

**Electric Vehicle Battery Recycling and Reuse Working Group  
Meeting Minutes**

**Date:** November 21, 2025

**Time:** 8:00 AM

**Location:** Hawai'i Department of Health and Zoom

**Members Present**

Hawai'i State Energy Office:

- Mark Glick, Chief Energy Officer
- Monique Zanfes, Managing Director of Energy Efficiency and Renewable Energy (Co-Chair)
- Jon Chin, Manager of Resilience, Clean Transportation, and Analytics
- Munashe Silverberg, Renewable Energy Analyst
- Nicole Cernohorsky, Transportation Energy Specialist
- Kevin Moy, Energy Resilience Project Specialist
- Steven Le, Intern

Hawai'i Department of Health:

- Lene Ichinotsubo, Acting Branch Chief, Solid and Hazardous Waste Branch
- Lenora Mau, Engineer, Solid and Hazardous Waste Branch
- Kelly Ann Lee, Project Specialist, Solid and Hazardous Waste Branch
- Michele Freitas, Environmental Health Specialist
- Tracie Saito, Planner
- Kolea Praywell, Planner

Working Group Representatives:

- Ashley Seaward, Redwood Materials
- Dan Bowerson, Alliance for Automotive Innovation
- Danielle Spalding, Cirba Solutions
- Darla Arians, Product Stewardship Institute
- Ed Washburn, Pasha Hawai'i
- Eric Frederickson, Call2Recycle
- Greg Jenkins, High Hazard Management

- Henry Gabriel, City and County of Honolulu
- John Redman, General Motors
- Jordan Brandt, Voltek Hybrid and EV Repair
- Kevin Krick, Matson
- Laura Kaakua, Hawai‘i Department of Transportation
- Marcus Boolish, PRBA (Rechargeable Battery Association)
- Melissa Pavlicek, Hawai‘i Automobile Dealers Association
- Michael Cooney, Hawai‘i Natural Energy Institute
- Mike Gaffney, Pasha Hawai‘i
- Nick Garofalo, Radius Recycling
- Nikolas Nikolaidis, TNN Computer Recycling Services/Electronic Recycling Pacific
- Pao-Chi Hwang, Honolulu Fire Department
- Rep. Nicole E. Lowen, State House of Representatives
- Ricardo Yost, Honolulu Fire Department
- Robert Potter, Synapse LLC
- Thomas Novak, Radius Recycling
- Thor Toma, ServCo Pacific
- Tiffany Yajima, Alliance for Automotive Innovation
- Todd Coy, KBI Recycling

## **Meeting Overview**

The third meeting of the Electric Vehicle Battery Recycling and Reuse Working Group focused on UN38.3 certification requirements for lithium-ion batteries, second life battery applications in stationary storage systems, and the state of Hawai‘i’s electric vehicle market. The meeting featured three comprehensive presentations addressing transportation safety standards, technical considerations for battery repurposing, and industry commitments to sustainable battery management.

### **Presentation 1: UN38.3 Certification Requirements** *Presented by John Redman, General Motors*

John Redman presented detailed information on UN38.3 certification, a global requirement for transporting lithium-ion batteries by air, ocean, or ground, built upon United Nations model regulations and adopted by international transportation agencies including IMDG, ICAO, IATA, and US DOT. He explained that the certification is performance-based and includes eight mandatory tests (T1-T8) covering altitude simulation, thermal shock, vibration, mechanical shock, external short circuit, impact, overcharge, and forced discharge, with new tests (T9-T13)

being proposed to assess thermal propagation, gas production, and hazard classification. Redman emphasized that certification is based on design type rather than individual batteries, meaning any modification to battery design—including changes to cells, hardware, terminals, wiring, or protective components—creates a new design type requiring recertification under a quality management system, a process that typically takes seven months and is costly. He noted there are no UN38.3 testing facilities in Hawai‘i and provided context on recent vessel fires involving lithium batteries, including the *Felicity Ace* (\$500-750 million loss), *Grande Costa D’Avorio* (emergency responder fatalities), Fremantle Highway (\$400-500 million loss), and Morning Midas (\$700 million loss), which have led to increased scrutiny from vessel operators. Redman clarified that while batteries transported for disposal or recycling do not require UN38.3 certification, damaged or defective batteries must be transported under more restrictive DDR provisions with specialized packaging.

