June 5, 2012

LOS ANGELES FIRE DEPARTMENT

BRIAN L. CUMMINGS
FIRE CHIEF

May 22, 2012

BOARD OF FIRE COMMISSIONERS
FILE NO. **12-085**

TO: Board of Fire Commissioners

FROM: Brian L. Cummings, Fire Chief

SUBJECT: CONTROLLER'S "ANALYSIS OF THE LOS ANGELES FIRE DEPARTMENT'S RESPONSE TIMES"

FINAL ACTION:	____ Approved	____ Approved w/Corrections	____ Withdrawn
	____ Denied	____ Received & Filed	____ Other

Recommendation: That the Board:

Receive and file the Controller's "Analysis of the Los Angeles Fire Department's Response Times."

Summary:

Attached for your review and consideration by the Board of Fire Commissioners is the Controller's "Analysis of the Los Angeles Fire Department's Response Times." The overall objective of the report, dated May 18, 2012, was to independently compute and compare the Fire Department's actual response times for four distinct time periods to established criteria and goals, i.e., the standards set by the National Fire Protection Association 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).

Conclusion:

On May 15, 2012, a draft report was provided to the Fire Department. The Controller's Office held an exit conference with LAFD management on that same day to discuss the contents of the report. LAFD management generally agreed with the issues and results noted in the report.

Board report prepared by Norina Tom, Senior Management Analyst I, Emergency Operations.

Attachment

WENDY GREUEL
CONTROLLER

May 18, 2012

Honorable Antonio R. Villaraigosa, Mayor
Honorable Carmen Trutanich, City Attorney
Honorable Members of the Los Angeles City Council

Today, I am releasing an analysis of the Los Angeles Fire Department's (LAFD) Incident Response Times. My analysis found that although LAFD has been able to maintain pre-reduction standards for fires and non-medical incidents, there has been an increase in the response times for medical first responders. As compared to the full deployment period, between January 2007 and July 2009, average response times for turnout and travel for Emergency Medical Services (EMS) incidents have increased by 12 seconds, from 4 minutes and 45 seconds to 4 minutes and 57 seconds. The percentage of EMS events responded to in 5 minutes or less decreased from 62% to 57%.

In contrast to EMS times, response times for turnout and travel for fire and non-EMS incidents have actually decreased since the end of full deployment, from an average of 5 minutes and 18 seconds to 4 minutes and 57 seconds. The percentage of under-5 minute and 20 second responses stayed essentially the same, at 63% during full deployment and 64% currently. Average Advanced Life Support First Resource response times have decreased by 16 seconds, from 5 minutes and 21 seconds to 5 minutes and 5 seconds, since full deployment. Structure fire response times have stayed relatively flat, going 3 minutes and 36 seconds to 3 minutes and 37.

Our independent analysis and review of LAFD response times noted that public perception and trust was compromised due to the Department's poor communication of revising their standard of performance measurement and their use of inconsistent methodology in calculating reported results.

Even though the LAFD presented its data in comparison to the National Fire Protection Association (NFPA) standards, my review found that LAFD's performance cannot be compared to those standards. Nearly 650,000 of the 1.9 million incidents we reviewed were coded unclearly, as they could be categorized as either an emergency or non-emergency, at the discretion of the dispatchers. As a result, there is no way to determine whether the LAFD has met its 90% goal, because emergency incidents were not clearly identified.

This analysis shines a light on all parts of the response, not just turnout and travel, but also the call processing time. It calculated both the actual response times, which include turnout and travel, and the real response times experienced by the caller, which include call processing. Since the full deployment period, real response times for EMS have increased by 20 seconds, from 6 minutes and 48 seconds to 7 minutes and 8 seconds. Nearly half of this increase is attributable to a 9 second increase in call processing time, which has increased from 95 seconds during full deployment to 104 in the current deployment period.

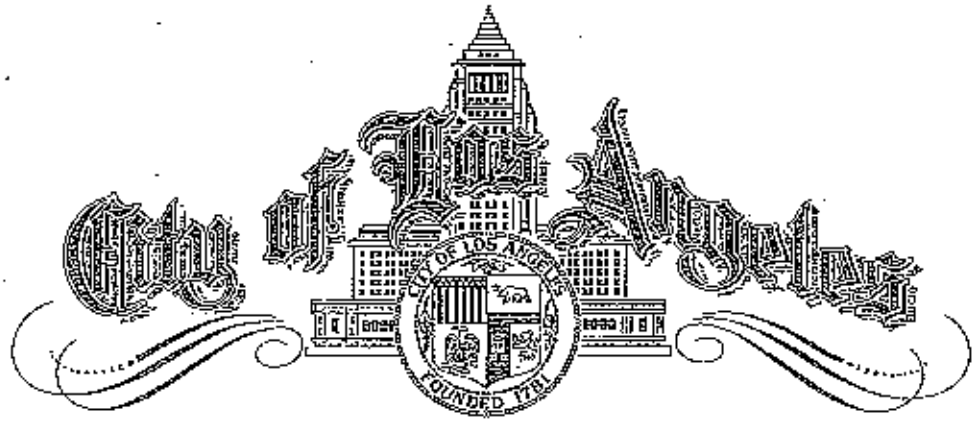
The effects of the new deployment plan varied across the different parts of Los Angeles. EMS response times in the San Fernando Valley were the most significantly impacted by the changes in deployment, with average response time increasing by over 20 seconds. East Los Angeles, San Pedro, and the Metro area each had response times increase by an average of 18 seconds.

The attached analysis confirms what response times have been and what they are now for all incidents – the next step is to scrutinize the LAFD deployment plan to determine how best to deploy our scarce City resources. It is imperative that LAFD implement the recommendations of this analysis to improve the use of tracking resources so that there will always be an honest assessment of how well the Fire Department is doing.

I would like to thank the hard-working men and women of the LAFD for doing their best and working as hard as they have during these difficult times with fewer resources. Our City counts on them every day, and I know that they will continue doing their best to get to emergencies as fast as possible, despite resource cutbacks. Through this analysis, I want to ensure that they are appropriately equipped to further improve response times.

Sincerely,

WENDY GREUEL
City Controller



WENDY GREUEL
CONTROLLER

May 18, 2012

Brian Cummings, Fire Chief
Los Angeles Fire Department
200 N. Main Street, Room 1800
Los Angeles, CA 90012

Dear Chief Cummings:

Enclosed is a report entitled "Analysis of the Los Angeles Fire Department's Response Times". A draft of this report was provided to your Department and comments made by your executive staff and Mr. Jeff Godown, LAFD consultant, at the exit conference held on May 15, 2012 were considered prior to finalizing the report.

This report presents our independent analysis of the LAFD's response times for all EMS and Fire/Non-EMS incidents compared across four defined time periods with specific deployment changes. We did *not* audit LAFD's previously reported Response Times, nor did we audit or comment on the effectiveness of specific deployment strategies.

Please review the final report and advise the Controller's Office by June 18, 2012 of the actions planned to implement the report's three recommendations. If you have any questions or comments, please contact me at (213) 978-7392.

Sincerely,

FARID SAFFAR, CPA
Director of Auditing

Enclosure

cc: Gaye Williams, Chief of Staff, Office of the Mayor
Janelle Erickson, Deputy Chief of Staff, Office of the Mayor
Miguel A. Santana, City Administrative Officer
June Lagmay, City Clerk
Gerry F. Miller, Chief Legislative Analyst
Genethia Hudley-Hayes, President, Board of Fire Commissioners
Independent City Auditors

City of Los Angeles
Office of the Controller

Analysis of the Los Angeles Fire Department's Response Times

May 18, 2012

Wendy Greuel
City Controller

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Analysis of the Los Angeles Fire Department's Response Times

Executive Summary

The Controller's Office has completed an analysis of the Los Angeles Fire Department's (LAFD/Fire Department) response times. The overall objective of the analysis was to independently compute and compare the Fire Department's actual response times for four distinct time periods to established criteria and goals, i.e., the standards set by the National Fire Protection Association 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).

Background

The LAFD responds to fire and medical emergencies throughout the City's 470 square miles, sending the necessary equipment and personnel to aid the public. As of January 2012, LAFD staffs and equips 106 fire stations located throughout the City on a 24/7 basis. The Department responds to emergency incidents with the following resources:

- 90 Engine Companies
- 42 Truck Companies
- 34 Ambulances (plus an additional 24 ready reserve ambulances)
- 89 Paramedic Ambulances
- 72 Assessment/Paramedic Engine Companies

In the City of Los Angeles, all calls to 9-1-1 are received by the Los Angeles Police Department (LAPD). When the LAPD representative determines it is a fire or medical emergency, the call is transferred to the Fire Department's Metro Communications. LAFD Dispatchers then determine what resources should be deployed to address the emergency. Standard terminology, such as *alarm handling (call processing)*, *turnout* and *travel*, is used by fire departments to define distinct segments of the emergency response process, so that response times can be measured and compared to NFPA goals and benchmarks. The response time process is depicted in Exhibit 1:

Exhibit 1: LAFD Call Processing and Unit Response

Incident, dispatch and response information is captured and recorded in the Computer Aided Dispatch (CAD) system. The incident is typically created during call processing, when unit dispatch information is recorded. Fire Department emergency units are equipped with a Mobile Data Computer (MDC) which transmits a time stamp and status to the CAD system once a button is pushed. Fire personnel are expected to push the button at the time the unit is leaving the station to record the start of travel time, and again when the unit arrives at the incident.

As a result of the City's budget deficit, beginning in FY 2009-10, the Department's operating budget was reduced. From FY 2009-10 through FY 2011-12, the Department has implemented different deployment strategies to achieve budgetary savings.

In March 2012, the Department's response time statistics came under scrutiny when media reports indicated that response time performance had significantly dropped due to budgetary reductions. LAFD's explanation that some reported response times being cited had been based on computer modeling projections, as well as a Department initiated change in performance time standards, resulted in further controversy as to the accuracy and reliability of the Department's reported response times.

Scope

This review was performed in accordance with Generally Accepted Government Auditing Standards. The review analyzed all response time data captured by CAD for incidents from January 1, 2007 through March 26, 2012. Fieldwork was conducted between March 27 and May 9, 2012. The review examined the accuracy and reliability of the Department's incident data and calculated actual response times for the four distinct time periods related to significant changes in the deployment of Fire resources.

Time Periods with Deployment Changes

Resource Coverage	Time Period
Full Deployment (Pre MCP)	Prior to July 2009
Modified Coverage Plan (MCP)	August 2009 through December 2010
Expanded Modified Coverage Plan (EMCP)	January 2011 through June 2011
Deployment Plan (DP)	July 2011 to Present

We did not audit nor compare the response times reported by the Department throughout these periods, because the Department applied different criteria over the entire time period, and for some periods utilized computer modeling software to determine the impact on response times. Rather, this review was an independent analysis of the data to determine actual response times, as measured by LAFD for turnout and travel, as well as the full response time as understood by the public, (i.e., from initial 9-1-1 contact) for each of the four periods using the same criteria and benchmarks, as well as a consistent calculation methodology for all Emergency Medical Service (EMS) incidents and all Fire/Non-EMS incidents. We also determined response times for the first Advanced Life Support (ALS - Paramedic) unit to an EMS incident, first response to structure fire incidents, and response times for ambulance transports.

This review did not include an assessment of the underlying causes for the changes in response times between the four periods, and did not assess deployment plans or whether the Department dispatched a sufficient number or type of units to the incidents.

Summary of Analysis Results

Our analysis found that LAFD's response time performance cannot be compared to NFPA standards because we cannot rely on the Department's determination of emergency and non-emergency incidents. NFPA standards are established for measuring response performance for emergency incidents. While LAFD assigns all incidents with a detailed incident type code, that in turn specifies if it is an emergency or non-emergency, one of the letter codes assigned to the data notes "emergency, can be non-emergency." For the 1.9 million incidents subject to our analysis, we noted this non-definitive code was used for 646,000 incidents, while more than 24,000 incidents had no such code assigned. Therefore, the Department's data cannot be used to determine *emergency* response times, as measured against NFPA standards. Our analysis presents response times for EMS and Fire/Non-EMS incidents without differentiating between an emergency and non-emergency incident. Based on our review, we noted the following key results:

In comparing the turnout and travel times for LAFD responses over the four periods,

- For all EMS incidents, the average response time has increased 12 seconds from the Department's full deployment to the most current Deployment Period, to 4 minutes 57 seconds.

- In contrast, our review results indicate that LAFD's response times for first ALS Resource (paramedic) on scene have improved over time, reducing the average response time by 16 seconds, to 5 minutes 5 seconds.

- For Fire/Non-EMS incidents, the average response time has also improved and has been reduced by 21 seconds in the most current Deployment Period to 4 minutes 57 seconds.

- LAFD's average structure fire response times has increased 1 second from full deployment to the current Deployment Period, to 3 minutes 37 seconds.

We also calculated the average total response times from the constituent's call to 9-1-1 to the first unit on-scene for all incidents. By comparing the results between full deployment (Pre-MCP) to the current deployment plan, total time has increased for EMS and Structure Fire incidents by 20 seconds, but it has decreased for Fire/Non-EMS incidents, by 19 seconds. In addition, the average total response time from the 911 call to first ALS resource (paramedic) on scene has decreased by 26 seconds.

More detail on these and other results of our analysis, including the breakdown by segment for the entire average response times experienced by the public for emergency and non-emergency incidents both citywide and by Community Code, and other performance measures over the four periods, are presented in the remainder of the report and Appendices.

Our independent analysis and review of LAFD response times noted that public perception and trust was compromised due to the Department's poor communication of revising their standard of performance measurement and their use of inconsistent methodology and in calculating reported results. We also noted the limitations of an aging information system, and the inherent risk of the system not capturing some travel times due to possible human error related to the necessary action of pushing a button on the dispatched unit to trigger a time stamp. Based on our review, we recommend the following:

LAFD Management should:

1. Adopt a consistent methodology for differentiating and coding emergency and non-emergency incidents in the CAD database and for reporting actual response times measured against NFPA standards, and clearly communicate this method to all interested stakeholders.

2. As it would be more meaningful to constituents, consider periodically reporting the Total Response Time for all emergency incidents, which includes the relative time segments of LAFD's call processing, turnout, and travel.

3. In order to improve data reliability, validation, and flexible reporting, determine feasible and cost beneficial solutions to improve system technologies used to measure and report actual Response Times. Such solutions could include expanding the capability or replacing the Computer Aided Dispatch System, installing a Global Positioning System within all fire units for direct interface with CAD, and other software solutions.

