

City of Arts & Innovation

Mobility & Infrastructure Committee Memorandum

TO: MOBILITY AND INFRASTRUCTURE COMMITTEE **DATE:** JUNE 13, 2024
FROM: GENERAL SERVICES DEPARTMENT **WARDS:** ALL
SUBJECT: UPDATE ON CITY OF RIVERSIDE ZERO-EMISSION VEHICLE FLEET
TRANSITION PLAN

ISSUE:

Receive an update on the Zero-Emission Vehicle Transition Plan study currently underway with Black & Veatch Corporation.

RECOMMENDATIONS:

That the Mobility and Infrastructure Committee receive an update on the Zero-Emission Vehicle Transition Plan study currently underway with Black & Veatch Corporation.

LEGISLATIVE HISTORY:

Newly enacted legislative rules aim to protect the health and well-being of Californians by improving air quality and mitigating the harm posed by greenhouse gas emissions.

California Advanced Clean Fleet Rule

The Advanced Clean Fleets (ACF) Rule was adopted by the California Air Resources Board (CARB) to transition the State’s medium and heavy-duty fleet sectors to zero-emission vehicles (ZEV) in support of California’s air, climate and transportation goals. CARB unanimously adopted the ACF Rule in April 2023, following a three-year rule development process, and the rule went into effect on October 1, 2023. The ACF Rule requires fleets that are well-suited for electrification to reduce emissions through requirements to phase-in the use of ZEV for target fleets and requires that manufacturers only manufacture ZEV trucks.

Under the ACF Rule, starting January 1, 2024, State and local governments must ensure that 50% of their annual medium and heavy-duty vehicle purchases per calendar year are ZEV. By January 1, 2027, this requirement increases to 100% of new vehicle purchases being ZEVs.

California Advanced Clean Cars II Rule

The Advanced Clean Cars Rule was adopted by CARB in 2022 and places requirements on new vehicles sold in California for model years 2026 through 2035. Like the ACF, this rule supports

California's air, climate and transportation goals. While the rule will phase in over the stated decade, by 2035 all new passenger cars, trucks, and sport utility vehicles sold in California will be required to be zero-emission (plug-in electric or hydrogen fuel cell electric ZEVs). The Advanced Clean Cars II regulations aim to rapidly scale down light-duty passenger car, pickup truck and SUV emissions, improving air quality.

This legislation addresses mobile sources, which are the greatest contributor to emissions of criteria pollutants and greenhouse gas emissions (GHG) in California, accounting for about 80-percent of ozone precursor emissions and approximately 50-percent of statewide GHG emissions, when accounting for transportation fuel production and delivery. California suffers some of the worst air pollution in the nation. The South Coast air basin is one of two regions in the country classified as "extreme" – the worst category for nonattainment of the federal ozone standard of 70 parts per billion. The suite of regulations with Advanced Clean Fleet and Advanced Clean Cars, which include the Zero-Emission Vehicle regulation, are an integral part of California's strategy to address these pressing public health needs. Reducing emissions contributes to decreasing the severity of their impacts. In addition, reducing the emissions that cause climate change will lead to greater reductions in ozone from the efforts to reduce the pollutants that cause it, which are primarily oxides of nitrogen (NOx) and hydrocarbons (HC) from fuel combustion. These emission reductions will help stabilize the climate and reduce the risk of severe drought and wildfire and its consequent fine particulate matter pollution.

BACKGROUND:

The City of Riverside's Envision Riverside 2025 Strategic Plan establishes goals for reducing greenhouse gas emissions and improving air quality. Transitioning the City's fleet to zero emission vehicles is specifically identified as a goal and an action item in order to improve air quality and reduce greenhouse gas emissions.

In August 2022, the City of Riverside was recognized as having the no.1 green fleet in North America by the NAFA Fleet Management Association, the vehicle fleet industry's largest membership association, which includes more than 38,000 fleets in the U.S., Canada and Mexico. Other notable Top 100 finishes in 2022 include the Portland, Oregon (#20), San Diego (#25), New York City (#26), Atlanta, (#33) and Edmonton, Canada (# 45). The Green Fleet Awards recognize fleet sustainability efforts and honors fleets that have enhanced practices to make a positive impact on the environment. The awards emphasize cities' commitment to the use of alternative fuel and hybrid vehicles, fuel usage and savings, purchasing policy, long-range planning, and community outreach among other areas. In the last 12 years, the City of Riverside has not placed outside the top 100 Fleets. The City's fleet has ranked in the top 20 green fleets since 2017 and the top 35 green fleets since 2010.

