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Testimony of
MARK B. GLICK, Chief Energy Officer

before the
**HOUSE COMMITTEES ON
ENERGY, ECONOMIC DEVELOPMENT, AND TOURISM
AND
AGRICULTURE AND ENVIRONMENT**

Thursday, March 14, 2024
1:30 PM
State Capitol, Conference Room 229 and Videoconference

In Support of
HB 1972, HD1

RELATING TO ELECTRIC VEHICLE BATTERIES.

Chairs DeCoite and Gabbard, Vice Chairs Wakai and Richards, and members of the Committees, the Hawai'i State Energy Office (HSEO) supports HB 1972, HD1, that establishes a working group within the Hawai'i State Energy Office, co-chaired by designees of the Director of Health and the Chief Energy Officer and with members providing in-depth expertise and knowledge of industry standards, laws, and policies to provide a report to the Legislature with recommendations regarding the management, reuse and recycling of electric vehicle batteries.

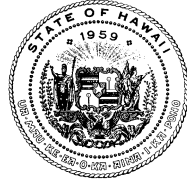
Improving the management of end-of-life batteries can be considered a part of achieving Hawai'i's resilient clean energy economy. Electric vehicle (EV) batteries contain critical materials that have the realistic potential to continue serving the energy economy, assuming the EV battery waste stream is managed well in the reverse supply chain. Proper management of these batteries will result in source materials for one of the most important components in the clean transportation sector. HSEO recognizes the need for propulsion batteries to have a proper management plan as improper disposal can result in negative environmental impacts.

The proposed working group will allow the integration of end-of-life battery management with clean energy objectives.

HSEO is committed to the development of effective end-of-life battery management solutions that serve Hawai'i's environmental, economic, and community needs and is actively engaged in seeking opportunities and securing partnerships that may be used to support efforts to manage end-of-life batteries safely and cost-effectively.

HSEO looks forward to working with others interested in this area, in pursuit of effective solutions to this very important topic.

Thank you for the opportunity to testify.



STATE OF HAWAII
DEPARTMENT OF HEALTH
KA 'OIHANA OLAKINO
P. O. Box 3378
Honolulu, HI 96801-3378
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**Testimony in SUPPORT of HB1972 HD1
RELATING TO ELECTRIC VEHICLE BATTERIES**

SENATOR LYNN DECOITE, CHAIR
SENATE COMMITTEE ON ENERGY, ECONOMIC DEVELOPMENT, AND TOURISM

SENATOR MIKE GABBARD, CHAIR
SENATE COMMITTEE ON AGRICULTURE AND ENVIRONMENT

Hearing Date: March 14, 2024

Room Number: 229

1 **Fiscal Implications:** N/A

2 **Department Testimony:** The Department of Health (Department) supports this measure, which
3 establishes an electric vehicle (EV) battery recycling and reuse working group in the State
4 Energy Office. The Department agrees that it is prudent to gather more information about the
5 current options for end-of-life EV batteries and develop policy to encourage proper recycling and
6 disposal, as this waste stream will increase in the future. The Department defers to the State
7 Energy Office on any specific recommendations relating to the working group's structure and
8 purpose and looks forward to participating as co-chair.

9 **Offered Amendments:** None.

10 Thank you for the opportunity to testify.



Date: March 13, 2024

To: The Honorable Chairs DeCoite and Gabbard and Vice Chairs Wakai and Richards, and Members of the Energy, Economic Development, and Tourism and the Agriculture and Environment Committees

From: Hawaii Environmental Change Agents (HECA) - Solid Waste Reduction Task Force

Re: HB1972 HD1 - Establishes a working group for the reuse and recycling of electric vehicle batteries

Aloha Chairs DeCoite and Gabbard and Vice Chairs Wakai and Richards and members of the EET/AEN Committees,

The HECA Solid Waste Reduction Task Force is in **support** of HD1972 HD1 which establishes a working group within the Hawaii State Energy Office to make recommendations for the reuse and recycling of electric vehicle (EV) batteries. Recycling batteries is of great importance as they contain critical raw materials - rare metals that must be mined in often limited locations around the world. Developing methods of recycling these metals will be critical for the successful transition to circular renewable energy systems in the future.

Batteries also contain hazardous heavy metals such as lead that pose risks to human health and the environment when landfilled. There are existing and effective programs in place that cover the costs and provide an incentive for consumers/merchants to recycle batteries from combustible engine vehicles. We hope similar programs can be established for EV batteries.

