From Road to Renewal
Creating a Second Life for EV Batteries

WHAT IS AN EV BATTERY SECOND LIFE?

Lithium-ion electric vehicle (EV) batteries can have a "second life" after a vehicle is retired. Once an electric vehicle reaches the end of its life, the battery inside can be reused and repurposed, and, ultimately, the critical minerals within the battery can be recycled to create new batteries. These are all second-life applications, and **they create significant economic and social benefits** while reducing the environmental impact of electric vehicles.

WHY IS IT IMPORTANT TO REUSE, REPURPOSE, AND RECYCLE EV BATTERIES?

Numerous studies have shown that EVs are much better for the environment than traditional gas-powered cars. Most of the emissions impact of an electric vehicle comes from producing the battery itself. But recent reports have demonstrated that using recycled materials, or directly reusing the battery, **can greatly reduce the need for newly mined minerals** – and subsequently the environmental impact – for electric vehicles. When you consider that recycling can recover around 95% of the key materials from EV batteries, there is a real opportunity to create a circular economy for EV batteries.

The circular EV battery process also creates jobs, benefits local economies, and reduces national security concerns. Automakers have several reasons to recycle batteries too – not only does each recycled EV battery generate economic benefits for recycling companies, but recycled materials are considered domestically sourced, **making vehicles using recycled materials eligible for the $7,500 federal EV tax credit.** This provides considerable incentive for automobile manufacturers to try to leverage as much recycled material as possible. Battery recycling is already a billion-dollar industry, and the positive impacts on job creation and local economies can already be seen in states like Nevada where many recycling facilities are headquartered.

KEY BENEFITS OF EV BATTERY SECOND-LIFE APPLICATIONS

Economic Reused and repurposed batteries are often cheaper than new batteries, and recycling an EV battery is estimated to produce up to $1,500 in net profit per battery recycled – value that will only increase over time as the battery recycling industry grows.

Workforce Studies have estimated that for every 1,000 tons of lithium-ion batteries collected, 15 jobs are created for collection, dismantling, and recycling.

Social Increased reuse, repurposing, and recycling of EV batteries reduces social injustices and harms caused by extractive mining practices.

Environmental Reusing and recycling battery materials versus making new batteries reduces the greenhouse gas emissions footprint of EVs as well as the impact on land and water resources by cutting demand for mining. One study estimated that if all lithium-ion batteries were recycled, the demand for mining could be reduced by up to 64% by 2050. And using a recycled battery versus a brand new one reduces the emissions by around 40%.

National Security The lithium-ion battery supply chain is highly complex and global in scope, and many key materials originate from countries with a strained relationship with the United States. Promoting second-life applications will maximize the content we can source domestically, reducing demand from other countries.

WHAT ARE THE KEY POLICIES NEEDED?

Extended Producer Responsibility This policy requires that at the end of an EV's life, the party who manufactured or repurposed the battery takes responsibility for managing its collection and placement for second-life usage.

Second-Life Prioritization To maximize the life of a battery, policies should require batteries be evaluated for reuse or repurposing before being recycled.

Recycling Efficiency Standards Standards can require that higher margins of battery critical minerals are recovered from recycled batteries over time.

Incentive Programs Incentives created through policies should promote the development of key recycling facilities.

Access to State-of-Health Information Policies should require EV battery manufacturers to label or use other methods to make the state of the battery's health readily accessible.

Global Battery Passport Policies that introduce a QR code on the battery would allow for instantaneous up-to-date information on the battery's sourcing, environmental impacts, state-of-health metrics, and more.

Interested in learning more?
Scan the QR code to read our "Emerging Policies and Best Practices to Promote Lithium-Ion Battery Second-Life Applications" report!

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