Review of Report

On May 15, 2012, a draft report was provided to the Fire Department. We held an exit conference with LAFD management on May 15, 2012 to discuss the contents of the report. LAFD management generally agreed with the issues and results noted in the report. LAFD's comments were evaluated and considered as we finalized the report. We would like to thank the management and staff from the Fire Department, Information Technology Agency and Los Angeles Police Department for their cooperation and assistance during the review.

INTRODUCTION AND BACKGROUND

LAFD's Budget Reductions and Resource Plans

The Los Angeles Fire Department (LAFD/Department) responds to fire and medical emergencies throughout the City's 470 square miles, sending the necessary equipment and personnel to aid the public. LAFD's 2011-12 budget totaled over $472 million, and the Department has over 3,500 sworn and civilian employees.[1] As of January 2012, LAFD has 106 fire stations located throughout the City. The Department responds to emergency incidents with the following resources:

- 90 Engine Companies
- 42 Truck Companies
- 34 Ambulances (plus an additional 24 ready reserve ambulances)
- 89 Paramedic Ambulances
- 72 Assessment/Paramedic Engine Companies

According to LAFD's November 22, 2011 report to the Board of Fire Commissioners (Fire Commission), prior to FY 2009-10, the Department's budget was approximately $561 million with daily field staffing of 1,071 personnel. Beginning in FY 2009-10, the Department's operating budget was reduced. In August 2009 the Department implemented a Modified Coverage Plan (MCP) that reduced on-duty daily staffing to achieve budgetary savings. The MCP resulted in closing, on a rotating basis, various types of companies (personnel and fire equipment assigned to a fire station). Under MCP, daily on-duty staffing dropped from 1,071 to 976 firefighters. To generate additional savings, in January 2011 LAFD implemented an expanded MCP (EMCP) that resulted in additional closures, and the daily on-duty staffing dropped to 933 firefighters. The closures under MCP and EMCP were designed as short-term solutions to meet budgetary constraints. On July 3, 2011, LAFD implemented a new Deployment Plan (DP) which replaced the rotating reductions by area with permanent closures of some fire companies. However, these deployment changes actually resulted in increasing the number of daily on-duty staffing to 986 firefighters.

LAFD informed the Fire Commission that the "Deployment Plan was designed to preserve the Department's EMS response capacity while minimizing impacts to non-EMS response." EMS is defined as emergency medical services while Fire/Non-EMS includes structure fires, small fires, rescues, hazards, public assistance, etc. Exhibit 2 shows what LAFD reported as the times and percentages towards meeting the goals for the first response (regardless of unit type) for EMS and Fire/Non-EMS incidents, and first Advanced Life Support (ALS)[2] response only, between two deployment periods.

[1] City's size, and LAFD's budget amounts from FY 2011-12 Budget.

[2] Advanced Life Support (ALS) is defined by the National Fire Protection Association (NFPA) as "Emergency medical treatment beyond basic life support that provides for advanced airway management including intubation, advanced cardiac monitoring, defibrillation, establishment and maintenance of

Exhibit 2
LAFD Response Times as Reported
to the Fire Commission in November 2011

Incident Type	Goal	Pre-MCP	DP	% Change
Emergency Medical Services (EMS)				
EMS 1st Resource (seconds/minutes)	300 sec./ 5 min.	291 sec./ 4 min. 51 sec.	298 sec./ 4 min. 58 sec.	-2.4%
EMS 1st Resource (%)	90%	63%	61%	-2.0%
EMS 1st ALS (seconds/minutes)	540 sec/ 9 min.	328 sec./ 5 min. 28 sec.	350 sec./ 5 min. 50 sec.	-6.7%
EMS ALS (%)	90%	89%	90%	+1.0%
Fire/Non-EMS				
Fire/Non-EMS 1st Resource (seconds/minutes)	300 sec./ 5 min.	317 sec./ 5 min. 17 sec.	313 sec./ 5 min. 13 sec.	+1.3%
Fire/Non-EMS 1st Resource (%)	90%	58%	59%	+1.0%

Source: LAFD Deployment Plan Analysis and Report to Board of Fire Commissioners dated November 22, 2011

Response Time Controversy

In early March 2012, a concern was made public regarding a slowdown in LAFD response times from 2008 to 2011, after budgetary cuts. It was reported that LAFD's response times for medical emergencies were within 5 minutes, 86% of the time prior to budgetary cuts, while in 2011, LAFD's response times dropped to within 5 minutes only 59%[3] of the time for medical emergencies.

Subsequently, LAFD explained that the statistics being cited could not be compared because the time standard followed by the Department changed from 2008 to 2011. In 2008, the Department used a 6-minute standard, while as of 2010, the Department uses a 5-minute standard. Other statements made by LAFD officials seemed confusing as to how the response times were calculated and being reported to various City officials (i.e., Fire Commission, Mayor and Council) when changes to the Department's budget were being considered.

Several recent Council motions have called for various actions, such as:

- the Department should report on the methodology used to calculate emergency response times and the factors that contributed to any changes in the methodology;

intravenous access, and drug therapy." For LAFD, ALS is synonymous with emergency medical treatment provided by a Paramedic – firefighters trained to the level of paramedic.

[3] This appears to be from the LAFD website, Fire Facts which showed EMS response times for 2011 as 59% of calls responded to in less than 5 minutes and 59% of all emergencies (Emergency Medical Services and non-EMS) were responded to in less than 5 minutes.

- the Department should seek an independent third party review and analysis of the Department's emergency response time statistics;

- the Chief Administrative Officer and Chief Legislative Analyst should contract with an appropriate third-party to analyze past and current Los Angeles Fire Department response times, including during full deployment, modified coverage (MCP), and the current deployment plan. This analysis should include an accurate accounting of response times, a report on how these numbers measure against best practices throughout the nation, and recommendations on how to improve response times, specifically through equipment, technology, personnel and changes in management practice;

- the Department should report to the Public Safety Committee in 60 days on the capabilities of technology platforms currently being used by the LAFD, an analysis of the solutions that would be necessary to meet the operational objectives of the Department in the context of "FIRESTAT" a COMPSTAT-style management system, an operational plan for frequent management meetings, and a timeline for implementation;

- the Department should report on the potential implementation of automatic vehicle location technology for all fire and emergency resources, including: (1) an assessment of the system's costs, (2) how the system would be overseen and managed by Fire personnel, (3) and how the system would be used to enhance emergency operations; and,

- the Department and Information Technology Agency should report back with a comprehensive review of the technology issues leading to the LAFD dispatch problems experienced recently and provide recommendations to remedy the notification deficiencies.

At both the March 20, 2012 Board of Fire Commissioners meeting and the March 23, 2012 Public Safety Committee meeting, the Fire Chief explained the chronology of the various statistics that were reported to the Fire Commission and Council and the methodology that was used to calculate the statistics. The Department explained that the time standard changed from prior years to the present (from a 6 minute standard to a 5 minute standard), so the Department's reported performance measured as percentages meeting that standard also varied. LAFD had previously reported the total response time which included call processing time by LAFD dispatch, and measured this total to a six-minute goal. The current five minute standard followed by LAFD refers only to turnout and travel time, which measures the time from a fire department unit receiving an alarm or radio notification of an emergency, to when the first unit arrives on scene at the incident location. According to LAFD management, response time calculations and reporting focused on turnout and travel times because deployment changes did not impact call processing staff.

The Fire Chief further explained that the significant difference in the percentage of incidents that met the time standard were initially reported based on computer modeling

software that projected response times from prior years to the present. The "higher" projected response statistics (e.g., 86%) were being compared to lower "actual" response statistics (e.g., 59%). The Fire Chief conceded that the Department should have done a better job at explaining what information was being communicated to the Fire Commission and Council during prior years' budget hearings.

Response Time Benchmarks for Fire Departments

The National Fire Protection Association (NFPA) is a voluntary association of fire and emergency service organizations. NFPA seeks to establish standards by consensus for fire departments to use as organizational, deployment and operational standards, and as recommended practices and benchmarks.

NFPA Standard 1710 establishes timeframes for fire departments to respond to fire and medical emergency incidents. This Standard focuses on time standards for two key segments of the process for incident response, turnout and travel. ***Turnout*** is defined as starting from the time a fire station unit receives the alarm/radio notification of an emergency and the unit's personnel preparation for the incident (e.g., putting on protective gear) up to the unit personnel boarding the fire engine, truck, ambulance, etc. to travel to the incident location. ***Travel*** is defined as the elapsed time from the unit being en route (the unit has started its travel to the incident) until it is actually on scene (arrived at incident location).

NFPA 1710 sets the standard for turnout time for fire incidents at 80 seconds[4], and 60 seconds for emergency medical services (EMS). Travel time for the first resource to arrive on scene for both fire and EMS incidents is 240 seconds (4 minutes). The travel time for the first Advanced Life Support (ALS) resource (with paramedic) is 480 seconds (8 minutes)[5].

Exhibit 3
NFPA 1710 Response Time Standard

Emergency Incident	Turnout Time (Seconds/Minutes)	Travel Time (Seconds/Minutes)	Response Time Standard (Seconds/Minutes)
Emergency Medical Services – First Resource	60 seconds/ 1 minute	240 seconds/ 4 minutes or less	300 seconds/ 5 minutes or less
Fire – First Resource	80 seconds/ 1 minute 20 seconds	240 seconds/ 4 minutes or less	320 seconds/ 5 minutes 20 seconds or less
Emergency Medical Services – First Advanced Life Support Resource	60 seconds/ 1 minute	480 seconds/8 minutes or less	540 seconds/ 9 minutes or less

[4] NFPA 1710 was revised in 2010 and increased the turnout time for fire incidents from 60 seconds to 80 seconds to allow more time for firefighters to put on protective gear.

[5] NFPA 1710 provides this longer travel time standard for the arrival of an ALS unit for an EMS incident where this service is provided by the fire department, provided that a first responder with capability to provide basic life support arrived in 240 seconds or less travel time.

NFPA 1710 also indicates that fire departments should establish a performance objective of not less than 90 percent for the achievement of each turnout time and travel time objective.

LAFD Response Process

In the City of Los Angeles, all calls to 9-1-1 are received by the Los Angeles Police Department (LAPD), at either the Metro Communications Division Center or the Valley Communications Division Center, which are considered the Public Safety Answering Point (PSAP). LAPD's 911 operators determine from the caller's information whether the emergency is police related or fire/medical related. All fire and medical emergency calls are transferred to LAFD Metro Communications.

At LAFD Metro Communications, located in downtown Los Angeles at the City's Emergency Operations Center, Fire Dispatchers determine what type of assistance is needed and whether it is an emergency (e.g., life threatening) or non-emergency call. LAFD has a software system to help assess EMS calls by asking pre-established questions. The LAFD dispatcher stays on the line with the caller for EMS calls to give CPR guidance, if necessary, while a unit is en route to the incident location.

The LAFD Dispatch Resource Controller uses the Computer Assisted Dispatch System (CAD) to dispatch units. Based on the location of the incident, the dispatch order is transmitted to the closest fire station. Algorithms programmed into CAD determine the fire station and unit types (e.g., an engine with basic fire fighting apparatus or a truck with a 100 foot aerial ladder) that should be sent to the incident. If the unit that needs to be dispatched to the incident is in radio status (i.e., the unit is not "in quarters"), a Resource Controller notifies the unit of the dispatch orders through the radio. A Resource Controller follows up on all CAD-dispatched orders with radio contact to the unit(s).

Fire Department emergency units are equipped with a Mobile Data Computer (MDC) which is capable of transmitting a time stamp and status to CAD, once personnel push a button. For response time purposes, Fire personnel are expected to push the button at the time the dispatched unit is leaving the station to record the *en route time* (start of travel time), and again when the unit arrives at the incident to record the *on-scene time*.

If a unit ordered to an incident does not respond to a dispatch within 60 seconds for EMS calls or 90 seconds for fires, the incident goes into overdue status. Several attempts are made to contact the unit by radio. If there is no response, the next closest unit may be dispatched based on a CAD algorithm.

The full process for handling and responding to 911 calls, through LAPD Call Handing, LAFD Call Processing and Unit Response is illustrated in Exhibit 4.

Exhibit 4

LAPD 911 Call Handling

Ring Time | LAPD Call Processing Time | Transfer Time

LAFD Call Processing and Unit Response

Call Processing Time | Turnout Time | Travel Time

Computer Assisted Dispatch Information System

LAFD's Computer Assisted Dispatch (CAD) system, also known as the Fire Command and Control System, is maintained by the Information Technology Agency (ITA). The CAD system is used to record all incidents handled by the Fire Department from the time a 911 call is received by the LAFD Metro Communications Center to the mitigation of the emergency, and return of Fire Department units to their quarters. LAFD's CAD system has been in use for approximately 20 years. CAD captures and records data related to LAFD call processing, dispatch, en route, and on scene times.

The data within CAD's production environment is available only to ITA; LAFD has no access to the CAD system or CAD data while it is in production. According to ITA staff, until approximately October 2011, ITA would provide a replica of CAD data to LAFD on a monthly basis. In the last 6 months, ITA has provided up to the minute CAD data to LAFD's Management Information System (MIS). CAD data is now "pushed" to LAFD's MIS every minute. Incident information populates a database comprised of three tables – Incident Table, Response Table (ITA refers to this as Incident Unit Table) and the Unit Status History Table.

LAFD's MIS staff generate reports for the Department's Planning Section that summarize incident response times. These reports calculated response times for Fire/Non-EMS and EMS incidents and included negative times but excluded incidents with time stamp intervals of greater than 20 minutes. The MIS reports were used by Planning staff for performance reports submitted to LAFD management and the Board of Fire Commissioners from approximately 1998 through September 2009.

In November 2010, LAFD acquired Deccan International software that allowed the Department to model various deployment plans and determine their impact on response times. The Deccan software has three modules – CAD Analyst, Apparatus Deployment

Analysis Module (ADAM) and Optimizer. The software utilizes the Fire Department's actual data from CAD to calculate response times (CAD Analyst) and to model coverage scenarios based on response times, call frequency and incident types within each fire station district (ADAM). LAFD uses ADAM to model various deployment configurations to maximize effectiveness and public safety. ADAM provides "what if" scenarios using historical data and determines the impact of different deployment models (e.g., what would be the response time if a certain number of fire engines or trucks were reduced). The Optimizer is used to provide a prospective analysis of given certain resources, where should the resources be deployed. Due to reductions in the Department's MIS staff, the CAD Analyst module of the Deccan system has generally been used to compute and report response times since 2011. The method used by the Deccan software does not include negative response times and excludes incidents with time stamp intervals of more than 30 minutes.

