2016

FIRE DEPARTMENT DEPLOYMENT REPORT

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Abstract

During the June 28, 2016, City Council meeting, the fire chief was asked if the current Fire Department paramedic deployment and paramedic override assessment fee meet the needs of the community. In an effort to provide a comprehensive response to the Council's inquiry, a detailed analysis was completed to determine if changes should be made to assure that the department meets the minimum response standards for paramedic services. This plan is based on statistical data from the past two years using the Metro Net Dispatch application "ADAM" by Decon fire response analytical software program. The approach consists of utilizing real empirical data and formulating realistic options based on what is truly happening in the City. The ability to pay and the impact on the general fund is also a key component to this Deployment Report. Both the short term and long-term liabilities outlined in the deployment plan also realistically estimate the financial impact on the general fund and the paramedic override assessment costs.

Executive Summary

When the Fire Department was asked to prepare a comprehensive report evaluating its current emergency medical and fire resources deployment, it was clear that an impartial perspective would need to be used. This process is not arbitrary, nor does it accept the status quo or imposes a deployment model that other fire agencies use. The plan must also realistically account for the City's ability to pay for services, and works to balance the fire service needs of the communities using non-general fund resources.

By using a pragmatic approach, applying real empirical statistics, and budgetary data from all available sources, a Fire Department Deployment Pan can be developed that would provide a road map to potentially move the department forward with several different options for the City Council to consider.

This deployment analysis is focused on the department's effectiveness at delivering its paramedic and emergency medical services. The department uses dual-function firefighters that are both nationally registered paramedics as well as California State fire marshal certified firefighters. There is a direct benefit in the department's firefighting capabilities that will occur when the paramedic/EMS capabilities are improved.

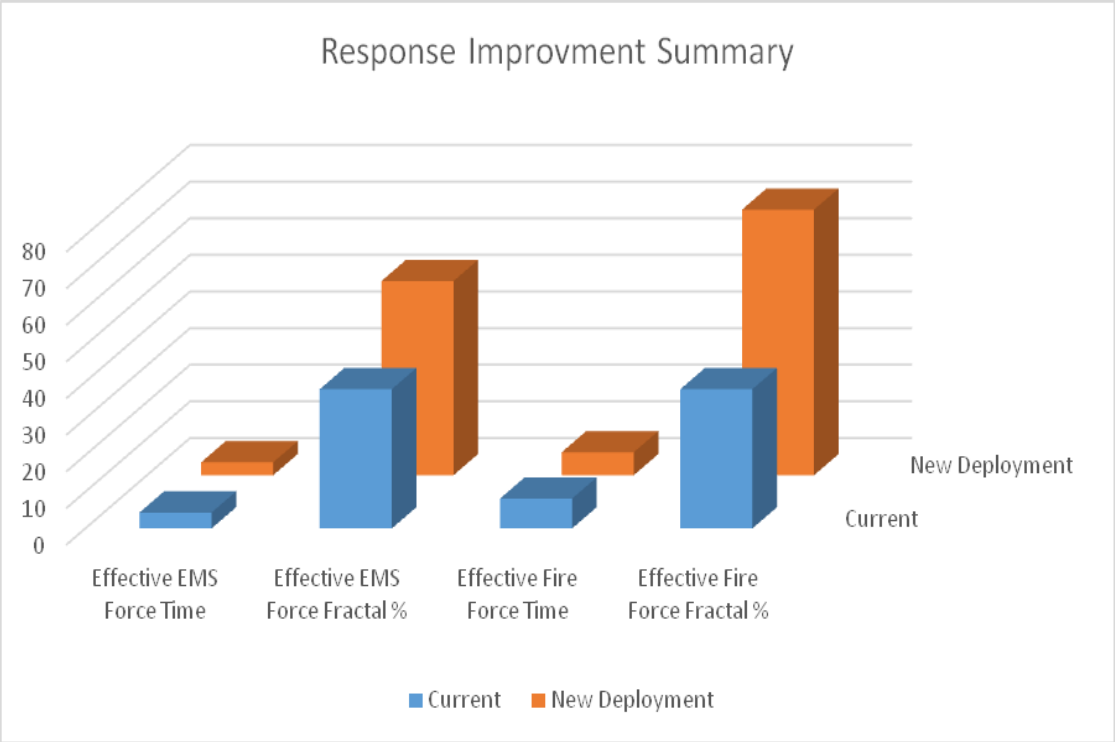
Time is the most critical component of any fire department's medical deployment model. The quicker paramedics can arrive to the location where medical care is needed, the more likely a positive outcome will occur. The standard that a fire department attempts to achieve is being able to provide a fire unit and paramedic unit on-scene within four minutes travel time or 6 minutes total time, 90% of the time. This is a very challenging standard to achieve, and many departments fall short, but efforts should be made to improve this time whenever possible. In addition, fire departments also work to deliver an effective fire force of 15 FF's to combat a structure fire within 8 minutes, 90% of the time.

Current Garden Grove Fire Performance Statistics 2014 (Light Blue)

First Unit On Scene (FUOS) Standard: 4 Mins/90% of Time	First Paramedic Unit On Scene (EEMSF) Standard: 4 Mins/90% of Time	EFfective Fire Force (EFF) Goal: 8 Min/90% of Time
•3:39 Minutes •68 Percent of the Time	•4:32 Minutes •38 Percent of the Time	•8:14 Minutes •46 Percent of the Time

- Add 2 minutes for dispatch and turn-out time

Travel time does not include the amount of time needed to be advanced from a dispatch center, or the amount of time firefighters need to leave the fire station. In the event of a cardiac arrest, stroke, or critical medical emergency, the ultimate goal for a fire department is to arrive within 6 minutes or less total time. This will maximize the patient's chances of survival. If resources take longer, then the likelihood of a poor outcome is highly possible, according to the American Heart Association.



Background

The Garden Grove Fire Department is staffed by 92 sworn, five full-time and one part-time civilian personnel. In 2014, the department responded to over 11,200 calls for service, with the majority being emergency medical calls in 2015 emergency calls increased to 14,627. Prior to 2015, medical calls have increased by 3%-7% per year but on 2014 calls increased significantly to 14%. The department's fire calls have remained consistent over the same time-period, with an average of about 350 fire-related calls per year. More than six of these fires were greater alarm incidents, requiring more than 50 firefighters and assistance from adjoining fire departments. In

addition to the department's suppression activities, the fire prevention bureau completes over 5,000 inspections per year while also providing services such as plan check, new construction inspections, public education, and fire cause/arson investigations. The City of Garden Groves fire resource deployment uses a combination of fire engines, a truck company, and a paramedic squad. Paramedic services are provided by four paramedic assessment engines, two full paramedic engine companies, and one paramedic squad.

Engine Company

Engine companies are the backbone of any fire department delivery system. They use a specialized fire apparatus that can pump over 250 gallons of water per minute and transport firefighters to extinguish fires. In addition to the fire extinguishment capabilities, they are also used to provide emergency medical care to the community.

