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The Honorable Information Technology and General Services Committee
City Hall, Room 395
Los Angeles, CA 90012
Attn: City Clerk

Council File 21-0680

Honorable Members:

In response to the City Council action on August 25, 2021, and the motion introduced by Councilwoman Nithya Raman and seconded by Councilmember Paul Koretz, the Los Angeles Fire Department (LAFD) appreciates the opportunity to submit the following report regarding the Department's short, medium, and long-term plans to transition its fleet to zero-emission vehicles. This report is hereby transmitted to the Committee for consideration and approval.

Should you need additional information, please contact Assistant Chief Richard Fields, Supply and Maintenance Division at (213) 392-9441

Sincerely,

Assistant Chief Richard Fields IV
Supply and Maintenance Division

Attachments

## Background

The Los Angeles Fire Department's (LAFD) fleet consists of approximately 1,400 vehicles of various types, models, and configurations to serve its all-hazard response matrix. Most of those vehicles are considered customized, in design and construction, and, except for those assigned to administrative staff and the fire prevention bureau, all are diesel-powered.

The emergency vehicle fleet consists of the following vehicle types:

- Tractor drawn aerial ladder apparatus (Truck)
- Triple combination pumping apparatus (Engine)
- Specialized Hazardous Materials Squads (Squad)
- Specialized Urban Search and Rescue Squads (US&R)
- Specialized Aircraft Rescue Firefighting apparatus (ARFF)
- Command Post, Heavy Rescue, Department Canines (Search and Chemical Detection), and other emergency support vehicles
- Advanced Life Support (ALS) and Basic Life Support (BLS) ambulances (Rescues)
- Most LAFD officers (Captains and above) assigned to administrative positions have emergency response vehicles because they are assigned to ancillary duty positions requiring them to respond to major events or catastrophes.
- In 2018, the department began converting parts of the sedan class vehicles to electric. This was supported by the addition of (20) 3704 AutoCoil Level 2 (with Level 1 capability) EV charging stations on the P2 parking level (assigned to LAFD personnel) at City Hall East.

## Discussion

Current State of Developing Infrastructure

In 2019, plans were made to expand EV charging infrastructure to remote fire station locations. LAFD Fire Facilities, working in conjunction with the Bureau of Engineering (BOE), the Department of Water and Power (DWP), the City Administrative Officer (CAO), and the Mayor's Office developed a plan to install Level-2 (6 kilowatt-hours) and Level-3 (5 kilowatt-hours and 50 kilowatt-hours) electric vehicle (EV) chargers at (10) Department facilities to support the deployment of the new EVs added to the fleet.

The following is a list of the fire station locations identified (based on proximity to Fire Prevention Bureau work sites):

- Westchester / LAX (FS 05) - 8900 S Emerson Ave. Los Angeles 90045
- Pico-Union / Koreatown (FS 13) - 2401 W Pico Blvd. Los Angeles 90006
- North San Pedro (FS 36) - 1005 N. Gaffey Street. San Pedro 90732
- Van Nuys (FS 39) - 14615 Oxnard St. Van Nuys 91411
- West LA (FS 59) - 11505 W Olympic Blvd. Los Angeles 90064
- South LA (FS 65) - 1801 E. Century Blvd. Los Angeles 90002

- Sun Valley (FS 77) - 9224 Sunland Blvd. Sunland 91352
- Woodland Hills (FS 84) - 21050 W Burbank Blvd. Woodland Hills 91367
- Granada Hills (FS 87) - 10124 Balboa Blvd. North Hills 91343
- North Hollywood (FS 89) - 7063 Laurel Canyon Blvd. North Hollywood 91605

To date, the Department has broken ground on only one EV charging location.

Future Infrastructure expansion is necessary to realize a larger fleet of staff and support vehicles.