### **Working Group Discussion:**

*Michael Cooney* clarified that UN38.3 testing applies to new battery manufacturing processes, not to every individual battery sold. He emphasized that this testing methodology cannot be applied to waste streams of lithium-ion batteries that are 7-8 years old and have been through various cycling and environmental stresses.

*Eric Frederickson* noted that several UN38.3 tests are physically destructive in nature. He asked how the testing relates to end-of-life battery management and second life applications.

*John Redman* responded that UN38.3 provides proof that a battery was manufactured to a high standard, which can provide confidence for second life applications. However, once a battery has been abused or modified, it loses its UN38.3 certification status that guarantees safety. He emphasized that any modification to a battery for second life use would require recertification.

*Greg Jenkins* raised concerns about liability and financial responsibility when batteries are used in second life applications without proper health assessment or certification.

*Jordan Brandt* asked whether retesting would be required for every repurposed battery or if a proven process using the same cells could be certified once. John Redman confirmed that if a company develops a quality management system and certifies a new battery design using recovered cells or modules, subsequent batteries built to the same design type would be covered. However, that company would become the battery manufacturer with all associated responsibilities.

*Marc Boolish* noted that UN model regulations include criteria for determining when batteries that are reused or repurposed have been modified in ways that would fail tests, triggering the need for retesting before transport (excluding transport for disposal/recycling).

### **Presentation 2: Second Life Batteries for Stationary Storage** *Presented by Kevin Moy, Hawai‘i State Energy Office*

Kevin Moy presented research on repurposing retired EV batteries for second life stationary storage applications, explaining that batteries typically retired from vehicles at 80-90% capacity can effectively support grid storage needs including peak shifting, renewable energy integration, and distributed energy resources. He described the parallel growth of EV adoption (projected to dominate by 2040) and grid storage demand (reaching 180 GWh by 2030), noting that retired EV

batteries could meet significant portions of this demand. Moy outlined the complexity of battery degradation, which involves multiple electrochemical processes affecting capacity and resistance, with battery lifetime varying from 400 to 4,000+ cycles depending on usage patterns, temperature, and depth of discharge. He highlighted key challenges in diagnosing second life batteries, including difficulty knowing usage history and predicting remaining useful life, while presenting solutions such as battery passports (tracking batteries throughout first life) and diagnostic tools to assess health at retirement. Moy emphasized that second life stationary storage involves much milder operating conditions than transportation applications—with longer time scales, less frequent cycling, and more controlled temperatures—which can significantly extend battery life while reducing environmental impact and supporting a circular economy.

### **Working Group Discussion:**

*Monique Zanfes* asked how UN38.3 certification applies when batteries are repurposed from transportation to stationary storage.

*John Redman* explained that if a battery is removed from a vehicle and used in a different application without modification, it retains its UN38.3 certification. However, most stationary storage applications involve modifications such as new battery management systems or different discharge rates, which would invalidate the original certification and require retesting if the battery needs to be transported.

*Eric Frederickson* emphasized the importance of understanding that even if UN38.3 certified batteries are used without modification, converting them to stationary storage often becomes an “artisanal industry” potentially creating batteries that are illegal to transport.

*Michael Cooney* questioned whether extended cycling in second life applications increases the risk of internal membrane degradation, making batteries more prone to short circuits and thermal events when finally disposed. John Redman and Kevin Moy confirmed that additional cycling does cause further degradation, though at lower rates under milder stationary storage conditions.

*Kevin Moy* clarified that batteries in Hawai‘i’s mild climate with typical driving patterns may last significantly longer than the 8-year average shown in presentation examples.