The department's current engine company deployment model is a combination of 3-person and 4-person engine companies. One of the 3-person engine companies provides basic medical care or emergency medical technician level of care. With this level of care, they can start the basic treatment until the arrival of the higher trained paramedic's. Four of the 3-person engine companies are paramedic assessment units, which have the capability to start initial paramedic advanced care, and stabilize the medical situation until the arrival of a full 2-person paramedic unit. When the full paramedic unit arrives, that team will take over care and transport to the hospital.

Paramedic Assessment Unit (PAU) Staffing

Paramedic Assessment Unit (PAU) is a fire engine company with one firefighter who is certified as a firefighter/*paramedic* (FF/PM.) This PAU can provide paramedic level care until a full paramedic unit, with *two* FF/PM's arrives to take over patient treatment, and transport to the hospital.

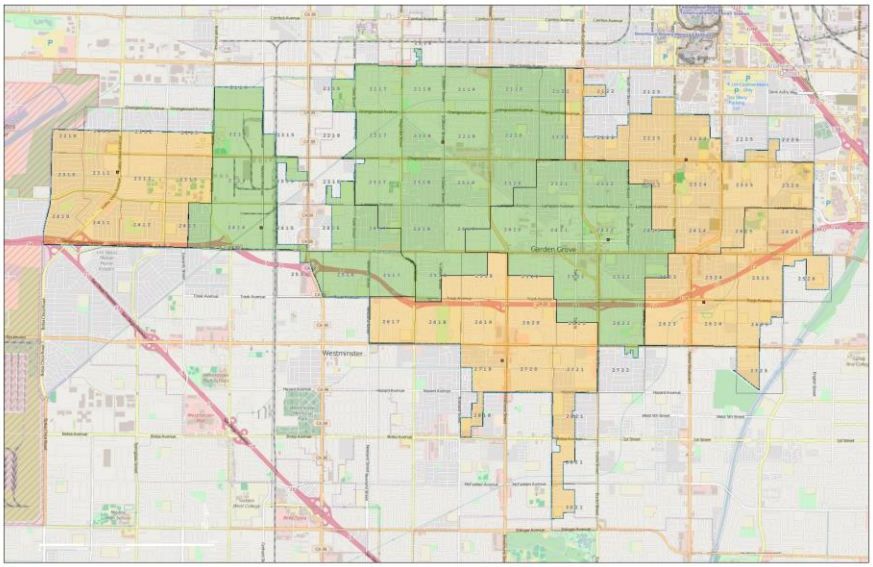
Captain-Engineer-FF/PM

Full Paramedic Engine Staffing

Full Paramedic Engine is a fire engine with *two* firefighters certified as FF/*PM's*. This team can provide paramedic level care and transport to the hospital.

Captain-Engineer-2 FF/PM's

Current Paramedic Deployment Map



- Green Paramedic Unit Coverage
- Yellow Paramedics Assessment Coverage

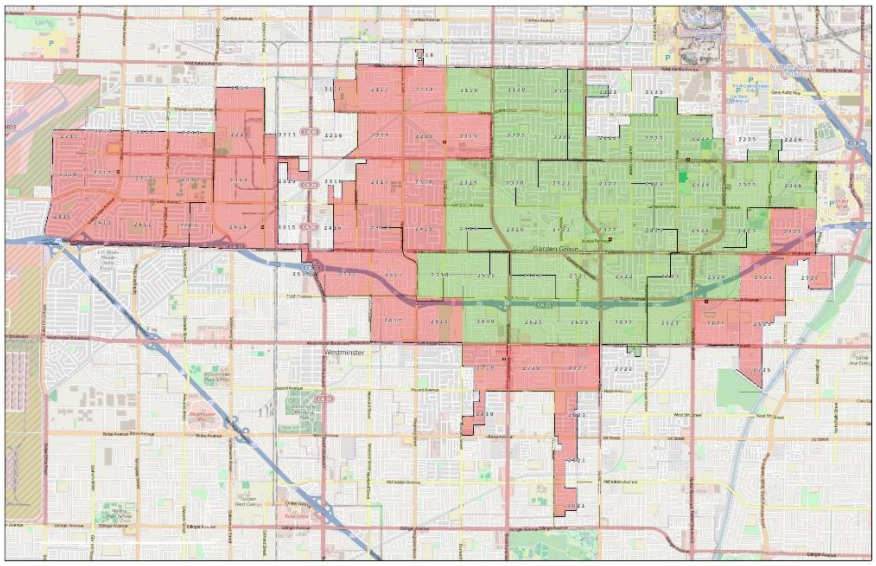
Truck Company

Truck companies are specialized apparatus that are designed to provide technical rescue and firefighting service. On the fire ground, the truck company provides most of the ladders used for rescue, which include a 100-foot aerial ladder for operations at high-rise hotel or commercial building fires. In addition, truck companies carry special rescue tools that are used to extricate citizens from entrapments such as traffic collisions.

The department's current truck deployment consists of a single-truck company serving the community at Station 1, located at 11301 Acacia Parkway. The truck is staffed with three personnel: a captain, engineer, and firefighter. Best practices for truck response is 6 minutes travel time. Additional truck services are provided through regional auto-aid requests and agreements. The West side of the City receives the majority of its truck services from the Orange County Fire Authority.

Captain-Engineer-1 Firefighter

Current Truck Company Deployment Map



- Green Truck Coverage Within 6 Minutes
- Red Extended Truck Coverage

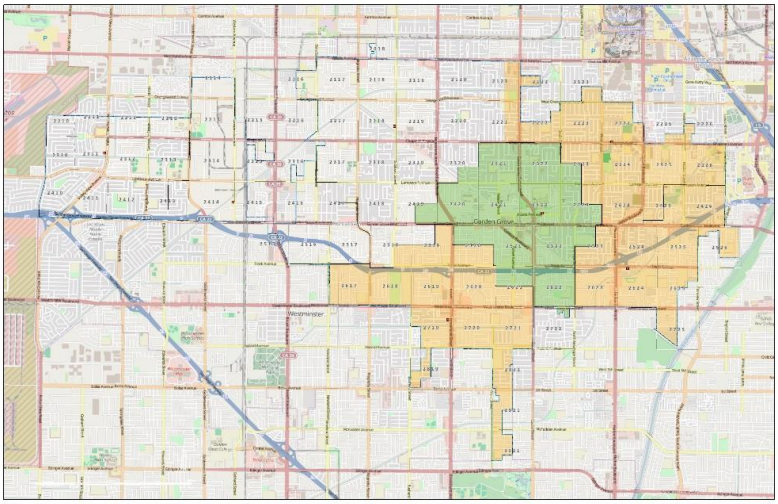
Paramedic Squad

A paramedic unit is designed to be primarily a single-function medical resource. The paramedic's squad carries two certified FF/PM's and all the equipment needed to provide advance life support care. In addition, the squad carries the basic equipment to outfit the FF/PM's in assisting with a structure fire.

The department currently has one paramedic squad, at Station 1, which primarily assists the engine companies in the districts of Stations 1, 3, 6, and 7.

