# Repurposing EV Batteries for Second-Life Stationary Storage/Market Landscape and Key Policy Challenges: ACEEE Policy Brief



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The American Council for an Energy-Efficient Economy ("ACEEE") released a policy brief titled:

*Repurposing EV Batteries for Second-Life Stationary Storage: Market Landscape and Key Challenges* ("Policy Brief").

The Policy Brief is authored by Peter Huether, ACEEE Senior Research Associate for Transportation.

The Policy Brief examines:

- Benefits and challenges of repurposing electric vehicle ("EV") batteries.
- Policy solutions that can expand repurposing.

The rationale for repurposing EV batteries is stated to include:

- An end of life (EOL) EV battery can often retain upward of 80% of its original capacity.
- Repurposed batteries can be used in a home or business to store energy or provide back-up power.
- Lower emissions.
- Reduction of new battery production and the accompanied mining.
- Creates lower-cost energy storage options.

The Policy Brief identifies as "Key Takeaways":

- Batteries taken out of electric vehicles are often suitable for use in stationary storage as they can retain upward of 80% of their original capacity.
- Repurposing used electric vehicle batteries into stationary storage reduces overall greenhouse gas emissions and the environmental impact from mining and manufacturing while providing a potentially more affordable energy storage option.
- Repurposed electric vehicle battery storage systems are not suitable for every storage application and are best suited for backup power and, if battery health is properly managed, storage for solar energy at utility- and commercial-level facilities.
- The repurposing industry is new and faces barriers to large-scale adoption. These include the complexities of changing battery chemistries, logistical and financial burdens to transport used batteries, fire risk, issues with battery disassembly, the safety certification processes, and most importantly, access to data on the battery and its first life in the vehicle.

- Policy opportunities that would enable greater electric vehicle battery repurposing include the following:
- Require access to battery management software data from the original vehicle for repurposers and other owners of second-life electric vehicle batteries.
- Establish a battery passport to share data about the battery, including state of health information.
- Update safety certification processes to ease compliance and limit costs. Establish some level of extended responsibility for vehicle manufacturers for the end-of life considerations of EV batteries to ensure that repurposing is considered.
- Establish design standards for electric vehicle batteries that enable easier and safer repurposing.
- Update hazardous waste and material classifications.
- Battery minerals are a scarce resource. But despite the financial and environmental benefits of battery repurposing, battery repurposers lack a standardized framework to follow.

Key components of the Policy Brief include:

- Introduction (notes that as the car market is rapidly electrifying, such EV batteries can still be valuable in stationary storage application).
- Key terms.
- Why repurpose EV batteries?
- How an EV battery is repurposed into a BESS.
- Collection and shipping.
- Accessing EV battery information.
- Repurposing the EV battery.
- Markets for second-life EV batteries.
- Barriers to repurposed EV battery storage.
- Changing battery chemistry and technology.
- Challenges to access information to evaluate state of health.
- Batteries are costly and challenging to assess, dissemble, and sort.
- Safety testing and certification can be expensive.
- Collection and transportation issues.
- Perceived risk of lower reliability and safety.
- Policy options.
- Data access policies.
- Safety certification updates.
- Extended producer responsibility (EPR).
- Standards for battery design.
- Hazardous material and waste classifications.

A copy of the Policy Brief can be downloaded here.