*Representative Lisa Martin* asked about UN38.3 requirements and whether they were developed before significant battery repurposing needs existed. John Redman explained that UN38.3 and related regulations are international standards modified through the United Nations process. He noted the global trend is toward ensuring modified batteries meet safety testing requirements rather than relaxing standards.

*Greg Jenkins* expressed concerns about ensuring safety and liability when batteries are used in second life applications, particularly at the residential level, without proper health assessment or oversight.

*Danielle Spalding* emphasized the importance of clearly defining responsibility and liability transfers throughout the battery lifecycle, including repair, remanufacturing, and repurposing stages.

*John Redman* noted that putting modified batteries in homes without proper testing and early detection systems poses significant risks. He recommended gas detection and heat sensors for early warning if batteries begin to fail.

*Michael Cooney* raised the issue that Hawai‘i lacks mechanisms for residents to dispose of batteries that begin showing signs of instability, creating a gap in the safety system even if early detection is implemented.

*John Redman* agreed that until Hawai‘i establishes on-island processing capability (such as black mass production through wet shredding), DDR batteries cannot practically be shipped off-island due to prohibitive packaging costs (\$60,000-\$80,000 per unit).

**Presentation 3: State of Hawai‘i EV Market and Industry Commitments** *Presented by Dan Bowerson, Alliance for Automotive Innovation*

Dan Bowerson from the Alliance for Automotive Innovation presented an overview of Hawai‘i’s EV market and the industry’s commitment to sustainable battery management. He reported that Hawai‘i has 1.13 million registered vehicles with EVs representing 2.6% of registrations but nearly 11% of new vehicle sales in 2024, higher than many states, though market share has fluctuated following the federal tax credit expiration in September 2025. Bowerson noted significant growth in hybrid electric vehicles over the past 18 months and highlighted that 155 EV models are now available nationally, with crossovers and SUVs comprising 71% of options compared to just 19% in 2020. He emphasized that EV batteries weighing up to 3,000 lbs require professional removal, preventing casual disposal, and cited BMW’s German facility using 500 retired EV batteries for grid storage as a successful second life example. Bowerson outlined comprehensive automaker-recycler partnerships aimed at recovering critical minerals for domestic supply chains and announced a pilot program launching in California, Oregon, and Washington where manufacturers will take responsibility for proper handling of unwanted batteries, including collection, processing costs, and recycling or repurposing decisions, with Hawai‘i to be updated on results.

**Working Group Discussion:**

*Monique Zarfes* asked whether commercial-scale repurposing has increased safety compared to residential applications. Dan Bowerson responded that commercial applications have advantages including in-depth knowledge of battery design and controlled environments, expressing more concern about residential applications without proper quality controls. John Redman agreed, noting that even controlled environments like Moss Landing carry significant risk.

*Michael Cooney* emphasized that all lithium-ion batteries eventually enter Hawai‘i’s waste stream in abandoned cars, behind dealerships, in warehouses, and illegally dumped. He noted that without a stewardship program, Hawai‘i cannot track batteries leaving the islands, and raised concerns about residential battery systems citing a Kaimuki house fire and lack of disposal pathways for failing batteries.

*John Redman* responded that early detection systems are critical for residential applications but not currently required. He acknowledged that DDR batteries cannot be shipped off-island due to prohibitive costs and reiterated support for on-island black mass production as the most practical solution.

*Chief HwangPao-Chi Hwang* noted that Hawai‘i’s gap is the lack of on-island recycling mechanism and legal shipping pathways. He recommended requiring battery sellers to provide

disposal solutions for customers, stating that sellers should be accountable for recycling as part of their business model.

*John Redman* referenced PRBA and Alliance for Automotive Innovation model legislation with extended producer responsibility provisions, noting New Jersey as a current model. He explained that industry currently handles warranty batteries, and AAI has a framework for recovering “orphan” batteries outside warranty. He emphasized that without on-island black mass generation, costs could reach \$80,000 to recover a \$20,000 battery, driving people to find risky alternatives.

**Future Meeting Schedule:** December 18, 2025

**Public Comment:** No public comments were received.

**Adjournment:** The meeting adjourned at approximately 11:20 AM.