



Energy Commission

CONSENT CALENDAR
September 14, 2021

To: Honorable Mayor and Members of the City Council
 From: Energy Commission
 Submitted by: Janet Strömberg, Chairperson, Energy Commission
 Subject: Recommendations for Fleet Electrification Policy and Financing

RECOMMENDATION

Refer to the City Manager to update the Municipal Fleet Electrification Assessment and electric vehicle (EV) charging funding priorities to respond to the City Auditor's Report "Fleet Replacement Fund Short Millions" and to align with the objectives stated in the City's Electric Mobility Roadmap to Prioritize Municipal Fleet Modal Shift to Electric Bicycles and Other Forms of Zero-Emissions Mobility Where Feasible.

SUMMARY

The Energy Commission recommends that Council refer to the City Manager to align an updated Municipal Fleet Electrification Assessment and transition plan¹ (Fleet EV Plan) and vehicle funding priorities with the objectives stated in the City's Electric Mobility Roadmap,² in Agenda Item 37³ as approved by Council April 20, 2021, and in the City Auditor's Report "Fleet Replacement Fund Short Millions" (June 2, 2021)⁴ (Audit Report). These documents aim to guide the City in achieving a zero-emission fleet by 2030 and "...prioritize municipal fleet modal shift to electric bicycles and other forms of zero-emissions mobility, where feasible."⁵

Specifically the Energy Commission recommends that Council refer to the City Manager:

¹ City of Berkeley Municipal Fleet Electrification Assessment done by East Bay Community Energy
https://www.cityofberkeley.info/uploadedFiles/Public_Works/Level_3_-_General/04-Municipal%20Fleet%20Electrification%20Assessment%202020.pdf

² Berkeley Electric Mobility Roadmap, April 2020,
https://www.cityofberkeley.info/uploadedFiles/Planning_and_Development/Level_3_-_Energy_and_Sustainable_Development/City%20of%20Berkeley%20Electric%20Mobility%20Roadmap_2020.pdf

³ Refer to the City Manager to Prioritize Municipal Fleet Modal Shift to Electric Bicycles and Other Forms of Zero-Emissions Mobility Where Feasible, from Councilmember Harrison, Item 37 on City Council Agenda 4-20-21,
https://www.cityofberkeley.info/Clerk/City_Council/2021/04_Apr/Documents/2021-04-20_Item_37_Refer_to_the_City_Manager.aspx

⁴ Fleet Replacement Fund Short Millions, Audit Report by Berkeley City Auditor, June 2, 2021,
https://www.cityofberkeley.info/uploadedFiles/Auditor/Level_3_-_General/Fleet%20Replacement%20Fund%20Short%20Millions.pdf

⁵ Item 37, Note 3

1. Adjust the Fleet Replacement Funding Model and budget to ensure that the City's transition to zero emissions mobility, including Electric Vehicles (EVs), e-bikes, and other zero emissions modes of transportation, aligns with the City's greenhouse gas (GHG) emission reduction goals.
2. Incorporate the City's existing commitment to "aggressively accelerate" electrification of the City's fleet and phase out fossil fuel vehicles by 2030, as described in the Electric Mobility Roadmap⁶ and in Item 37 into Public Works directives.
3. Implement Item 37 and the requested updated Fleet EV Plan, as a supplement to the City's response to the Auditor's recommendations regarding Public Works' plans, regulations, fleet replacement policy and priorities, RFPs and vendor contracts (i.e. the recommendations and management's responses in Auditor's report on pages 20, 27, 28, 30).
4. Dedicate adequate funds in the FY2022 budget to replace City fleet vehicles with EVs, e-bikes, and/or other zero-emission modes of transportation as scheduled. The Fleet EV Plan identified 32 vehicles to replace with EVs in FY2021 (requiring an estimated \$1.16 million). Public Works has collected \$747,000 to replace 29 vehicles scheduled to be replaced with EVs in 2021. These EV replacements – some of which could potentially be replaced with e-bikes or other zero-carbon forms of transport per Item 37 Referral – should be prioritized in the budget and in Public Works' plans.
5. Commence investment in the needed EV charging infrastructure urgently to prevent delay in operations of newly leased and purchased EVs.

FISCAL IMPACTS OF RECOMMENDATION

The 2020 City of Berkeley Municipal Fleet Electrification Assessment prepared by EBCE projects a \$1.42 million (17%) increase in cost over the next ten years for replacing the city's light duty vehicle fleet with electric vehicles, compared to replacing with internal combustion engine (ICE) vehicles, due primarily to expenses associated with needed charging infrastructure.⁷ Reviewing this plan, the Auditor's Report further states the backlog of vehicles overdue for replacement may cost the City more than purchasing or leasing new vehicles.