Prior Controller Report

The Controller's Office issued a report on January 31, 2002 that noted the response time data being used by the LAFD to analyze response times could not be completely validated, because some steps in the process relied on mechanical intervention that is subject to human error. This observation was based on the fact that some actions used to compute response times rely on a person pushing a button to time stamp the initiation of an action, instead of a system-generated time stamp being recorded. As previously described, Fire Department units responding to emergencies are equipped with a Mobile Data Computer (MDC) which transmits a time stamp and status to CAD once personnel push a button. The 2002 report noted that LAFD management was very interested in having the ability to validate response time information, and was in the process of determining if implementing a Global Positioning System (GPS) for LAFD units was a feasible and cost-beneficial solution.

During our current review, LAFD indicated that standardized procedures and training have been provided to Fire personnel, instructing them when to push the button on the MDC with the objective of minimizing human error. However, there remains a risk that during an emergency a button may be pushed before or after the prescribed time. For example, the recorded on scene time could be significantly later than the actual on scene time during a fire incident, if personnel neglected to push the button upon arrival, since their priority was to mitigate the emergency. As a result, human errors or delays in pushing the button may result in inaccurate response times being recorded.

The prior audit observation describes an inherent risk to identifying actual response times, based on the process used to enter some data elements, which continues through today. We performed this analysis based on the system-captured data. Our methodology intended to mitigate the effects of anomalies caused by human error, i.e., not recording the correct time stamp, by: a) excluding response times that were beyond two standard deviations of the mean; b) excluding any incidents where the time stamps were blank; and c) excluding incidents where the calculated response time resulted in a "negative time". It should be noted that the percentage of excluded incidents due to incomplete or inaccurate data due to human error was determined to be insignificant,

and did not materially affect the response times noted in this report. However, there remain concerns that data reliability may be compromised due to human error.

OBJECTIVES, SCOPE AND METHODOLOGY

The overall objective of this review was to independently calculate and compare the Fire Department's response times to established criteria, such as NFPA 1710 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments or equivalent criteria as approved by the Fire Commission. LAFD management indicated that the Department's criteria for reporting and measuring response times followed NFPA 1710, which primarily addresses turnout and travel time.

The review examined the accuracy and reliability of the Department's incident data and calculated actual response times for the four distinct time periods related to significant changes in the deployment of Fire resources.

Exhibit 5
Time Periods with Deployment Changes

Resource Coverage	Time Period
Full Deployment (or Pre MCP)	Prior to July 2009
Modified Coverage Plan (MCP)	August 2009 through December 2010
Expanded Modified Coverage Plan (EMCP)	January 2011 through June 2011
Deployment Plan (DP)	July 2011 through March 2012

We did not audit the response times reported by the Department for these periods because the Department did not use the same criteria consistently for each of the periods, and computer modeling software was also utilized for some of the reported response times. Rather, this review was an independent analysis of the incident data to determine actual response times for each of the time periods for all Emergency Medical Service (EMS) incidents and all Fire/Non-EMS incidents. We also determined response times for the first Advanced Life Support (ALS) response to an EMS incident, first response to structure fire incidents and ambulance transport.

The review also did not include an assessment of the underlying causes for the changes in response times between the time periods, and did not assess the Department's deployment plans, including the number and type of units dispatched to the incidents.

This review was performed in accordance with Generally Accepted Government Auditing Standards for Attestation Engagements, December 2011 Revision by the Comptroller of the United States. To achieve the review objectives we met with LAFD management to confirm the criteria used for our analysis of response times, obtained a complete database of CAD data and conducted tests to ensure completeness and integrity of the data, performed extensive data analysis using our audit software (IDEA), and summarized our results in a draft report that was submitted to LAFD for their review and comment prior to transmittal of the final report.

Data Integrity & Completeness

Our response time analysis was based on incident data provided by LAFD from its MIS database of CAD data. Incidents are categorized as either EMS or Fire/Non-EMS and then further defined as to a specific incident type such as poisoning, traffic accident, industrial accident, etc. The Department has defined 1,156 incident type codes which are then tied to a dispatch code classifying the incident as an emergency or non-emergency. However, one of the codes is defined as **"emergency, can be non-emergency"**, and we noted this non-definitive code was used for approximately 646,000 incidents, while more than 24,000 incidents had no code defined at all. As a result, the Department's data cannot be used to determine emergency response times. Instead, we included the entire population of incidents that were defined as either EMS or Fire/Non-EMS in our response time analysis.

We confirmed that CAD data was accurately and completely transmitted from ITA's production environment to LAFD MIS, to ensure the integrity and completeness of the data used in our analysis. Specifically, we selected certain dates within the last 30 days of our review period, which comprised over 18,000 individual records and compared ITA's unit status history file for the selected sample to verify accuracy and completeness. We found no significant exceptions.

We also obtained radio transmission logs for the same sample of selected dates to determine whether the CAD system captures dispatch notifications and unit transmissions completely and accurately. The radio transmission logs document when a Fire unit receives an alarm/radio notification of a dispatch order, and when the Fire unit presses the MDC button to indicate it is en route to, and on scene at, an incident. We confirmed that radio transmitted time stamps generally update the Unit Status History Table and Response Table. However, we noted a number of transmitted time stamps did not update the Unit Status History Table. In these cases, the time stamps were recorded only in the Response Table. To ensure we had a complete set of incident data, we compared the Response Table file to the Unit Status History Table file and identified approximately 35,000 records (0.29%) in the Response Table (these are individual time stamp records for individual units) that were not included in the over 12 million records in the Unit Status History Table. Although the number of time stamp records was insignificant to the population of Unit Status History records, we used these Response Table records along with the Unit Status History Table as source data for our response time calculations.

Our analysis considered all incidents where LAFD units had noted an "on scene" time data element. Because we were interested in calculating response times for each segment in the process (call processing, turnout, and travel) and overall, each of these were analyzed as a separate population. Incidents that were missing a time stamp for either the start or end of a relevant segment, or that resulted in a negative time for that segment, were excluded from the analysis. For the turnout and travel segment populations, the exclusions were insignificant. For call processing, the exclusions averaged 27%. Our review results provide verifiable performance measures based on the available data, and fairly represents calculated averages and %s as applicable for each segment.

Based on the tests we conducted, for consideration of all incident data that was coded as either an EMS or Fire/Non-EMS incident, and after applying consistent criteria for excluding some incidents for some segments, we are sufficiently confident that the LAFD response times presented in this report provide accurate measures of performance, based on the system data.

Criteria to Calculate Response Times

According to LAFD, turnout and travel times are the response components that are most relevant to the Department. We compared the actual response times based on when the units received the alarm/radio notification of dispatch (start of turnout time) to the on scene time (end of travel time) for each of the time periods in our review.

However, from the general public's perspective, response time is generally considered to be the elapsed time from their call to 9-1-1, up to the arrival of Fire personnel and equipment at the incident location. LAFD's reported turnout and travel time does not account for the total response time experienced by a caller. Therefore, for purposes of informing the public and City leaders of the average time for LAFD to respond to an incident from their call to 9-1-1, we also calculated call processing times for LAFD dispatch (call is transferred to LAFD Communications and dispatch orders are sent to units) and considered average call processing times as obtained from the LAPD Communications Division.[6]

These average total response times are reported for each of the four periods of resource deployment strategies, as well as by community code. LAFD's incident data identifies the community code where the incident is located. There are seven community codes used by LAFD Dispatch to help determine the dispatch orders based on incident location. These include:

- East Los Angeles
- Harbor City
- Metro
- San Fernando Valley
- Santa Monica[7]
- San Pedro
- West Los Angeles

The response times calculated in our review included all incidents identified as either EMS or Fire/Non-EMS from January 1, 2007 through March 26, 2012.[8] In accordance with LAFD criteria, response times for First Resource on Scene included 10 unit types, as listed below:

[6] We did not audit LAPD's 911 call processing times.
[7] In prior years, the LAFD provided dispatch services for Santa Monica; this service is no longer provided.
[8] Our analysis included all incidents classified in these two broad categories by LAFD because the data provided and related classifications did not consistently differentiate between emergency and non-emergency incidents.

1. Assessment Engine
2. Assessment Truck
3. Engine
4. Light Force
5. Paramedic Ambulance
6. Paramedic Engine
7. Rescue Ambulance
8. Squad
9. Truck
10. Task Force

All LAFD fire and EMS units are staffed with personnel trained as Emergency Medical Technicians (EMTs). This enables any LAFD unit responding to an EMS incident to provide Basic Life Support services. Firefighters trained to the level of a Paramedic provide Advanced Life Support (ALS) and may be assigned to an Assessment Engine, Assessment Truck, Paramedic Ambulance, or Paramedic Engine.

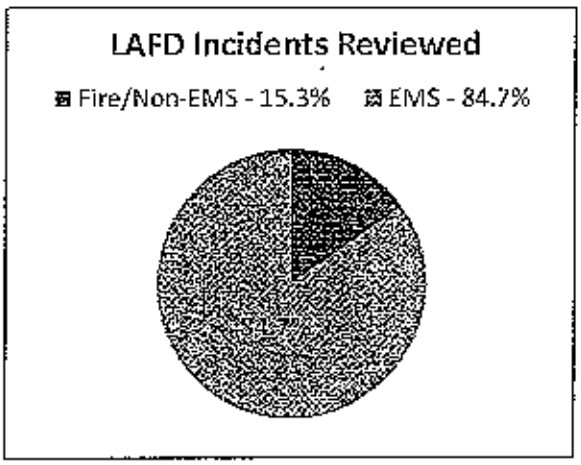
Our response time calculations for the specific segment of response time (i.e., call processing, turnout, and travel) excluded incidents where one of the related time components was blank. We also excluded incidents where the calculated time for a specific segment resulted in a negative time. These can result when on scene time stamps are noted as having occurred before a unit received the alarm/radio notification of dispatch. According to LAFD, this could occur for "still alarms" when a unit could be flagged down by someone and the unit arrives on scene for the emergency prior to the typical dispatch process through LAFD Metro Communications (or a person seeking help comes directly to the fire station). In these instances, the unit will radio Metro Communications to report the incident and their location, and this information is then recorded into CAD with the time stamps for 911 call, dispatch and en route being noted as the same or later than the on scene time noted for the unit.

Our analysis also excluded outlier response times for each time segment. In statistical terms, we included all incident response times for each of the three segments (call processing, turnout, and travel) that fell within two standard deviations from the calculated mean. By applying two standard deviations, we considered more than 95% of the population of each incident's segment data being analyzed. This adjustment, which is an accepted practice in statistical analysis, provides for consideration of virtually the entire population, and provides a more meaningful adjusted average time.

REVIEW RESULTS

SECTION I: RESPONSE TIME TRENDS

Based on the incident data in our analysis, the number of incidents handled by the LAFD has remained consistent over the four periods under review. LAFD responds to approximately 360,000 incidents on an annual basis, and EMS account for approximately 85% of this total.



As previously described, NFPA Standard 1710 defines *turnout* as starting from the time a fire department unit receives the alarm/radio notification of dispatch, and the assigned unit's personnel prepares for the incident (e.g., putting on protective gear) up to the unit personnel getting on the fire engine, truck, ambulance, etc. ready to travel to the incident location. *Travel* time is defined as the elapsed time from the unit being en route (start of travel to incident location) until it is on scene (arrived at incident location). LAFD has reported their emergency response times that include these two defined segments of the process, in comparison to NFPA standards.

Observation #1: LAFD Incident Code data does not clearly and consistently define response incidents as either "Emergency" or "Non-Emergency", making any attempt to compare actual performance to NFPA standards problematic.

The NFPA Standards apply to the deployment of resources by a fire department ***specifically to emergency situations,*** when operations can be implemented to save lives and property. LAFD, consistent with most fire departments, deploys resources in response to a wide variety of events including fires, rescues, alarms, investigations, hazard mitigation, and EMS. Some incidents are considered emergency situations that would be subject to NFPA criteria, while others are not. Based on information received from the 911 caller (or other request for service), LAFD Dispatch assigns a detailed incident type code to the event[9], which determines whether the dispatch is considered an emergency or non-emergency.

[9] LAFD's Computer Assisted Dispatch System uses 1,156 unique incident type codes, which are further defined by eleven additional descriptive criteria, including an Emergency Dispatch Code.

The incident data provided for our review, after excluding cancelled events and considering only those that were classified as either EMS or Fire/Non-EMS, included more than 1.9 million incidents that resulted in a LAFD response. By analyzing the specific incident code assigned to each, we noted that a significant portion (646,000 or 33%) were classified as incident types that LAFD further defines as "**emergency, can be non-emergency**". According to LAFD, for these incident types, dispatchers may use their discretion to designate the notification to responding units to be in emergency status or not, depending on their interaction with the caller. However, the final determination is not coded in the system as either an emergency or non-emergency. Instead, the dispatcher's determination would be noted as a text narrative in a subordinate "comments" field within CAD. The "comments field" was not included with the incident data files provided to the Controller's Audit staff for this analysis, nor would this field be easily searchable by LAFD or others to determine whether such incidents were handled as an "emergency" or not. Further, more than 24,000 incidents had a blank field for incident type, and therefore lacked any classification as to whether it was an emergency or a non-emergency.

Therefore, for more than one-third of all incidents subject to our analysis, we could not assess whether it should have been subject to the NFPA standards as criteria, or not. The high percentage of incidents in this category raises questions regarding the accuracy and reliability of coded information.

It could be reasonably argued both ways; that these should, or should not, be included in calculating response times for measurement against NFPA standards. As a result, we are not able to definitively conclude on a significant portion of the incident population that should be used for a comparison to benchmarked standards; therefore, we present no such comparison in our report. Rather, we performed our independent analysis considering the population of ***all*** EMS and Fire/Non-EMS incidents that LAFD responded to during the relevant periods under review. It should also be noted that the classification of "emergency" or "non-emergency" is made by LAFD Dispatch based on their understanding of the incident noted by the caller. Therefore, while the caller may believe he/she truly needs "emergency assistance" and expects LAFD to arrive within the quoted NFPA standard of five to six minutes, the Department may not have classified nor escalated the incident as an "emergency".

