CITY OF LONG BEACH

Memorandum

Date: September 5, 2025

To: Thomas B. Modica, City Manager

From: Dennis Buchanan, Fire Chief

For: Mayor and Members of the City Council

Subject: **Paramedic Assessment Unit (PAU) Fire Engine Pilot Program**

As part of the Fiscal Year 2025 budget process, the Long Beach Fire Department (LBFD) implemented a Paramedic Assessment Unit (PAU) pilot program to evaluate the effectiveness of expanding advanced life support capabilities through the PAU fire engine model. City Council approved allocating $115,714 in one-time funding to support a six-month pilot program from January 1, 2025, to June 30, 2025.

The initiative involved converting three Basic Life Support (BLS) fire engines assigned to Fire Stations 3, 9, and 11 into PAU fire engines. The three fire engines were converted into PAU fire engines by assigning existing Fire Captains and Fire Engineers who hold California paramedic licenses to serve as each fire engine's paramedic. This model increased the number of daily PAU fire engines from 12 to 15 units, enhancing the department's ability to deliver Advanced Life Support (ALS) services to a broader service area in the City. This memo outlines the pilot program's key findings.

LBFD Emergency Medical Services Protocols

When a 911 medical emergency call is received, it is assessed by dispatchers housed in the Department of Disaster Preparedness and Emergency Communications. These dispatchers are trained in accordance with Los Angeles County Emergency Medical Services Agency (LEMSA) protocols and evaluate reported symptoms to determine the appropriate level of medical response.

To ensure the efficient and effective deployment of resources, LBFD utilizes a tiered dispatch system based on the severity of the patient's condition. Calls are categorized into the following three response levels as outlined in Table 1.

Table 1: Tiered 911 Medical Call Response

Response Category	Detail
Alpha Response	Non-life-threatening incidents where patient transport is not anticipated.
Bravo Response	BLS incidents where patient transport is expected.
Charlie Response	ALS incidents requiring more advanced emergency health care and patient transport.

Depending on the severity and nature of the call, dispatchers may deploy one or more of the LBFD Emergency Medical Services (EMS) resources listed below in Table 2.

Table 2: Available LBFD EMS Units

EMS Unit	Detail
Basic Life Support Ambulance	Staffed by two Ambulance Operators, who are licensed Emergency Medical Technicians (EMTs). This unit responds to and provides patient transport for non-life-threatening emergencies.
Basic Life Support Fire Engine or Fire Truck	Staffed by one Fire Captain, one Fire Engineer, and two Firefighters. These units are equipped and licensed to provide EMT services. They can provide first aid, cardiopulmonary resuscitation, and conduct in-person patient assessments. They can upgrade or downgrade the call based on the patient's EMS needs.
Advanced Life Support Paramedic Ambulance	Staffed by two licensed Firefighter-Paramedics, this unit provides comprehensive pre-hospital ALS care and transport.
Paramedic Assessment Unit Fire Engine	Staffed by one Fire Captain, one Fire Engineer, one Firefighter-Paramedic, and one Firefighter. The Firefighter-Paramedic delivers ALS interventions on scene.
Pilot Paramedic Assessment Unit Fire Engine	A pilot model staffed by one Fire Captain, one Fire Engineer, and two Firefighters. In this model, a Fire Captain or Fire Engineer who retains an active State of California paramedic license serves as the paramedic, utilizing their ALS training and experience in an elevated role.

Upon arrival at a 911 EMS incident, EMS personnel reassess the patient's condition. Based on this in-person evaluation, the response level may be upgraded or downgraded to ensure appropriate care. For complex incidents involving multiple patients or critical conditions, additional EMS units may be dispatched to provide adequate care and coverage.

Paramedics assigned to either PAU fire engines or ALS paramedic ambulances are licensed by the State of California and trained to perform a wide range of ALS interventions, including:

- Cardiac and vital sign monitoring
- Advanced airway management (e.g., intubation)
- Intravenous (IV) access and medication administration
- Defibrillation

These interventions are critical in managing life-threatening conditions such as chest pain, respiratory distress, or altered mental status. All paramedic-capable units are equipped with

advanced medical equipment to support these interventions. While PAU fire engines are not designed for patient transport, the units significantly enhance fire engine response by enabling on-scene patient stabilization until ambulance transport units arrive. In contrast, ALS paramedic ambulances provide both treatment and transport, offering a fully integrated pre-hospital care solution. Together, these resources create a coordinated and scalable EMS system, enabling LBFD to deliver timely, high-quality medical care across a wide range of emergencies.