However, shifting even a small portion of the ICE light-duty vehicle replacements to e-bikes and other zero-carbon forms of transportation could lower costs substantially, potentially sufficiently to eliminate projected added costs for fleet replacement. For example, e-bikes cost \$2,000-6,000 to purchase and require only a regular 120V outlet for charging compared with an estimated \$30,000 for a new Bolt EV, along with costs for charging infrastructure.⁸

CURRENT SITUATION AND ITS EFFECTS

On June 23, 2021, the Berkeley Energy Commission voted to send this recommendation to update the Municipal Fleet Electrification Assessment and electric vehicle (EV) charging funding priorities, moved by Commissioner Leger, second by Commissioner Gil, motion carried

⁶ Berkeley Electric Mobility Roadmap, April 2020, see Note 2.

⁷ City of Berkeley Municipal Fleet Electrification Assessment done by East Bay Community Energy, see Note 1

⁸ Walk Bike Berkeley, E-bikes: Key to Berkeley's Climate & Public Safety Goals
https://drive.google.com/file/d/1slSMSq0h2HF2KaXVj0GC30o3P_oosf5t/view

by vote 8-0-0-0; Ayes: Stromberg, Moore, Gil, Paulos, Zuckerman, Guliassi, Leger, Wolf. Noes: None. Abstain: None. Absent: None.

The Audit Report “Fleet Replacement Fund Short Millions” found that the City’s fleet replacement funding model is not aligned with how funding decisions are made, the replacement fund is underfunded by several million dollars, and delays in vehicle replacement may undermine the City accomplishing its goal to transition its fleet from internal combustion engines (ICE) vehicles by 2030 to reduce greenhouse gas emissions. The Audit Report prompted the Energy Commission to review City policies and plans for fleet transition. The Energy Commission agrees with the Audit Report’s recommendations that the Fleet Replacement Funding Model be adjusted to align with how funding decisions are made, and that additional funds be allocated for timely fleet replacement. However, we also recommend unequivocally that funding decisions must align with the emission reduction goals of the Electric Mobility Roadmap and the Council’s April 20, 2021 directive to “Prioritize Municipal Fleet Modal Shift to Electric Bicycles and other forms of Zero Emission Mobility Where Feasible.”

The City’s current plans to transition its municipal fleet to electric vehicles and the Audit Report on the Fleet Replacement Fund shortfall are both missing the inclusion of less expensive and less polluting electric bicycles and other micro-modal and zero-carbon forms of transportation. The climate impacts of delaying the replacement of the City’s gas-fueled vehicles with electric vehicles due to possible Fleet Replacement Fund shortfalls are substantial: millions of tons of greenhouse gases for every year of delay, as estimated below. The City could benefit significantly from both cost-savings and greenhouse gas emissions reductions by replacing some of its vehicles with e-bikes and/or other zero-carbon modes of transport. Shifting even a small portion of existing gas-fueled light-duty vehicle replacements to e-bikes and other zero-carbon forms of transportation could lower costs substantially, potentially enough to eliminate projected added costs for fleet replacement. This recommendation is consistent with the Referral Item 37 by Councilmember Harrison approved on April 20, 2021, and aligns with the City’s Strategic Plan Priorities, its municipal expenditure policy, and with its previously adopted Climate Action Policies to reduce municipal GHGs from the transportation sector.

BACKGROUND

Item 37 notes: “In response to Council direction in 2019, the Public Works Department is in the process of transitioning its light, medium and heavy-duty fleet to zero emissions vehicles. Replacing the City’s fleet with zero-emissions vehicles will require significant budgetary and carbon investments. Given the carbon, environmental, and budgetary costs of these investments, it is in the public interest to explore opportunities to shift the mode of municipal transit, where feasible, to less-intensive modes, including electric bicycles, scooters and public transportation.”

Item 37 further states that e-bikes and micro-modal transportation have significantly lower embodied and operational carbon footprints. A University of Oxford study cited in the item “concluded that even partial substitution of vehicle travel with walking, cycling or e-biking are

critical strategies for addressing climate change and lower mobility-related lifecycle CO₂, and that cyclers have 84% lower CO₂ emissions impact as compared to non-cyclers.”⁹

This is also supported by research prepared by Walk Bike Berkeley, which found that e-bikes are 18 to 32 times cleaner than EVs comparing both operational and embodied carbon dioxide equivalent (CO₂e).¹⁰

A key conclusion of the Auditor’s Report is that the Fleet Replacement Fund fell \$7.2 million short of the American Public Works Association’s recommended level in FY 2020, and that the City’s funding model is not working to ensure sufficient funding for timely replacement.

Additionally the Report states **“This shortfall may also prevent the City from adhering to its plan to transition to an electric fleet by 2030.”**

(emphasis added) A shortfall in the Fleet Replacement Fund will undermine the City’s commitments to reduce GHG emissions.

