U.S. Department of Energy
LITHIUM-ION BATTERY RECYCLING PRIZE

Incentivizing Innovators

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AMERICAN MADE
BATTERY RECYCLING PRIZE
U.S. DEPARTMENT OF ENERGY

Light-Duty Passenger Vehicle Market and Potential Growth

U.S. Electric Vehicle (EV) Sales

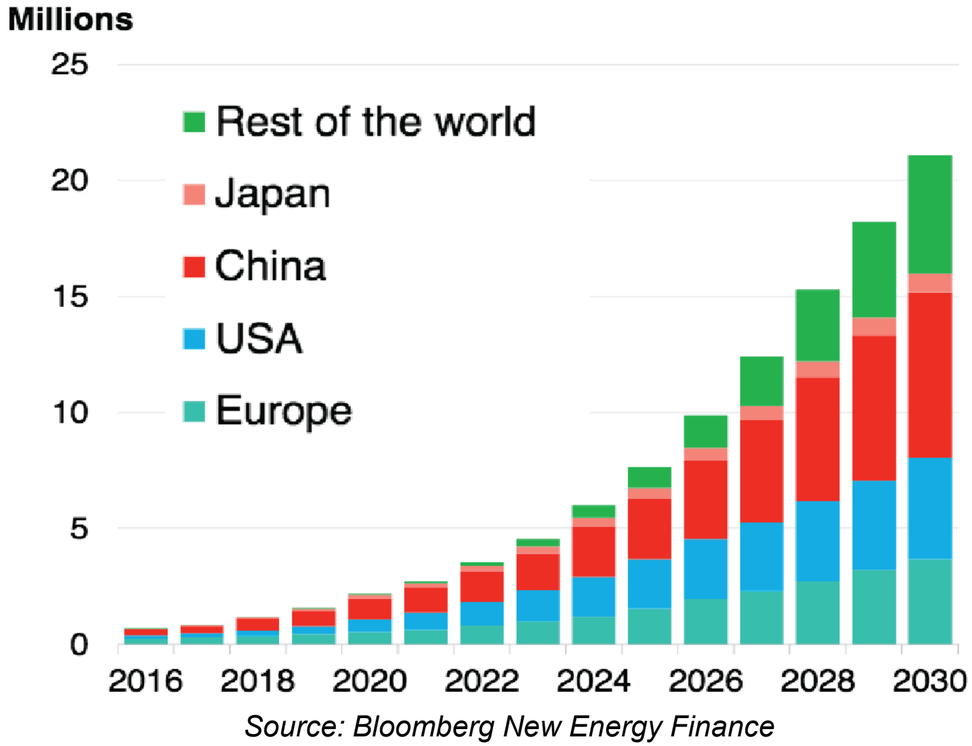
- **Energy Information Administration:**
  - U.S. light-duty battery PEV sales are projected to reach 1.4 million by 2030.
  - EV batteries combined with consumer, stationary, and industrial applications are projected to quadruple the demand for lithium-ion batteries by 2030.

Ref: EIA Annual Energy Outlook 2019, https://www.eia.gov/outlooks/aeo/pdf/aeo2019.pdf

Critical Materials for EV Batteries

- **Cobalt:** Highest material supply risk for EVs
- **Lithium:** Integral intercalating material for lithium-ion and lithium metal batteries

Global EV Forecast



Source: Bloomberg New Energy Finance

Battery EVs forecasted to achieve more than 20 million sales globally by 2030.