2 Firefighter/Paramedics

Paramedic Squad Deployment Map



- Green Current Paramedic Squad (Unit) Deployment
- Yellow Current PAUs

Current Medical Deployment Summary

Station Location	Resource Type	Medical Capabilities
Station 1 11301 Acacia Parkway	3-Person Engine Company 3-Person Truck Company 2-Person Paramedic Squad 1-Person Command Unit	Basic Medical Care Basic Medical Care Advance Medical Care & Transport *Full 2 Person Paramedics Unit
Station 2 11805 Gilbert	4-Person Engine Company	Advance Medical Care & Transport *Full 2 Person FF/PM's Unit
Station 3 12132 Trask	3-Person Engine Company	Advance Medical Care, No Transport PAU
Station 4 12191Valley View	3-Person Engine Company	Advance Medical Care, No Transport PAU
Station 5 12751 Western	4-Person Engine Company	Advance Medical Care & Transport *Full 2 Person FF/PM's Unit
Station 6 12111 Chapman	3-Person Engine Company	Advance Medical Care, No Transport PAU
Station 7 14162 Forsyth	3-Person Engine Company	Advance Medical Care, No Transport PAU

Indicates location of *full paramedic unit* with the ability to transport to the hospital

Deployment Standards (NFPA 1710 & Best Practices)

The Fire Department's mission is to provide rapid all-risk emergency services to the City, including responding to medical emergencies, fires, hazardous material calls, and technical rescues. It is essential to periodically review and analyze the deployment of resources to determine if there are gaps in community coverage, or areas in which efficiencies might be improved. A nationally recognized reference used by many cities and fire departments to measure performance benchmarks is the National Fire Protection Agency 1710 (NFPA) publication. This publication covers functions and objectives of fire department emergency services delivery, response capabilities, and resources, including staffing levels, response times, and service levels. General criteria for managing resources and systems, such as health and safety, incident management, training, communications and pre-incident planning are also incorporated.

The Garden Grove Fire Department has not completed a comprehensive survey of deployment and operational effectiveness in over 30 years. Several changes in deployment have occurred over the years as a reaction to an increase in emergency calls for service, which has expanded paramedic services, but no formal analysis or service evaluation has occurred. In 2006, the department responded to 408 fire calls and 8,184 medical calls. In comparison, in 2014, the department responded to 462 fires calls and 11,887 medical calls. In 2011-2014, call volume increased by 3%-7% annually. Last year, 2015, emergency calls increased by over 14% or 14,627 calls. An increase in call volume does not automatically require that fire department staffing levels to change, but it should trigger an evaluation of staffing to assure that a sufficient level of service to the community is occurring and has not been degraded.

As the population continues to grow, and the community's expectations of fire and related services increase, it is essential that the department's deployment be vetted against a recognized national performance standard.

Response Times

The most important standard of operational performance a fire department must meet is its ability to deploy appropriate resources in an adequate amount of time. This makes an absolute difference with all critical life-threatening medical emergencies, as well as with preventing a small fire from turning into a major fire. Time standards can be subjective in nature, so it is important to use nationally accepted time benchmarks to establish our own standard goals. We should strive to achieve these practices as a department, with the understanding that the community's ability to pay may affect total compliance.

Total response time is based on the combined total of several specific time elements. This includes:

- Dispatch time: Time elapsed from when a call is received at the 9-1-1 center until units are notified.
- Turnout time: Time elapsed from when units are notified until they are responding.
- Travel time: Time elapsed from when units respond until they arrive on the incident scene.

Dispatch Time + Turn Out Time + Response or Travel Time = Total Response Time

The overall goal of the NFPA 1710 standard is to achieve compliance with the time benchmarks (fractal measurement) 90% of the time. This standard is extremely difficult to meet and very few departments nationally comply with it. It should be the Garden Grove Fire Department's goal to execute a deployment that maximizes the effectiveness of current fire resources available and supplements future responses with additional resources, as funding is available, to achieve the best response times attainable.

Dispatch Time

The Fire Department is a member of the Metro Net Communications Center Joint Powers Agreement as its fire Emergency Communication Center (ECC.) Currently, the communication center answers approximately 106,196 calls per year. The communication center is fully NFPA complainant, and meets both the time and fractal percentage benchmarks.

Description	Target Service Level	2013	2014
Non Breathing Calls			
Land Line	105 Seconds, 90%	105 Seconds, 92%	105 Seconds, 93%
Cell Phone	135 Seconds, 100%	135 Seconds, 97%	135 Seconds, 98%
Description	**Target Service Level**	**2013**	**2014**

Description	Target Service Level	2013	2014
All Medical Calls			
Land Line	120 Seconds, 90%	60 Seconds, 91%	120 Seconds, 89%
Cell Phone	150 Seconds, 100%	90 Seconds, 98%	150 Seconds, 97%
Fire Calls			
Land Line	105 Seconds, 90%	105 Seconds, 91%	105 Seconds, 91%
Cell Phone	135 Seconds, 100%	135 Seconds, 97%	135 Seconds, 97%

Turnout Time

NFPA 1710 has established the benchmark time measurement of 60 seconds, or 1 minute, for fire/EMS personnel to be notified by the dispatch center and then depart the fire station responding to the reported emergency. Within Orange County, the fire chiefs have determined that the response standard for fire responses should be extended to 90 seconds, or 1½ minutes, to more accurately represent the task required to be completed prior to leaving the station. Firefighters must fully don their firefighting gear prior to leaving their station. This gear, which must be worn, includes the following items:

- Structure firefighting turn out pants and boots
- Structure firefighting coat
- Structure firefighting gloves
- Structure firefighting protective hood and helmet

The fire chiefs also agree that the 60 seconds, or 1-minute standard must remain in effect for any emergency medical response that includes Basic Life Support/Emergency Medical Technician or Advance Life Support/Paramedic calls.

The Garden Grove Fire Department currently meets the time standard for fire calls with an average turnout time of 01:24 minutes, but fails to meet the EMS time standard with an average turnout time of 01:17 seconds. The department has implemented an organizational policy to improve its turnout time efficiency. It is also seeking grant funding to implement countdown clock technology to help meet this standard.

Countdown clock cost is estimated at $35,000, and can be integrated into the current station dispatch notification system.

First Unit on Scene (FUOS)

Many cardiac pulmonary arrest studies, including reports from the American Heart Association, have found that early cardiac defibrillation by an automatic defibrillator (AED), or standard defibrillator, by a trained emergency medical technician or a FF/PM, is critical for patient survival. NFPA 1710 recommends that all first responders be able to respond (travel or response time) in 4 minutes, 90% or a total of 6 minutes (Dispatch + Turnout Time+ Response Time.) The Garden Grove Fire Department currently provides **first unit on scene** response, or travel times, of less than 6 minutes, 68% of the time. Also of note, the majority of first responding resources will have a minimum of one FF/PM with them.

In addition to the need for emergency medical services to arrive within 6 minutes total time, it is also important that an initial firefighting resource arrive within 6 minutes to begin essential fire operations, including rescue and reducing the potential size of the fire and its threat to nearby structures or exposures.