Suggested Amendments: We respectfully request that HB1972 HD1 be amended to include the following:

- (1) As currently written the working group does not have any representation from outer island counties. The development of other EPR programs in the state such as the older version of the electronics waste recycling program have led to complications in the implementation of these programs outside of Oahu. **We respectfully ask that a representative from each County's department that oversees recycling programs be included as members of the working group,** so each county's unique perspective can be included in the development of an EV battery recycling program.
- (2) The working group membership is also very heavily skewed towards the voices of industry. **We respectfully ask that the number of representatives from an environmental organization that specializes in waste reduction and recycling be increased from one to two.**

Thank you for considering this legislation that will set us on the path to develop a program for the recycling of electric vehicle batteries.

Mahalo nui loa,

~HECA Solid Waste Reduction Task Force

Jennifer Navarra, Ted Bohlen, Ruta Jordans, and Jolie Ryff



March 13, 2024

RE: Redwood Materials' Written Testimony and Suggested Language for HB1972 HD1, Relating to Electric Vehicle Batteries – House Finance Committee

Dear Chairs DeCoite and Gabbard, Vice Chairs Wakai and Richards and Members of the Committees on Energy, Economic Development, and Agriculture and Environment,

As the leader in the sustainable management of electric vehicle (EV) batteries, Redwood Materials is supportive of HB1972 HD1. We recognize the bill's significance in advancing sustainable practices in the EV battery sector, and have some minor suggestions to improve the legislation and resultant working group.

Redwood is at the forefront of ensuring that the United States meets its clean energy and electric vehicle (EV) ambitions. We are dedicated to developing a domestic, secure, and sustainable battery supply chain. Our strategic approach includes:

- **Recycling:** We focus on collecting and recycling end-of-life lithium-ion batteries from EV battery packs to consumer devices, turning potential waste into high-value battery materials.
- **Refining and Processing:** Our facilities process and refine critical minerals contained in these batteries, ensuring their optimal reuse.
- **Re-manufacturing:** We specialize in re-manufacturing sustainable battery materials, particularly cathode active materials and anode foils, essential for domestic battery manufacturing.

Our company's mission aligns with the objectives of HB1972, advocating for responsible and sustainable management of electric vehicle (EV) batteries. Today, Redwood receives more than 10 GWh of lithium-ion batteries annually, which equates to more than 100,000 vehicles, 788 million cell phones, or 40,000 metric tons/year. The vast majority of lithium-ion batteries recycled in North America come through our doors.

Redwood recognizes Hawaii's pioneering role in sustainable energy and battery technology. In collaboration with Kaua'i Island Utility Cooperative (KIUC), we've worked on [decommissioning the first-generation battery storage system at the Anahola substation](#), a 4.6 MWh battery energy storage system (BESS). The successful decommissioning and recycling of these initial projects serve as an industry model for future gigawatt-scale projects.

Additionally, [we contributed to the EPA's Maui Wildfire Response](#) by facilitating the safe transport of fire-damaged lithium-ion batteries from Maui to our Northern Nevada facilities for proper recycling. This effort was part of our commitment to environmentally responsible practices in emergency situations.

We have also engaged with the University of Hawaii in their research on EV battery recycling. By hosting their researchers at our facilities, we shared insights into our methods for EV battery circularity, aiming to contribute to broader knowledge in this field and inform local policy development.

This year, [over 250,000 electrified vehicles are reaching the end of their life cycle in the United States](#), presenting a crucial opportunity for sustainable practices in battery management. Our involvement in policy development and environmental sustainability initiatives, both locally and nationally, positions us as a key contributor in this evolving industry.

Redwood Materials was an original member of *CalEPA's The Lithium-ion Car Battery Recycling Advisory Group* and played a pivotal role in advocating for the inclusion of an industry-first definition of an 'authorized propulsion battery recycler' in New Jersey's recently passed EV Battery Recycling law. This was a significant measure in emphasizing the importance of advanced recycling capabilities and ensuring responsible end-of-life management of batteries beyond traditional and potentially outdated processes.

In light of our experience and expertise, we propose a simple but important language amendment to HB1972 HD1. In addition to an e-waste recycler, we suggest the following language be included in the bill regarding membership on the commission:

'One representative from a company specializing in the recycling of electric vehicle batteries, with demonstrated expertise in providing end-of-life battery management solutions, including recovering materials from end-of-life batteries and manufacturing sustainable battery materials.'

