

# ADDITIONAL ELECTRIC VEHICLE RECYCLING RESOURCES – PART I

TRANSPORTATION INTERIM COMMITTEE  
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## OVERVIEW

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In July 2024, the Transportation Interim Committee requested additional information on other states' approaches to electric vehicle (EV) battery recycling and management and more details about the cost of recycling. This paper is broken into two parts – part I provides information on other states' approaches, and part II provides a review of information on the costs of recycling.

## OTHER STATES' REPORTS AND LEGISLATION

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A few states have produced reports for their state legislatures, and some legislation has been passed or is being considered concerning this topic. There is also some research concerning costs for EV battery recycling. This paper will provide a summary for each of those reports and links to the full documents, in case committee members would like to review the information in greater depth.

Common themes among the other states' reports include:

- **Formation of advisory groups or task forces** to further study the issues concerning battery recycling;
- **Extended producer responsibility** requiring battery producers to be responsible for repurposing, reuse, or recycling of batteries;
- Ways of **identifying the number of batteries sold** in the state (typically, through reporting);
- Requirement for battery producers to provide a **battery management plan** for review and approval; and
- **Battery labeling** to provide information about the battery, possibly including its composition, both to aid in recycling or reusing of the battery as well as to avoid unauthorized disposal.

**ELECTRIC VEHICLE (EV) BATTERY MANAGEMENT STUDY: FINAL REPORT TO THE LEGISLATURE. WASHINGTON STATE DEPARTMENT OF ECOLOGY, APRIL 2024.**

**Link to Full Report:** <https://apps.ecology.wa.gov/publications/documents/2407014.pdf>

## SUMMARY/FINDINGS

As required under Washington's Senate Bill 5144 (2023),<sup>1</sup> the Washington State Department of Ecology provided a report to the state legislature concerning preliminary policy recommendations for the collection and management of EV batteries. The consultant for the study set out to find answers to key questions, including:

- What is the estimated volume of EV batteries currently being collected in Washington?

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<sup>1</sup> <https://lawfilesexternal.leg.wa.gov/biennium/2023-24/Pdf/Bill%20Reports/Senate/5144-S2.E%20SBR%20FBR%202023.pdf?q=20240829115748>

- What is the ten-year projection for EV batteries requiring end-of-life management?
- What regulations govern the collection, transportation, storage, processing, and recycling of EV batteries in Washington state?
- What second-life use cases exist for EV batteries?
- What are the common pathways for EV batteries at their end-of-life?
- What happens to EV batteries after they are collected?
- Where are EV batteries stored or stockpiled once they are removed from vehicles?
- At what facilities might EV battery storage occur?
- What is the financial landscape surrounding EV batteries?
- Are there existing programs that provide funding or incentives for EV battery management?
- What characteristics and values are associated with the most common EV battery chemistries?

The study concluded by providing three recommendations to address immediate needs surrounding EV battery management:

1. **Provide training, education, and resources to first responders, second responders, and automotive recyclers.** This report recommends creating a clearing house that can assess, consolidate, and distill existing resources and information for dissemination to relevant stakeholders and help avoid duplicative efforts between agencies.
2. **Determine who should have financial responsibility and liability for EV batteries.** While other states have explored extended producer responsibility (EPR) and a core exchange program with producer take back, there was agreement that examining New Jersey's recent EPR law for EV batteries<sup>2</sup> was a good place to start.
3. **Form a Washington State EV Battery Management Task Force (Task Force) with a broad set of stakeholders to address mid- and long-term policy needs.** The time frame of this study was too short to comprehensively delve into many aspects of EV battery management. The work this study started must continue. This report includes a comprehensive list of potential stakeholders based on a better understanding of EV battery end-of-life pathways and feedback from stakeholders participating in this study. The Task Force could provide balanced engagement on policies to address financial responsibility and liability.

## LITHIUM-ION CAR BATTERY RECYCLING ADVISORY GROUP FINAL REPORT. CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY, MARCH 2022.

**Link to Full Report:** [https://calepa.ca.gov/wp-content/uploads/sites/6/2022/05/2022\\_AB-2832\\_Lithium-Ion-Car-Battery-Recycling-Advisory-Group-Final-Report.pdf](https://calepa.ca.gov/wp-content/uploads/sites/6/2022/05/2022_AB-2832_Lithium-Ion-Car-Battery-Recycling-Advisory-Group-Final-Report.pdf)

CA AB2832, 2017-2018, Establishing the Advisory Group: <https://legiscan.com/CA/text/AB2832/id/1821569>

## SUMMARY/FINDINGS

<sup>2</sup> [https://pub.njleg.state.nj.us/Bills/2022/PL23/222\\_.PDF](https://pub.njleg.state.nj.us/Bills/2022/PL23/222_.PDF)

In 2018, California passed legislation to establish a lithium-ion car battery recycling advisory group to review and advise the legislature on policies pertaining to the recovery and recycling of lithium-ion batteries sold in electric vehicles. The bill required the advisory group to submit policy recommendations to the legislature on or before April 1, 2022, aimed at ensuring that as close to 100% as possible of lithium-ion batteries in the state are reused or recycled at end-of-life in a safe and cost-effective manner.

