

City of Kirkwood Fire Department

Mission and Vision Statements

The mission of the Kirkwood Fire Department is to “Save Life and Property.” To accomplish this we provide efficient and effective all-hazards emergency response to the community to ensure the best possible life, property, and environmental safety protection through excellent emergency medical services, fire-based transport, fire prevention, fire suppression, safety education, technical rescue, hazardous materials response, and emergency preparedness services. This commitment is intended to safeguard the general welfare and economy of the Cities of Kirkwood and Oakland.

The vision of the Kirkwood Fire Department is for all members to willingly work toward common, team-oriented goals with enthusiasm and dedication. These goals will be mutually agreed upon and based on clearly communicated, well-focused and understood priorities and values. We will make the safety and well being of the citizens and community we protect our highest priority. We will move deliberately and with determination toward mastering our mission --- to “Save Life and Property.” First and foremost, these actions will result in a safe community, and secondly, in a safe, stable and consistent work environment where all members are respected, grow, learn, and enjoy the job and each other.

Effectiveness The Kirkwood Fire Department is effective in its mission to save life and property. Time is a factor with most calls for emergency service that will have a direct result on the outcome of that call. One measure of effectiveness is response time. It is imperative that a Fire Department unit or units arrive on the scene quickly to control the emergency in order to minimize pain and suffering and improve patient outcomes, and to stop the loss of property or life. Both fire and emergency medical service (EMS) require a timely response. With three fire stations strategically located in Kirkwood, our goal is to have the first unit on the scene in less than five minutes. In Fiscal 2008-09 met this goal with the average response time to all emergencies was 4 minutes 53 seconds.

Listed below are statistics related to fire department effectiveness for the Fiscal 2008-09 period from April 1, 2008 to March 31, 2009:

Estimated value of property at risk - \$ 18,099,364

Percentage of property saved –97.55%

Estimated value of property lost - \$ 441,656

Total fire injuries – 0, (0 firefighter, 0 civilian)

Total fire fatalities – 0

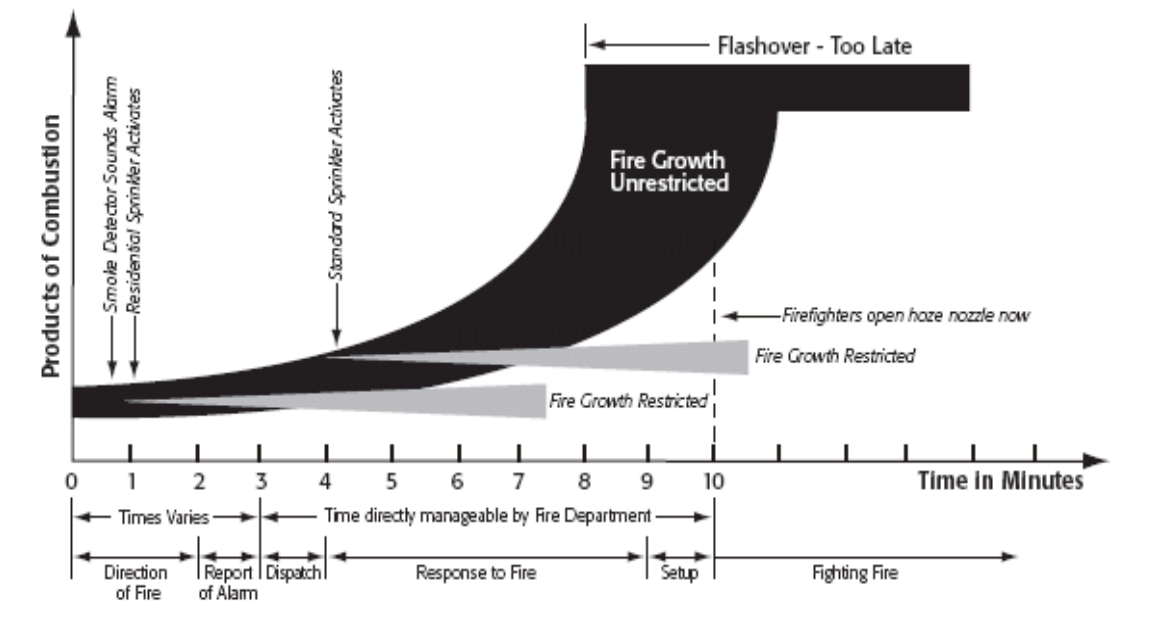
Average (mean) response time to emergency – 4 minutes and 53 seconds (includes Kirkwood and Oakland responses plus mutual aid units)