It also appears that LAFD may have used inconsistent methods for considering which incidents were classified as emergencies in their analyses of response times for different reporting periods. While the "emergency" classification on the dispatch code is linked to the incident type code within CAD, LAFD MIS personnel stated they consider only certain codes but not all for classifying emergency versus non-emergency incidents. In addition, for reports produced using the Deccan software system, we noted that many inconsistencies where incident types noted as "non-emergency" were used by Deccan's CAD Analyst queries to produce reported performance statistics for emergency incidents through Deccan.

Observation No. 2: LAFD unit response times from alarm/radio notification to first unit on-scene has had mixed results, with some response times increasing and others decreasing from full deployment to the current Deployment Plan.

For all incidents identified as EMS or Fire/Non-EMS from January 1, 2007 through March 26, 2012, we calculated the time interval between alarm/radio notification times and on scene times. We determined the citywide average response times for each of the four time periods to demonstrate any change in response times potentially due to resource deployment changes.. We applied the same criteria for each period to allow comparisons to be made of the data over the four time periods.

The four time periods used for our analysis are as follows:

Resource Coverage	Time Period	Months
Full Deployment (or Pre-MCP)	January 2007 through July 2009	31
Modified Coverage Plan (MCP)	August 2009 through December 2010	17
Expanded Modified Coverage Plan (EMCP)	January 2011 through June 2011	6
Deployment Plan	July 2011 through March 2012	9

Table 1a summarizes LAFD's overall calculated average response times for all EMS and Fire/Non-EMS incidents. For EMS incidents, the first responding unit can be any type of LAFD fire or EMS unit. All fire and EMS units are staffed with personnel trained as Emergency Medical Technicians (EMTs). This enables any unit responding to an EMS incident to provide Basic Life Support to a person in need.

Table 1a

Average Time from Alarm/Radio Notification to First Unit Arriving On-Scene (Turnout & Travel)

Incident Type	Pre-MCP	MCP	EMCP	DP	Change from Pre- MCP to DP
All EMS Incidents	4 min. 45 sec.	4 min. 53 sec.	4 min. 55 sec.	4 min. 57 sec.	+ 12 sec
All Fire/Non-EMS Incidents	5 min. 18 sec.	5 min. 2 sec.	4 min. 58 sec.	4 min. 57 sec.	- 21 sec.

Our analysis indicates that the average response time has increased 12 seconds from the Department's full deployment to the most current Deployment Period.

The results are slightly better for Fire/Non-EMS response times. The average response time has also improved over time and has been reduced by 21 seconds in the most current Deployment Period from 5 minutes, 18 seconds to 4 minutes 57 seconds.

Our review does not present a comparison of the reviewed response times to the Department's reported response times, due to LAFD's applying different criteria and methodology to different time periods. In our analysis, we excluded response times that exceeded two standard deviations from the mean for that specific time segment's population (e.g. turnout or travel). In contrast, LAFD's criteria excluded incidents from response time calculations if the interval between time stamps is 20 minutes or more. In addition, our review scope included more current response data, up to March 26, 2012.

Table 1b provides response times for first Advanced Life Support (ALS) resource and structure fire incidents. These are additional classifications of incident types previously reported by LAFD.

First ALS Resource refers to those EMS incidents where an Advanced Life Support unit, which includes a LAFD paramedic, arrived on scene. Our analysis noted that 84% of all EMS incidents had an ALS Resource response, and ALS Resources were deployed for 71% of total LAFD response incidents reviewed.

Structure Fires are a sub-classification of all Fire/Non-EMS incidents. Our analysis noted that structure fires accounted for 7.3% of all Fire/Non-EMS incidents, and Structure Fires were 1.1% of all LAFD response incidents reviewed.

Table 1b

Average Time from Alarm/Radio Dispatch to First Unit Arriving On-Scene (Turnout & Travel)

Incident Type	Pre-MCP	MCP	EMCP	DP	Change from Pre-MCP to DP
EMS First ALS Resource	5 min. 21 sec.	5 min. 5 sec	5 min. 9 sec.	5 min 5 sec	- 16 sec.
Structure Fires	3 min. 36 sec.	3 min. 37 sec.	3 min. 29 sec.	3 min. 37 sec.	+ 1 sec.

Our review results indicate that LAFD's response times for first ALS Resource (paramedic) on scene have improved over time, reducing the average response time by 16 seconds. LAFD's structure fire average response time has increased 1 second from full deployment Pre-MCP to the current Deployment Period.

Our review did not assess the impact on public safety for those cases where the reviewed response times demonstrated a longer response time. Whether these differences can be considered significant or can be attributed to deployment changes requires a specific analysis by experts knowledgeable in emergency services, which was not part of this review. Appendix I presents a frequency distribution of the calculated times from alarm/radio notification to on scene for the four periods, by incident type.

SECTION II: TOTAL RESPONSE TIMES

Prior to 2010, LAFD analyzed emergency response times using a six-minute standard that included call processing time. Currently, LAFD analyzes response times in accordance with NFPA Standard 1710 for turnout and travel time only. NFPA 1221 defines standards and performance related to call processing/alarm handling. While turnout and travel times are important components for operational decisions regarding citywide resource deployment, the total response time – from the time a 9-1-1 call is received to when the LAFD units arrive on scene – is fundamentally important from the public's perspective.

NPFA Standard 1221 Section 6.4.3 defines the alarm handling (call processing) time standard and goal for fire department call processing where there is a separate Public Safety Answering Point (PSAP – a facility in which 911 calls are answered directly). The LAPD is the City's PSAP.

Exhibit 6
NFPA 1221 Time Standard & Goals

Emergency Incident	Standard (Seconds/Minutes)	Goal per NFPA 1221
All EMS Incidents	1 minute or less 1 min; 30 sec or less	90% at 60 seconds 99% at 90 seconds
All Fire/Non-EMS Incidents	1 minute or less 1 min; 30 sec or less	90% at 60 seconds 99% at 90 seconds

Since the average total response time may be more informative for the general public, we have also calculated and compared the average total response times, by response segment and overall, for the four classifications of incidents (EMS, Fire/Non-EMS, ALS and Structure Fire) over the four deployment periods under review. However, as noted in Observation No. 1, we have not compared LAFD's overall total response times, nor by segment, to NFPA standards, due to the fact that all incident data could not be clearly defined as either "emergency" or "non-emergency", and subject to NFPA criteria.

Observation No. 3: The average total response time from 911 call processing to first unit on-scene has increased for most incident types from full deployment (Pre-MCP) to the current Deployment Plan.

The following tables and charts present the result of our analysis and calculated citywide averages for each segment of LAFD's response, based on incident type:

2a – EMS incidents; First Resource on Scene
2b – EMS incidents; First ALS on Scene
2c – Fire/Non-EMS incidents; First Resource on Scene
2d – Structure Fire incidents; First Resource on Scene

The calculated results for each segment presented here were based on separate data populations from CAD, each with its own standard deviation that was used to eliminate relative outliers for the population segment being measured. In addition, our analysis excluded incidents that were missing a time stamp for either the start or end of the process, or if the elapsed time between time stamps was negative. While the total of all excluded incidents for the turnout and travel populations were insignificant, the excluded incidents for call processing averaged 27% of that segment's population. There may be a reasonable explanation for this high number of what appear to be atypical processes; however, this may warrant a further review by LAFD management regarding adherence to established procedures, and/or inquiries regarding any necessary upgrade or replacement of the CAD system.

It should also be noted that because we analyzed each process segment as a separate population, the sum of two segments for turnout and travel, which are noted separately in this Section, may not be equivalent to the outcomes noted in Section I for average time from alarm/ratio notification to first unit arriving on scene.

We also calculated average total response time by segment for all EMS and Fire/Non-EMS incidents by Community Code over the four periods; these results are presented in Appendix II.

LAFD's response time performance for citywide incident types, for call processing, turnout, travel, and ambulance transport over the four periods is presented in Appendix III.

Table 2a

Average Time from 9-1-1 Call made to LAPD to First LAFD Resource on Scene – All EMS Incidents

Deployment Period	LAPD receives & transfers 911 call (in seconds)	LAFD receives & processes 911 call (in seconds)	Turnout time (in seconds)	Travel Time (in seconds)	Total time from 911 call to first LAFD resource on-scene
Pre-MCP	25	96	51	237	6 min 48 sec.
MCP	25	104	53	245	7 min 7 sec.
EMCP	24	105	56	244	7 min 9 sec
DP	24	104	56	244	7 min 8 sec

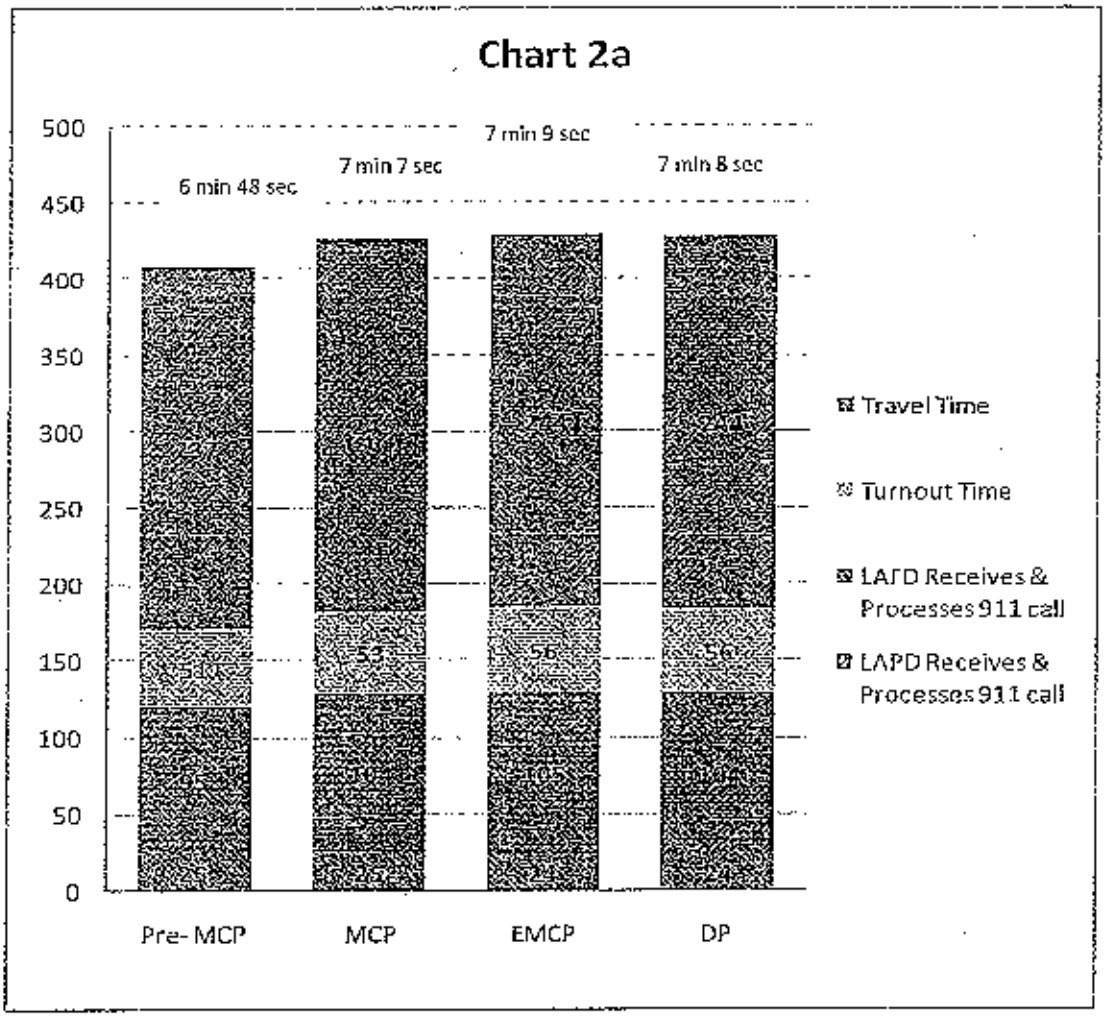


Table 2b

Average Time from 9-1-1 Call made to LAPD to First ALS Resource (Paramedic) on Scene for EMS Incidents

Deployment Period	LAPD receives and transfers 911 call (in seconds)	LAFD receives & processes 911 call (in seconds)	Turnout time (in seconds)	Travel Time (in seconds)	Total time from 911 call to first LAFD resource on scene
Pre-MCP	25	116	61	266	7 min 48 sec
MCP	25	113	61	248	7 min 27 sec
EMCP	24	116	62	251	7 min 33 sec
DP	24	108	65	245	7 min 22 sec