On January 23, 2024, the City Council approved a Professional Consultant Services Agreement with Black & Veatch Corporation, of Overland Park, Kansas for zero-emission fleet transition plan services. The term of the agreement is from February 1, 2024, through February 1, 2025, for a total contract amount not-to-exceed \$99,600.

Zero Emission Fleet Transition Study Scope

Black & Veatch will review currently available and soon to be available battery and fuel cell electric vehicles available to replace the vehicle types used by the City. This task will highlight vehicle classes for which electric alternatives are available and cost effective, as well as those for which electric alternatives are not yet available.

The scope of the study includes:

1. Identification of fleet vehicles that can be transitioned to zero emissions vehicles (ZEV).
2. Identification of fleet vehicles that may be underutilized or oversized for current applications.
3. Average upfront and lifecycle cost differential among the commercially available fuel options, including kilowatt-hour cost.
4. Cost benefit analysis of the conversion to electric vehicles for different vehicle classes and types.
5. Identification of the vehicle types that are least viable for conversion to electric due to insufficient alternatives, unreliable technology, excessive cost or other identified reasons.
6. Recommended compliance pathway to meet the Advanced Clean Fleet regulations based on the Consultant's review.
7. Existing Conditions and Trends, including each City facility's capacity to support electrical load demand from charging operations, identify potential grid impacts, inadequate charging infrastructure/siting limitations, and concerns about reliability and resilience in the event of grid outage.
8. Needs assessment and gap analysis.
9. Develop projected costs and identify other barriers to conversion.
10. Identify and analyze financing mechanisms and strategies.
11. Develop a Phased Master Plan for staff review.

DISCUSSION:

The City has a variety of medium-duty and heavy-duty vehicles and equipment meeting the gross vehicle weight rating (GVWR) of 8,500 pounds or greater, which makes them subject to ACF regulations. Over the next 10 to 20 years, these vehicles will need to be phased from internal combustion engine (ICE) technology to zero-emission status. This will require an effective transition plan and associated understanding of the charging or fueling infrastructure that will be needed.

To assist the City of Riverside with this planning effort, the ZEV Fleet Transition Plan study was initiated with Black & Veatch Corporation (Consultant) in February 2024, with a cross-departmental City team including representatives from the City Manager's Office of Sustainability, General Services, Riverside Public Utilities, and Public Works. The first deliverable for this study has been completed, which consists of assessing the City's existing fleet and available transition pathways to develop the future state of the City's ZEV fleet composition and utilization. In this portion of the study, Black & Veatch identified available ZEV alternatives for the City's existing fleet, evaluated current and future fleet utilization needs, considered the least viable conversion alternatives, determined cost/benefits for EV conversion when compared to ICE vehicles, and

recommended the compliance pathway to adhere to CARB ACF rule. Key takeaways of the fleet assessment portion of the study are outlined below.

Current City Fleet Assessment

Excluding public safety emergency response vehicles which are exempt under the ACF, the City’s fleet consists of 701 vehicles, as follows:

- 373 fleet vehicles meet the GVWR of 8,500 pounds or greater and are subject to ACF regulations. These vehicle types include vans, refuse trucks, street sweepers, utility service trucks, bucket trucks, dump trucks, flatbed trucks, work pickup trucks, semi-trucks, vacuum trucks, tank trucks, and paint strippers.
 - ZEV alternatives are currently available for some, but not all of these medium and heavy-duty vehicle types. If the City cannot comply with ACF requirements to purchase a ZEV because a ZEV alternative for that vehicle type does not exist, beginning in 2025, it’s anticipated that the City will be able to request an exemption under CARB’s ZEV Purchase Exemption List.
- 294 fleet vehicles are exempt from ACF regulations. These light-duty vehicle types include sedans, sports utility vehicles (SUVs), and light-duty pickup trucks.
 - Beginning in 2035, 100% of in-State sales of new light-duty passenger cars and trucks will be ZEV.
- 34 paratransit buses are subject to Innovative Clean Transit (ICT) regulations enacted by CARB, rather than ACF.