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As the graphic below illustrates, response time is critical to controlling the development of fire and more importantly saving lives. Kirkwood has not had a fire related fatality in over 15 years and benefits from an extremely high percentage of property saved from fire. This is due in large part to having an adequate number of well trained and properly equipped firefighters arriving at the fire scene to begin fire suppression activities in less than eight minutes, which is the point at which all combustible materials in a room simultaneously ignite - "flashover." At flashover room temperatures exceed 1200° Fahrenheit, a point that is fatal to any occupant including a firefighter in full protective gear.

Time Versus Products of Combustion

NOTE: All Times are Based Upon National Averages



Fire Suppression Service – Rapid Response Equals Low Property Loss -

The fire department provides excellent response time with three strategically located fire stations. As the graphic above illustrates, firefighters can prevent flashover and major fire damage with a response time of less than eight minutes. The fire department's average (mean) response time is 4 minutes 53 seconds.

FIRES IN KIRKWOOD/OAKLAND INVOLVING SIGNIFICANT PROPERTY LOSS

Annual Fire Frequency and Dollar Value at Risk

Fiscal Year	2005	2006	2007	2008	2009
Total Number of Fires	36	33	43	37	39
Property Value Lost to Fire	469,985	314,650	1,867,008	382,560	226,004
Property Value Saved From Fire	27,119,310	11,344,300	173,700,648	7,549,905	5,679,063
Percentage Saved From Fire	98.26	97.22	98.92	94.93	96.02

The chart above shows the number of significant fires that occurred in each of the last five fiscal years. These are fires that, left unchecked, would have

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destroyed the entire building or property. This chart demonstrates the value of property threatened by fire, and most importantly, the value of the property saved from the fires destruction. In the report period of 2008/2009, the Fire Department responded to 39 fires with over \$5 million in property value and saved over 96% of the property.

Productivity – Listed below are statistics related to fire department productivity for the period of April 1, 2008 to March 31, 2009:

- Total emergency calls – 3,541
- Total apparatus (fire truck or ambulance) responses – 7,388
- Average number calls per day – 9.70
- Average apparatus responses per day – 20.24
- Total man hours* on emergency calls – 8,935
- Total man hours* on training – 4,496
- Total fire inspections completed - 687
- Total man* hours on fire inspections – 1,717
- Total fire hydrants tested - 706
- Total man hours* on fire hydrant testing – 699
- Total man hours* on fire hose testing – 805
- Total feet of fire hose tested – 17,050
- Total child car safety seats checked and installed – 360
- Total man hours* on child car safety seat installations and checks---- 270
- Total man hours* on Greentree Festival coverage - 206
- Total man hours* on Citizen Emergency Response Training (CERT) -- 152

Items not included - smoke detector and battery installations, public and school fire safety education, public CPR and first aid training, routine equipment and vehicle checks, station maintenance, community event participation

*Man hours refers to work performed by female or male firefighters

Staffing –The Fire Department has 46 uniformed personnel and one civilian secretary. Included in this total are 43 shift personnel and 3 Chief Officers. It is important to note that 42 of 46 members are cross-trained as Firefighters and Emergency Medical Technicians (EMT's) or Paramedics. We are a fully integrated department providing fire and emergency medical response. Listed below are the current positions maintained in the Department:

- 1 Fire Chief
- 1 Assistant Fire Chief- Operations
- 1 Deputy Chief/Fire Marshal - Prevention
- 9 Captains – 3 per shift x 3 shifts
- 9 Engineers – 3 per shift x 3 shifts
- 20 Firefighter/Paramedics – 7 (or 6) per shift x 3 shifts
- 5 Firefighter/EMT – 2 (or 1) per shift x 3 shifts
- 46 Total Uniformed Personnel

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Firefighters Required To Combat a Structure Fire - Because fires and other emergencies escalate quickly, sometimes exponentially over time, firefighters must arrive quickly and in sufficient numbers to control the emergency. A “rule of thumb” based on rate of heat release (HRR in kilowatts) from an incipient fire in a room, suggests that the fire will double in size every thirty seconds. Please refer to previous graphic, Time vs. Products of Combustion.