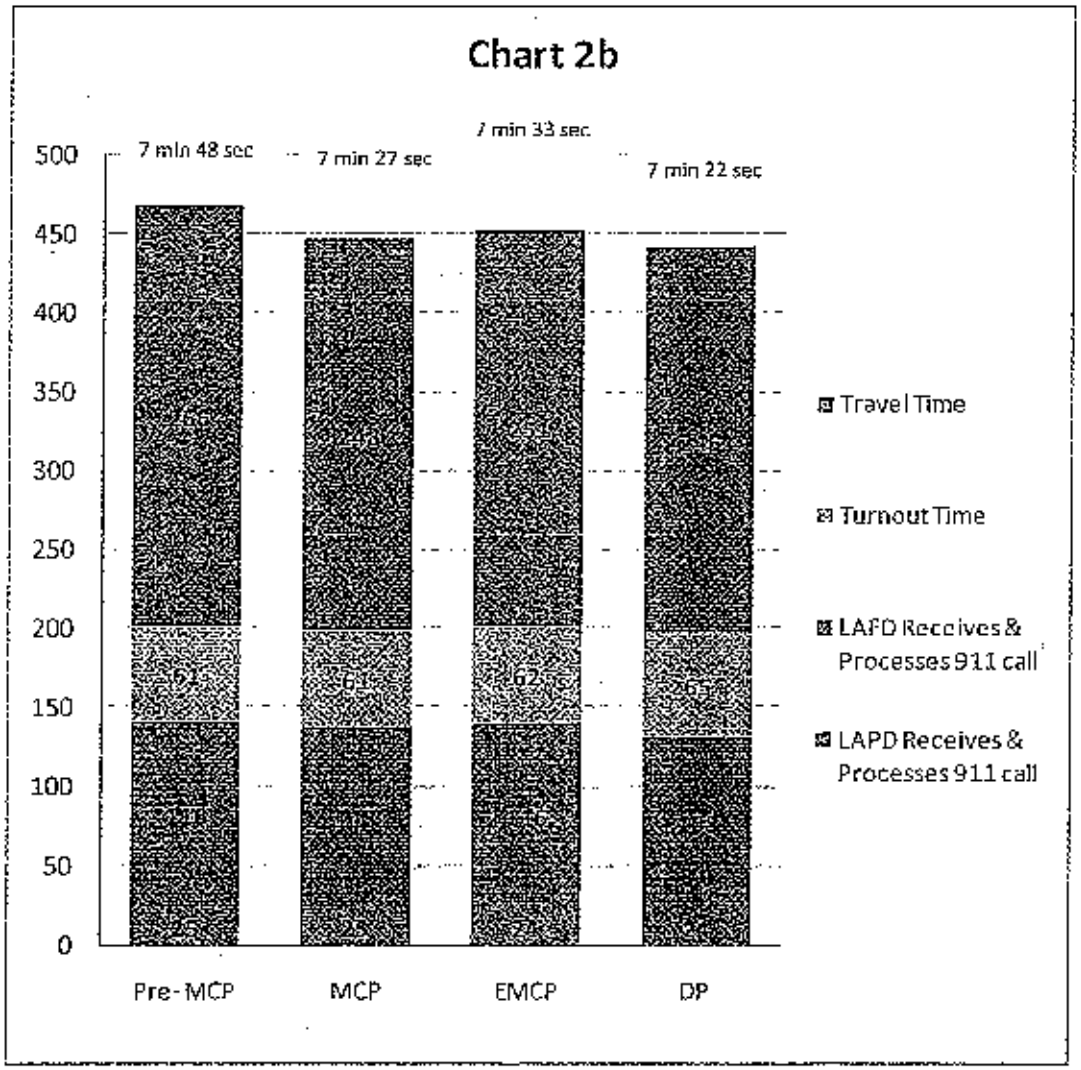


Table 2c

Average Time from 9-1-1 Call made to LAPD to First LAFD Resource on Scene – All Fire/Non-EMS

Deployment Period	LAPD receives and transfers 911 call (in seconds)	LAFD receives & processes 911 call (in seconds)	Turnout time (in seconds)	Travel Time (in seconds)	Total time from 911 call to first LAFD resource on scene
Pre-MCP	25	76	59	266	7 min 6 sec
MCP	25	81	60	248	6 min 54 sec
EMCP	24	86	62	244	6 min 56 sec
DP	24	79	65	239	6 min 47 sec

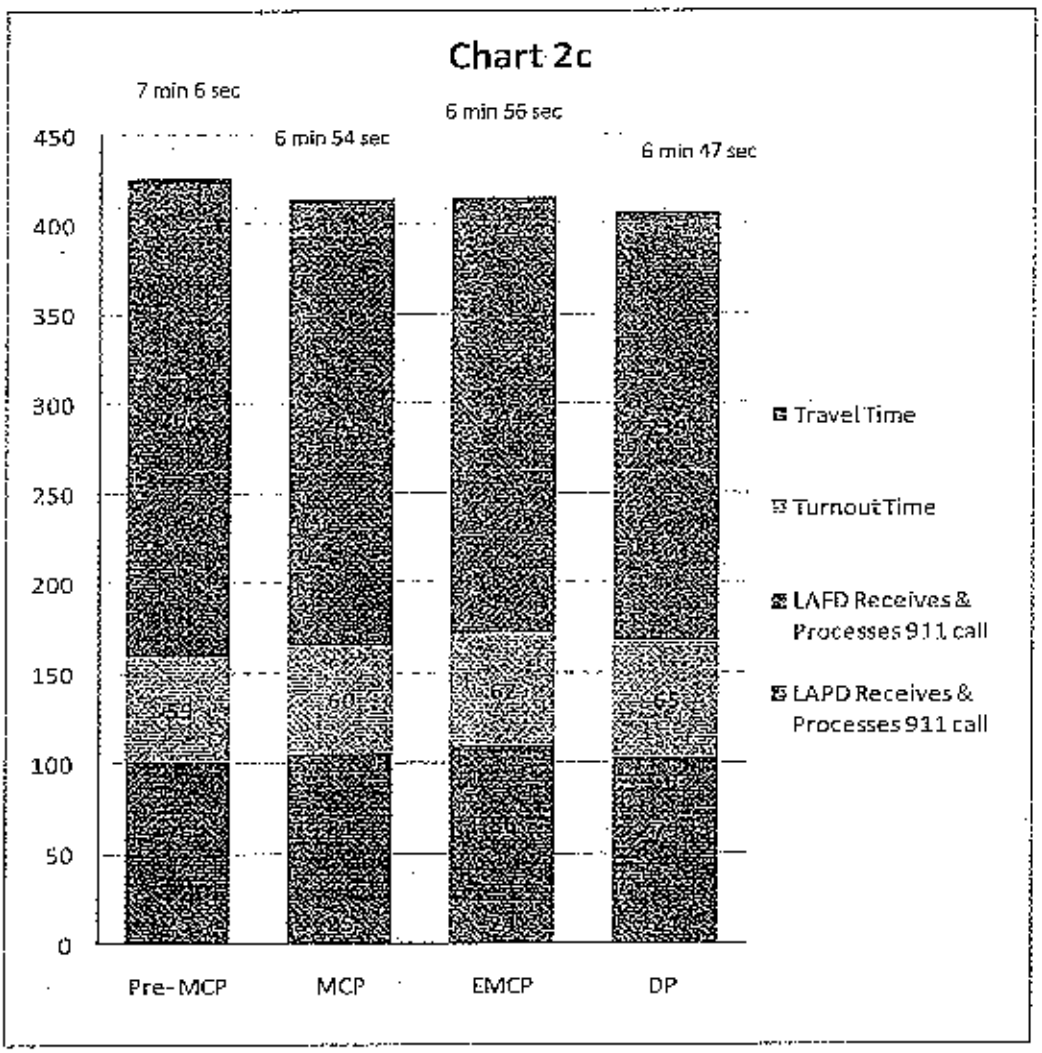
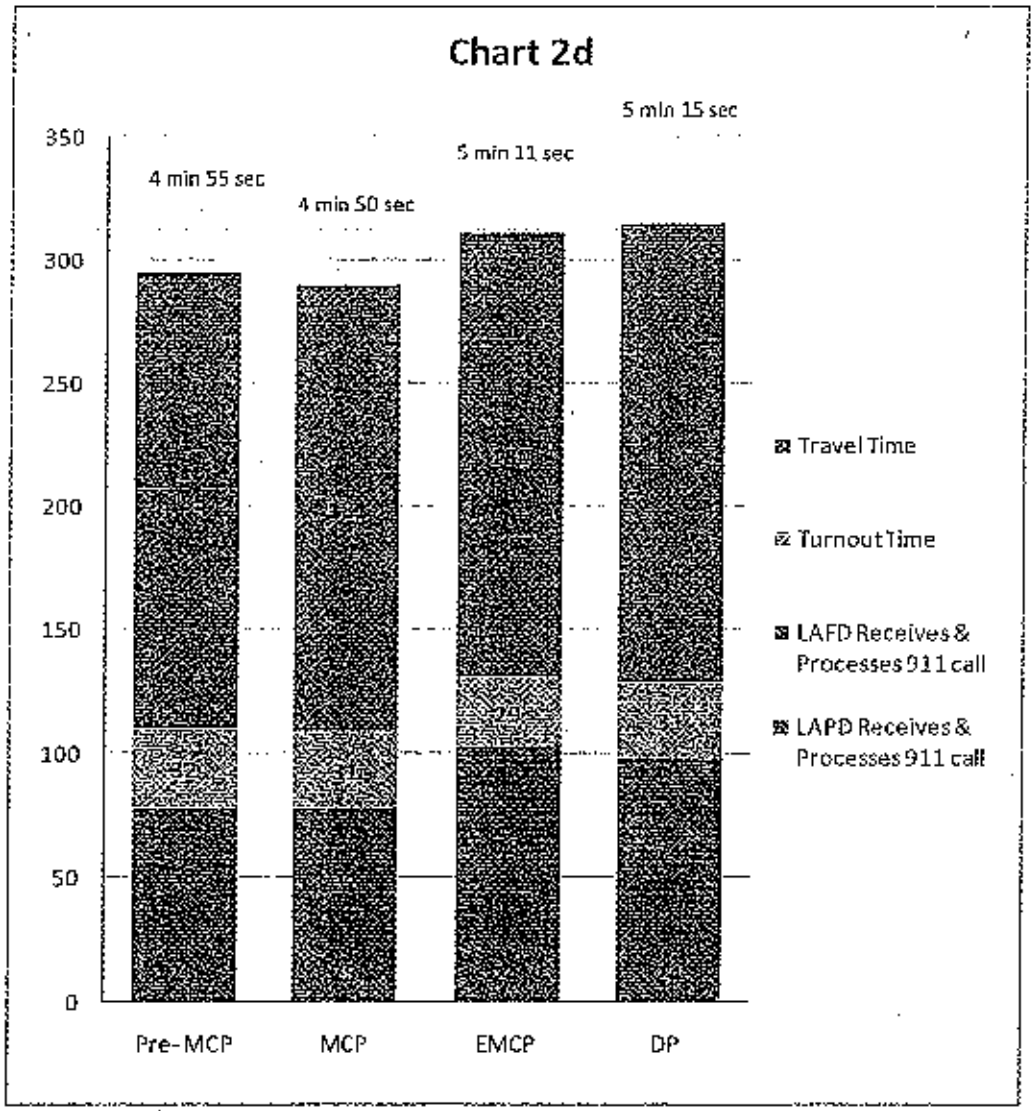


Table 2d

Average Time from 9-1-1 Call made to LAPD to First LAFD Resource on Scene – Structure Fires

Deployment Period	LAPD receives and transfers 911 call (in seconds)	LAFD receives & processes 911 call (in seconds)	Turnout time (in seconds)	Travel Time (in seconds)	Total time from 911 call to first LAFD resource on-scene
Pre-MCP	25	53	32	185	4 min 55 sec
MCP	25	53	31	181	4 min 50 sec
EMCP	24	78	29	180	5 min 11 sec
DP	24	74	31	186	5 min 15 sec



Based on the information presented in the tables and charts 2a through 2d, the total response time from the call to 9-1-1 to the first LAFD resource on scene has generally followed the same trend as depicted in Tables 1a and 1b. Turnout and Travel times for all EMS, EMS – Advanced Life Support (Paramedic) and Fire/Non-EMS incidents are fairly similar to one another; while the Turnout and Travel times for Structure Fires were less than the other incident types. LAFD Call Processing Times are greater for EMS than Fire/Non-EMS incidents and may be the result of LAFD Dispatchers asking more detailed questions to assess the patients' medical condition.

Additional information related to response times is presented in the Appendices that follow. Appendix I shows the frequency distribution of the Alarm/Radio Notification to On-Scene time data for each incident type, in meeting different intervals of time. This information provides more specificity than average response times and clearly indicates the ratio of incidents meeting different time intervals.

Appendix II shows the Average Total Response Times for EMS and Fire/Non-EMS incidents by Community Code for each of the deployment periods reviewed.

Appendix III shows other Response Times for EMS and Fire/Non-EMS incidents.

Respectfully submitted,

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May 9, 2012

Appendix I

Frequency Distribution of Alarm/Radio Notification to On-Scene Times by Incident Type[10]

ALL EMS
RESPONSE TIMES –Turnout & Travel

	Pre MCP		*MCP*		*EMCP*		*DP*	
Time Ranges	Freq.	Cum. %	Freq.	Cum. %	Freq.	Cum. %	Freq.	Cum. %
0 to 1 min	2%	2%	2%	2%	2%	2%	2%	2%
> 1 min to 2 min	3%	5%	3%	5%	3%	5%	2%	5%
>2 min to 3 min	11%	16%	10%	15%	9%	14%	9%	13%
>3 min to 4 min	22%	38%	22%	36%	21%	35%	20%	33%
>4 min to 5 min	24%	62%	23%	60%	24%	59%	24%	57%
>5 min to 6 min	17%	78%	17%	76%	18%	76%	18%	76%
>6 min to 7 min	10%	88%	10%	86%	10%	86%	11%	86%
>7 min to 8 min	5%	93%	5%	91%	6%	92%	6%	92%
>8 min to 9 min	3%	96%	3%	95%	3%	95%	3%	96%
>9 min to 10 min	2%	98%	2%	97%	2%	97%	2%	98%
>10 min to 15 min	2%	100%	3%	100%	3%	100%	2%	100%
>15 min to 20 min	0%	100%	0%	100%	0%	100%	0%	100%
>20 min	0%	100%	0%	100%	0%	100%	0%	100%

[10] There may be immaterial differences noted in the cumulative percentages as a result of rounding the frequency distribution percentages to the nearest whole number.