The National Fire Protection Association (NFPA) sets nationwide standards for fire and EMS operations. One of these standards, NFPA 1710, outlines recommended response times for emergency medical responses and fire responses. For EMS-related emergencies, identified as paramedic level response, the goal is to have the first BLS responder (EMT with an AED minimum) arrive within 4 minutes and the arrival of ALS (paramedic) personnel within 8 minutes for 90% of responses. These benchmarks account for unit turnout and travel time but exclude the time required to process the 911 call.

In an ideal scenario, LBFD would dispatch either a PAU or ALS paramedic ambulance as the first responder to every Charlie-level medical emergency. However, the current number of available paramedic units does not allow this goal to be met on every call. In some situations, it is more expedient to send a BLS fire engine or truck staffed by EMT fire sworn personnel. These EMT fire engines and fire trucks provide basic medical care and immediate in-person patient assessment, helping stabilize the situation until a paramedic team can arrive with more advanced support.

PAU Pilot Program Data

The PAU pilot program was launched to explore a new way of providing advanced medical care during 911 emergencies. By allowing experienced Fire Captains and Fire Engineers who are also licensed paramedics to step into a medical role, the PAU pilot program aimed to improve how quickly and effectively care is delivered. This memo summarizes the key findings from the pilot.

Finding 1: Paramedic On-Scene Response Time Improved During the PAU Pilot Program

The implementation of the PAU Pilot Program resulted in a notable improvement in response times for paramedic personnel during emergency medical calls. Table 3 displays the improvement in response time for the pilot program's service area. Specifically, it was found that the average on-scene arrival time of ALS paramedic ambulance units responding to Charlie-level medical calls within the Engine 3, Engine 9, and Engine 11 service areas prior to the pilot was 7 minutes and 38 seconds.

Table 3 also shows the average arrival time of the first paramedic unit either via ALS paramedic ambulance or pilot PAU fire engine during the pilot period from January 1 to June 30, 2025. The average response time reduced to 6 minutes and 24 seconds.

Table 3: Changes in Response Time Before and During the PAU Pilot Program for Charlie-level Medical Calls

Service Area	Paramedic On-scene Time before the Pilot via ALS Ambulance	Paramedic On-scene Time during the Pilot via ALS Ambulance or Pilot PAU
Station 3	5 min 58 sec	4 min 48 sec
Station 9	8 min 08 sec	6 min 45 sec
Station 11	7 min 32 sec	6 min 21 sec
Service Area Average	**7 min 28 sec**	**6 min and 24 sec**

This represents a reduction of 1 minute and 14 seconds per call, or a 15.5% decrease in paramedic on-scene arrival time. These findings demonstrate that the PAU Pilot Program enhanced the speed at which ALS care reached patients in the field.

Finding 2: The PAU units Reduced Calls for ALS Paramedic Ambulance Units

The PAU Pilot Program also reduced the need for ALS paramedic ambulances to go to certain 911 calls by effectively managing a large portion of Charlie-level medical calls on scene. Tables 4 through 6 provide a breakdown of Charlie-level calls that required ALS paramedic assessment, how many calls ultimately required transportation per county protocols, and how many were effectively managed by the PAU fire engine paramedic without the need for dispatching an ALS Paramedic Ambulance. Tables 4 and 5 provide a comparative assessment of call volume during the pilot program, which occurred during January 1, 2025, to June 30, 2025. As shown by these tables, call volume was approximately level for the two periods.

Table 4: Call Volume by Unit prior to the PAU Pilot Program
July 1, 2024, to December 31, 2025

Unit	Total 911 Fire and EMS Calls for Service	Total 911 EMS Calls		Charlie-Level EMS Calls	
	#	#	*Percentage of 911 Calls*	#	*Percentage of 911 Calls*
Pilot PAU Engine 3	3,416	2,687	*78.6%*	1,614	*47.2%*
Pilot PAU Engine 9	2,990	2,441	*81.6%*	1,599	*53.4%*
Pilot PAU Engine 11	3,404	2,728	*80.1%*	1,804	*53.0%*

Table 5: Call Volume by Unit during the PAU Pilot Program
January 1, 2025, to June 30, 2025

Unit	Total 911 Fire and EMS Calls for Service	Total 911 EMS Calls		Charlie-Level EMS Calls	
	#	#	*Percentage of 911 Calls*	#	*Percentage of 911 Calls*
Pilot PAU Engine 3	3,376	2,622	*77.7%*	1,627	*48.2%*
Pilot PAU Engine 9	3,023	2,488	*82.3%*	1,713	*56.7%*
Pilot PAU Engine 11	3,157	2,488	*78.8%*	1,718	*54.4%*

Table 6 provides a breakdown of Charlie-level calls that required ALS paramedic assessment, how many calls ultimately required transportation per county protocols, and how many were effectively managed by the PAU fire engine paramedic without the need for dispatching an ALS Paramedic Ambulance.