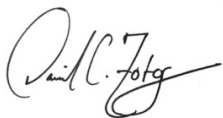
This language change is vital to ensure that the commission or study group formed under this bill recognizes and integrates the unique expertise and capabilities required in advanced EV battery recycling and end-of-life management of EV batteries. This expertise should be explicitly reflected in the commission membership.

Should this bill pass, Redwood Materials expresses its keen interest and commitment to serve on Hawaii's working group, bringing our expertise and experience from our involvement in sustainable battery management in both Hawaii and nationwide.

Redwood Materials is committed to advancing our industry, driving circularity in battery material production, and collaborating with partners and policymakers. We are dedicated to reducing costs, enhancing sustainability, and fostering innovation, contributing to a more sustainable future.

Thank you for considering our testimony and proposed amendment. We look forward to the possibility of a meaningful collaboration.

Sincerely,

A handwritten signature in black ink, appearing to read "Daniel Zotos". The signature is fluid and cursive, with the first name "Daniel" and last name "Zotos" clearly distinguishable.

Daniel Zotos
Senior Manager, Public Affairs & Advocacy
Redwood Materials



To: The Honorable Chairs Lynn DeCoite and Mike Gabbard, the Honorable Vice Chairs Glenn Wakai and Tim Richards, III, and Members of the Energy, Economic Development and Tourism and Agriculture and Environment Committees.
From: Hawai'i Reef and Ocean Coalition and Climate Protectors Hawai'i (by Ted Bohlen)

Re: **Hearing HB1972 HD1 RELATING TO THE ELECTRIC VEHICLE BATTERIES**

Hearing: Thursday, March 14, 2024, 1:30 p.m., room 229

Aloha Chairs DeCoite and Gabbard, Vice Chairs Wakai and Richards and Members of the Energy, Economic Development and Tourism and Agriculture and Environment Committees.

The Hawai'i Reef and Ocean Coalition (HIROC) is a group of scientists, educators, filmmakers and environmental advocates who have been working since 2017 to protect Hawaii's coral reefs and ocean. HIROC is deeply concerned about the impact the state's waste management systems for lithium-ion batteries can have on Hawaii's public health and nearshore water quality!

The Climate Protectors Hawai'i seeks to educate and engage the local community in climate change action, to help Hawai'i show the world the way back to a safe and stable climate. The Climate Protectors Hawai'i supports the electrification of ground transportation, but is concerned that the use of materials be minimized.

The Hawai'i Reef and Ocean Coalition and Climate Protectors Hawai'i STRONGLY SUPPORT HB1972 HD1!

Lithium-ion battery reuse and recycling is an important waste stream issue. Hawai'i Reef and Ocean Coalition and Climate Protectors Hawai'i support the effort to explore these issues via a dedicated working group as described in this bill. Our electrified vehicles (and energy delivery systems) need to operate within the principles of a just and circular economy. This means **prioritizing reuse instead of recycling and prioritizing recycling over disposal**. It also means we need to **start taking action before this waste stream gets out of control**. We need to minimize the mining of these materials, given the social justice impacts.

Please pass this bill!

Mahalo!

Hawai'i Reef and Ocean Coalition and Climate Protectors Hawai'i (by Ted Bohlen)



DATE: March 14, 2024
TIME: 1:30 pm
PLACE: VIA VIDEOCONFERENCE and Conference Room 229
BILL: HB 1972, HD1, Relating to Electric Vehicle Batteries

Aloha Chairs DeCoite and Gabbard, Vice Chairs Wakai and Richards and members of the committees,

On behalf of the Hawai'i Automobile Dealers Association (HADA), we are writing to **support** HB 1972, relating to electric vehicle batteries. This bill establishes a working group within the Hawaii State Energy Office to make recommendations for the reuse and recycling of electric vehicle batteries.

HADA supports working collaboratively with policy leaders to ensure that the state's clean energy goals are met. HADA is presently proactively discussing with stakeholders, including state agency leaders, the need to comprehensively address electric vehicle implementation issues such as the reuse and recycling of electric vehicle batteries. Widespread battery recycling would help keep hazardous materials from entering the waste stream. The U.S. Department of Energy is actively seeking to develop and demonstrate profitable solutions for collecting, sorting, storing, and transporting spent and discarded EV batteries for eventual recycling and materials recovery. After collection of spent batteries, the material recovery from recycling would also reintroduce critical materials back into the supply chain and would increase the domestic sources for such materials. We support the establishment of this working group.