The following chart lists the tasks that must be completed simultaneously to control a moderate risk structure fire similar to those commonly encountered in Kirkwood. Information is based on National Fire Protection Association (NFPA) standards. This is the minimum number of firefighters for a routine 1st alarm residential fire. In order to deliver this number of firefighters to an emergency scene, based on normal staffing patterns in Kirkwood and surrounding areas, will require three fire engines, one aerial ladder, two rescue ambulances, and a chief officer.

REPRESENTATIVE TASKS NECESSARY AT A MODERATE RISK STRUCTURE FIRE

<u>Task</u>	<u>Number of Firefighters</u>
Attack Line	2
Back Up Line	2
Hose Line Support	2
Search and Rescue	2
Ventilation	2
Rapid Intervention Team	2
Pump Operator	1
Aerial Operator	1
Incident Commander	1
Total	15

The Kirkwood Fire Department operates three 24-hour shifts with a minimum required staffing of 13 firefighters per shift. The shift personnel work a 56 hour work week for a total of 2912 hours annually. The minimum staffing number must also account for vacation leave, sick and injury leave, military leave, etc. Overtime is required to maintain minimum staffing levels. Each of the three Chief Officers assumes the role of “Duty Officer” on a rotating weekly “24/7” schedule. Since the Chief Officers work a 40-hour week, they respond from home on all structure fires and serious incidents that occur after business hours. The Fire Department does not have sufficient numbers of personnel in normal staffing to perform all of the basic required tasks at a structure fire incident so Mutual Aid from surrounding departments is required on all structure fire calls.

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Apparatus and Staffing – Each piece of fire department apparatus (vehicle) is assigned a radio identification number. The number assigned is based upon a standardized system utilized throughout St. Louis County. The first two digits indicate the City or District the unit is from. For example, 15 is Kirkwood, 14 is Glendale, and 12 is Crestwood. The next number is the station that the unit is assigned to. For example in 1535; the 3 indicates Kirkwood's Firehouse #3. The last number is the type of unit. For example, the 7 in 1517 means the unit is an ambulance. So by looking at 1527, we know that it is an ambulance from Kirkwood's Firehouse #2.

Listed below is the equipment operated by the fire department during this reporting period, along with routine staffing levels:

- 1514 – Structural Firefighting Engine with a 1500 gallon per minute (gpm) pump, 900 gallons of tank water, a Compressed Air Foam (CAF) system, 30 gallons of Class A foam, and a light tower for night operations, and 7500 watt diesel generator, ALS equipment and a three person operating crew, purchased in 2007
- 1517 – Rescue Ambulance carries advanced life support (ALS) paramedic equipment and supplies, the two person operating crew treats and transports patients to area hospitals and performs firefighting duties on fire scenes, purchased in 2001.
- 1524 – Technical Rescue Engine with a 1250 gpm pump, 750 gallons of tank water, 30 gallons of Class A foam, 30 gallons of Class B foam, an air cascade system, hydraulic and pneumatic rescue equipment, ALS equipment and a three person operating crew, purchased in 1998.
- 1527 – Rescue Ambulance carries advanced life support paramedic equipment and supplies, the two person operating crew treats and transports patients to area hospitals and performs firefighting duties on fire scenes, purchased in 2001.
- 1535 - Aerial Ladder Tower with 100 foot aerial ladder and platform, 2000 gpm pump and 450 gallons of tank water, 121 feet of ground ladders, ALS equipment and a three person operating crew, purchased in 2002.
- 1594 – Reserve Structural Firefighting Engine with a 1250 gallon pump, 750 gallons of tank water, 25 gallons of Class B Foam, ALS equipment and a three person operating crew, purchased in 1993. This truck is only placed in service when a "front line" fire truck is out-of-service due to scheduled maintenance or unscheduled repairs.