ALL FIRE/NON-EMS
RESPONSE TIMES – Turnout & Travel

	Pre MCP		*MCP*		*EMCP*		*DP*	
Time Ranges	Freq.	Cum. %	Freq.	Cum. %	Freq.	Cum. %	Freq.	Cum. %
0 to 1 min	3%	3%	3%	3%	3%	3%	3%	3%
> 1 min to 2 min	3%	6%	3%	6%	3%	6%	3%	6%
>2 min to 3 min	10%	16%	10%	16%	10%	16%	9%	16%
>3 min to 4 min	21%	36%	21%	37%	20%	36%	20%	36%
>4 min to 5 min 20 sec	27%	63%	28%	65%	28%	64%	29%	64%
>5 min 20 sec to 6 min	9%	73%	10%	75%	10%	74%	10%	75%
>6 min to 7 min	9%	82%	9%	84%	10%	84%	10%	85%
>7 min to 8 min	6%	88%	6%	90%	6%	90%	6%	91%
>8 min to 9 min	4%	91%	3%	93%	4%	94%	4%	94%
>9 min to 10 min	2%	94%	2%	95%	2%	96%	2%	96%
>10 min to 15 min	5%	98%	4%	99%	4%	100%	4%	100%
>15 min to 20 min	1%	99%	1%	100%	0%	100%	0%	100%
>20 min	1%	100%	0%	100%	0%	100%	0%	100%

ALL ADVANCED LIFE SUPPORT RESOURCE (PARAMEDIC) RESPONSE TIMES – Turnout & Travel

	Pre MCP		*MCP*		*EMCP*		*DP*	
Time Ranges	Freq.	Cum. %	Freq.	Cum. %	Freq.	Cum. %	Freq.	Cum. %
0 to 1 min	2%	2%	2%	2%	2%	2%	2%	2%
> 1 min to 2 min	2%	4%	2%	4%	2%	4%	2%	4%
>2 min to 3 min	8%	12%	8%	12%	8%	12%	8%	12%
>3 min to 4 min	18%	30%	20%	32%	19%	30%	19%	31%
>4 min to 5 min	22%	52%	23%	55%	23%	53%	24%	54%
>5 min to 6 min	18%	70%	18%	73%	19%	72%	19%	73%
>6 min to 7 min	12%	81%	11%	84%	12%	83%	12%	85%
>7 min to 8 min	7%	88%	7%	91%	7%	90%	7%	91%
>8 min to 9 min	4%	92%	4%	95%	4%	95%	4%	95%
>9 min to 10 min	3%	95%	2%	97%	3%	97%	2%	97%
>10 min to 15 min	4%	99%	3%	100%	3%	100%	3%	100%
>15 min to 20 min	1%	100%	0%	100%	0%	100%	0%	100%
>20 min	0%	100%	0%	100%	0%	100%	0%	100%

ALL STRUCTURE FIRES
RESPONSE TIMES – Turnout & Travel

	Pre MCP		*MCP*		*EMCP*		*DP*	
Time Ranges	Freq.	Cum. %	Freq.	Cum. %	Freq.	Cum. %	Freq.	Cum. %
0 to 1 min	4%	4%	4%	4%	4%	4%	3%	3%
> 1 min to 2 min	9%	13%	8%	12%	8%	12%	8%	11%
>2 min to 3 min	21%	34%	23%	35%	24%	36%	22%	32%
>3 min to 4 min	31%	65%	32%	66%	31%	67%	32%	65%
>4 min to 5 min 20 sec	25%	89%	23%	89%	24%	91%	25%	89%
>5 min 20 sec to 6 min	5%	94%	5%	94%	5%	97%	5%	95%
>6 min to 7 min	4%	98%	3%	97%	4%	100%	4%	98%
>7 min to 8 min	1%	99%	2%	99%	0%	100%	2%	100%
>8 min to 9 min	1%	100%	1%	99%	0%	100%	0%	100%
>9 min to 10 min	0%	100%	0%	100%	0%	100%	0%	100%
>10 min to 15 min	0%	100%	0%	100%	0%	100%	0%	100%
>15 min to 20 min	0%	100%	0%	100%	0%	100%	0%	100%
>20 min	0%	100%	0%	100%	0%	100%	0%	100%

Response Times by Community Code

LAFD's CAD data identifies the community code where the incident is located. There are seven community codes used by LAFD Metro Communications to help determine the dispatch orders, based on the incident location. These include:

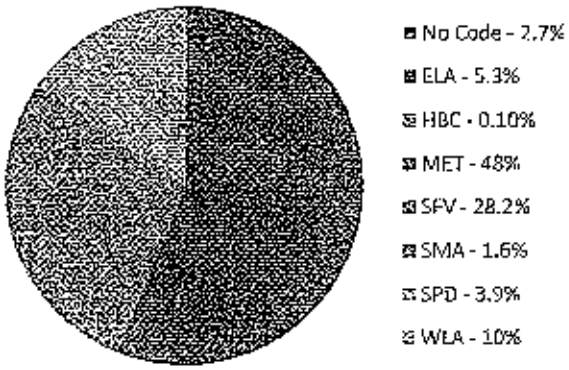
- East Los Angeles
- Harbor City
- Metro
- San Fernando Valley
- Santa Monica (note: while LAFD previously provided dispatch services to the City of Santa Monica, it no longer does, as indicated by the very low numbers noted in subsequent tables)
- San Pedro
- West Los Angeles

While these classifications indicate the general geographical area of the incidents that required a response by LAFD, the Department does not possess a map showing the relative boundaries of these communities within the City, or the specific fire stations included therein. As noted in the pie charts following, for a significant number of incidents there was no community code assigned. This further brings into question the accuracy and reliability of incident data noted in CAD.

The following tables and charts provide a breakdown of the total incidents by community code, for both EMS and Fire/Non-EMS, as recorded in the Computer Aided Dispatch system that we considered in our analysis. Using the methodology described in the body of this report, each of these were separately analyzed to determine the total response times for both EMS and Fire/Non-EMS incidents, by each of the seven community codes identified, which are provided as bar charts in subsequent pages of this Appendix.

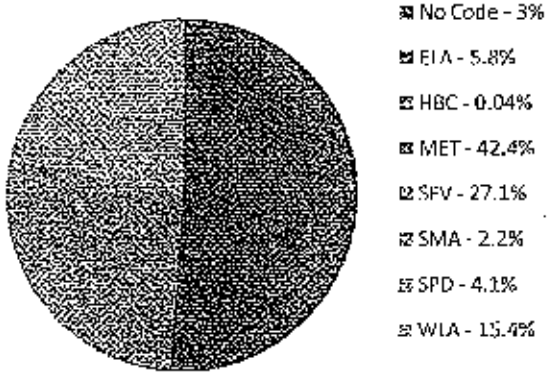
All EMS Incidents (RA) By Community Code					
	Pre	MCP	EMCP	DP	Total
No Code	22,345	12,747	3,948	6,278	*45,318*
ELA	42,583	24,417	8,571	12,892	*88,463*
HBC	772	424	175	273	*1,644*
MET	384,914	216,043	77,068	116,247	*794,272*
SFV	224,643	127,338	45,411	69,680	*467,072*
SMA	23,234	3,302	3	9	*26,548*
SPD	31,491	17,746	6,290	9,714	*65,241*
WLA	79,587	45,671	16,477	24,544	*166,279*
Total	*809,569*	*447,688*	*157,943*	*239,637*	*1,654,837*

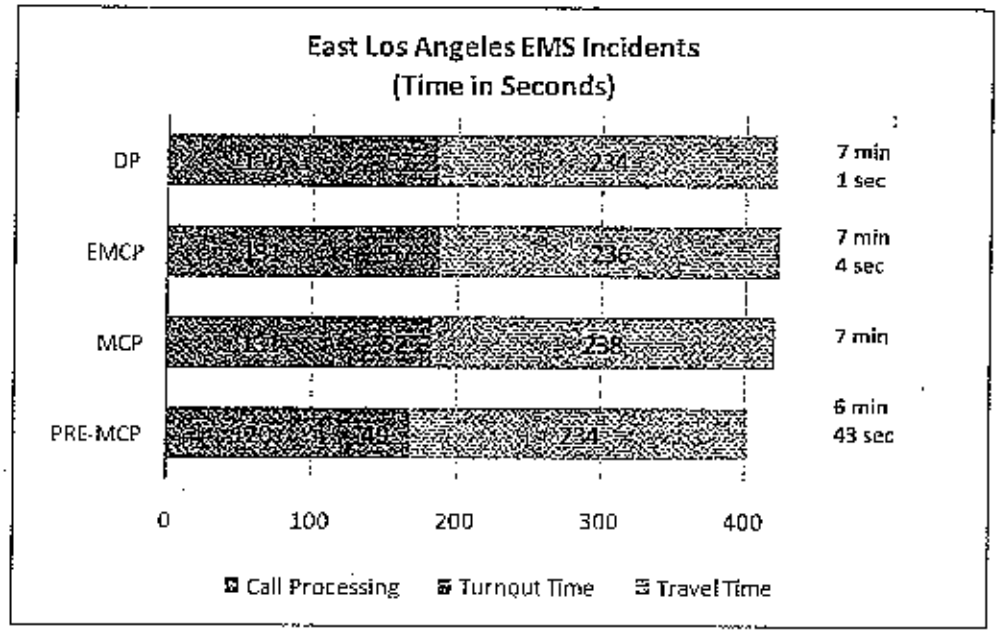
All EMS Incidents by Community Code

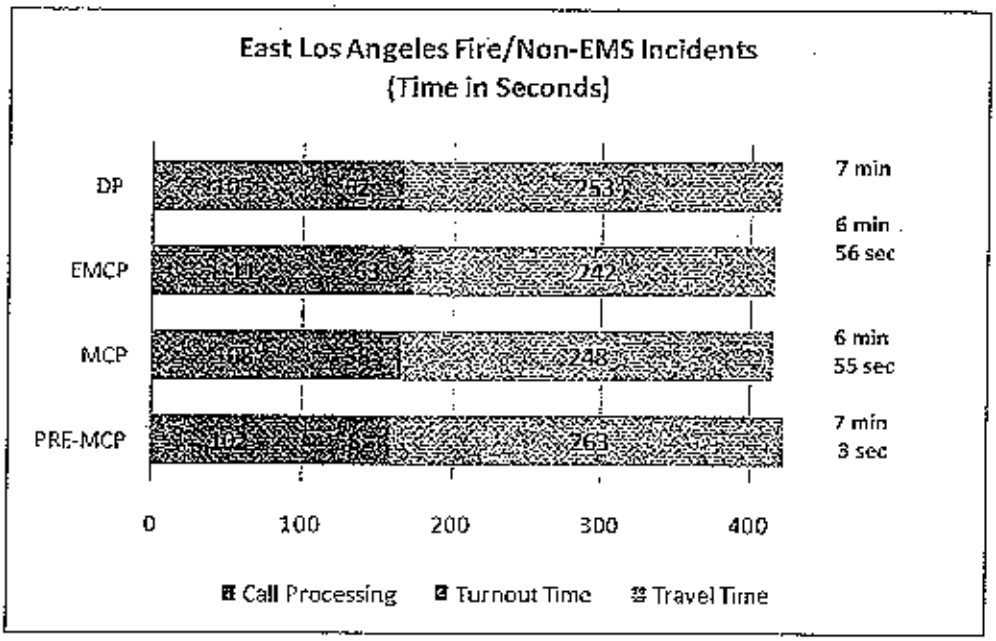


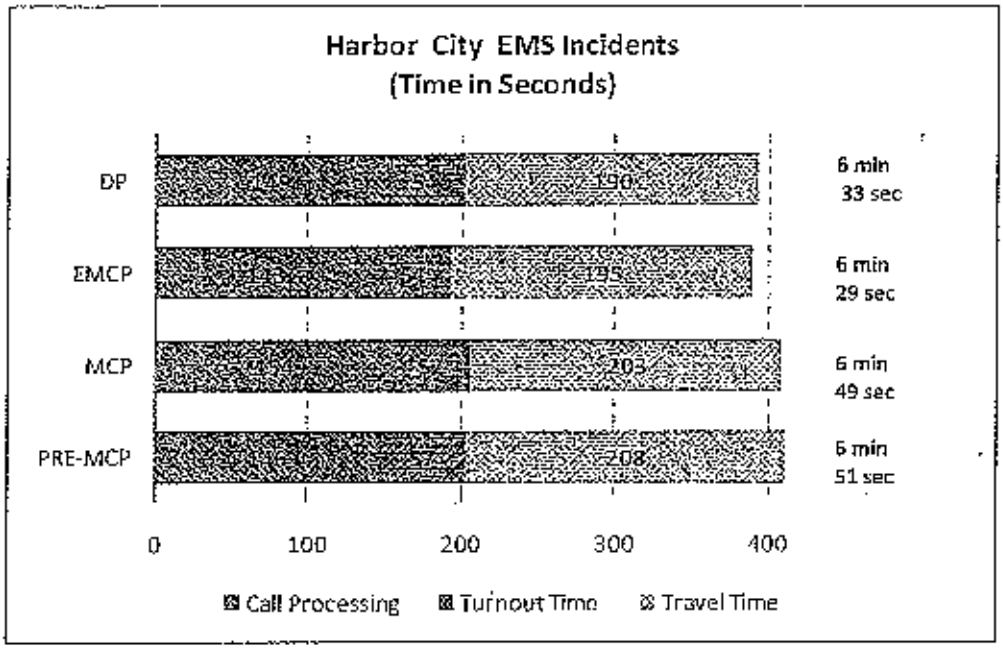
All Fire/Non-EMS Incidents By Community Code					
	Pre	MCP	EMCP	DP	Total
No Code	4,989	2,519	755	1,240	*9,503*
ELA	9,003	4,883	1,629	2,884	*18,399*
HBC	75	34	11	15	*135*
MET	67,130	35,536	12,133	19,610	*135,409*
SFV	43,203	23,335	8,068	12,124	*86,730*
SMA	6,232	842	2	2	*7,078*
SPD	6,563	3,444	1,192	1,791	*12,990*
WLA	24,404	13,388	4,559	6,917	*49,268*
Total	*161,599*	*84,981*	*28,349*	*44,583*	*319,512*

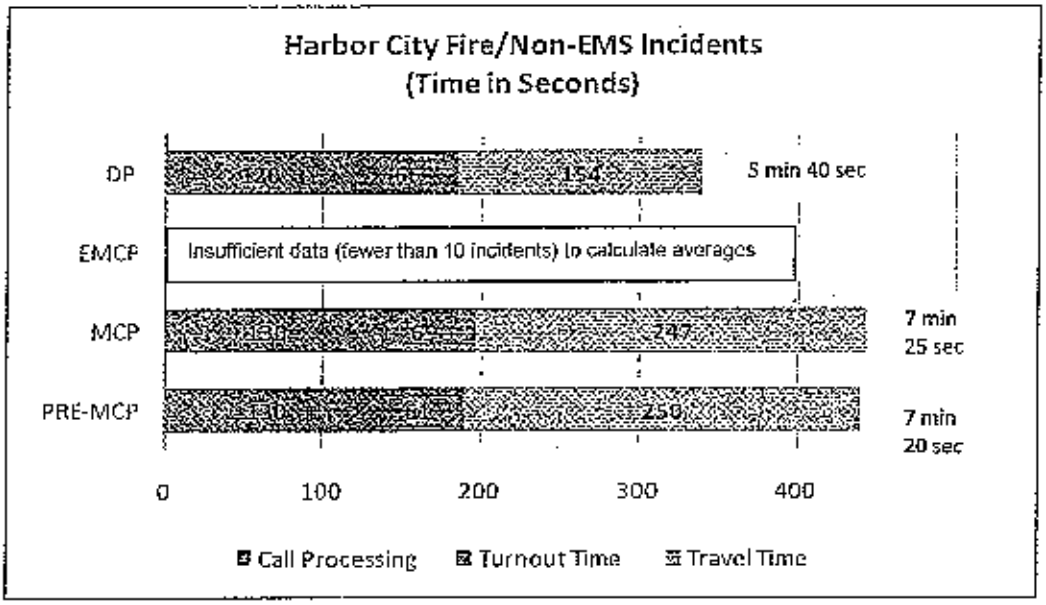
All Fire/Non-EMS Incidents
by Community Code