HADA seeks to engage with legislators on issues of importance relevant to motor vehicles, our state's clean energy future, and safety. We thank you for the opportunity to testify.

The Hawai'i Automobile Dealers Association is the voice of more than 60 new car dealerships across the islands, accounting for over 4,000 direct jobs, \$6 billion total sales and more than \$250 million in general excise taxes paid.



Environmental Caucus of
The Democratic Party of Hawai'i

Energy & Climate Action Committee

Thursday, March 14, 2024, 1:01 pm

Senate Committee on Energy, Economic Development and Tourism, and on and Environmental Protection

HOUSE BILL 1972 HD1 – RELATING TO ELECTRIC VEHICLE BATTERIES

Position: **Strong Support**

Me ke Aloha Chair DeCoite, Vice-Chair Wakai, and members of the Senate Committee on Energy, Economic Development and Tourism, and on and Environmental Protection:

HB1972 HD1 Establishes a working group within the Hawai'i State Energy Office to make recommendations for the reuse and recycling of electric vehicle batteries.

The Energy and Climate Action Committee strongly supports this measure. The future requires that strategic materials be recycled into new products, and the effort is on, nation-wide, to develop a system of recycling and reproduction of critical materials used in renewable energy systems

Mahalo for providing the opportunity to address this matter.

/s/ Charley Ice, Chair, Energy and Climate Action Committee
Environmental Caucus of the Democratic Party



March 14th, 2024

Tony Belot
91-56 Hanua Street
Kapolei, HI 96707
abelot@rdus.com

Senate Committee on Energy, Economic Development, and Tourism
Senator Lynn DeCoite, Chair
Senaor Glenn Wakai, Vice Chair

Senate Committee on Agriculture and Environment
Senator Mike Gabbard, Chair
Senaor Herbert Richards III, Vice Chair

RE: HB 1972 HD1 Relating to Electric Vehicle Batteries

Aloha Chair DeCoite, Chair Gabbard, Vice Chair Gabbard, Vice Chair Richards and members of the committees,

Radius Recycling (formerly Schnitzer Steel Industries), is a world leader in sustainable and environmentally responsible recycling. The Company was listed as one of TIME's 100 Most Influential Companies of 2023, recognized as the Most Sustainable Company in the World by Corporate Knights in 2023, and has been honored by Ethisphere as one of the World's Most Ethical Companies® for nine consecutive years.

HB 1972 HD1 recognizes the growing necessity for proper recycling and disposal protocols of Electric Vehicle (EV) batteries in our accelerating electric vehicle landscape. The goal is to preserve our environment while concurrently optimally utilizing resources through recycling. To this end, the current draft of the bill introduces an inclusive working group tasked with maximizing the recycling of EV batteries and suggesting best practices for EV battery management.

As our organization routinely encounters these batteries in our recycling stream, we respectfully urge the Committee to consider a revision to Section 2. (d). Specifically, we propose the inclusion of a representative from the automotive recycling industry. Such a representative would contribute a significant and valuable viewpoint, grounded in practical experience, concerning the safe, environmentally responsible, and efficient handling of end-of-life electric vehicles. This proposed amendment would enhance the effectiveness and comprehensiveness of the working group's strategies, to the benefit of all stakeholders involved.

Radius Recycling is deeply appreciative of the hard work of the Chair, Vice Chair, and the entire House Committee on Consumer Protection & Commerce on the proper recycling and disposal of EV batteries.

Sincerely,

Tony Belot
Government and Public Affairs Manager, Radius Recycling



SanHi

GOVERNMENT STRATEGIES

A LIMITED LIABILITY LAW PARTNERSHIP

DATE: March 14, 2024

TO: Senator Lynn DeCoite
Chair, Committee on Energy, Economic Development, and Tourism

Senator Mike Gabbard
Chair, Committee on Agriculture and Environment

FROM: Tiffany Yajima

RE: **H.B. 1972, H.D. 1 – Relating to Electric Vehicle Batteries**
Hearing Date: Thursday, March 14, 2024 at 1:30 p.m.
Conference Room: 229

Dear Chair DeCoite, Chair Gabbard, and Members of the Joint Committees:

On behalf of the Alliance for Automotive Innovation (“Auto Innovators”) we submit these **comments** supporting the intent of H.B. 1972, H.D. 1, which establishes a working group to study the reuse and recycling of electric vehicle batteries.

