resource System to review charts for Quality Assurance (QA) and Quality Improvement (QI) purposes.
11. The firefighters will undergo any other training deemed necessary by the EMS Resource System Plan.
12. All training will be conducted by a person that has been identified by the Resource System as competent to conduct said training.
13. The firefighters will undergo training on any SOG’s or department policies that may change due to the implementation of the ambulance service. (i.e.,

rotations on the ambulance, where ambulance is housed, guidelines for engines responding with the ambulance, etc.)

14. The training schedule will be adjusted depending on manning, weather and other variables.
15. All required training will be completed before the ambulance implementation date.
16. This list is not to be considered all inclusive as there may be more training identified throughout the process that will need to be added.

## Quality Assurance/Quality Improvement Program

1. The fire department will conduct a continuous EMS system review by utilizing the following evaluation criteria:
  - I. Debriefing
  - II. Critique sessions
  - III. Chart Review (Completeness)
  - IV. Chart Audit (SMO and Polices)
2. The fire department will also participate in the resource hospital QA/QI program as described in the system plan or the Hospital EMS Coordinator's established policies.

## Additional Staffing Excerpts

The following excerpts were copied from the source "NFPA 1710 Question and Answers" produced and made available from International Association of Fire Firefighters.

### **American Insurance Association, "Fire Department Efficiency," Special Interest Bulletin No. 131, December 1975.**

Bulletin prepared by the American Insurance Association on fire department efficiency. Emphasis is placed on the importance of staffing companies with a minimum of four personnel. The bulletin further states that if companies are staffed with two or three personnel, they cannot perform the required functions of either an engine or ladder company.

### **American Insurance Association, "Fire Department Manning," Special Interest Bulletin No. 319, December 1975.**

Bulletin prepared by the American Insurance Association on fire department staffing levels. Emphasis is placed on the importance of staffing companies with a minimum of four personnel. The bulletin further states that four personnel do not represent an adequately staffed company. It concludes with a statement that progressive fire chiefs believe a company should never respond with fewer than five or six personnel.

### **Cushman, Jon, Seattle, WA Fire Department's "Abstract: Report to Executive Board, Minimum Manning as Health & Safety Issue," 1981.**

This study, performed by the Seattle Fire Department, analyzed the link between staffing and fire fighter injuries by reviewing the average severity of injuries suffered by engine companies of fewer than four fire fighters as compared to companies with four or more fire fighters. The study concluded that the average time per disability increased as company strength decreased for both types of companies. This analysis indicated that the rate of fire fighter injuries expressed as total hours of disability per hours of fireground exposure were 54% greater for engine companies staffed with three personnel when compared to those staffed with four fire fighters, while companies

staffed with five personnel had an injury rate that was only one-third that associated with four-person companies.

**Gerard, John C. and Jacobsen, A. Terry, "Reduced Staffing: At What Cost?," Fire Service Today, September 1981; pp. 15-21.**

This study concluded that an aggressive early initial interior attack on a working structural fire results in greatly reduced loss of life and property damage. Given that the progression of a structural fire to the point of flashover generally occurs in less than 10 minutes, two of the most important elements in limiting the spread of fire are the quick arrival of sufficient numbers of personnel and equipment to attack and extinguish the fire as close to the point of its origin as possible.

**International City Managers Association, Municipal Fire Administration (Chicago, IL:ICMA) 1967; pp. 161-162.**

The ICMA concluded that there must be enough personnel to put fire apparatus into effective use. It determined that a minimum of five personnel are required for engine (pumper) companies, three personnel are needed to place a single line of 2 ½-inch hose in service, and one additional person, plus a fourth person, is needed to operate a pump.

**International Association of Fire Fighters, "Analysis of Fire Fighter Injuries and Minimum Staffing Per Piece of Apparatus in Cities With Populations of 150,000 or More," December 1991.**

This study was a comprehensive analysis of fire fighter injuries and minimum staffing levels in a number of cities. The study found that 69% of jurisdictions that maintained crew sizes of fewer than four fire fighters had fire fighter injury rates of 10 or more per 100 fire fighters, while only 38.3% of jurisdictions maintaining crew sizes of four or more fire fighters had comparable injury rates. In other words, jurisdictions having crew sizes of fewer than four fire fighters suffered a benchmark injury rate at nearly twice the percentage rate of jurisdictions that maintained crew sizes of four or more fire fighters.