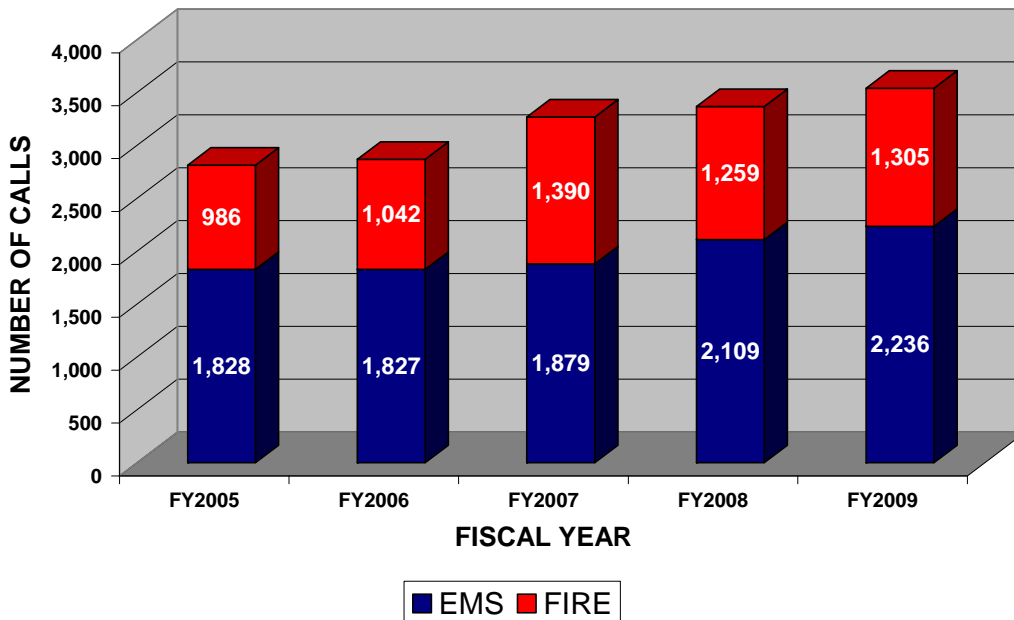
Number of Emergency Responses - The chart below shows a five-year history of the total emergency responses made by the Fire Department. These totals also include Fire and EMS responses to the City of Oakland. Kirkwood currently provides fire services to Oakland under a five-year contract that was renewed in December, 2008. According to the agreement, the City of Oakland pays the City of Kirkwood \$68,856 annually for Emergency Medical Service, Fire Protection, and Fire Prevention service, which includes Enforcement of Fire

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Codes and New Construction Plan Review. The additional expenditures to provide service to the City of Oakland are minimal and are absorbed into the annual cost of existing Fire Department operations. There are no additional staffed positions required to provide this contract service to Oakland. The Fire Department will continue to explore possibilities for contracting Fire or Ambulance Service to surrounding municipalities where opportunities for service improvement at revenue neutral or profit basis exist.

Fire Department calls for service fall into two broad categories, Fire Calls and Emergency Medical Service (EMS) calls. The chart below represents the number of calls in each classification. Over the last five years, EMS calls represent a range of 58% to 63% of total emergency calls answered by the Fire Department.

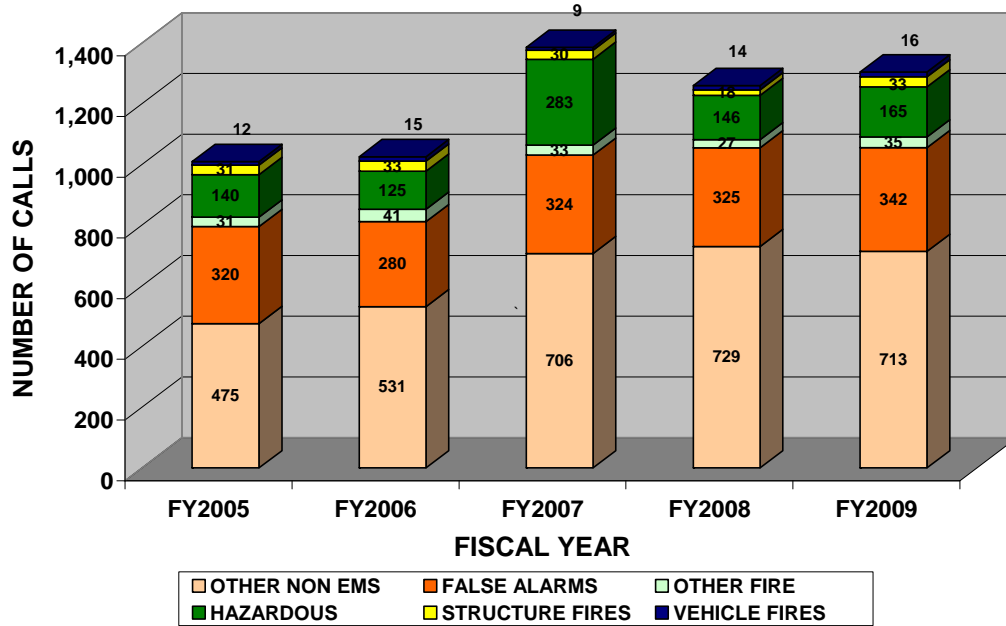
KIRKWOOD FIRE DEPARTMENT NUMBER OF CALLS BY TYPE