However, the Fleet EV Plan and Auditor’s report only consider replacement of the City’s fleet with comparable EVs, and do not consider e-bikes and other zero-carbon modes of transportation, thus missing other important opportunities to further reduce the City’s GHG emissions. To prioritize the reduction of GHGs and make the best use of public funds, both the Fleet EV Plan and the Auditor’s report need to be updated to include the costs and environmental impacts of fleet replacement with e-bikes and other micro-modal and zero-carbon forms of transportation.

ENVIRONMENTAL SUSTAINABILITY AND CLIMATE IMPACTS

The Fleet EV Plan previously presented to Council estimates 308 Million tons of additional greenhouse gases would be emitted cumulatively during 2021 - 2030 if the City continues with its existing Internal combustion engine (ICE) fleet and does not replace with EVs as planned.¹¹ This is a worst-case scenario if no vehicles are replaced with EVs. For example, per the Fleet EV Plan, if the City does not replace light-duty ICE cars with EVs as scheduled in 2021, it will produce an additional 10.6 MT of GHG emissions in 2021; if not replaced as planned in 2022 an additional 19.5 MT of GHGs would be emitted in 2022; and so on. The City should also plan for the replacement of medium- and heavy-duty vehicles with EVs, such as the new electric Ford F-150 coming to market.

Further GHG reductions and cost savings can be achieved if some ICE vehicles are replaced with e-bikes and other micro-modal forms of transport. As outlined on Walk Bike Berkeley’s website:

⁹ “Study Shows Walking, Cycling, & e-Biking Make Significant Impact On Carbon Emissions,” CleanTechnica, February 3, 2021, <https://cleantechnica.com/2021/02/03/study-shows-walking-cycling-e-biking-make-significant-impact-on-carbon-emissions>

¹⁰ Walk Bike Berkeley, E-bikes: Key to Berkeley’s Climate & Public Safety Goals https://drive.google.com/file/d/1sISMSq0h2HF2KaXVj0GC30o3P_oosf5t/view

¹¹ Estimate calculated by adding the difference between baseline and EV “well to wheels” GHG emissions for each year 2021 to 2030, as shown in Figure 5 on page 11 of Municipal Fleet Electrification Assessment. [City Council Report ##-##-####](#)

- E-bikes get anywhere from 1,000 to almost 4,000 miles per gallon equivalent.
- E-bikes can go 40 to 140 times as far as a 30-mpg gas car per pound of climate emissions with California's electricity energy mix (*Note: Berkeley's municipal electricity accounts at 100% renewable means the savings can be even larger*)
- E-bikes get 30-100 times more miles per pound of battery than an electric car.¹²

The Fleet EV Plan notes that in mid-2020 Public Works planned to implement a GPS tracking (telematics) system on some vehicles that would provide real-time data on vehicle usage that will help determine "right sizing" of vehicles and whether some vehicles could be shared by more staff, thereby expanding City services without adding more vehicles. It would seem reasonable that such telematics could help determine if an e-bike or other mode could be used instead of a car.¹³

RATIONALE FOR RECOMMENDATION

Fleet replacement and electrification, and shifts to zero-carbon modes of transportation, are vital elements in becoming a Fossil Fuel Free City, and align with the City's Strategic Plan Priorities. The City has many excellent goals, commitments, and plans for advancing electric mobility and zero-carbon transportation across several departments and programs. This Energy Commission recommendation is an opportunity to integrate, coordinate, and leverage the City's efforts and implement the plans into operational procedures, directives, and budgets.

The Energy Commission's mission to advise the Council on climate protection, energy conservation, and alternative energy development in Berkeley includes reducing GHGs from the transportation sector. **Missing opportunities to replace some of the City's gas-fueled vehicles with less expensive and less polluting e-bikes or other zero-carbon transport modes, and delaying replacement of the City's gas-fueled vehicles with EVs due to Fleet Replacement Fund shortfalls, will both have measurable climate and fiscal impacts due to the continued use of fossil fueled vehicles.**

This Recommendation aligns the City's municipal expenditure policy with its previously adopted Climate Action Policies to reduce municipal GHGs from the transportation sector.

Thank you for your consideration of our recommendations regarding the Fleet Electrification Assessment, the Fleet Replacement Fund, and plans to prioritize funds in the FY2022 budget to accelerate the City of Berkeley's transition to EVs and other zero-carbon modes of transportation.

ALTERNATIVE ACTIONS CONSIDERED

None

CITY MANAGER

The City Manager concurs with the content and recommendations of the Commission's Report. Staff will be updating implementation of the fleet assessment to accelerate fleet

¹² Walk Bike Berkeley, "E-Bike 1000 MPG Project," <https://sites.google.com/view/ebikestudy>

¹³ Appendix A, pp. 29-30 of the Municipal Fleet Electrification Assessment, see link in Note 1

transition to electric vehicles and will consider opportunities to prioritize municipal fleet modal shift to electric bicycles and other forms of zero-emissions mobility where feasible.

CONTACT PERSON

Billi Romain, Secretary, Energy Commission, 510-981-7432