Underutilized Fleet Vehicles

Identification of underutilized vehicles is a vital component to maintaining an optimized fleet size and composition to meet the City’s operational needs.

- A total of 48 underutilized vehicles were identified, with 17 showing zero annual miles for the previous year, and 31 showing under 10% utilization, i.e. very low mileage. Underutilization is attributable to a variety of reasons including vehicle condition, or unavailability of parts, reserve status awaiting replacement, or low usage due to specialized, seasonal or on call use.

Table 1. Vehicles with Zero Miles

Vehicle Status	No. of vehicles
Declared Surplus*	7
Specialized/Low Usage	1
No Parts Available/Pending Surplus*	2
Totaled in Accidents/Pending Surplus*	3
Reserve Status/Pending Replacement	4
Total:	17

Table 2. Vehicles with Under 10% Utilization

Vehicle Status	No. of Vehicles
On Call Usage Only	2
Specialized/Low Usage	16
Fleet Motor Pool/Low Usage	3
Major Repairs Required/Pending Surplus*	7
Seasonal Use Only	2
At Vendor Awaiting Major Repairs	1
Total:	31

*All surplus vehicles will be removed from the active vehicles database because these vehicles are no longer needed or usable by the holding department and are in the process of being sold.

The Fleet Services Division will continue to work with departments to review, investigate and better understand reasons for a vehicle being inactive or underutilized. This understanding will help guide future replacement decisions for an optimally sized fleet.

ZEV Suitability for City Fleet

Approximately one-third of the City vehicle types subject to ACF regulations have low ZEV alternative suitability, due to either ZEV range limitations, payload capacity, gross vehicle weight rating suitability, configuration to meet the required height, weight, length and vocational body of current fleet vehicles, or market availability.

- High ZEV alternative suitability: Sedan, SUV, Pickup Truck, Paratransit Bus, Van, Heavy Duty Semi Truck, Refuse Truck. Electric (EV) alternatives will meet operational requirements and should present no significant concerns.
- Medium ZEV alternative suitability: Work Pickup Truck, Street Sweeper, Dump Truck, Heavy-Duty Utility Truck, Flatbed Truck, Medium-Duty Utility Truck, Medium-Duty Bucket Truck. There are few original equipment manufacturers for these vehicle types; however, a ramp up in the market is expected due to high market demand.
- Low ZEV alternative suitability: Vacuum Truck, Tanker Truck, Construction Materials Truck, Paint Striper Truck, Heavy-Duty Crain. No ZEV alternatives are on the market to meet operational requirements.

In instances where a suitable ZEV alternative is not commercially available, the City may need to apply for ACF Exemptions until suitable alternatives enter the market. Additionally, City staff will monitor the market for vehicle manufacturer announcements, and potentially engage manufacturers to pilot vehicles to help accelerate the market and become an early adopter.

ZEV Alternatives Assessment

In evaluating available ZEV vehicle types, the Consultant’s recommendation is that the City select electric, rather than hydrogen vehicles due to lower purchase price and infrastructure costs, combined with availability of vehicle models to meet the City’s operational needs. While hydrogen

fuel cell vehicles have many benefits, such as longer vehicle ranges and shorter refueling times, they lag far behind electric vehicles in terms of market availability and fueling infrastructure. Furthermore, limited hydrogen vehicle availability results in lack of data to accurately model total cost of ownership when compared to electric vehicles.

