



## CITY OF GLENDALE, CALIFORNIA REPORT TO THE CITY COUNCIL

### AGENDA ITEM

---

Report: Fleet Electrification Study

1. Motion to Note and File the Report and direct staff to implement the Fleet Electrification Plan.

### COUNCIL ACTION

---

**Item Type:** Action Item

**Approved for** September 20, 2022 **calendar**

### EXECUTIVE SUMMARY

---

The Public Works Department is responsible for maintaining the City's fleet of approximately 862 vehicles that are used by various City operations. This responsibility includes preparing specifications for replacement vehicles when portions of the fleet have reached the end of their usable life. While a significant portion of the fleet is already alternative fuel or electric, there is increasing interest in transitioning the entire diverse fleet of vehicles to all electric zero emission standard to minimize their adverse impact on the environment. A consulting firm, Center for Transport and the Environment (CTE), was hired by the City to prepare a Fleet Electrification Study. The draft study has been completed and attached to this report as Exhibit 1 and provides the city with a roadmap for transitioning the entire fleet. The plan also describes the expected benefits from electrifying the fleet as well as the additional costs, needed infrastructure enhancements, and other drawbacks associated with implementation of this plan. Any City Council feedback and direction on the draft study will be integrated to the final plan.

## **COUNCIL PRIORITIES**

---

Environmental Stewardship: As shown in the draft Fleet Electrification Study, operating with a full electric vehicle (EV) fleet will result in significant reductions in greenhouse gas and other harmful emissions derived from municipal operations.

## **RECOMMENDATION**

---

Staff recommends that the Glendale City Council approve the attached motion to note and file the draft Fleet Electrification Study, direct staff to implement the fleet electrification plan with the goal of a transition by 2040, and to provide any additional direction to staff related to fleet electrification.

## **BACKGROUND**

---

The Public Works Department, Fleet Services Division is responsible for the maintenance of the entire City's non-bus fleet. This includes trash trucks, police vehicles, fire engines, and work trucks. Currently about 12% of this non-bus fleet is comprised of compressed natural gas vehicles, 4% are all-electric, and 10% are hybrids.

Fleet Services prepares specifications for the replacement of older vehicles that have reached the end of their usable life. Currently, staff seeks out new EV options for replacement vehicles whenever possible. As part of the FY 2022-23 budget, 65 total vehicles were approved for replacement which includes 10 authorized for EV replacement.

Historically, options for EV replacements for municipalities have been scarce. Other than sedans, EV alternatives for municipalities have either not been widely available for the vehicle classes that makes up the majority of the City's fleet or were overly expensive and/or impractical. While this technology has been in development for nearly every vehicle class used by the City, these vehicles have not been commonly available for municipalities.

In early 2021, Public Works staff began researching the possibility of conducting a Fleet Electrification Study. At the time, staff found no examples of another city performing a comprehensive electrification study for the wide range of vehicles used by a full service City deployed from numerous facilities. Most studies were solely for a single class of vehicle such as transit buses. The City of Fremont, for example, prepared an Electric Patrol Vehicle Pilot Program in November 2020 that determined transitioning to all electric law enforcement vehicles for them is feasible.

In April 2022, the City of Los Angeles announced that their City Council approved an Electric Vehicle Master Plan with the goal of transitioning their fleet of 10,000 vehicles to EV. However, the plan was predominately just direction to staff in various departments to develop plans to electrify the fleet plus authorizing three new employee positions assigned to this project. However, comprehensive plans that cover all vehicles for all vehicle classes and major facilities for a full service city are still rare.

Following this research, staff initiated a Professional Services Agreement with CTE for Glendale's Fleet Electrification Study in September 2021. Of the firms that had performed electrification studies for transit agencies, CTE appeared best suited to develop a plan to transition Glendale's diverse fleet. They had recently prepared a plan for the Alexandria, Virginia Transit Company that closely mirrored Glendale's expectations. The Alexandria, Virginia Plan features a feasibility plan and implementation scope that provided a clear picture of the costs and achievability of transitioning to zero emission that allowed them to make informed decisions and provided a straightforward pathway for implementation. This consultant has also performed similar work for Los Angeles County Metro, Santa Monica Big Blue Bus, San Diego Metropolitan Transit System, and Orange County Transportation Authority.

Glendale staff provided CTE with data on the current fleet makeup, information on various City facilities where most vehicles are stored and financial data. CTE also worked with Glendale Water and Power (GWP) to determine the impact of the transition on the electrical grid and any projects that might be needed to foster this change. They met with staff from the major City departments who are assigned vehicles such as Police, Fire, GWP and Public Works to better understand how operations might be impacted by this transition.

The purpose of this plan is to inform future planning and decision making related to fleet so that the transition to EVs will be as smooth as possible. This will enable the City to better understand the costs and benefits of electrification before continuing with electrification of the fleet.

The plan does not include transit vehicles which were already studied in the Transit Fleet Electrification Feasibility Study for the Arroyo Verdugo Region Transit Operators that was completed in February 2022. The electrification of Glendale's transit vehicles is already in the implementation stage.