The Alliance for Automotive Innovation is the singular, authoritative and respected voice of the automotive industry. Focused on creating a safe and transformative path for sustainable industry growth, the Alliance for Automotive Innovation represents the manufacturers producing nearly 99 percent of cars and light trucks sold in the U.S. Members include motor vehicle manufacturers, original equipment suppliers, technology, and other automotive-related companies and trade associations.

Automakers appreciate the intent of this measure and as the makers of electric vehicles that use these batteries would be willing to and interested in serving as a resource to the state on this working group. Auto Innovators also suggest that the working group examine the current conditions for battery recycling and consider current programs that already exist to manage EV battery recycling.

While this working group would be tasked with examining how to maximize recycling and reuse of EV batteries, and to recommend EV battery management practices, we note that an EV battery management and disposal process is already in place. In the life cycle of a battery, when an EV battery begins to show signs of failure, these battery modules or packs can first be refurbished to as good or better quality and performance levels through the replacement of worn or deteriorated components and can then be re-certified to OEM specifications. If a

battery module or pack cannot be reused, these batteries and components can also be refurbished on the secondary market to fulfill a different use from what was originally intended. At the end of the life of a battery, EV batteries can be processed to recover the maximum amount of raw materials for reuse in identical or alternative industries.

In addition, automakers have already adopted a “Full Vehicle Backstop” program. The Full Vehicle Backstop program covers the whole electric vehicle – not just the battery – for vehicles that have reached end-of-life, that are unwanted without parts removed by a dismantler. Under the program, the vehicle manufacturer is responsible to accept the vehicle and ensure that it is properly dismantled, and the lithium-ion battery is properly reused, refurbished, or recycled.

Thank you for the opportunity to submit this testimony.

While electric vehicles are helpful to an extent in reducing society's carbon emissions, the way they are built can be just as impactful on the environment. In Hawaii, our landfills are filling up quickly, and there is no other place to designate trash. Figuring out a way to recycle and reuse these batteries would mean that there would be less that ended up in landfills. Gathering outside parties could be helpful, but they should not have too much input when they take over. This may be very difficult to actually enact. If recyclers live up to their claims that over 95% of these minerals can be recovered, saving nickel and cobalt from old batteries could lessen the quantity that needs to be mined again (Moseman and Olivetti). Since EV batteries are not standardized, dismantling them can be different every time. If the batteries are meant to be reused long term then placing them for short term use can be an option. Batteries that are disposed of incorrectly have the potential to damage land and water with hazardous chemicals or start fires (Tankou and Hall). Recycling facilities are being constructed in areas that are already home to EV and lithium-ion battery manufacturing facilities. As a result, a cohesive ecosystem is established, making it simple to repurpose the recovered material into lithium-ion batteries and electric vehicle manufacturing processes (Tankou and Hall). With the rise of electric vehicles, it is important to cover the other end of the spectrum and discuss how to properly dissolve the waste they produce.

Works Cited

Moseman, Andrew, and Elsa Olivetti. "How well can electric vehicle batteries be recycled?" *MIT Climate Portal*, 5 September 2023,
<https://climate.mit.edu/ask-mit/how-well-can-electric-vehicle-batteries-be-recycled>.
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Tankou, Alexander, and Dale Hall. "Will the U.S. EV battery recycling industry be ready for millions of end-of-life batteries?" *International Council on Clean Transportation*, 29 September 2023, <https://theicct.org/us-ev-battery-recycling-end-of-life-batteries-sept23/>. Accessed 12 March 2024.

Van Dyke, Michelle Broder. "What happens to Hawaii Island's trash and recyclables?" *Spectrum News*, 17 December 2022, <https://spectrumlocalnews.com/hi/hawaii/news/2022/12/15/what-happens-to-hawaii-island-s-trash-and-recyclables-->. Accessed 12 March 2024.

Van Dyke, Michelle Broder. "What happens to Hawaii Island's trash and recyclables?" *Spectrum News*, 17 December 2022, <https://spectrumlocalnews.com/hi/hawaii/news/2022/12/15/what-happens-to-hawaii-island-s-trash-and-recyclables-->. Accessed 12 March 2024.