Additional work and support locations will need to be evaluated and planned, following the process:

(4) Geographic Operations Bureau offices
(3) Fire Prevention remote offices including Figueroa Plaza
(1) Frank Hotchkin Memorial Training Center
(4) Supply and Maintenance central-1 and remote facilities-3

**LAFD Projected Fleet Conversion**

Short Range – The Department's initial effort to convert the fleet was to purchase 55 electric vehicles for non-emergency use by the Fire Prevention Bureau (FPB) inspectors and support staff, followed by other sections and units 'civilian staff. To date, our EV fleet consists of (15) Chevrolet Bolts with an additional (16) to be delivered by late May 2022. The expansion of the EV fleet to the proposed 55 was hampered by a lengthy manufacturer recall and product shortages, and by delays in expanding the charging infrastructure, largely due to the impact of the COVID-19 pandemic.

Mid-Range – The Mid-Term Plan is to procure current production EV for non-emergency, support, and administrative use. These vehicles will provide the opportunity for further testing of current technology including vehicle ergonomics, range, and recharge requirements. For the Fiscal Year 2022/23 and subsequent years, the Department will submit a budget request to purchase 10-15 EVs including ten additional 2022 Ford Mustang Mach-E (Mach-E) electric vehicles to be tested and evaluated for administrative use. The Mach-E has an advertised 230-mile range and costs approximately $56,000 per vehicle.

The acquisition and deployment of the Mach-E will:
- Facilitate further testing and determine the reliability of current battery technology;
- Validate the published extended-range capability of the vehicle;
- Evaluate the vehicle's maintenance requirements and cost;
- Determine the charge rate and time required to return the vehicle to service; and

- Evaluate the Department's current EV charging infrastructure with regards to the continued evolution of in-vehicle battery capacity and size of emergency light vehicles (civilian and sworn staff vehicles).

Long Range – As vehicle manufacturers develop and release new vehicle models that meet the Department's operational needs, the continued purchasing of Hybrid (gasoline/electric) powered vehicles will advance the goal of reducing emissions produced by the Department's vehicles. Further expansion of EVs will be evaluated as vehicle manufacturers develop and market new vehicle platforms such as ambulances, and heavy firefighting apparatus, including an ARFF prototype. In addition, continued expansion of the EV charging systems, with the installation of backup power systems, will be required for the future expansion of EV and deployment. Furthermore, continued evaluation of the Department's existing EV charging infrastructure and systems will be required to match the continued evolution in-vehicle battery capacity and charging requirements. Lastly, it will be necessary for the City's current or future EV Charging Network vendor to enhance the functionality of their network application to permit interdepartmental vehicle charging and stand-alone backup functionality, thus emulating the operability of the current City-wide fuel system. Currently, the Department of General Services, the Los Angeles City Fire Department, and the Los Angeles Police Department EV charging systems operate as stand-alone systems.

**Challenges**

Operability
The current EV charger operating system (OS) does not currently provide the ability to operate in an emergency backup or manual mode. If any or all of the Department facilities lose internet service or connectivity with the system host, the local system does not have the stand-alone capability to operate independently. This will result in the location not being able to charge the vehicles and capture critical vehicle data. To support the department, as referenced in the Long-Term Plan, the City-wide EV charging systems must have stand-alone or backup operability that emulates the current City-wide fuel system.

Interoperability
Currently, the Department has the capability of sustaining outside agency vehicles during a local mutual-aid request with gasoline and/or diesel fuel, as would be expected by the Department if vehicles were deployed to other areas or regions. If the Department expanded the use of EV beyond administrative use, the interoperability of the department's vehicles would be contingent upon the charging infrastructure and local power supplies in those specific jurisdictions or regions. The potential for charging incompatibility or inability could also arise depending on the type of charging equipment used by an outside agency. For example, in the United States, Tesla's proprietary chargers are not compatible with other vehicle manufacturers that mainly utilize the CHAdeMO charging connector. This will impact our ability to maintain our mutual aid responsibilities.