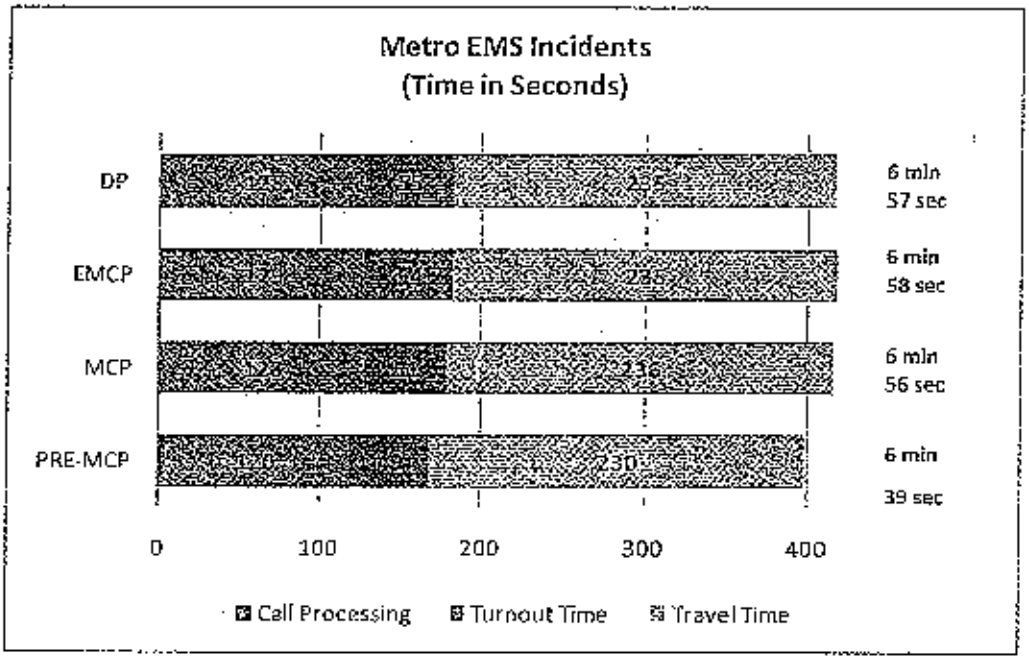


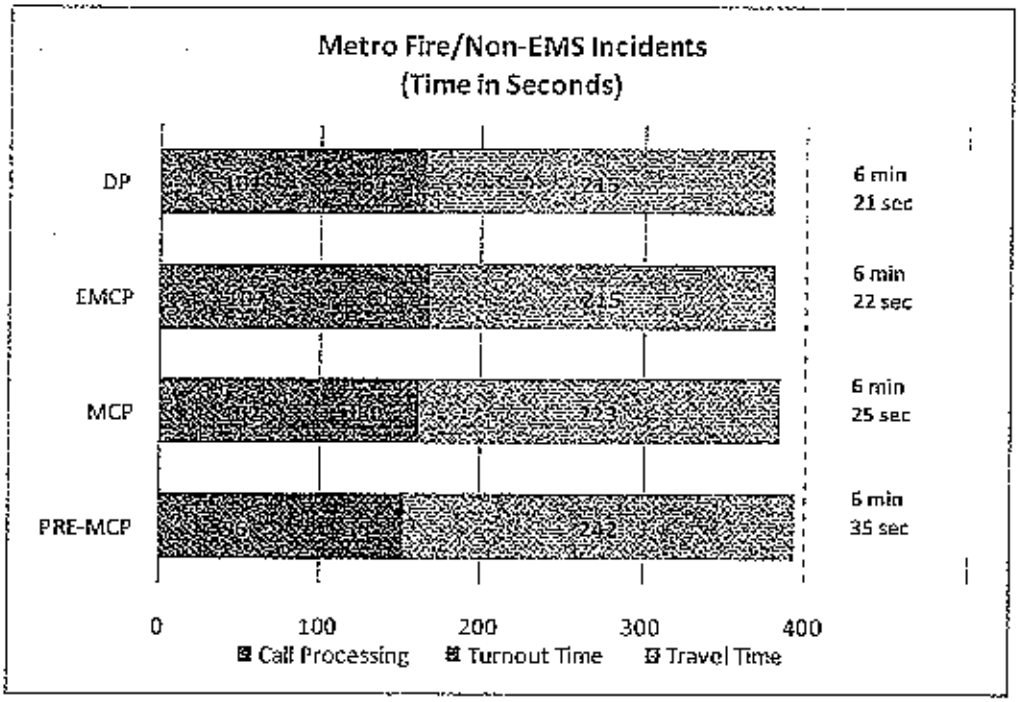

East Los Angeles EMS Incidents
(Time in Seconds)
DP
EMCP
MCP
PRE-MCP
7 min
1 sec
7 min
4 sec
7 min
6 min
43 sec
0
100
200
300
400
Call Processing
Turnout Time
Travel Time

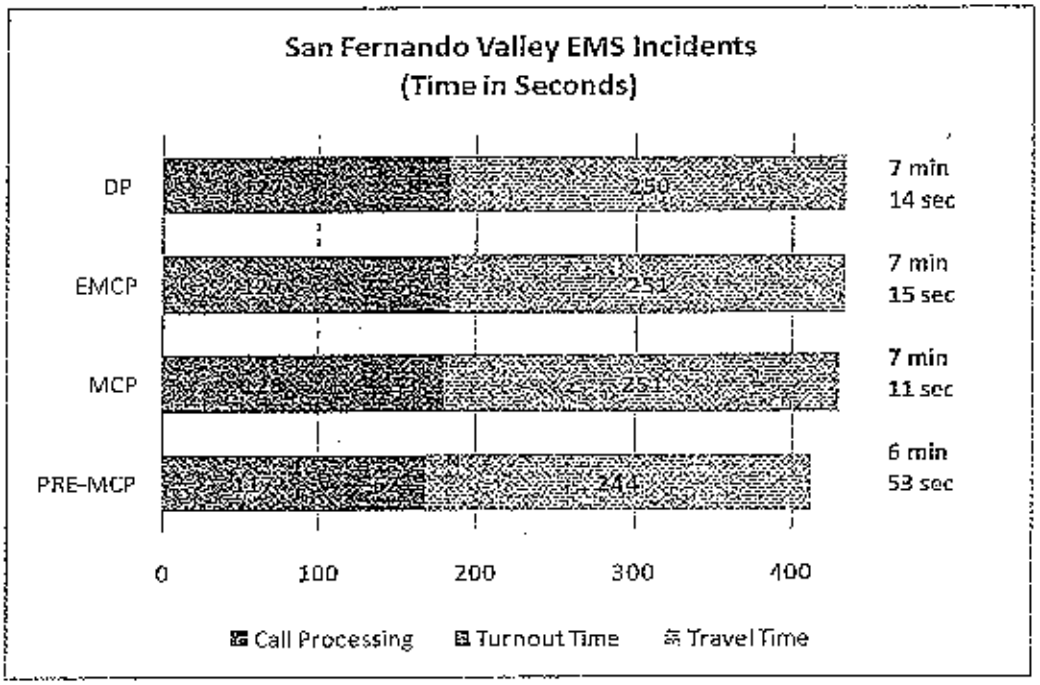

East Los Angeles Fire/Non-EMS Incidents
(Time in Seconds)
DP
EMCP
MCP
PRE-MCP
7 min
6 min
56 sec
6 min
55 sec
7 min
3 sec
0
100
200
300
400
Call Processing
Turnout Time
Travel Time

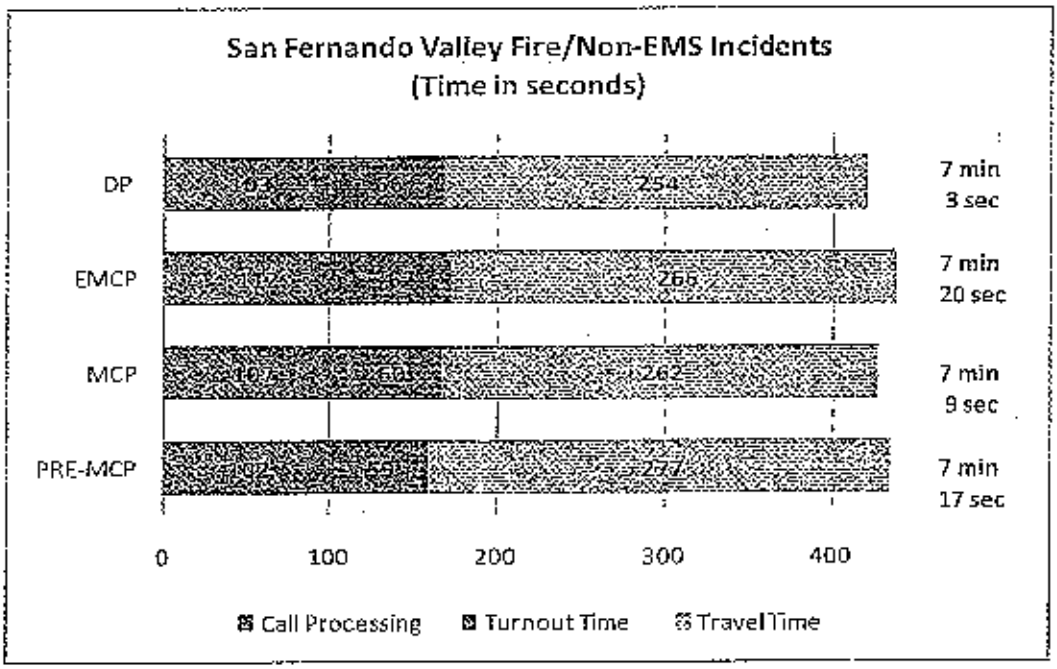

Harbor City EMS Incidents
(Time in Seconds)
DP
EMCP
MCP
PRE-MCP
190
195
205
208
6 min
33 sec
6 min
29 sec
6 min
49 sec
6 min
51 sec
0
100
200
300
400
Call Processing
Turnout Time
Travel Time

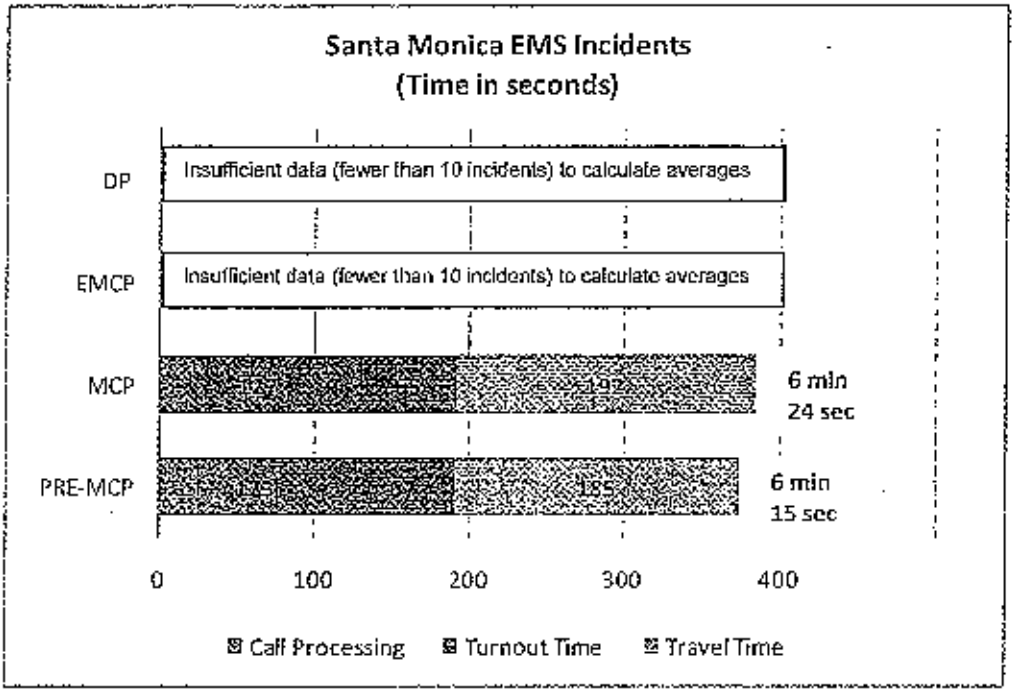

Harbor City Fire/Non-EMS Incidents
(Time in Seconds)
DP
EMCP
MCP
PRE-MCP
154
Insufficient data (fewer than 10 incidents) to calculate averages
247
250
5 min 40 sec
7 min
25 sec
7 min
20 sec
0
100
200
300
400
Call Processing
Turnout Time
Travel Time

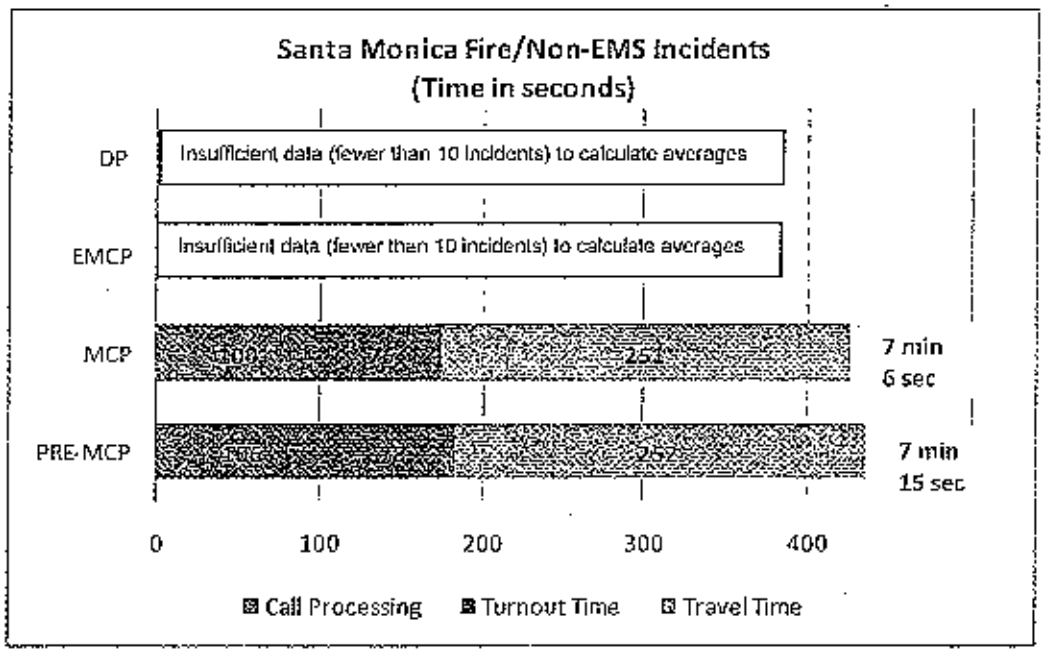

Metro EMS Incidents
(Time in Seconds)
DP
EMCP
MCP
PRE-MCP
6 min 57 sec
6 min 58 sec
6 min 56 sec
6 min 39 sec
0
100
200
300
400
Call Processing
Turnout Time
Travel Time


