

Domestic Supply Chains for End-of-life Batteries



Arizona ▪ British Columbia ▪ Indiana ▪ Michigan ▪ North Carolina ▪ Ohio ▪ South Carolina

Cirba Solutions

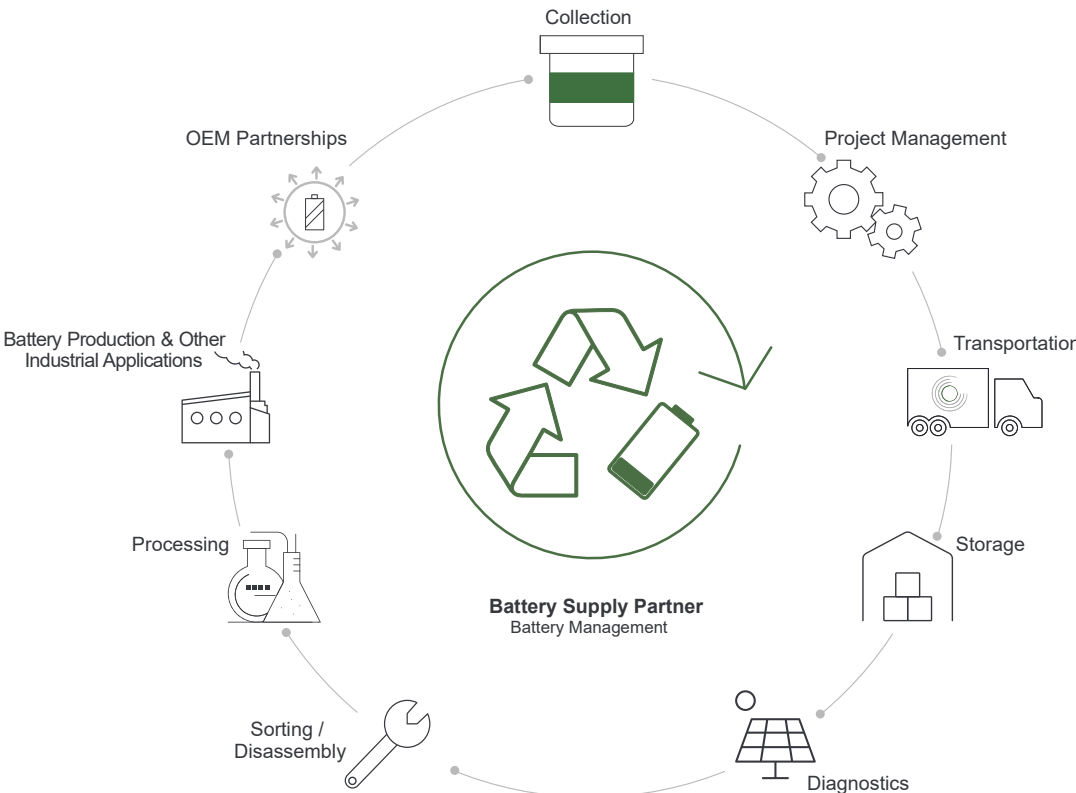
Trusted Battery Recycling Leader

- 35 years of battery recycling experience
- **Largest operations** across North America
- Handles **all battery formats** and chemistries
- **10+ years** of experience commercially processing lithium-ion
- **Services all industries:** End-of-life batteries, production scrap, post-consumer, etc.
- **In-house processing:** Shredding and hydrometallurgy processing approach
- Return **critical minerals (Li, Ni, Co, Mn)** back into the **domestic battery supply chain**



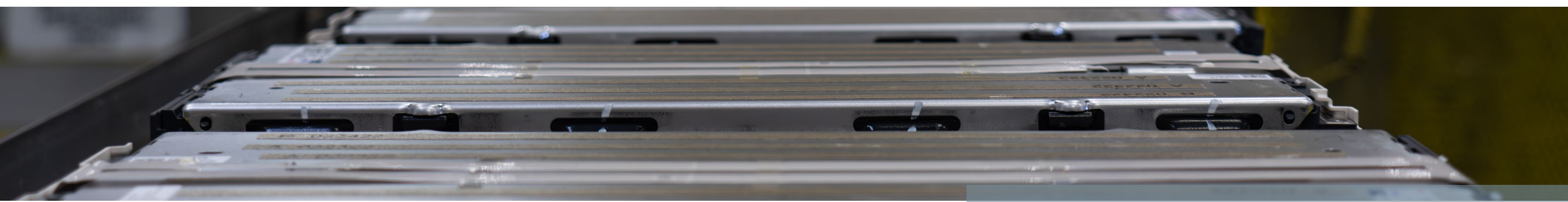
The Battery Supply Chain's Most Comprehensive Solution

Advanced battery management solutions for end-of-life and scrap batteries, enabling a true closed-loop supply chain.