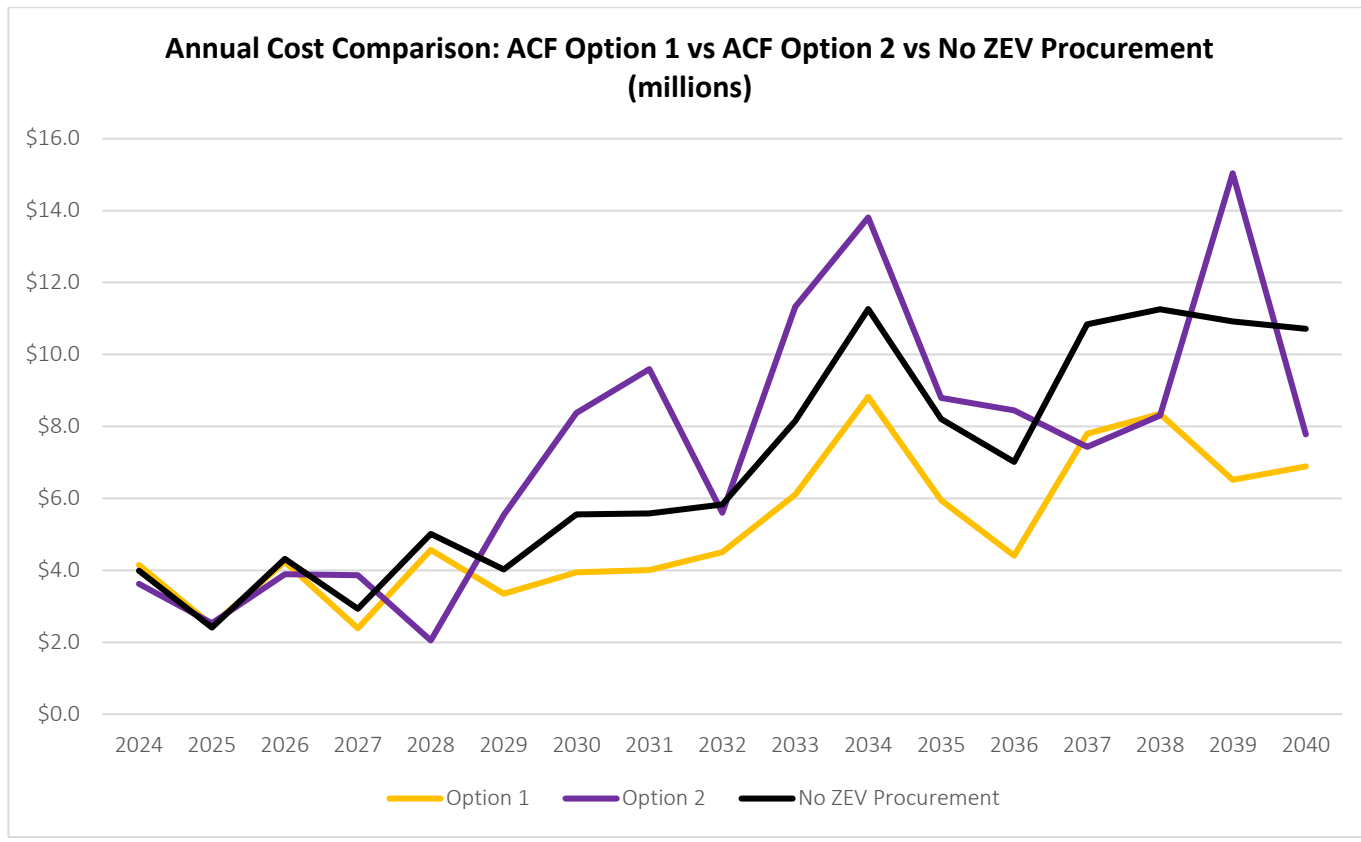
ACF Compliance Pathways

Under the ACF, there are two compliance pathway options available to the City: 1) the Model Year Schedule (Default) which became effective January 1, 2024, which requires 50% of annual vehicle purchases per calendar to be ZEV, increasing to 100% of annual vehicle purchases starting January 1, 2027; or 2) the ZEV Milestone Option, wherein fleet owners phase ZEVs into their fleet based on the body type of the vehicle.

- **Option 1 Model Year Schedule** is driven by existing fleet replacement schedules and vehicle mileage, and ultimately results in fewer ZEV purchases. Under this option, existing vehicles are not taken out of service and replaced before the end of useful life. In this scenario, total vehicle transition costs by 2040 are estimated at \$88.4 million, including anticipated incentives and rebates, and excluding costs for EV charging infrastructure and installation.
 - The Pros include a gradual transition as the City can phase-in ZEVs over time, flexibility as ICE vehicles can continue to be used until they reach the end of their useful life, and a predictable timeline.
 - The Cons include limited ZEV adoption as the City would not fully transition to ZEVs by 2040.
- **Option 2 Milestone Option** is offered as a one-time option until 2030. The Milestone Option categorizes fleet vehicles into groups by body type, with ZEV percentage requirements per year. The milestone schedule drives the replacement schedule, resulting in more ZEV purchases as fleet vehicles would be retired and replaced years before they would otherwise need to be replaced, in order to meet ZEV fleet composition requirements. In this scenario, total vehicle transition costs by 2040 are estimated at \$126.0 million, excluding costs for EV charging infrastructure and installation.
 - The Pros include faster transition as the City would commit to specific ZEV fleet milestones by certain dates, it encourages early adoption and accelerates the reduction of greenhouse gas emissions.
 - The Cons include challenges meeting milestones and higher upfront costs.
- **No ZEV Procurement** is shown for comparison purposes only. In the absence of ACF regulations, the City would spend approximately \$118.0 million by 2040 on ICE vehicle replacements, based on existing vehicle replacement schedules.