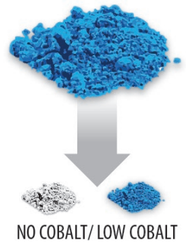
Ref: Bloomberg New Energy Finance (https://about.bnef.com/electric-vehicle-outlook/)

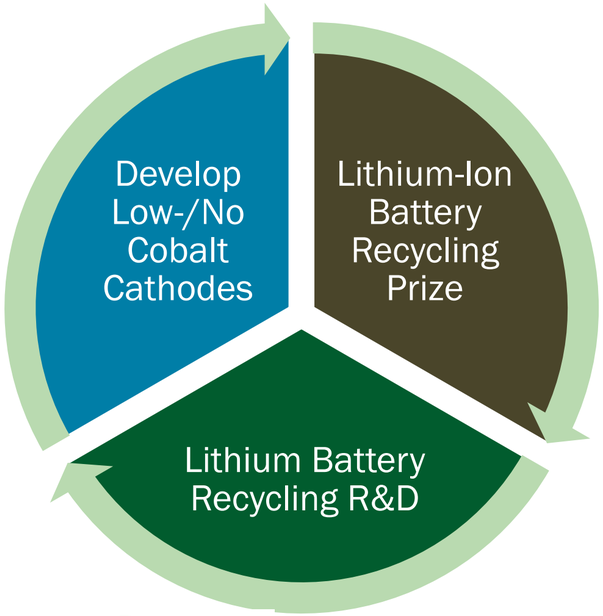
DOE Strategic Objective for Electric Vehicle Battery Storage

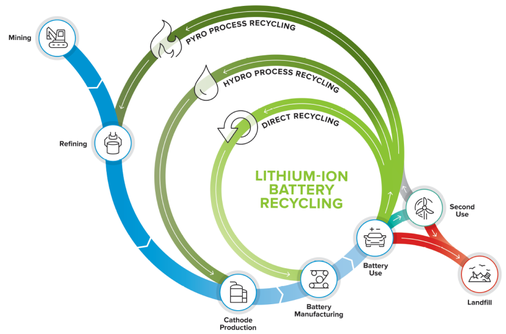
By September 30, 2022

- Reduce the cost of EV battery packs to less than $150/kWh (long-term goal is $80/kWh)
- Significantly reduce or eliminate the dependency on critical materials
- Utilize recycled material feedstocks.

Cobalt (CO) Content (kg) *per 100 kWh battery pack*	NMC622	19
	Low-no CO target	<5 or Zero