Types of Fire Calls -The remaining calls are classified as fire calls and are further divided into subcategories following guidelines established in the National Fire Incident Reporting System (NFIRS). The chart below shows six general categories that make up fire calls. These categories are Structure Fires, Vehicle Fires, Other Fires, False Alarms, Hazardous Materials and Conditions, and Other Responses. False Alarms include fire alarm and smoke detector malfunctions, accidental activation, and carbon monoxide detector malfunction. Other Responses include items such as “smell of smoke”, or fog or dust thought to be smoke, smoke or odor removal, and Mutual Aid assist to another department (this is for assistance with a fire, vehicle accident, or medical call in another jurisdiction). Hazardous calls include chemical spills, contractors rupturing a natural gas line, power lines down, and toxic conditions.

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KIRKWOOD FIRE DEPARTMENT FIRE CALLS BY CATEGORY

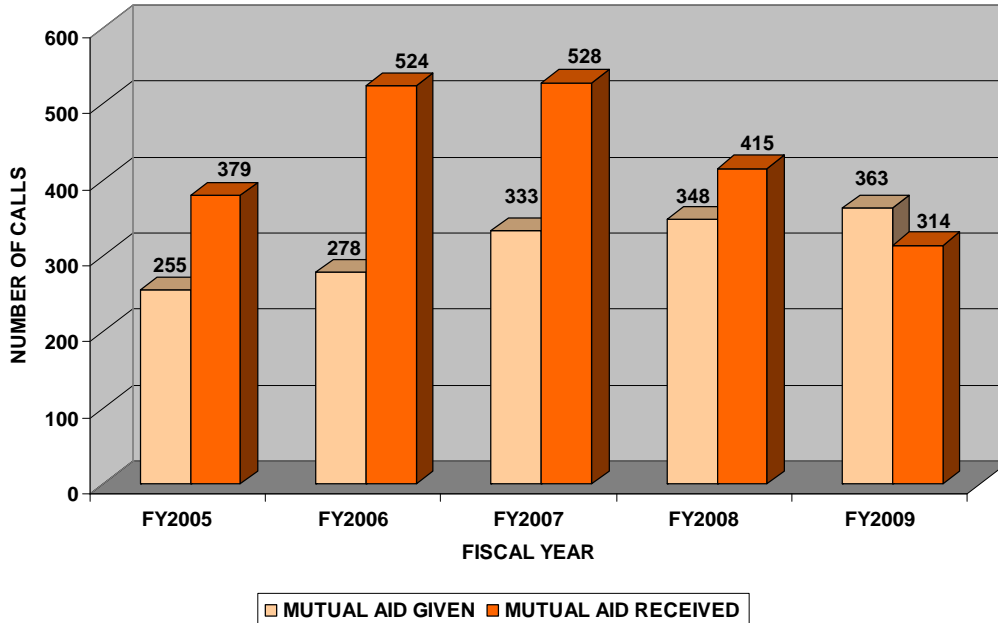


Mutual Aid Given and Received - The Kirkwood Fire Department assists neighboring fire departments when they need additional equipment and personnel to complete the required tasks at an emergency incident scene, and to fill in if they are unavailable due to a simultaneous call. This assistance is known as “mutual aid”. Kirkwood receives mutual aid assistance in return when needed. All mutual aid data includes ambulance responses.

Simultaneous Calls - Emergency calls (911) by their very nature cannot be scheduled and occur at any time. At times multiple emergency calls can stress the operations of any Fire Department. The mutual aid system in St. Louis County is designed to assist fire departments to provide coverage when they have greater than ordinary demand for fire and emergency medical services. The following numbers demonstrate how often multiple calls occurred during this report period: two calls at one time--- 3289 occurrences: three calls at one time--- 457 occurrences: four calls at one time--- 94 occurrences: and five calls or more at one time---11 occurrences.