Effective Fire Force (EFF)

NFPA 1710 and the Orange County Fire Chiefs Association recommend that a total minimum of 15 firefighters arrive at a fire (travel or response time) in no more than 8 minutes, 90% (fractal measurement) of the time. This standard is based on the number of firefighters required to perform the basic fire ground activities for a normal 1,200 square foot residential house. This size fire problem is consistent with the majority of homes in the City, and the common-type of structure fires to which the department responds. Currently, the Garden Grove Fire Department only provides an EFF of 46%, within 8 minutes.

The department's current deployment model can only deliver 13 firefighters to a structure fire on the east side of the community the majority of the time. This is due to the consolidation of 3-person staffed engine companies at Fire Stations 1, 3, and 7, and a 3-person truck company at Station 1.

The need for an EFF is due to the complexity of the fire ground and its dynamic fast-moving environment. Structure fires require command, control, and multiple tactical operations to be conducted simultaneously. In addition, the safety of the occupants, civilians, and firefighters must be a top priority, and are mandated by both OSHA and federal laws. Following is a list of the essential fire groundwork assignments that must be staffed on any structure fire.

Effective Fire Force Deployment 1200 Square Foot Residential Home

Command & Safety Officer **1 Chief Officer**

- 1 Battalion Chief

Fire Attack Team **3-4 Firefighters**

- 1 Supervisor (Captain)
- 1 Pump Operator (Engineer)
- 1-2 Hose and Nozzle Operators (Firefighters)

Back-up Fire Attack Team & Search and Rescue Team **3-4 Firefighters**

- 1 Supervisor (Captain)
- 1 Pump Operator (Engineer)
- 1-2 Hose and Nozzle Operators (Firefighters)

Ventilation Team **4 Firefighters**

- 1 Supervisor (Captain)
- 1 Aerial Ladder Operator (Engineer)
- 1 Saw Operator (Firefighter)
- 1 Back-Up (Firefighter)

Initial Rapid Intervention Team (IRIC) OSHA 2in 2out Requirement **2 Firefighters**

- 2 Equally trained and equipped firefighters ready to rescue a lost or trapped firefighter.

Exposures Protection **2 Firefighters**

- 2 Firefighters deploying fire attack hose lines to protect adjoining structures from fire spread.

Total **15-17 Firefighters**

Effective Truck Service

One of the most important procedures at the fire ground is truck company operations. The specialized tools and training that truck personnel provide have a significant impact on how quickly the incident is stabilized and mitigated. Some of the more critical operations performed by a truck are:

- Rescue Operations

- Forcible Entry or Escape From a Structure
- Ladder Operations
- Extrication of Tapped Victims
- Fire Ventilation Operations

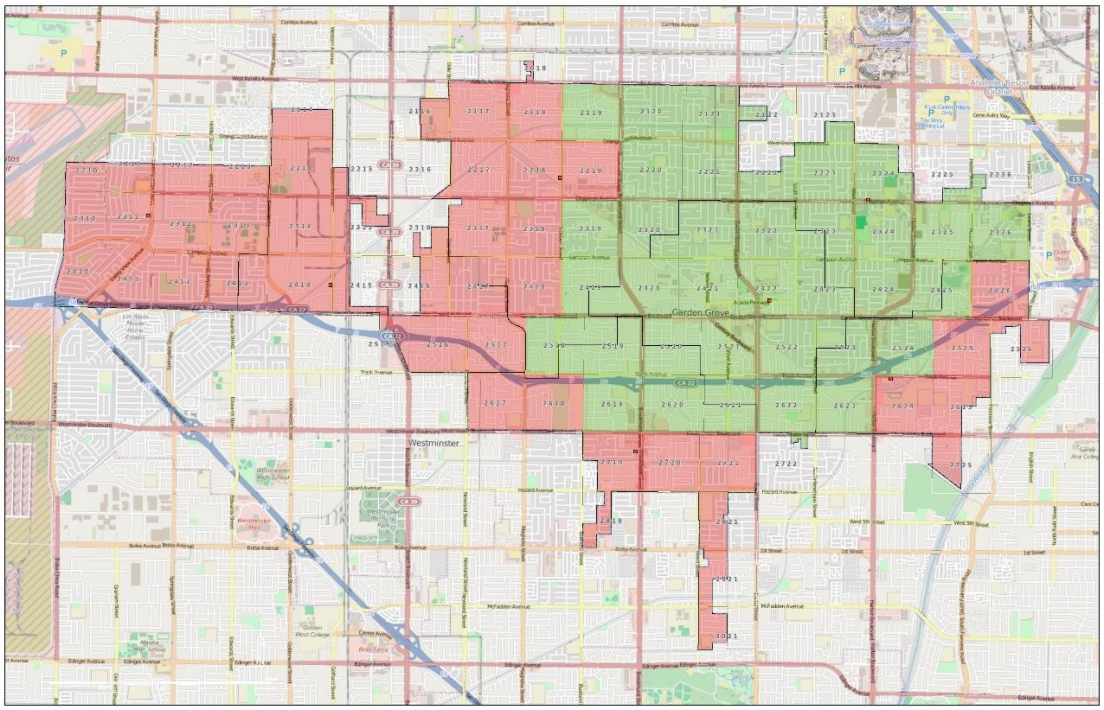
Currently, the Garden Grove Fire Department only has one Truck Company serving a community of over 175,000 people. The department's current truck deployment model does not meet the requirements of NFPA 1710 and cannot provide truck services (staffed with four firefighters) within the EFF standard to every resident within 8 minutes of travel time. The City currently depends on the availability of auto-aid assistance from surrounding fire departments to provide truck services for a large section of the west side of the City. Adequate truck service has been exasperated by the recent shutting down of the City of Stanton's truck company (OCFA Truck 46), extending the response time for an auto-aid truck company to respond and assist the department.

In addition to the fire ground operations that truck companies perform, they are also a critical rescue resource. Trucks are used for auto extrication, technical rescue entrapments, and many other specialized emergencies. Response times are critical for these types of emergencies, and many citizens on the west side of the community experience greater response times because of this.

The best practice for specific truck company response times, is the ability to arrive at any location within the City in 6 minutes or less. This standard was modeled in the Decon "ADAM" program and it was determined that the most effective location for our department truck companies is to be located at 11301 Acacia Parkway (Station 1) and a second truck at 12751 Western (Station 5.) Current funding may not be able to staff a dedicated 4-person truck company at Station 5, but a Quint fire apparatus, which has both truck and engine capabilities, would be an acceptable alternative. Truck 5 would have the following capabilities:

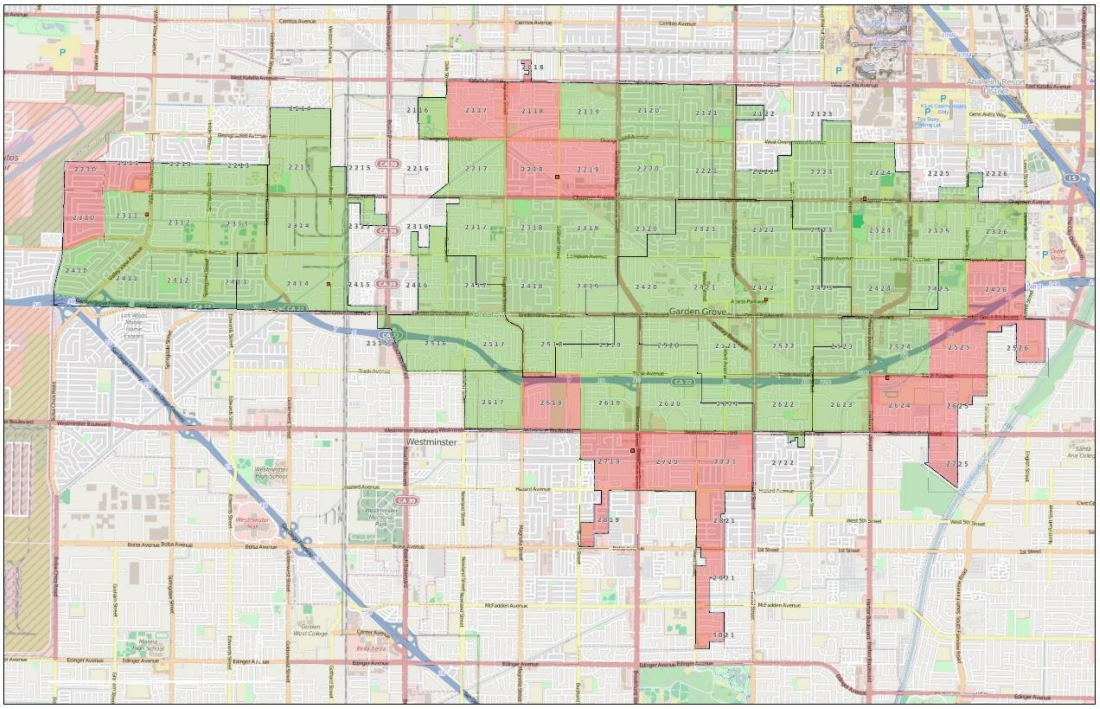
- Paramedic Services
- Engine Company Capability
- Truck Company Capability

Current Deployment for Station 1



- Green Area = Truck Coverage Within 6 Minute Response Time

Truck Deployment for Station 1 and Station 5

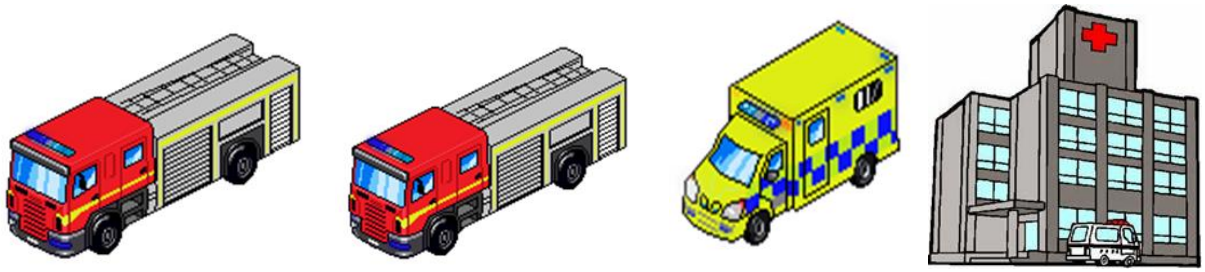


- Green Area = Truck Coverage Within 6 Minute Response Times

Effective Emergency Medical Force (EEMF)

EEMF is defined as the Fire Departments ability to provide two paramedics and two emergency medical technicians at an advanced life support medical emergency, within 4 minutes travel time, 90% of the time or 6 minutes total time. This time benchmark is critical because it improves a patient's chances of survival in the event of cardio-pulmonary arrest, stroke or other critical medical emergencies and expedites rapid intervention of paramedic care. The most efficient method of delivering an EEMF is with a 4-person staffed paramedic engine company, because fewer apparatus are needed to respond.

3-Person Paramedic Assessment Unit (PAU) Engine Response



PAU Engine + Paramedic **Engine or Squad + Ambulance Hospital**

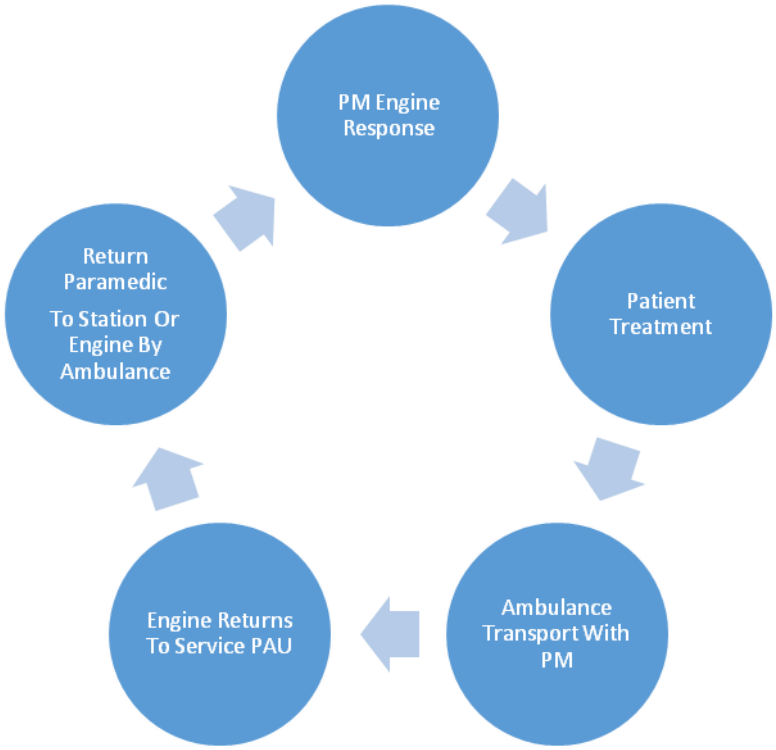
4-Person Full Paramedics Engine Response

Paramedic Engine + Ambulance Hospital

The paramedic engine company staffed with four personnel improves the required EEMF by nearly 57%. This delivery method is more efficient than the current combination of 3-person PAU, and 2-person medic squads, by taking advantage of Orange County's Emergency Medical Policy (310.10.) Determination of transportation to an appropriate facility allows certain types of medical calls to be escorted with one FF/PM to the hospital for Tier 2 types of paramedic level responses, such as abdominal discomfort or pain.

By only using one FF/PM when appropriate to transport to the hospital with an ambulance, the engine company can return to service as a PAU, ready for the next medical or fire call. This will significantly close the gap for the amount of time that a district is not protected by an engine due to hospital follow-up. Furthermore, once the patient is transported to the hospital, the ambulance would then return the FF/PM to their apparatus or station, and the crew would return to a full paramedic unit. This will drastically improve the department's response resiliency, and eliminate situations when two large pieces of fire apparatus respond to the same medical call simply to provide the proper staffing.
The Fire Department and City would also see general fund cost savings in the wear and tear on its response fleet fire engines and trucks, as well as a reduction in repair cost and fuel consumption.