Table 6: PAU Fire Engine Impact on ALS Paramedic Ambulance Transport Demand during the PAU Pilot Program
January 1, 2025, to June 30, 2025

Unit	Charlie-Level EMS Calls	ALS Transport Required	Resolved by PAU Fire Engine (No ALS Ambulance Needed)
Pilot PAU Engine 3	1,627	711	916
Pilot PAU Engine 9	1,713	963	750
Pilot PAU Engine 11	1,718	834	884
Total	**5,058**	**2,508**	**2,550**
Percentage	**100%**	**49.5%**	**50.4%**

In total, 2,550 Charlie-level calls were resolved on scene by PAU fire engines without requiring an ALS paramedic ambulance response. This improved system efficiency by allowing ALS paramedic ambulances to remain available for other critical incidents citywide.

Utilizing the PAU fire engine as the primary patient assessment tool, the ALS paramedic ambulances were not only preserved for calls requiring critical patient transport resources, just over 50 percent of the time, but also enhanced citywide EMS coverage and response readiness.

Table 7: Calls Upgraded to Charlie from Alpha and Bravo-level by PAU Fire Engine Unit during the PAU Pilot Program
January 1, 2025, to June 30, 2025

Unit	Alpha-level Upgraded to Charlie-level	Bravo-level Upgraded to Charlie-level	Total Upgrades
Pilot PAU Engine 3	46	86	132
Pilot PAU Engine 9	35	98	133
Pilot PAU Engine 11	37	65	102
Total	**118**	**249**	**367**

Additionally, during the study period, 367 calls initially dispatched as Alpha or Bravo-level calls were upgraded to require Charlie-level incidents and thus requiring ALS treatment and transport. These were appropriately handled by PAU fire engine units, further demonstrating their ability to flexibly respond to evolving medical needs and provide immediate ALS assessment and treatment prior to ALS ambulance arrival.

PAU Pilot Program Findings

Standardizing ALS Assessment Documentation

During the pilot evaluation, it became evident that there was a need for a more consistent and reliable method to identify when an ALS paramedic assessment is performed. Initially, the data analysis used the activation of cardiac monitoring as a proxy for ALS-level care; however, this method presented potential inconsistencies and did not always accurately reflect the full scope of ALS assessments conducted in the field. In response, the LBFD EMS Division collaborated with the department's Electronic Patient Care Report (ePCR) provider and field personnel to establish a standardized documentation process. As of late July 2025, LBFD has formally implemented a dedicated field in the ePCR system to document when an ALS assessment is performed, ensuring more accurate and actionable data moving forward.

Improved ALS On-Scene Response Times

The PAU Pilot Study demonstrated a measurable improvement in the speed of ALS personnel response. Specifically, the average on-scene arrival time of paramedics was reduced by 1 minute and 14 seconds, representing a 15.5% decrease compared to pre-pilot response times. In the context of medical emergencies particularly those involving life-threatening conditions such as cardiac arrest, respiratory distress, or altered mental status this reduction in response time is clinically meaningful. It stands out as one of the most significant outcomes of the pilot and underscores the potential life-saving impact of timely ALS intervention.

Enhanced Call Triage and Resource Availability

The pilot also highlighted the effectiveness of PAU fire engines in triaging Charlie-level calls.

These calls are initially identified as requiring ALS ambulance response; however, once on scene, PAU personnel were often able to assess the patient, determine that ALS transport was not necessary, and downgrade the call to a Bravo or Alpha level. This allowed the ALS paramedic ambulance to be cleared from the scene and made available for higher-priority incidents. By reducing unnecessary ALS ambulance deployments, the pilot program enhanced overall EMS system efficiency and improved readiness for critical medical emergencies across the city.

Fiscal Impact

The cost of operating a PAU pilot fire engine is primarily driven by skill pay enhancements for Fire Captains and Fire Engineers serving as paramedics. Per the Firefighters Association MOU, Firefighter Paramedics receive a 19 percent hourly skill pay rate based on the top step (Step 5) of a firefighter's base hourly rate. For example, a Step 5 Firefighter Paramedic earns a base rate of $51.814 per hour, with an additional $9.845 per hour in paramedic skill pay, totaling $61.659 per hour. Due to Firefighter Paramedics utilizing their paramedic skills for all worked shifts, the 19 percent skill applies to all shifts worked throughout year.

Under the PAU pilot program, Fire Captains and Fire Engineers earn the 19 percent hourly skill pay on a per diem basis when assigned as the designated paramedic on a PAU fire engine. For instance, a Step 5 Fire Captain earns a base rate of $70.985 per hour and receives an additional $9.845 per hour when activated as a paramedic, resulting in a total hourly rate of $80.830 for that shift. When not serving in a paramedic role, their compensation returns to the standard base rate. The application of the 19 percent per diem skill pay to Fire Captains and Fire Engines is what composes the primary operational cost of the PAU pilot fire engines.