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MUTUAL AID GIVEN AND RECEIVED

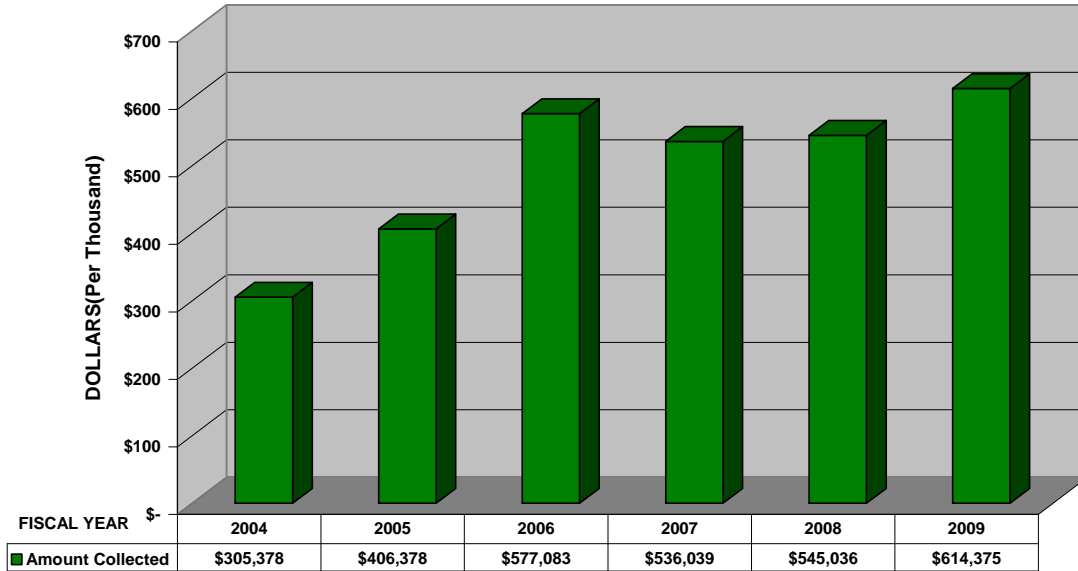


Ambulance Service – On June 1, 2003, the Fire Department added Ambulance transportation to the list of services it provides to the citizens of Kirkwood and Oakland. The addition of Ambulance service allows the city to control the quality of this vital component of Public Safety. Ambulance transport is provided under a “fee-for-service” arrangement. In most cases, medical insurance provides the majority of payment for a patient’s Ambulance service bill. Patients are only responsible for any remaining insurance co-pay. Since the Fire Department has always provided emergency medical care, the Ambulance service now provides a means to bill and recover a substantial part of the cost associated with this service.

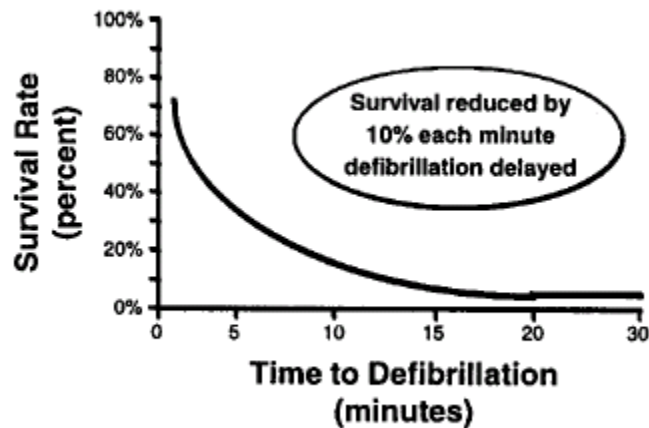
Beginning in June, 2003 and through July, 2009, the ambulance service has collected \$ 3,577,266, which has been placed in the General Fund. More importantly, the ambulance service is under the direct control of the City of Kirkwood through the Fire Department and provides high quality emergency care to the citizens of Kirkwood and Oakland from the time of dispatch until the patient arrives in the Emergency Room.

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CITY OF KIRKWOOD FIRE DEPARTMENT AMBULANCE COLLECTIONS



Ambulance Service – Good Response Times -The Fire Department provides rapid response times and quality on-scene care for our patients. There are two important time benchmarks for Ambulance response: the “Chain of Survival” standard developed by the American Heart Association, and the “Golden Hour” for trauma patient survival established in Pre-Hospital Trauma Life Support.