When comparing compliance pathway vehicle purchase and lifecycle costs scenarios, ACF Option 1 is the most cost-effective scenario against Option 2; however, it is less aggressive towards achieving the City's goal to achieve citywide carbon neutrality no later than 2040.

Table 3. Annual Cost Comparison



Next Steps

Black & Veatch is currently working to determine the projected number and location profiles of ZEV charging stations that are required to meet the energy usage and demand by vehicle category to support effective and efficient City operations, including costs relating to ZEV infrastructure. In parallel, Black & Veatch will review existing conditions and trends to understand existing City facility capacity to support the increased electrical load demand and assess the impact of ZEV infrastructure on electric reliability and resiliency. This phase will conclude with an estimate of greenhouse gas emissions reductions anticipated from the transition to a ZEV fleet.

The Black & Veatch team will leverage their proprietary total cost of ownership model to provide a comprehensive view into the total costs of ZEV ownership, incorporating costs for purchasing, maintenance, and operations, as well as associated infrastructure. They will also identify barriers (e.g., technology maturity, power availability, interconnection timelines, etc.) to the City’s conversion to a ZEV Fleet. In addition, Black & Veatch will design a comprehensive funding and financing strategy identifying a different range of options and mechanisms that the City can leverage, including potential revenue opportunities from participating in credit and other applicable programs.

The City’s transition to zero emission vehicles is likely to be a complex, long-term undertaking that will require considerable flexibility in contracting, procurement, and where possible, funding sources and availability. The ZEV Fleet Transition Plan study is anticipated to be complete by the

third quarter of 2024. Upon completion, the final ZEV Fleet Transition Plan will be presented to the full City Council for consideration and further direction.

STRATEGIC PLAN ALIGNMENT:

The ZEV Fleet Transition Plan supports Strategic Priority Environmental Stewardship, and Goals 4.3 “...to ensure all residents breath healthy and clean air...” and 4.6 “to implement the requisite measures to achieve citywide carbon neutrality no later than 2040.” Further, Goal 4.6 Action Item 4.6.1 provides that the City “[e]xpand the use of zero emission and low-emission vehicles as part of the City’s fleet, including electric, hybrid and hydrogen vehicles, and develop the charging/fueling infrastructure to support and meet state mandates and timelines.”

This item aligns with each of the five Cross-Cutting Threads as follows:

1. **Community Trust** – The Professional Consultant Services Agreement with Black & Veatch Corporation for Zero Emission Fleet Transition Plan services was agendized for the Board of Public Utilities and City Council consideration, ensuring public transparency.
2. **Equity** – The Zero Emission Fleet Transition Plan will benefit the entire Riverside community by providing a road map for reducing greenhouse gas emissions and improving air quality for all Riversiders.
3. **Fiscal Responsibility** – The Zero Emission Fleet Transition Plan will help to ensure that the most effective and cost-effective ACF compliance pathway is identified.
4. **Innovation** – The Zero Emission Fleet Transition Plan will ensure that the City of Riverside remains a leader in the areas of Green Fleet, as the no. 1 ranked fleet in North America, and environmental stewardship.
5. **Sustainability & Resiliency** – In terms of resiliency, the Zero Emission Fleet Transition Plan will address concerns about reliability and resilience in the event of a grid outage and ensure backup generators or other energy storage methods are incorporated to ensure the City’s fleet remains operational.

FISCAL IMPACT:

There is no fiscal impact associated with this report. The fiscal impact of this initiative is dependent upon the selected ACF Compliance Pathway and related incidental expenses, such as charging stations.

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