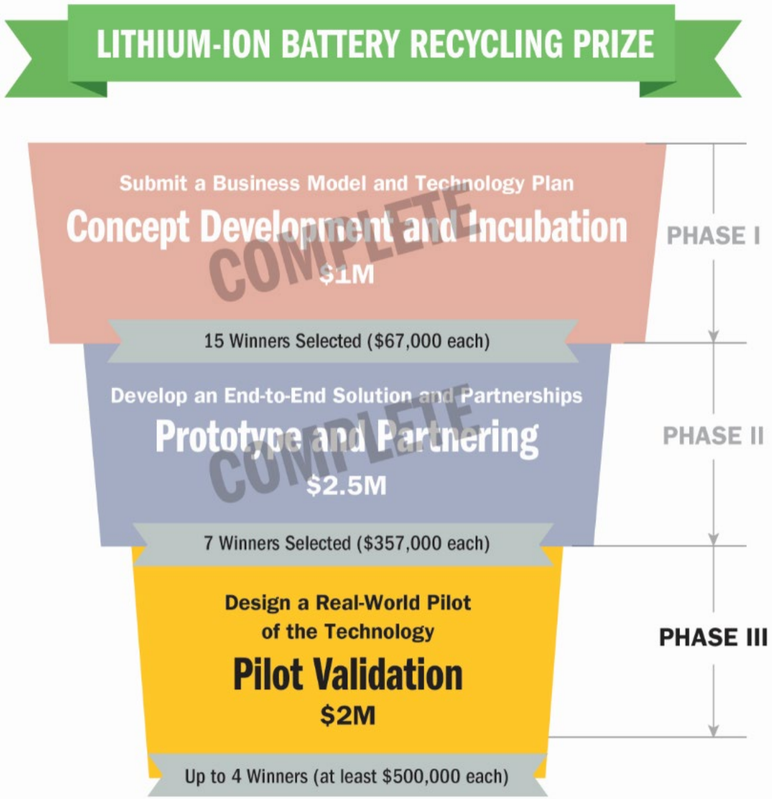




ReCell ADVANCED BATTERY RECYCLING

USABC UNITED STATES ADVANCED BATTERY CONSORTIUM

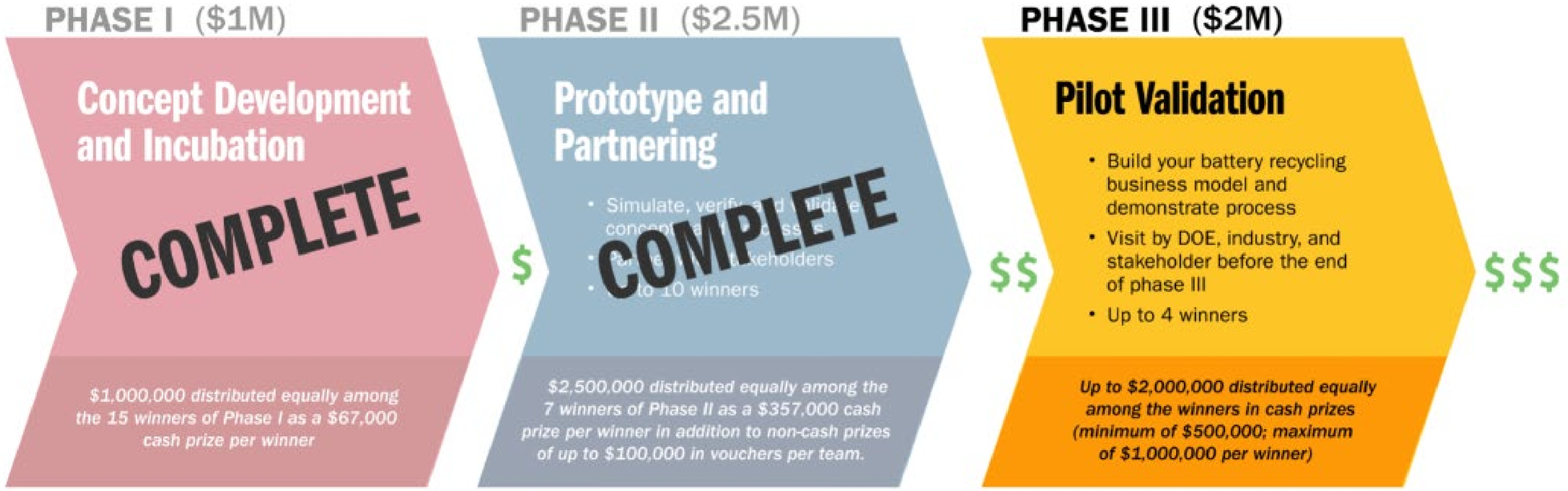
NREL Transforming ENERGY



Lithium-Ion Battery Recycling Prize

The Prize is designed to incentivize a diversity of problem solvers to create end-to-end solutions to help DOE achieve an overall lithium-ion battery (LIB) recovery rate of 90%. This might be accomplished by:

- Increasing collection
- Implementing cost-effective, automated methods or technologies for separation and sorting
- Developing safe methods or technologies for lithium-ion battery storage and transportation
- Optimizing the efficiency of logistics
- Designing an entirely unanticipated solution
- Some innovative combination of all these solutions.



Lithium-Ion Battery Recycling Prize

Li Industries
Machine learning-based, automated Smart Battery Sorting System.

OnTo Technology
Deactivate, identify, sort, and cut (DISC) solution for end-of-life processing.

Powering the Future
Leveraging the existing network of collection for lead-acid batteries to collect end of life LIBs.

Smartville
Distributed heterogeneous unifying battery facilities to reduce costs in the reverse logistics supply chain.

Renewance
Renewance Connect digital platform tracks and manages LIBs throughout their full life cycle.

Team Portables
Reward to Recycle is a smartphone app that rewards consumers for recycling.

Titan Advanced Energy Solutions
Battago Battery Market Intelligence platform built to generate, aggregate, and connect data.

https://www.herox.com/BatteryRecyclingPrize