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The chain of survival states that basic life support (CPR with defibrillation) should be available to the victim of a cardiac arrest within 4 minutes of the event, and that advanced life support (Paramedic service) should be available within 8 minutes or less to achieve a positive patient outcome. A patient is classified as “Clinically Dead” the instant the pulse and breathing stop, but “Clinical Death” can be reversed with rapid, skilled medical treatment. The human brain cannot be deprived of oxygen carrying blood for more than 4-6 minutes before brain damage begins, and 6-10 minutes before brain death occurs. This is the point of “Biological Death.”

The “Golden Hour” concept states that critical patients must arrive at an appropriate Trauma Care Hospital within 60 minutes from the time of the injury so that surgical intervention can repair damaged organs and tissues to provide the best chance for survival. Early arrival of emergency medical care is paramount to successful resuscitation and positive patient outcomes.

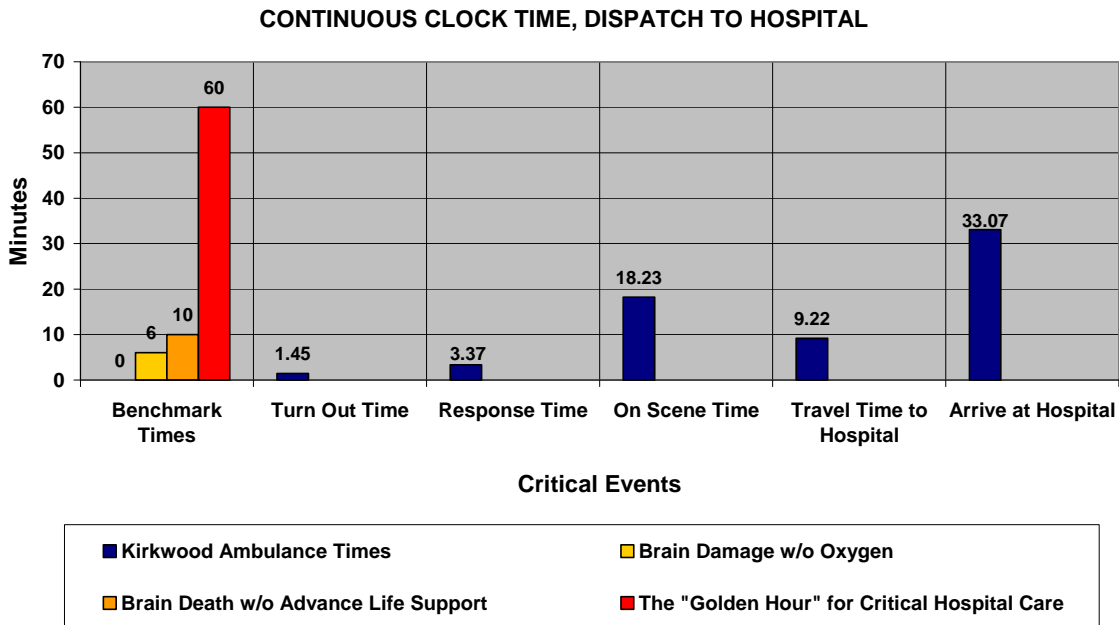
The Fire Department has good ambulance response times. The average response time for a Kirkwood Fire Department Ambulance (see chart on next page) is 5 min: 32 seconds (add the first two times). The average total time from dispatch to arrival at a hospital is approximately 33 minutes and 7 seconds (add all four times). Both times beat the nationally accepted benchmark times. The “Total Time” (not included on the chart) is the average amount of time that an ambulance is out-of-service for one ambulance trip, from dispatch until the unit is back in-service in the City. That “total time” is 1 hour and 16 minutes.

This data does not include the response time of mutual aid ambulances; those specific times are not available. However, with 105 mutual aid ambulances used, the time a patient arrives at the hospital will be greater than if a Kirkwood ambulance transported the patient.

2008/2009 AVERAGE AMBULANCE RESPONSE TIMES – Continuous Clock Time, Dispatch to Hospital

Turn Out Time	Response Time	On Scene Time	Transport Time	Arrive at Hospital
1min:45sec	3min:37sec	18min:23sec	9min:22sec	33min:07sec

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During this period of time, the Fire Department responded to 2236 calls for emergency medical care with 2601* patients, and transported 1616 of those patients to area hospitals. This equates to a transport rate of 62% of all calls for emergency medical care. The remaining patients refuse transportation after paramedic personnel render initial on-scene care, or refuse care entirely when paramedics arrive on the scene.

(*This is the actual number of patients treated; one scene may have more than one patient. For example a motor vehicle accident (MVA) is one call, but may have three patients that are treated.)

