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EV BATTERY RECYCLING

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Speaker: Jon McQuaid

As VP of Marketing, Communications, and Innovation for Call2Recycle Canada, Jon leads the Marketing strategy and execution to enhance the company brand and increase public education and awareness. Jon oversees all advertising, media, public relations, communications, special events, and account partner programs to continue raising awareness of the importance of end-of-life battery recycling.

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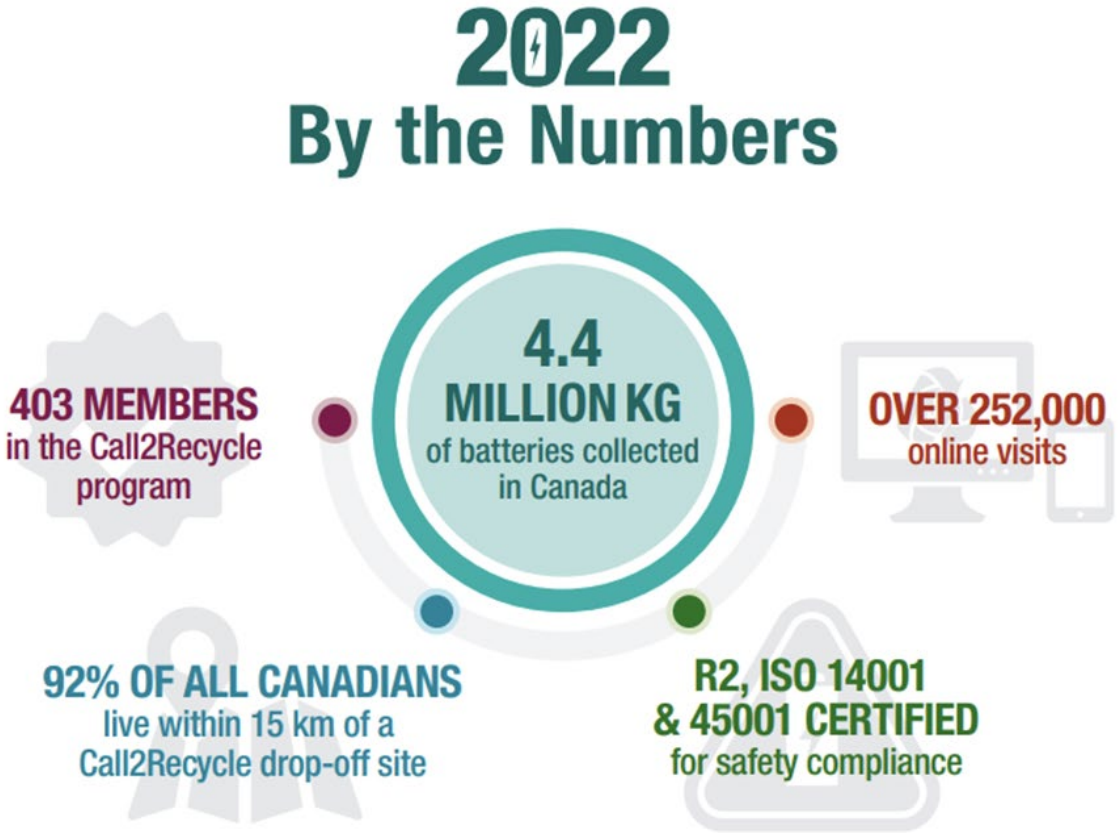
About Call2Recycle

Call2Recycle is Canada's leading national consumer battery recycling organization operating as a not-for-profit which, on behalf of our Members, safely maximizes the diversion of batteries from landfills through an established and convenient collection network.

40+ million kgs collected and recycled since inception in 1997



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A Few Distinctions About Batteries

- **Single-use batteries**: includes alkaline, lithium primary, or carbon-zinc batteries.
- **Rechargeable batteries**: either plugged into a charger or recharging while in the device. Can contain hazardous materials (lead, cadmium, nickel, etc.).
    - Includes Lithium-ion, Small Sealed Lead Acid (SSLA) batteries, Nickel Cadmium and Nickel Metal Hydride.
    - Found in laptops, cell phones, power tools, electric bikes or digital cameras.

