

## Doe Run Backgrounder

### The Uses of Lead

The most recycled consumer product, lead batteries, starts more than 1 billion vehicles globally, and stores and optimizes energy from renewable energy sources. Lead also is vital for radiation protection, nuclear storage, and in medical, military, and telecommunications applications. The global battery energy storage is expected to nearly triple. Lead batteries will play an important role.

### The Most Common Use: Batteries

According to the [Battery Council International](#) (BCI), lead batteries are the most [commonly used rechargeable battery](#). What's more, lead batteries have a [99% recycling rate](#), returning valuable metal to future use and making them the most environmentally sustainable battery technology.

**With a 99% recycling rate, lead batteries are the most recycled consumer product**

vehicles use a lead battery. Start-stop technology using lead batteries is eliminating 4.5 million tons of vehicle greenhouse gas emissions annually in the U.S. And, advanced lead batteries are predicted to be the most cost-

effectively way to meet vehicle fuel economy standards. Traditionally used to start cars, trucks and buses with internal combustion, today's advanced lead batteries also are designed for start-stop hybrid vehicles, which reduce fuel consumption and emissions. Worldwide, nearly 100% of mass-produced hybrid and full-electric

vehicles use a lead battery. Start-stop technology using lead batteries is eliminating 4.5 million tons of vehicle greenhouse gas emissions annually in the U.S. And, advanced lead batteries are predicted to be the most cost-



effective way to meet vehicle fuel economy standards. Today, the global battery market is about \$90 billion in value, dominated by lead batteries and lithium-ion batteries for electric vehicles. By 2030, the battery market will grow to \$150 billion annually while storage will nearly triple from 440 GWh to 1.3 TWh.

### Power & Renewable Energy

- Lead batteries are a primary source for uninterruptible power supply (UPS). In the U.S. alone, a \$1 trillion communications infrastructure relies on lead batteries for UPS. Lead battery banks provide quiet, pollution-free, emergency power for critical operations, such as air traffic control towers, hospitals, railroad crossings, military installations, and cell phone towers.
- Lead battery banks also can be used in remote area power supplies (RAPS), combining renewable energy sources and batteries for energy storage to bring electricity to remote areas.
- Lead batteries also support the growing solar and wind industries by storing the energy generated from these renewable sources. In addition to storing renewable energy, lead sheathing protects the transmission cables of offshore renewable wind and wave power.



## Lead Batteries: Infinitely Recyclable

Lead batteries account for more than 86% of today's lead consumption. Despite incredible demand, battery recycling continues to stand out as an industry success story.

According to the U. S Environmental Protection Agency, the more than 99% recycle rate for lead batteries ranks as the highest among all recycled consumer products. By comparison, the recycle rates are 68% for paper and paperboard and 50% for aluminum cans.

Doe Run's [Resource Recycling facility](#) is one of the world's largest, single-site lead recycling facilities. It recycles more than 8.5 million lead batteries annually.

## Other Uses of Lead

Many industries rely on lead for specialty items. Lead is vital in certain architectural applications like lead-lined sheet rock and plywood, and roof flashings. It's also used in ammunition, anodes for electroplating and select electronic applications.

Lead also has protective applications. Lead is used in aprons to shield patients from X-rays, and provides a barrier in medical scanning equipment used in hospitals, dental offices and laboratories. Lead also lines doors and walls in diagnostic and medical treatment rooms (oncology and other nuclear medicine).

Lead-lined "boxes" protect security personnel as luggage is screened at airports.

Lead is used to store and transport spent nuclear fuel. Doe Run's Seafab Metals Company subsidiary manufactures lead for nuclear shielding.



## Additional Resources

- [Essential Energy Everyday](#)
- [Consortium for Battery Innovation](#)
- [Battery Council International](#)
- [International Lead Association](#)
- [The Doe Run Company](#)