Type	Illustrative Battery Form Factors		
Lithium-ion			
Lithium Primary			
Lead Acid			
Nickel Cadmium			
Nickel Metal Hydride			
Alkaline and Others			





The Why: The Salvage Model Was Built for a Different Vehicle

Traditional Auto Recycling

Built around positive-value combustion-engine scrap. Dismantlers could accept nearly any vehicle and still come out ahead.

1.2M → 14M

EV batteries reaching end of life globally, 2030 → 2040

The EV and Hybrid Reality

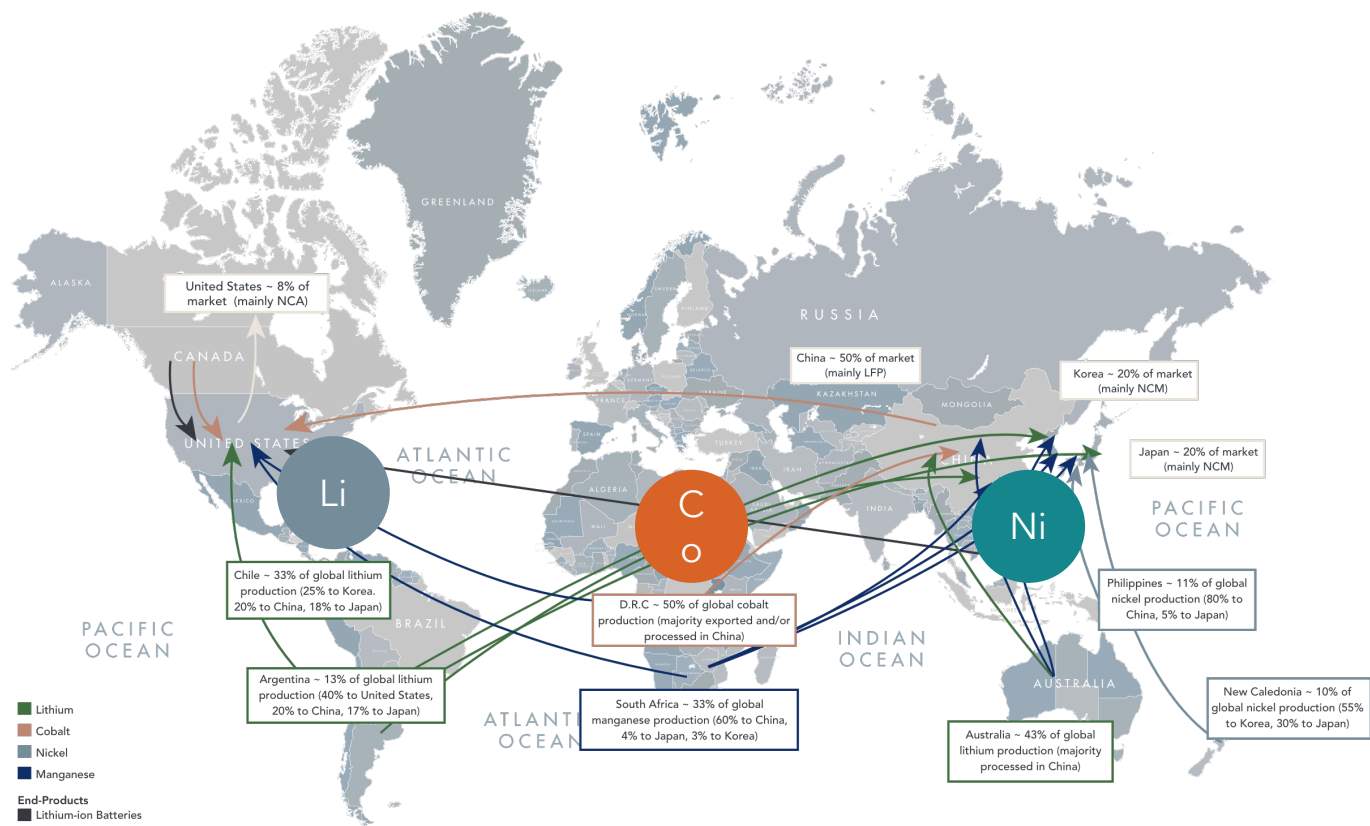
High-voltage packs add handling fees, safety risk, transport surcharges, chemistry-dependent value, and possible infrastructure upgrades.

\$2.4B → \$7.4B

North American battery recycling market, 2025 → 2032 (17%+ a year)



End-of-life Batteries Are Strategic Critical Mineral Assets



It is estimated that in some cases, critical battery metals for cathode active materials travel over **50,000 miles** before they reach a battery gigafactory.

up to
90%

of global critical mineral refinement is controlled by China.