Full Paramedic Response & Return to District Service Follow up Diagram



Paramedic Nurse Coordinator

The Paramedic Nurse Coordinator is an important component to the Departments Emergency Medical Services (EMS) delivery system, which is responsible for implementing the mandatory state, federal, and local quality assurance program. This person also regularly analyzes Emergency Medical System (EMS) effectiveness, system trends, formulates policies and procedures, and finally executes EMS educational programs and system modifications. Currently, the department is not in full compliance with all quality assurance components required by law. Non-compliance exposes the City to potential liability, and prevents sub-standard performance trends from being identified until a real problem arises.

The nurse coordinator would also make recommendations to the department related to firefighter health, fitness, and wellness issues. This person is a valued resource in assisting firefighters during prolonged emergency incidents, where firefighters need to be monitored during rehabilitation prior to returning to active firefighting.

The paramedic nurse coordinator is also responsible for analyzing and formulating a plan for the delivery of community para-medicine within the City.

Funding the City's Paramedic Program - Paramedic Override Assessment

The paramedic override assessment has been used in the City of Garden Grove since 1974. This assessment is based on the State Revenue and Taxation Code, which allows local agencies to levy an ad valorem assessment on taxable property to fund voter approved indebtedness, such as paramedic services. This assessment was approved by over 60% of the voters, and has been in use for the past 40 years. City Ordinance No. 2859 allows City Council to approve up to 10 cents per $100 of property value to be assessed for the specific use of providing paramedic service to the community. This assessment can be used for the salaries, training, and purchasing of equipment.

On June 28, 2016, the City Council adopted the paramedic assessment override rate for FY 16/17, which is unchanged from the prior year. Currently, the rate is set at 07 cents per $100 of property value. This adopted rate does not capture all the current Fire Department paramedic response requirements, and needs to be adjusted to accommodate the recommendations included in this report. City finance staff is in the process of analyzing exactly what the current revenue is from the tax, and what changes would be needed to fund part or all of the recommendations.

Deployment Recommendations

Following a careful analysis of all the potential Fire Department deployment configurations that would improve both response times and maximize cost efficiencies, a deployment recommendation has been developed. The analysis examines the present deployment model of paramedic squads with Basic Life Support (BLS) and Advanced Life Support (ALS) engine companies, and the deployment of a 4-person full paramedic engine. After modeling many different scenarios, it was determined that the most efficient and cost effective deployment that improved response times for both EFF and EEMF, and maintains our FUOS times, was the 4-person full paramedic engine system.

This data was obtained using the "ADAM" by Decon response modeling program which used actual response data from the past two years, (2013-2014), and then overlaid various deployment options, until the optimum model was determined. A 3-phase deployment plan was determined to be the best path moving forward as a department. These options build on each other and would allow for an incremental approach to improving service, as well as allow for long-term financial planning to achieve the recommendations.

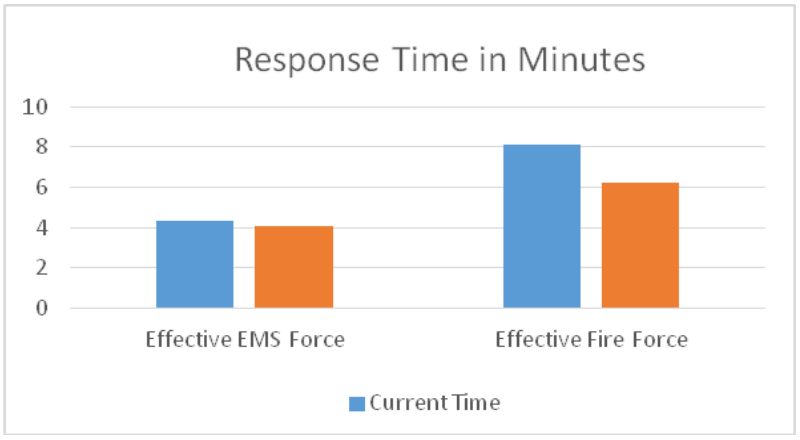
Lastly, the deployment recommendation considered the City's ability to pay, and its impact on the general fund. The majority of the deployment recommendations will directly improve paramedic services and meet the minimum needs of the community. Funding through the current paramedic override assessment will be the catalyst to pay for any new operational costs. This funding would use an incremental approach that would allow the City Council to annually evaluate the effectiveness of the deployment, and anticipate the City's need to increase the paramedic override assessment to support the deployment.

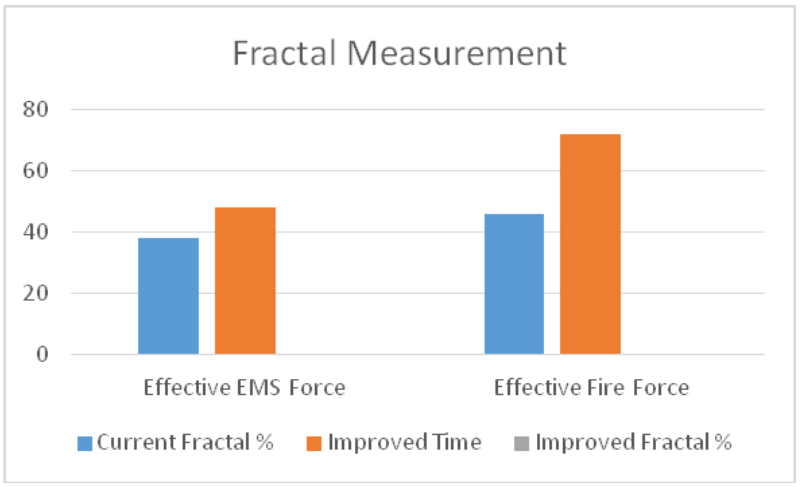
<u>Phase 1 Deployment (FY 16/17)</u>

1. Upgrade PAU Engine 6 to Full Paramedic Engine 6 (adding three FF/PM's.)

   This will allow for quicker paramedic-level care on the east side of the community, while increasing the total number of paramedic units in the City from three to four. This change will improve the Effective EMS Force (Full Paramedic Unit) from 06:32 minutes, 38% of the time, to 06:07 minutes, and 48% of the time. This is a significant increase in deployment effectiveness.