The estimated annual cost to continue the PAU pilot program on Fire Engines 3, 9, and 11 is $86,242 per engine totaling $258,726 using FY 26 cost estimates, as outlined in Table 8.

Table 8: Estimated FY 26 Cost to Continue the PAU Pilot Program for One Year*

Resource	Total Hours for 24/7 coverage	19% Per Diem Rate per Hour	Estimated FY 26 Cost
Pilot PAU Fire Engine 3	8,760	$9.845	$86,242
Pilot PAU Fire Engine 9	8,760	$9.845	$86,242
Pilot PAU Fire Engine 11	8,760	$9.845	$86,242
Total			**$258,726**

**Note: Does not include potential labor increases stemming from negotiations.*

Expanding the PAU Pilot Program as a year-round structural program would involve converting all ten EMT Fire Engines and four EMT Fire Trucks into PAU fire engines and PAU fire trucks. The estimated structural cost of this PAU service conversion is $1.20 million annually and is demonstrated below in Table 9.

Table 9: Estimated Annual Cost for Structural Citywide PAU Conversion*

Resource	No. of Units	Estimated FY 26 per Unit Cost	Total
PAU Pilot Fire Engines (3, 9, and 11)	3	$86,242	$258,726
Remaining BLS Fire Engines	7	$86,242	$603,694
BLS Fire Trucks	4	$86,242	$344,968
Total			**$1,207,388**

**Note: Does not include potential labor increases stemming from negotiations.*

For context, the cost to fund one 24/7 ALS Paramedic Ambulance unit is approximately $1.89 million. This includes adding two Firefighter Paramedics per shift, for a total of six new Firefighter Paramedics, which totals $1.77 million. Consumable equipment is estimated to be $50,000 per year while ambulance maintenance costs are forecasted to total $73,000 annually.

Recommendation

The PAU Pilot Program demonstrated its effectiveness in improving response times by enabling a single paramedic to reach patients more quickly. However, while this model enhances the delivery of timely paramedic assessment and care, it does not address the growing demand for patient transport services, an area where the department continues to experience capacity constraints.

The PAU Pilot Program highlighted that roughly 50 percent of Charlie-level calls ultimately do not result in the transport of the patient to the hospital. This highlights the efficiency of PAU Engine model in allowing for quicker arrival and assessment of patients by paramedics resulting in more efficient use of the ALS ambulance. By allowing the PAU paramedic to perform the advanced assessment, the ALS paramedic ambulances remain available for other critical incidents citywide and utilized for critical patient care.

Expanding PAU units alone will not resolve transport-related challenges. Even if all fire engines were converted to PAUs, LBFD would still face limitations in meeting the increasing need for ALS Paramedic Ambulance transport. Therefore, PAU units should be viewed as a valuable complement to, but not a replacement for, fully staffed ALS Paramedic Ambulance Units. A balanced system that includes both PAUs and an adequate number of transport-capable ALS units working in concert to meet the demand for service.

While the use of PAU units impacts positively on the overall EMS deployment model, the Fire Department's focus during FY 26 budget development prioritized transporting units (ALS Transport Units). The LBFD ambulances, fire engines, and fire trucks responded to 64,939 EMS related calls for service in FY 24 which resulted in the transport of 19,923 ALS patients and 10,261 BLS patients. The annual EMS calls volume has increased by just over 11,000 calls over the past 10 years. Roughly 50 percent of these calls result in patient transportation. Therefore, PAU units can enhance the EMS model, but there is a greater need for the addition of ALS transportation units to minimize the "Out of Rescue" scenarios. Because of this, LBFD prioritized the structural support for Rescue 2 in the Fire Department's FY 26 budget.

To further explore sustainable solutions, LBFD is launching a Service Delivery Evaluation Committee (SDEC) tasked with evaluating additional strategies to optimize workload distribution, improve service delivery, and address resource gaps. Continued investment in innovative pilot programs and system-wide planning will be critical to meeting the evolving public health needs of the community.

If you have any questions, please contact me at (562) 570-2505.

CC: DAWN MCINTOSH, CITY ATTORNEY
DOUGLAS P. HAUBERT, CITY PROSECUTOR
LAURA L. DOUD, CITY AUDITOR
APRIL WALKER, ASSISTANT CITY MANAGER
TERESA CHANDLER, DEPUTY CITY MANAGER
MEREDITH REYNOLDS, DEPUTY CITY MANAGER
GRACE YOON, DEPUTY CITY MANAGER
TYLER BONANNO-CURLEY, DEPUTY CITY MANAGER
KEVIN LEE, CHIEF PUBLIC AFFAIRS OFFICER
MONIQUE DE LA GARZA, CITY CLERK
DEPARTMENT HEADS