Every battery that leaves North America, or ends up in a landfill, is material we will have to buy back.



Sources: <https://mondaynote.com/the-global-race-for-battery-supply-4e1227e5ba46>; Cirba Solutions testimony to U.S. House Energy & Commerce, June 2026

Taking End-of-Life Batteries to Battery-Grade Metals



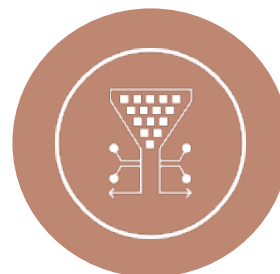
Collect

Collect batteries, identify chemistry/format, isolate damaged, defective, or recalled (DDR) units.



Prepare for Recycling

Potential discharge and dismantle packs and large-format batteries.



Mechanical Processing

Shred & separate: Black Mass, copper, aluminum, plastics.



Hydrometallurgical Refining

Leach, purify, and separate metals by solvent extraction.



Battery-Grade Salts

Lithium, nickel, cobalt & manganese salts back to cathode makers.



Setting Up The Recycling System: *Every Link Has a Role*

Producers

Collaborate on the full lifecycle of the battery, including end-of-life.



Dismantlers & Collection Sites

Identify EVs & hybrids during intake, store safely & responsibly, and collaborate with certified recyclers.



Transportation & Logistics

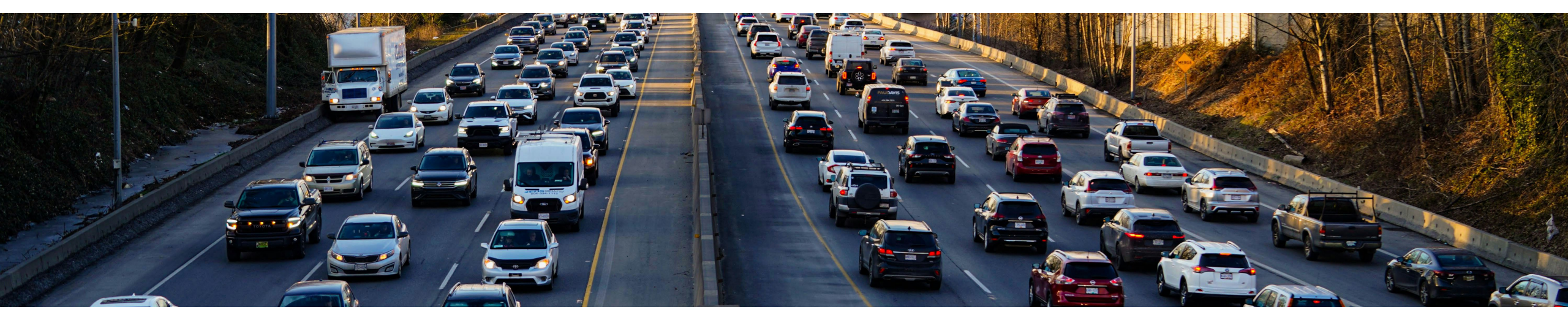
Compliant packaging and consolidation to manage the cost of transport vs. value of the battery.



Recyclers

Partner with certified recyclers for material traceability and efficient and high recovery of critical minerals.





Chemistry Drives the Economics

48%

of global EV battery demand is
NMC in 2026

30%

of global EV battery
demand is LFP in 2026
Rising to 32% by 2036

17% - 45%

LFP share of North American
scrap 2026–2040

Understanding the holistic view of NMC vs. LFP is critical for every participant in the battery supply chain.





Policy Directly Impacts Cost Barriers

What Works:

- **Collaboration across the full battery lifecycle**, including end-of-life.
- **Consistent battery classification** for storage and transport.
- **Domestic processing prioritized** over export.
- Incentives **paired with recycled-content demand**.

Colorado SB26-003, signed June 2026

No-Cost Collection

Producers collect packs from dismantlers and solid-waste facilities.

2029

Landfill disposal ban takes effect.

2031

Recovery targets: 90% cobalt and nickel, 50% lithium (80% by 2035).



Key Takeaways To Close The Gap

1

Collaboration

Producers, dismantlers, and recyclers own a piece of the supply chain, and work together to align market value.

2

Regional Networks

Connected hubs close to where batteries are produced and reach end-of-life to deliver more value.

3

Responsible & Safe Handling

Partner with certified recyclers to ensure the safe and responsible handling of end-of-life batteries, including DDR (damaged, defective, and recalled).

4

Market Value

Offtake agreements and recycled-content provide recyclers with the resources to increase capacity for processing, recovery, and refinement of critical materials.

Keep batteries and scrap material in North America — continue to expand domestic capacity.





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