**Kimball, Warren Y., *Manning for Fire Attack* (Boston, MA: NFPA) 1969.**

This book thoroughly covers staffing of fire companies. In summary, effective fireground staffing was demonstrated to involve two fundamentals: first, carefully engineered equipment components designed to deliver specified fire extinguishing capacity under stated conditions and second, personnel assigned and used to deliver specified fire attack capabilities. In other words, the fire fighting capability of a fire department ultimately depends upon a complete systems approach and not a mere massing of random forces when an emergency occurs.

**McManis Associates and John T. O'Hagan and Associates, "Dallas Fire Department Staffing Level Study," June 1984; pp. I-2 & II-1 through II-7.**

The Dallas Study is a benchmark study of the link between crew size and fire suppression effectiveness. This study was performed as a series of controlled evolutions on a specified set of fire situations using different components in the range of four to six people. Significantly, the study found that "fatigue was a serious problem for smaller groups." Indeed, the author of a 1993 memorandum concluded that this finding was relevant because it highlights the link between staffing and fire fighter deaths and injuries.

**Metro Chiefs/International Association of Fire Chiefs, "Metro Fire Chiefs – Minimum Staffing Position," May 1992.**

In 1992, the Metro Fire Chiefs Division of the ICHIEFS not only endorsed assembling at least four fire fighters before initiating an interior attack, but went a step further stating: In order to permit the effective operation of fire companies at the scene of a structure fire, the minimum number of personnel on both engine and ladder companies should be five members per unit. This firm position was taken by the Metro Fire Chiefs solely in the interest of the safety of both the citizens "we serve and our nation's fire fighters."

**Morrison, Richard C., “Manning Levels for Engine and Ladder Companies in Small Fire Departments,” 1990.**

The conclusions reached in the Dallas study were confirmed for small fire departments by the Westerville, Ohio Fire Department. Using standard fire fighting tactics, the results of the Westerville Fire Department report showed that four (4) fire fighters could perform rescue of potential victims 80% faster than a three fire fighter crew.

**National Fire Academy, Executive Development Program III, “Fire Engines are Becoming Expensive Taxi Cabs: Inadequate Manning,” February 1981; pp. 2 & 4.**

This NFA report summarizes a 1977 test conducted by the Dallas Fire Department, which consisted of a simulated fire involving several rooms at the rear of the third floor of an old school. This simulation was conducted to determine how long it took a three, four, or five-person team to advance its line to this area and get water on the fire. Immediately following those tasks, each individual’s physical condition was assessed. Timing began as each engine company entered the schoolyard. The average time for the engine companies to complete the tasks is revealing. The three-person team average was 18.8 minutes. All personnel were exhausted, rubber legged, had difficulty standing up and were unfit for further fire fighting. The four person team, conducting the very same test, averaged 10.29 minutes and upon completion, were nearing exhaustion. The five-person team averaged 6.15 minutes, and showed little evidence of fatigue at the end of the exercise.

**National Fire Protection Association, “Decision of the Standards Council on the Complaint of M.E. Hines, Texas Commission on Fire Protection, concerning a Formal Interpretation on NFPA 1500, Standard on Fire Department Occupational Safety and Health Program,” April 6, 1994.**

In 1993, the NFPA included in its NFPA 1500 Consensus Standard on Fire Department Occupational Safety and Health a requirement addressing the minimum number of fire fighters necessary to initiate an offensive interior attack on a structural fire. This Tentative Interim Agreement (TIA) to the fire fighter safety standard states:

*“At least four members shall be assembled before initiating interior fire fighting*

*operations at a working structural fire.”*

Consequently, in 1994, Mr. M.E. Hines, Director of the Texas Commission on Fire Protection, sought formal clarification from the NFPA on this issue. NFPA’s formal interpretation of how the four fire fighters should be assembled is as follows:

*“...when a company is dispatched from a fire station together as a unit (which includes both personnel responding on or arriving with apparatus), rather than from various locations, the standard recommends that the company should contain a minimum of four (4) fire fighters.”*