In their final report, the most broadly supported policy defining responsibility for end-of-life management was the core exchange and vehicle backstop proposal, which allocates responsibility under three possible retirement paths:

1. The used battery is exchanged and the entity removing the old battery is responsible for reusing or recycling it;
2. At end-of-life, a dismantler who takes ownership of the EV is responsible for ensuring that the battery is properly reused, repurposed, refurbished or recycled; or
3. If the end-of-life EV with an original equipment manufacturer (OEM)-certified battery is not acquired by a licensed dismantler, the vehicle manufacturer shall be responsible for ensuring that the vehicle is properly dismantled and the battery is properly reused, refurbished, or recycled.

The other policy proposal that received majority support is a producer take-back policy, wherein the auto manufacturer is responsible for ensuring proper repurposing, reuse, or recycling of its EV traction batteries by a licensed facility at no cost to the consumer.

These policies have been included in legislation that is currently being considered by California's legislature, SB 615.<sup>3</sup>

**FINAL REPORT: COLORADO EV BATTERY STUDY. COLORADO STATE UNIVERSITY FOR COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, MARCH 2021.**

**Link to Full Report:**

[https://www.researchgate.net/publication/354131908\\_Final\\_report\\_Colorado\\_EV\\_battery\\_recycling\\_study#pf2a](https://www.researchgate.net/publication/354131908_Final_report_Colorado_EV_battery_recycling_study#pf2a)

## SUMMARY/FINDINGS

The study findings concluded that:

- At the time of the report, there were no known EV battery recycling facilities in Colorado; the closest was in Utah.
- Due to incomplete information and data sources, there is no effective way in Colorado to determine exactly how many lithium-ion batteries there are, nor how many might be in salvage yards or storage facilities. The identification and tracking of batteries will need to extend to dealerships who sell EVs, EV repair shops, salvage yards, dismantlers, and potential disposal/recycling facilities.

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<sup>3</sup> [https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill\\_id=202320240SB615](https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=202320240SB615)

- Given the aggressiveness of Colorado’s EV goals, the state has a two- to three-year window to develop a plan for effectively managing the lithium-ion battery lifecycle issues/impacts that will begin to accrue in 2025, with their full implications being realized by 2030.
- The issues for Colorado pertaining to lifecycle management of lithium-ion batteries are complex and will ultimately be costly if not addressed early.

The researchers recommended the state initiate a formal roadmap planning and strategy initiative modeled after the one launched in 2019 by the California legislature, with the Lithium-Ion Battery Recycling Advisory Group. Along those lines, they recommended that Colorado establish an EV lifecycle management study group of diverse stakeholders from around the state, having the charge of undertaking a more expansive investigation of the impacts of lithium-ion batteries to ascertain their extent, timelines, costs, and relationships to other governance issues.

### ELECTRIC AND HYBRID VEHICLE BATTERY MANAGEMENT ACT. NEW JERSEY S3723 (2022-2023), P.L. 2023, C. 222.

**Link to Pamphlet Law:** <https://pub.njleg.state.nj.us/Bills/2022/PL23/222 .PDF>

**Link to Bill Page:** <https://www.njleg.state.nj.us/bill-search/2022/S3723>

#### KEY TAKEAWAYS

Key provisions of the legislation include:

- Initially, the legislation requires the New Jersey Department of Environmental Protection (DEP) to commence a needs assessment to determine the availability of propulsion battery recyclers and infrastructure, both public and private, needed to implement the provisions of the bill, in addition to any other necessary information as identified by the department.
- Collection, acceptance, and disposal of propulsion batteries is restricted for solid waste facilities.
- After the DEP completes its needs assessment and adopts rules establishing standards and criteria for battery management plans, battery producers – including vehicle manufacturers, brand or trademark licensees, or importers – must submit a battery management plan to the DEP for review and approval. The plan must provide for producers to be responsible for the collection and management of the producer’s used propulsion batteries that are offered to the producer for take-back by the current battery owner. The plan may include a complete vehicle take-back program, a battery take-back program, or any other such program approved by the DEP.
- Producers are required to provide consumers with educational materials related to the producer’s approved battery management plan and the collection services that are available. The materials must include information identifying the end-of-life management options that are available through the battery management plan and a notice that, in New Jersey, the costs of the services will be covered by the producer.
- Additionally, producers are required to register with the DEP within one year after the enactment of the legislation. They must within 2 years begin report to the department the number of propulsion batteries sold, offered for sale, or distributed in or into the state by the producer; that report must then be filed annually.