



Report to the California Legislature:

Zero-Emission Assurance Project

Report Submitted By:

California Air Resources Board

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DOCUMENT AVAILABILITY

This report can be viewed at: <https://ww2.arb.ca.gov/legislatively-mandated-reports>. To obtain a hard copy of this report, please contact Dr. David Ernest García at

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Overview

The Zero-Emission Assurance Project (ZAP) was established by Assembly Bill (AB) 193 (Cervantes, Chapter 363, Statutes of 2018) to help lower-income Californians reduce the risk of buying a used zero-emission vehicle (ZEV) by providing a rebate or vehicle service contract for the replacement battery or fuel cell component. ZAP complements the Clean Vehicle Rebate Program and equity projects, such as Clean Cars 4 All (CC4A) and Financing Assistance, by helping to alleviate low-income residents' concerns about premature battery degradation resulting in reduced vehicle performance, vehicle depreciation, and costly repairs. In addition to establishing ZAP, AB 193 required that the California Air Resources Board (CARB) submit a report to the Legislature no later than January 1, 2024. The report is required to include: the number of rebates issued pursuant to the Zero-Emission Assurance Project, the total cost to administer the Zero-Emission Assurance Project, a quantitative analysis of the Zero-Emission Assurance Project's emissions benefits, and a quantitative analysis of the impacts of the Zero-Emission Assurance Project on low-income consumer buyer decisions in the zero- and near-zero -emission vehicle (NZEV) markets. While legislation established this program in 2019, direct funding for ZAP was not allocated by the Legislature until Fiscal Year (FY) 2022-23, through AB 179 (Ting, Chapter 249, Statutes of 2022)¹. Because of this, ZAP has not yet been established and CARB staff is currently developing the project. Therefore, CARB is unable at this time to provide any of the details required for this report. Below is a summary of staff's efforts to collect information and data on battery degradation prior to ZAP implementation.

Initial CARB Research to Support Development of ZAP

Though Staff could not begin development of ZAP upon the passage of AB 179, staff did begin to collect information and data related to battery degradation to ensure once funding was provided, development could begin. CARB staff's initial research has found that outside of the initial battery issues with the first generation of vehicles offered by manufacturers, there is evidence that the batteries in ZEVs, plug-in hybrid and hybrid vehicles last, on average, more than 100,000 miles with 70% or more of their original capacity.² This is consistent with research done for the Advanced Clean Cars II Regulation³, which established durability and warranty measures for ZEVs for 2026 and subsequent model

¹ AB 179, Ting. Budget Act of 2022. California Legislative Information, Accessed 30 October 2023, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220AB179

² "New Study: How Long Do Electric Car Batteries Last?" Recurrent, Accessed 27 March 2023, <https://www.recurrentauto.com/research/how-long-do-ev-batteries-last>

³ *Initial Statement of Reasons (ISOR) Public Hearing to Consider the Proposed Advanced Clean Cars II Regulations*. Section 2. California Air Resources Board, 12 April 2022

years. CARB's *Initial Statement of Reasons (ISOR) for The Advanced Clean Cars II Regulation*⁴ includes an overview of various research that multiple manufacturers and industry publications.

A large part of the issues with the first generation of ZEVs and NZEVs batteries was cooling. Current batteries and complementary electronic systems are liquid cooled to keep them at an optimum operation range. Battery replacements are rare, most occurring under the manufacturer's warranty⁵. CARB staff have contacted vehicle manufacturers to get additional information on the replacement frequency of EV battery or fuel cell components for used ZEV and NZEV. To date, manufacturers maintain that this information is proprietary information they will not disclose.

Service contracts (extended warranty) can be purchased to cover unexpected vehicle repairs not covered by the manufacturer's warranty related to unique problems in eligible used vehicles. Specific extended warranties that cover hybrid or EV batteries are not always offered at the time of purchase. Not all dealers have extended warranty plans for purchase, or the vehicle is too old or has too high mileage for coverage. Service contracts are, on average, for ten years or 120,000 miles from the date of purchase or date of manufacture.

Further, the grantee that oversees the Driving Clean Assistance Program, the Community Housing Development Corporation (CHDC), has subcontracted with the Foundation for California Community Colleges (FCCC) to collect data to better understand how battery life depreciates over time. To collect data for this project, FCCC installed on-board diagnostics (OBD) trackers in eligible vehicles from past program participants on a voluntary basis. The 18-month data collection pilot began in April 2022 and 24 of 97 applicants agreed to have OBDs installed on their vehicles. CHDC Staff is currently analyzing the program data and will provide updates on this pilot through the public process.

Conclusion

After establishment in 2019, ZAP did not receive funding until 2022. ZAP received a \$10 million allocation in the FY 2022-23 State Budget and may be included as part of an upcoming joint statewide program along with CC4A and Financing Assistance. In the interim, CARB staff has been evaluating available data around battery degradation to help

⁴ *Initial Statement of Reasons (ISOR) Public Hearing to Consider the Proposed Advanced Clean Cars II Regulations*. Section 2. California Air Resources Board, 12 April 2022
<https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acii/isor.pdf>

⁵ *Initial Statement of Reasons (ISOR) Public Hearing to Consider the Proposed Advanced Clean Cars II Regulations*. Section 2. California Air Resources Board, 12 April 2022
<https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acii/isor.pdf>

support development of ZAP. Additionally, FCCC began a pilot program that conducted data collection on vehicle batteries. CARB will provide updates on the results of the pilot program and ZAP implementation through the public process and in future iterations of the Funding Plan for Clean Transportation Incentives.