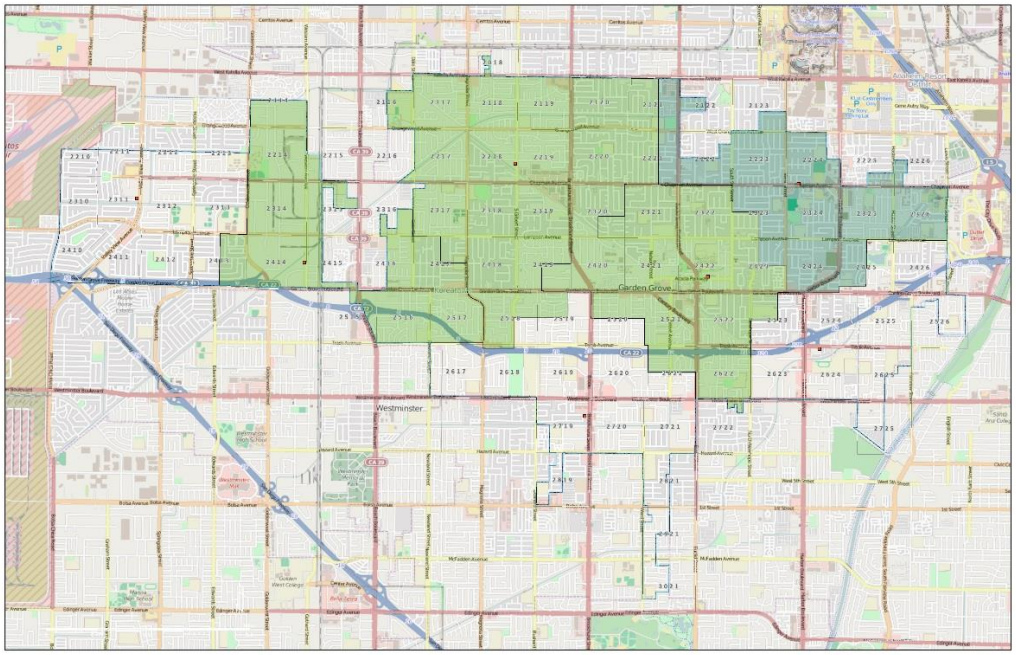
2. Integrating a new private ambulance contract that includes provisions to provide specific paramedic equipment, and guarantee return transportation of our FF/PM from the hospital, back to the Engine Company or station, will further close the gap in district coverage for many calls (Tier 2) that require a paramedic escort to the hospital.





This phase would initially cost $605,235 annually (Todays cost), and would be funded by the current paramedic override assessment. *Final cost projection is pending a report from the City Finance Department. It is estimated to be a minimal overall increase in the assessment.*

District Deployment Graph Engine 6



- Green Current Paramedic Unit Coverage
- Dark Green Proposed New Paramedic Unit

Cost of Phase 1

Paramedic Assessment Funding Impact	Direct General Fund Impact
Engine 6 Paramedic Upgrade $605,235	$0 dollars

- Dollar estimates are based on current day cost

Phase 2 Deployment (FY 18/19)

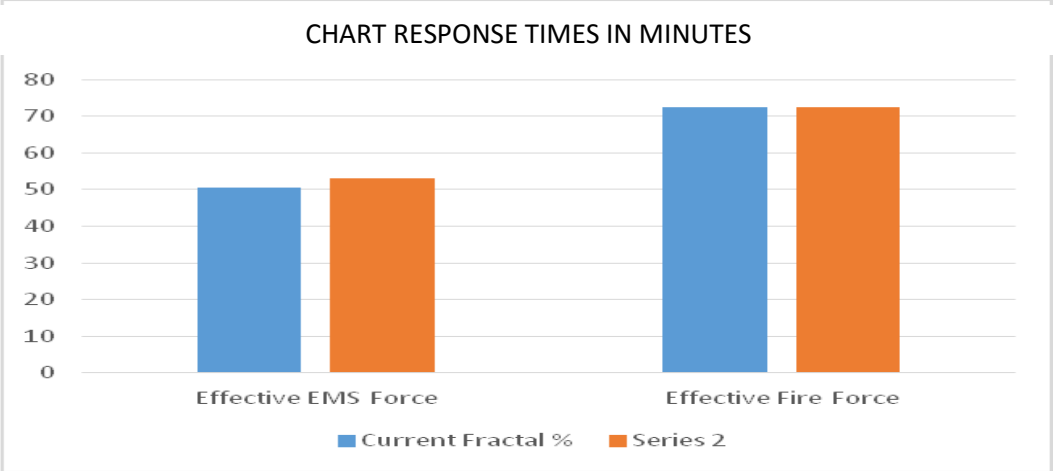
Phase 2 builds on the prior phase, and continues to close the Effective EMS Force gap by providing an additional full paramedic engine to the City. After the implementation of this phase, the City will be served by five full paramedic engines. In addition, this phase will improve our fractal measurement by another 3%. This change will maintain the department's first unit on scene and effective fire force.

1. One of the key components of Phase 2 is to designate a full-time nurse / paramedic coordinator that will assure compliance with all EMS regulations and quality assurance requirements. Currently, the department is not in full compliance with the required quality assurance for medical personnel. The nurse/ paramedic coordinator would also be responsible for researching the feasibility of a community para-medicine program and would administer the program in the future if approved.
2. Change PAU Engine 3 to Full Paramedic Engine 3 (adding three FF/PM's)
3. Re-deploy Paramedic Squad personnel and distribute personnel to E1 and T1
    a. Engine 1 to become a full paramedic engine

b. Truck 1 to become a paramedic assessment unit

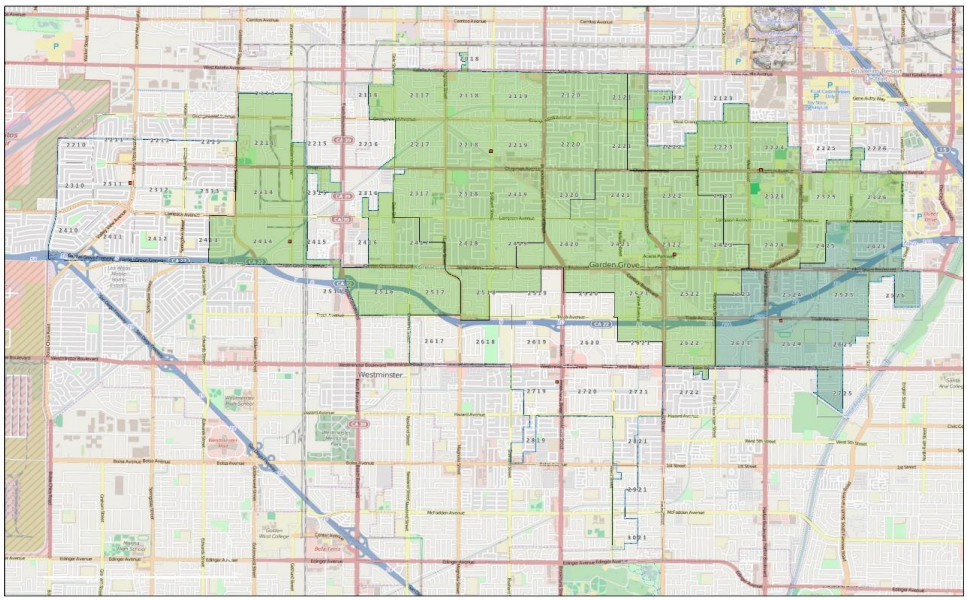
Although the overall daily responses by Engine 1 will increase slightly, the statistical outcome of service delivery supports the change because of the improvement in effective EMS force. The additional staffing of one firefighter/paramedic will improve advanced medical services and align the department with the NFPA 1710 recommendations for a 4-person truck. Typical compliant truck staffing is as follows:

- Fire Captain (Supervisor and Crew Safety Officer)
- Fire Engineer (Apparatus Driver and Aerial Ladder Operator)
- Firefighter/Paramedic 1 (Ventilation Saw Operator)
- Firefighter 2 (Back-up Person for Saw Operator)



Note: Increase in fractal measurement is the goal.