Metro Fire/Non-EMS Incidents
(Time in Seconds)
DP
EMCP
MCP
PRE-MCP
6 min 21 sec
6 min 22 sec
6 min 25 sec
6 min 35 sec
0
100
200
300
400
Call Processing
Turnout Time
Travel Time

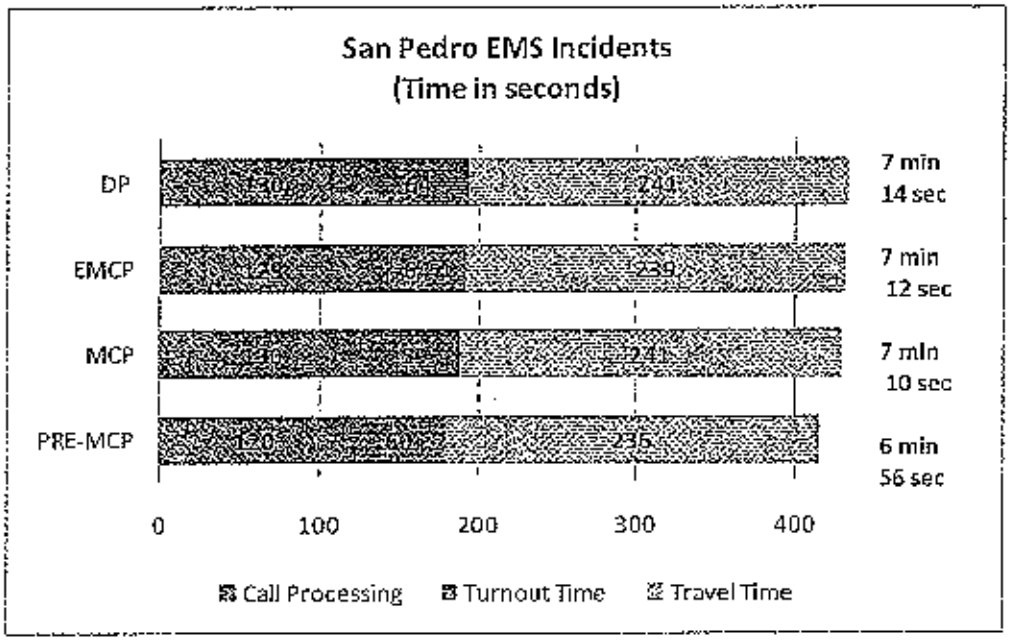

San Fernando Valley EMS Incidents
(Time in Seconds)
DP
EMCP
MCP
PRE-MCP
250
251
251
244
7 min
14 sec
7 min
15 sec
7 min
11 sec
6 min
53 sec
0
100
200
300
400
Call Processing
Turnout Time
Travel Time

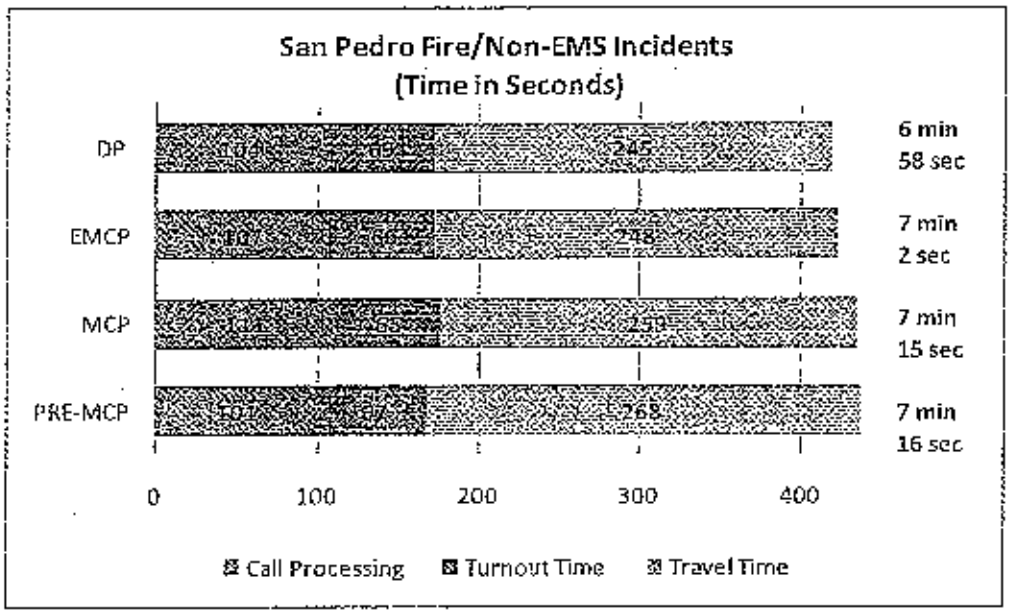

San Fernando Valley Fire/Non-EMS Incidents
(Time in seconds)
DP
EMCP
MCP
PRE-MCP
254
266
262
277
7 min
3 sec
7 min
20 sec
7 min
9 sec
7 min
17 sec
0
100
200
300
400
Call Processing
Turnout Time
Travel Time

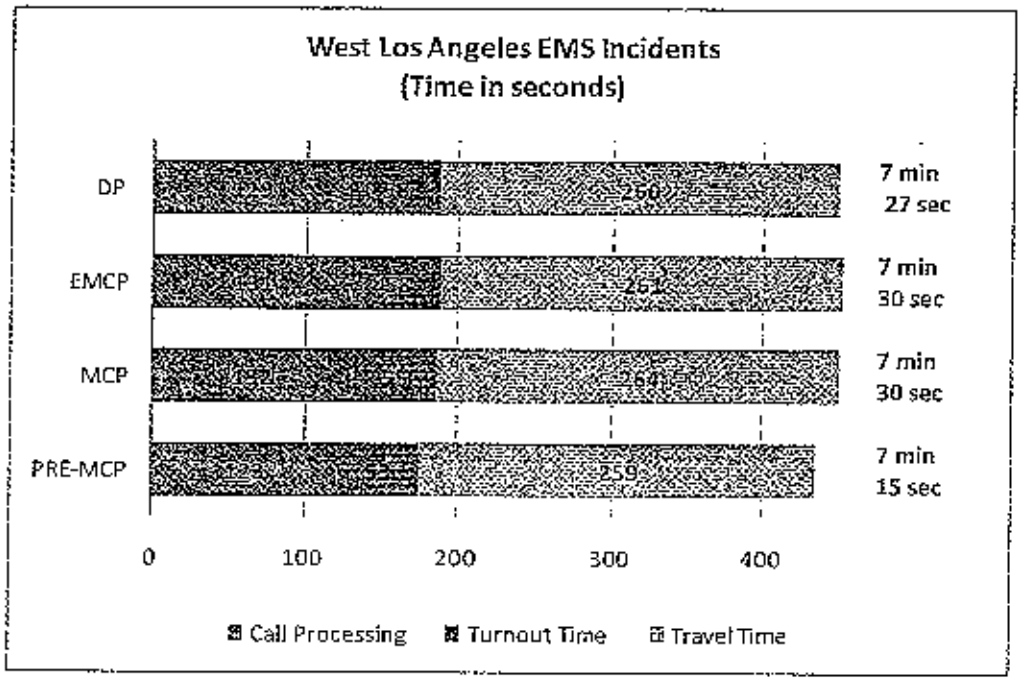


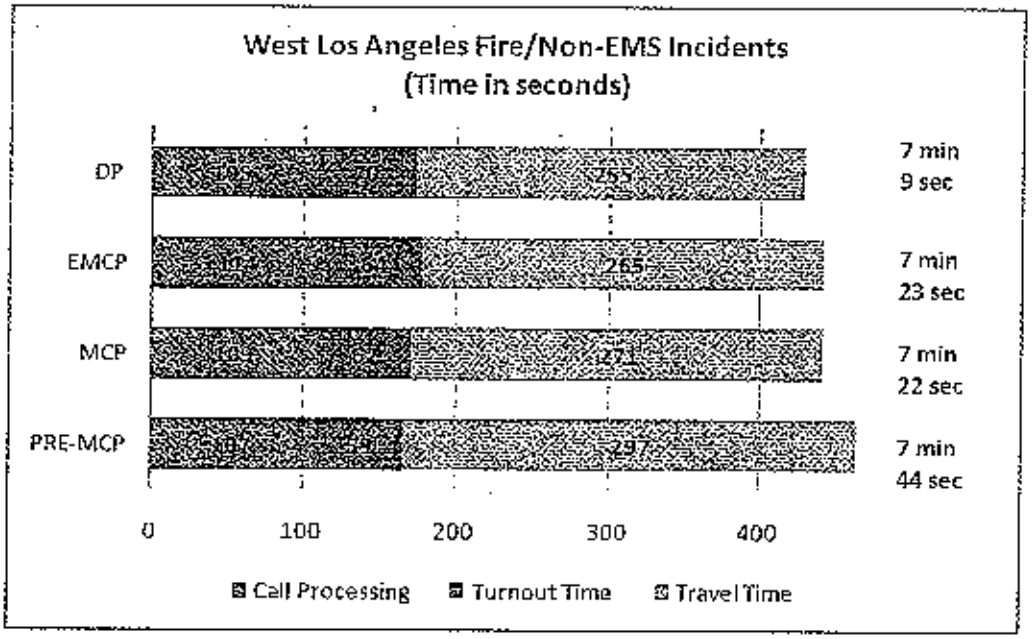


NOTE: In previous years, LAFD provided dispatch services for the City of Santa Monica. This service is no longer provided.


San Pedro EMS Incidents
(Time in seconds)
DP
EMCP
MCP
PRE-MCP
7 min
14 sec
7 min
12 sec
7 min
10 sec
6 min
56 sec
0
100
200
300
400
Call Processing
Turnout Time
Travel Time


San Pedro Fire/Non-EMS Incidents
(Time in Seconds)
DP
EMCP
MCP
PRE-MCP
6 min
58 sec
7 min
2 sec
7 min
15 sec
7 min
16 sec
0
100
200
300
400
Call Processing
Turnout Time
Travel Time


West Los Angeles EMS Incidents
(Time in seconds)
DP
EMCP
MCP
PRE-MCP
250
261
264
259
7 min
27 sec
7 min
30 sec
7 min
30 sec
7 min
15 sec
0
100
200
300
400
Call Processing
Turnout Time
Travel Time


West Los Angeles Fire/Non-EMS Incidents
(Time in seconds)
DP
EMCP
MCP
PRE-MCP
255
265
271
297
7 min
9 sec
7 min
23 sec
7 min
22 sec
7 min
44 sec
0
100
200
300
400
Call Processing
Turnout Time
Travel Time

LAFD Average Call Processing Time (in seconds)

Incident Type	Pre-MCP	MCP	EMCP	DP	Change from Pre-MCP to DP
All EMS Incidents	95	104	105	104	+ 9 sec.
All Fire/Non-EMS Incidents	76	81	86	79	+3 sec.

LAFD Average Turnout Time (in seconds)

Incident Type	Pre-MCP	MCP	EMCP	DP	Change from Pre-MCP to DP
All EMS Incidents	51	53	56	56	+ 5 sec.
All Fire/Non-EMS Incidents	59	60	62	65	+ 6 sec.

LAFD Average Travel Time (in seconds)

Incident Type	Pre-MCP	MCP	EMCP	DP	Change from Pre-MCP to DP
All EMS Incidents	237	245	244	244	+7 sec.
All Fire/Non-EMS Incidents	266	248	244	239	- 27 sec.

Percentage of First Ambulance Arrival Meeting LAFD Internal Goal and Average Arrival Time for EMS Incidents[11]

Transport Type	LAFD Goal	Pre-MCP	MCP	EMCP	DP	Change from Pre-MCP to DP
First ALS Transport (Ambulance with Paramedic)	90% at 9 min. or less	90%	90%	90%	90%	
	LAFD avg. time	5 min 40 sec	5 min 41 sec	5 min 42 sec	5 min 47 sec	+ 7 sec.
First BLS Transport (Ambulance)	90% at 9 min. or less	74%	72%	70%	78%	
	LAFD avg. time	7 min 11 sec	7 min 22 sec	7 min 34 sec	7 min 3 sec	- 8 sec.

Percentage of First Ambulance Arrival Meeting LAFD Internal Goal and Average Arrival Time for Fire/Non-EMS Incidents[11]

Transport Type	LAFD Goal[12]	Pre-MCP	MCP	EMCP	DP	Change from Pre-MCP to DP
First ALS Transport (Ambulance with Paramedic)	90% at 9 min. or less	88%	89%	90%	89%	
	LAFD avg. time	5 min. 41 sec	5 min 22 sec	5 min 12 sec	5 min 21 sec	- 20 sec.
First BLS Transport (Ambulance)	90% at 9 min. or less	83%	81%	82%	82%	
	LAFD avg. time	6 min. 29 sec	6 min. 37 sec	6 min 22 sec	6 min 23 sec	- 6 sec.

[11] As with the other response times presented in the report, these average times are based on all incidents, emergency and non-emergency.

[12] The LAFD established performance metrics for ALS and BLS transport arrival for EMS incidents. The performance metric is the same for Fire/Non-EMS incidents, although it does not distinguish between ALS or BLS transport. For comparison purposes, we followed the same ALS and BLS distinction for Fire/Non-EMS Incidents.