## **ANALYSIS**

---

Based on direction from Glendale staff, CTE analyzed a fleet electrification transition by 2035 as well as by 2040. The City Council may direct staff to move forward with the implementation of either electrification model or a different approach.

### ***Feasibility Assessment***

The plan includes a suitability index that provides a score to various vehicle classes of 1-5 based on their suitability to transition to electric. Only vehicle classes rated 4 or 5 would be eligible for an EV replacement. In order to score 4 or higher, there must be more than one comparable original equipment manufacturer (OEM) options available. This will allow the city to continue to competitively bid vehicle procurements and is consistent with the Citywide Purchasing Policy. The city would still be able to procure vehicles scoring less than 4 with City Council approval under special circumstances such as in conjunction with a grant.

City vehicles are depreciated after they are purchased so that when they reach the end of their usable life, adequate funds are available to purchase a like-for-like replacement vehicle. Under this procurement model, additional funds would not be available to purchase more expensive EVs which can be 50%-100% more expensive than standard models according to the Fleet Electrification Study. Additionally, to reduce capital outlay costs, the city routinely keeps vehicles past their replacement date. Due to a serious backlog, a total of 150 vehicles were approved for replacement in FY 2018-19 and 100 in FY 2019-20. Since then annual vehicle replacements have ranged between 50-75. Both the 2035 transition model and 2040 transition model require annual replacements between 100-170 for the first four years and greater than usual annual replacements after that. As the plans focus solely on EV replacements in the outer years, mostly for heavy duty vehicle classes, annual fleet replacement costs are expected to exceed \$25 million under both models. Therefore, to implement this Fleet Electrification Plan, vehicle replacements will need to be accelerated and additional funding will need to be either transferred to the Fleet Fund or appropriated from other sources.

Both the 2035 scenario and 2040 scenario achieve significant electrification by these goal years (87% and 97% respectively); however, since many vehicle classes are not widely commercially available from local dealers and still have low ratings for availability and suitability, 100% electrification will depend on increased availability and suitability. Many of these vehicles classes with low availability and suitability ratings are for heavy duty vehicles classes with long usable lives. For example, dump trucks and crane trucks last for a minimum of 12 years and construction equipment such as backhoe loaders and excavators are kept for 15 years. Most notably, Fire Department vehicles which currently feature diesel engines have 20-year lifespans. So even if the City only purchased EV fire engines going forward, this class of vehicle wouldn't be fully electrified until 2042 unless the City decided to retire these assets early. Due to the high cost of new fire engines and ladder trucks (\$800,000 - \$1,600,000), as well as other heavy duty vehicles and equipment, and the fact that these retired assets are commonly refurbished and resold to other cities after they are retired by the City, staff recommends not retiring assets early. CTE recommends the City update the Fleet Electrification Plan every two years; in part, to determine if the market for EV vehicles and chargers has matured so that a more aggressive schedule can be pursued.

### ***Costs and Challenges***

CTE worked with GWP to determine the infrastructure needed and associated costs to support an EV fleet at the five largest facilities where vehicles are stored. This includes chargers and electric infrastructure improvements to provide power to the Civic Center Complex, Police Facility, Public Works Corporation Yard, Ginger Bremberg Integrated Waste Management Facility and GWP Utility Operations Center. The total projected cost of this infrastructure to support full fleet electrification is approximately \$70,500,000. This includes \$22,000,000 for GWP infrastructure improvements, \$1,500,000 for EV charger design work, \$26,500,000 for charger equipment and \$20,500,000 for charger installations. These five facilities have varying ages, unique layouts and are generally complex so fitting them with chargers for overnight charging will be challenging. There will likely be an opportunity at most facilities to reduce costs by assigning multiple vehicles

to a single charger. GWP staff will fully determine the extent of the infrastructure improvements needed in the budgeting, planning and design phases for these proposed projects.

CTE projected the variation the City should expect for fuel costs due to the transition to EVs. Based on fluctuating energy costs, the City spends between \$1.7 and \$2.3 million annually in diesel, unleaded gas and compressed natural gas (CNG) combined. In their analysis, CTE determined that the City could expect to pay nearly \$2 million annually in energy costs following a transition to EVs. Therefore, overall fuel costs are not expected to change substantially from fleet electrification.

The City should expect 30% savings on vehicle maintenance costs by converting to EVs. EVs have fewer moving parts, reduced need for engine oil, and regenerative braking which means less routine maintenance and repairs compared to standard fuel vehicles.

Total cumulative transition costs for both scenarios exceed \$100 million. Based on the projected costs of fleet electrification, additional funding will be required. The chargeback model that is used to provide adequate funding for Fleet Services operations will not be able to fully cover the additional costs associated with electrification. Grants and vouchers are available through vehicle dealers and will offset some of the costs. However, additional funding will be needed from potentially Measure S or the General Fund to cover the additional costs described in the analysis. Additionally, as EV vehicles and charging technology improve, the cost of these enhancements could diminish.