District Deployment Graph Engine 3



- Green Paramedic Unit Deployment Including Phase 2
- Dark Green Proposed New Paramedic Unit

Cost of Phase 2

Paramedic Assessment Funding Impact	General Fund Impact
Engine 3 Paramedic Upgrade $605,235	
Nurse/Paramedic Coordinator $254,215	
Cost From Phase 1 $605,235	
Total Cost: $1,464.685	$-00

- Dollar estimates are based on current day cost

Phase 3 Deployment (FY 20/21)

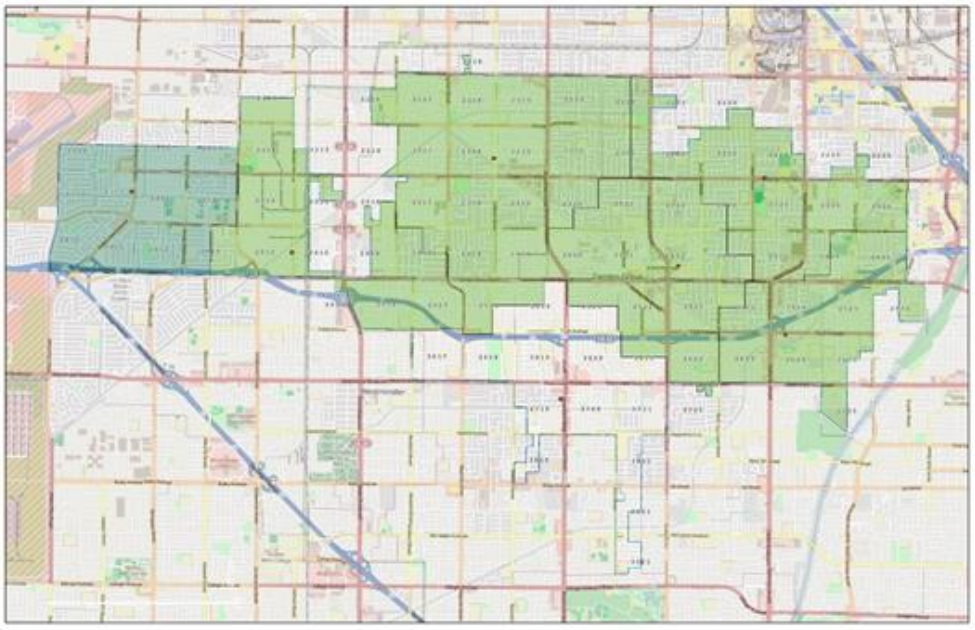
1. Change PAU Engine 4 to Full Paramedic Engine 4 (additional three FF/PM's)

This final phase completes the process of deploying additional paramedic resources throughout the community. The upgrade of paramedic assessment Engine 4 to a full paramedic engine eliminates the need for a second paramedic resource to respond in the City's farthest west districts.

Upgrading PAU Engine 4 to a full paramedic unit will allow for faster paramedic care and transport on the west side of the community, as well as increase the total number of paramedic units in the City from five to six. This is three more paramedic units than the City currently has. This change will improve the Effective EMS Force

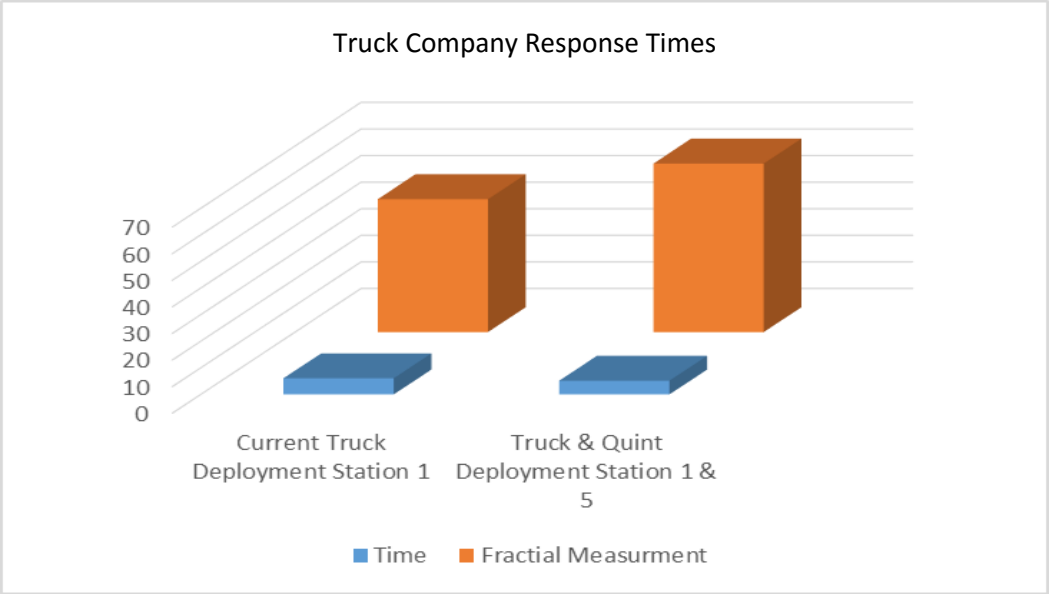
another 3% and maintain a Citywide effective fire force of 6:26 minutes, 72.5% of the time.

District Deployment Graph Engine 4



- Green Paramedic Unit Deployment Including Phase 2
- Dark Green Proposed New Paramedic Unit

2. Changing Engine 5 to a Quint (Truck Company) full paramedic fire unit will require the purchase of a new peace of a Quint apparatus, capable of functioning as a ladder truck, fire engine, and paramedic unit. The cost of this apparatus would be a general fund and paramedic assessment cost but most of the additional cost would be offset by the reduction of the size of the overall fire apparatus fleet. The Quint would be purchased when Engine 5 is scheduled for replacement and the additional cost for the Quint capabilities would be offset by not replacing the current paramedic squad.



Cost of Phase 3

Paramedic Assessment Funding Impact	General Fund Impact
Engine 4 Paramedic Upgrade $605,235	Quint Truck Apparatus* $750,000
Cost From (Phase 1 & 2) $1,464.685	Planned Purchase of Engine Company -($560,000)
	Planned Purchase of PM Squad -($160,000)
Total Cost: $2,069.920	Total Cost: $30,000

- Dollar estimates are based on current day cost

Planned cost to replace both an engine company and paramedic squad should offset the cost of the Quint apparatus.

GLOSSARY

ECC	Emergency Communication Center
EEMF	Effective Emergency Medical Force
EEMSF	Effective EMS Force
EFF	Effective Fire Source
EMS	Emergency Medical Services
FF	Firefighter
FF/PM	Firefighter/Paramedic
FPE	Full Paramedic Engine
FPU	Full Paramedic Unit
FUOS	First Unit on Scene
NFPA	National Fire Protection Association
PAU	Paramedic Assessment Unit