Fleet Size
While increasing the non-emergency fleet can be accomplished at a reasonable pace in the coming years, consideration and analysis will be required for the possibility of an increase in the size of the Department's emergency response vehicle fleet. This would be due to the deployment of field assets during a major event and that most returning vehicles would require recharging prior to redeployment. Future vehicle battery technology, in addition to the number and types of chargers at each department work location, will both factor in the future assessment of the Department's emergency response vehicle fleet size.

**Department Facilities**

Many of the Department's facilities are at maximum parking capacity, therefore, the loss or reduction in available parking spots, due to the installation of additional EV chargers and associated equipment, will require future Department expansion.

**Staffing Needs**

The Supply and Maintenance Division(S&M), the maintenance section, is responsible for the mechanical and body repairs of the LAFD fleet. Staffing requirements to support the development of an EV emergency response and critical staff fleet are currently undetermined, however, staff will need to be increased and trained to ensure the continuity of operations and emergency response vehicle availability. Staffing requirements would be based on the number of vehicles in service. Staffing for fleet operations would monitor and rotate vehicles through the charging process 24 hours per day, 7 days per week, 365 days per year where vehicles are required for emergency response if an insufficient charger-to-vehicle ratio exists. Without on-site S&M fleet operations, the Department will require similar monitoring and support to ensure the availability of emergency response vehicles.

**Financial Challenges**

The Department's reliance on the Municipal Improvement Corporation of Los Angeles (MICLA) funding creates challenges to the department's ability to react to the automotive market's fluctuation in government fleet pricing and availability. Currently, MICLA funding becomes available for the current fiscal year well into the model year for the automotive industry creating a very small window to order vehicles; and as other municipalities compete for the same vehicles and the consumer market grows, there are fewer vehicles available and for a shorter period. This year, the (2022) Ram, now owned by Fiat, declined to sell to state and local governments. Inflation and rapid price changes reduce the number of vehicles we can procure. As we shift to a larger EV platform, we should anticipate similar procurement challenges.

The community expects the department to respond to calls for service for any crisis that requires police service. During times of crisis, the Department's emergency response

vehicles are expected to perform under extreme conditions with limited resource support. At this time, the existing City, County, and State disaster planning and resources are designed to support petroleum-powered vehicles. The State of California has expressed serious concerns about the current condition of the State's electrical distribution power grid and its inability to accommodate additional power loads during peak times, especially during the heat of summer. The California Public Utilities Commission campaign to "Flex our power, save our power" demonstrated that if electrical consumption was not reduced through advertised Flex Alerts, the strain on the State's energy resources could result in power outages.

The Department's EV fleet operations will require the ability to charge at any time, without any constraints, which could impact emergency response vehicle deployment and would only be exacerbated during a large-scale emergency or unusual occurrence. Prior to a department's commitment to expanding to a fully electric emergency response vehicle platform, the installation of backup systems to power an EV fleet would have to be installed to ensure continuity of operations and public safety response. In addition, substantial increases in the number of EV chargers at Department facilities would also be required.

The following areas are required for a department's commitment to transition to a zero-emissions fleet:

- A regional assessment of City and Department facilities to include their current electrical capacity;
- Develop a plan with DWP for future infrastructure requirements needed to meet the City's goal of a zero-emissions fleet;
- A reliable local and regional power grid;
- Enhanced and stabilized electric generation to sustain the increasing demands on the power grid;
- EV charging equipment installed and widely available at both Department facilities and surrounding agencies for mutual aid events;
- Emergency power systems in place to support Department charging operations; and
- Regional coordination to ensure interoperability and compatibility of the supporting charging infrastructures.

**Conclusion**

The Supply and Maintenance Division supports the continued expansion of EVs for administrative transportation while continuing to collaborate with vehicle manufacturers and test new products to include other specialized vehicles and emergency fleets, as they become available. This growth however cannot outpace infrastructure, funding, and staff to sustain it. The traditional combustion engine (including available hybrids) meets the operational demands of the Department and is supported by the existing State and local emergency and disaster response plans and infrastructure.