The Fire Department operates two ambulances to meet the demand for service. When the ambulance service was added in 2003, there was sufficient staffing in the Fire Department to operate one ambulance by utilizing the personnel who had staffed the rescue truck previously operated by the Fire Department. Three additional Firefighter/Paramedics were hired in 2003 to staff the second ambulance. It was understood by all involved that it requires six Firefighter/Paramedics to staff one ambulance, but it saved money to hire only three and backfill the other three positions with overtime hours worked by existing personnel.

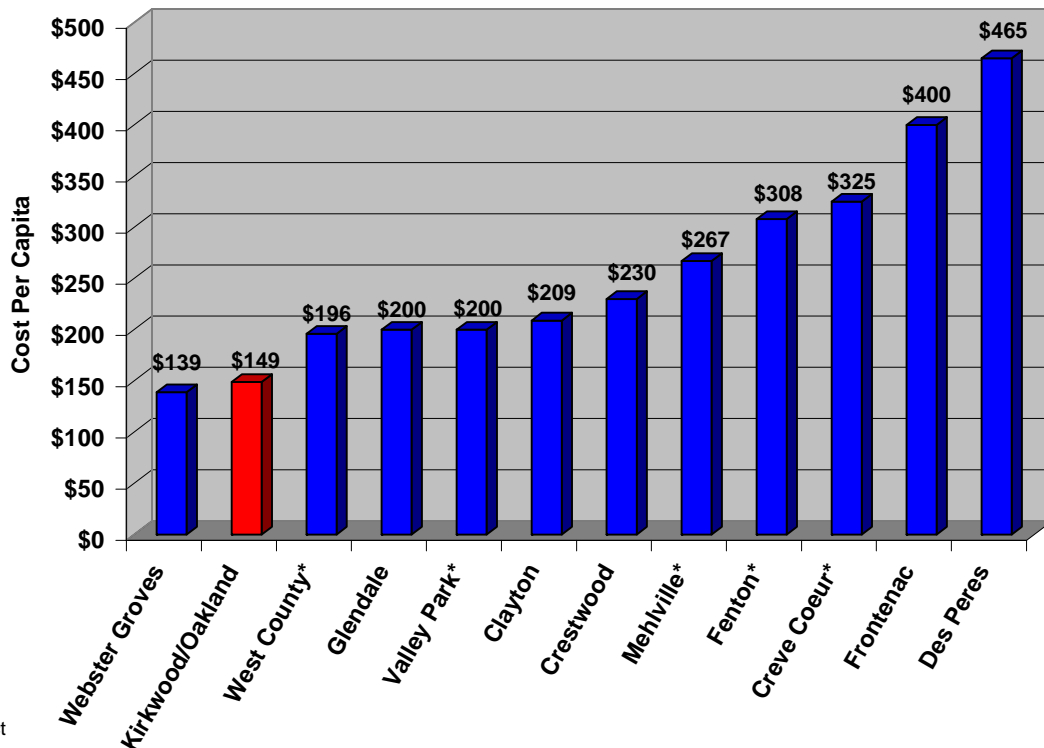
The use of mutual aid ambulances has decreased since Proposition C was passed by the citizens of Kirkwood on June 5, 2007 allowing vacant firefighter/paramedic positions to be filled. The re-hiring of these personnel after an austere period allows the Fire Department to staff and operate both Kirkwood

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ambulances 100% of the time. During the 2008/09 Fiscal Year, the Fire Department provided ambulance mutual aid 102 times and received ambulance mutual aid 105 times. This is due to the large number of simultaneous calls as mentioned earlier in this report.

COMPARISON TO AREA FIRE DEPARTMENTS AND DISTRICTS – The Kirkwood Fire Department is operated in a very efficient manner. Based on the following table, it is obvious that the Fire Department provides a good value for the citizens of Kirkwood. The Fire Department provides Advanced Life Support on our Fire Trucks, Ambulance Service, Fire Suppression, Hazardous Materials Response, Technical Rescue Services including High Angle, Confined Space, Structural Collapse and Trench Rescue, Fire Code Services and New Construction Plan Review, Fire Education and Prevention Services, and General all Hazards Response capability. This data was compiled through an informal telephone survey of neighboring departments and districts conducted in September 2008. (note: the per capita costs listed below do not include pension costs)

**2008 FIRE DEPARTMENT/DISTRICT
Cost Per Capita**



*Fire District