

# Sustainable



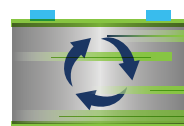
The lead battery industry is doing its part to achieve a low carbon future by reducing greenhouse gas emissions on multiple fronts. Lead batteries support key applications and technologies in next-gen transportation, renewable energy, smart cities and connectivity – while modeling a highly sustainable, closed-loop manufacturing economy.

## Leader in Circularity and Recycling

Lead batteries are one of the most environmentally sustainable battery technologies. Using smart lifecycle management, the lead battery industry operates a circular model that minimizes raw inputs, ensures a domestic supply chain, and stays economically competitive.

- + The lead battery recycling industry has an **established infrastructure to collect, transport and recycle** spent lead batteries. The lithium-ion battery industry lacks stable markets for the collection, transport and recovery of materials.
- + **99% of lead batteries are recycled**, making them the **most recycled consumer product** in the U.S. and the most recycled battery technology. (In contrast, less than 15% of lithium-ion batteries are recycled.)

- + **Modern, closed-loop recycling** in the U.S. keeps **more than 160 million lead batteries** from landfills each year and provides U.S. battery manufacturers a **secure domestic supply** of recycled inputs.
- + **Lead from lead batteries** can be **recycled infinitely**, with no loss of performance.
- + Lead batteries rank among the **top five consumer product categories in sustainability**.
- + The World Economic Forum and MIT's Center for Transportation and Logistics have **praised the circular economy and recycling system** of lead batteries.



A typical new lead battery is comprised of **80% recycled material**, thanks to the circular model of the industry.

“ We have a great partner in lead batteries. No other product ... is recycled more than them. ”

— Alan French, Vice President of Engineering, QTS Data Centers

Sustainable  
through  
**Circularity  
and  
Recycling**

Sustainable  
through  
**Climate  
Change  
Mitigation**

Sustainable  
through  
**Renewable  
Energy  
Storage**

## Essential to Climate Change Mitigation Technologies

Lead battery technology continually innovates to support decarbonization goals of countries and smart cities, including carbon-free transportation and renewable energy storage.

- ⊕ Lead batteries are an **integral part of start-stop and micro-hybrid vehicle engine systems**, which lower fuel consumption by up to 10%. And virtually **every hybrid and electric vehicle** relies on a lead battery to power critical vehicle systems.
- ⊕ Start-stop technology using lead batteries is **eliminating nearly 6.7 million tons of greenhouse gas emissions** annually in the U.S.
- ⊕ **50% of the world's rechargeable energy storage needs** are met by lead batteries. This includes wind and solar facilities, EV charging stations, backup for renewable powered data centers and grid-scale battery storage.
- ⊕ **Smart cities rely on lead batteries** to support multi-pronged, technology-driven approaches:
  - decarbonizing electric grids
  - storing and regulating renewable energy
  - moving to electric, autonomous transportation
  - resiliency of data centers and telecommunications
  - reducing waste and meeting circular economy goals

## Powering Utility Infrastructure, Microgrids and Off-Grid Areas

In remote geographic areas or overburdened grids around the world, lead batteries help communities meet their daily electricity needs, while reducing carbon emissions.

- ⊕ **Lead batteries are key** to providing **off-grid solutions that are essential** for cleaner cooking, refrigeration to reduce food waste, education, and overall greater connectivity. [Read Case Study →](#)
- ⊕ In places with no access to a traditional power grid, **lead batteries store energy** from renewable energy sources to provide communities with continuous, 24-hour power for lighting, heat and connectivity. [Read Case Study →](#)
- ⊕ Many electric grids experience increased demand (peak loads) during certain times of the day or times of the year like tourism seasons. **Lead batteries reliably provide stored energy** for these surges so communities don't need to expand their fossil fuel infrastructure. [Read Case Study →](#)

**BATTERY COUNCIL INTERNATIONAL** Formed in 1924, BCI joins together battery manufacturers and recyclers, marketers and retailers, suppliers of raw materials and equipment, and battery distributors from across North America and around the world. BCI members are committed to responsible manufacturing and recycling processes, and serve as a unified voice for environmental, health and safety stewardship.

[Learn more at BatteryCouncil.org](#)

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COUNCIL  
INTERNATIONAL**

ESSENTIAL ENERGY EVERYDAY