Electrifying the Glendale Police Department (GPD) fleet poses unique challenges relative to other City departments. Because GPD provides law enforcement services 24/7, patrol vehicles run nearly continuously in Glendale. Patrol vehicles are not parked overnight which is necessary for overnight charging. As a result, costlier 150kW DC fast chargers are recommended to charge these vehicles during the 15 to 30-minute gap between shifts. Additionally, Glendale Police may need to adjust their operations such as staggering shifts or eliminating take home vehicles to accommodate EVs. Nearly half of the citywide electrification infrastructure costs projected are for the Glendale Police Department Parking Structure due to the need for more expensive DC fast chargers.

### ***Benefits***

Some vehicle assets for departments such as GWP and the Fire Department provide mutual aid support for incidents in California and even outside the state. This includes responses to wild fires and damaged electric power lines. Currently, the EV charger infrastructure needed to support electric heavy duty vehicles on these deployments is inadequate. Significant improvements to this infrastructure is necessary to fully electrify these emergency response assets that are still exempt locally from existing emission rules for heavy duty vehicles.

The CTE study projects the environmental benefits associated with fleet electrification to be significant. Modern heavy duty CNG engines emit only negligible amounts of particulate matter and NOx (oxides of nitrogen). Implementation of CNG technology over

20 years has resulted in significantly cleaner air in the Southern California region. Unfortunately, this technology still emits significant quantities of greenhouse gases (GHG) which includes carbon dioxide, methane and nitrous oxide which all contribute to adverse climate change. CTE estimates fleet electrification can reduce overall NOx, SOx (sulfur oxides), and PM10 (particulate with a diameter of 10 microns or less) from over 300 lb. annually to near zero, and GHGs from nearly 7 million lb. annually to near zero.

### ***Fleet Regulations***

In 2000, the South Coast Air Quality Management District proposed rules 1192, 1193 and 1196 that eventually enacted new emission standards for public agencies operating transit buses, refuse collection vehicles, and heavy duty vehicles. Staff is tracking the progress of similar Advanced Clean Fleet regulation being developed by the California Air Resources Board. For certain classes of vehicles, local governments would be required to make sure 50% of all procurements are zero-emission beginning in 2024 and increasing to 100% in 2027. As was the case 20 years ago when the City first adopted CNG technology, Glendale's fleet will need to become greener due to these imminent regulations.

City Council direction to implement this plan will result in the Public Works Department bringing annual Capital Outlay requests that mirrors the vehicle replacement schedule in this plan. Additionally, GWP will need to budget and plan for the needed infrastructure upgrades to support vehicle electrification. Staff will also move forward with projects to install EV chargers. The 2040 implementation goal is recommended over 2035 because staff believes it's more realistic based on vehicle feasibility, suitability, availability and cost. For example, public safety vehicles make up a significant portion of the fleet and suitable EV alternatives for these vehicle classes are not yet available. Even suitable vehicles that have been released such as EV light-duty pickups are not yet widely available or currently have long waiting lists. Additionally, while the 2035 plan only achieves 87% by the goal date, the 2040 plan reaches 97% which is closer to a full transition. However, this plan is designed to be dynamic and as technology advances, it can be updated to accommodate a faster implementation schedule.

### **STAKEHOLDERS/OUTREACH**

---

CTE met with staff representatives from all five primary City facilities, as well as departments, covered by this study. Fleet electrification will require significant changes to many municipal operations. Public outreach will be performed as needed for any plan implementation component that impacts the public such as potentially refuse collection route adjustments, rate increases and capital improvement projects.

### **FISCAL IMPACT**

---

There is no fiscal impact associated with accepting this report. However, the development and implementation of the proposed Fleet Electrification Plan is expected to result in the significant costs in excess of \$100 million over the course of this transition as described in the study associated with the acquisition of vehicles, chargers, facility upgrades, and improvements in GWP's existing electrical infrastructure. Such

costs are anticipated to impact both the City's General Fund as well as its Enterprise Funds, which would result in significant impacts to existing rate structures. While funding sources for these additional costs have not yet been identified or secured, actual costs would be identified in future Cost of Service Analyses and presented to the City Council in future years' budget appropriation processes in order to ensure adequate and defensible charge backs to departments and ratepayers alike.

#### **ENVIRONMENTAL REVIEW (CEQA/NEPA)**

---

This item is considered a ministerial activity and therefore, not subject to CEQA review.

#### **CAMPAIGN DISCLOSURE**

---

This item is exempt from campaign disclosure requirements.

#### **ALTERNATIVES**

---

Alternative 1: Approve a Motion to note and file the staff report and exhibit, and direct staff to implement the Fleet Electrification Plan with the goal of transition by 2040 and provide any additional direction to staff.

Alternative 2: Approve a Motion to note and file the staff report and exhibit, direct staff to implement the Fleet Electrification Plan with the goal of transition by 2035 and provide any additional direction to staff.

Alternative 3: The City Council may consider any other alternative not proposed by staff.

#### **ADMINISTRATIVE ACTION**

---

**Prepared by:**

Shea Eccleston-Banwer, Sr. Public Works Manager

**Approved by:**

Roubik R. Golanian, P.E., City Manager

#### **EXHIBITS/ATTACHMENTS**

---

Exhibit 1 – Glendale Fleet Electrification Plan