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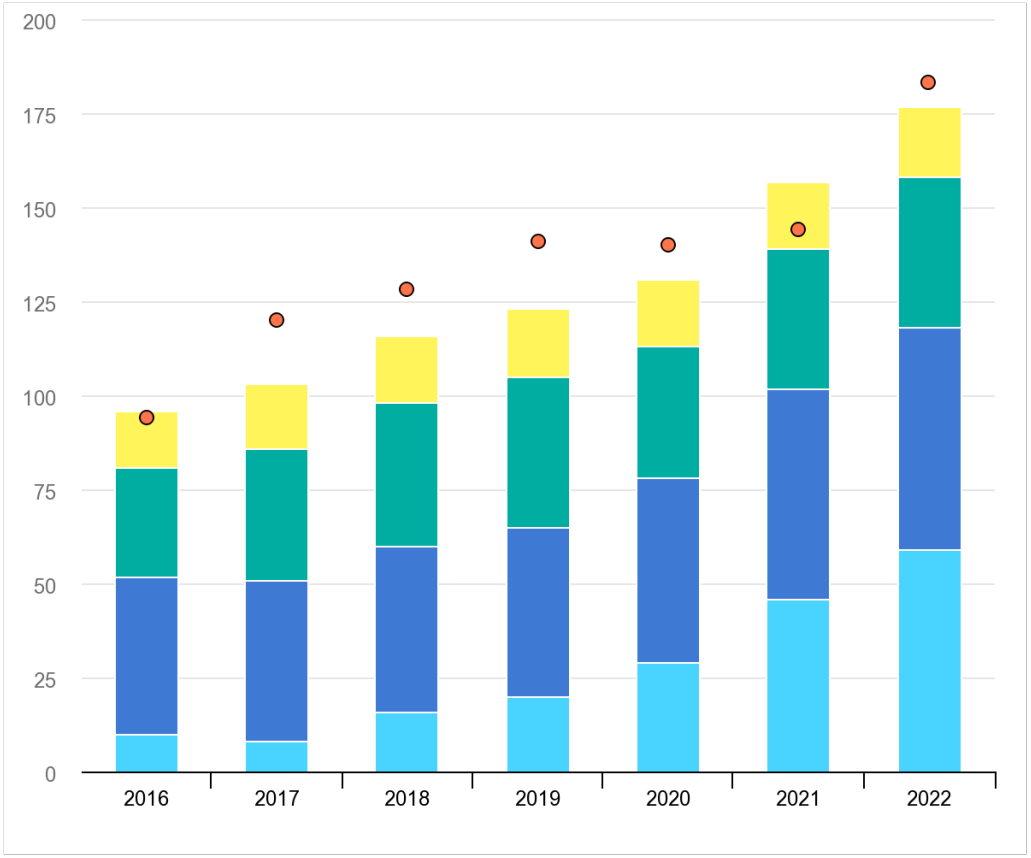
Rise of the EVs

- Early years (1970s-90s) driven by gas shortages and environmental concerns but with limited performance (range, battery capacity).
- New beginning since the 1990s with hybrid electric vehicles, plug-in hybrids, and all-electric Electric Vehicles (EVs).
- EV research has pushed forward the Lithium-ion battery and helped cut EV battery costs.
- Most EV brands in North America in 2023 use Lithium-ion batteries with high life expectancy (300k to 500k miles), high charge (300 to 500 miles) but higher cost (almost half of the price of the EV).

Lithium and EV Batteries

Demand for Lithium



Source: International Energy Agency

- Lithium-ion battery demand for EVs increased by almost 1,500% from 2016 to 2022.
- Issue with critical materials: in 2022, lithium demand exceeded supply (as in 2021) despite the 180% increase in production since 2017.
- Reducing the need for EV battery critical materials (lithium, cobalt, nickel, etc.) is becoming essential for supply chain sustainability.

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Recycling EV Batteries: Call2Recycle's Program

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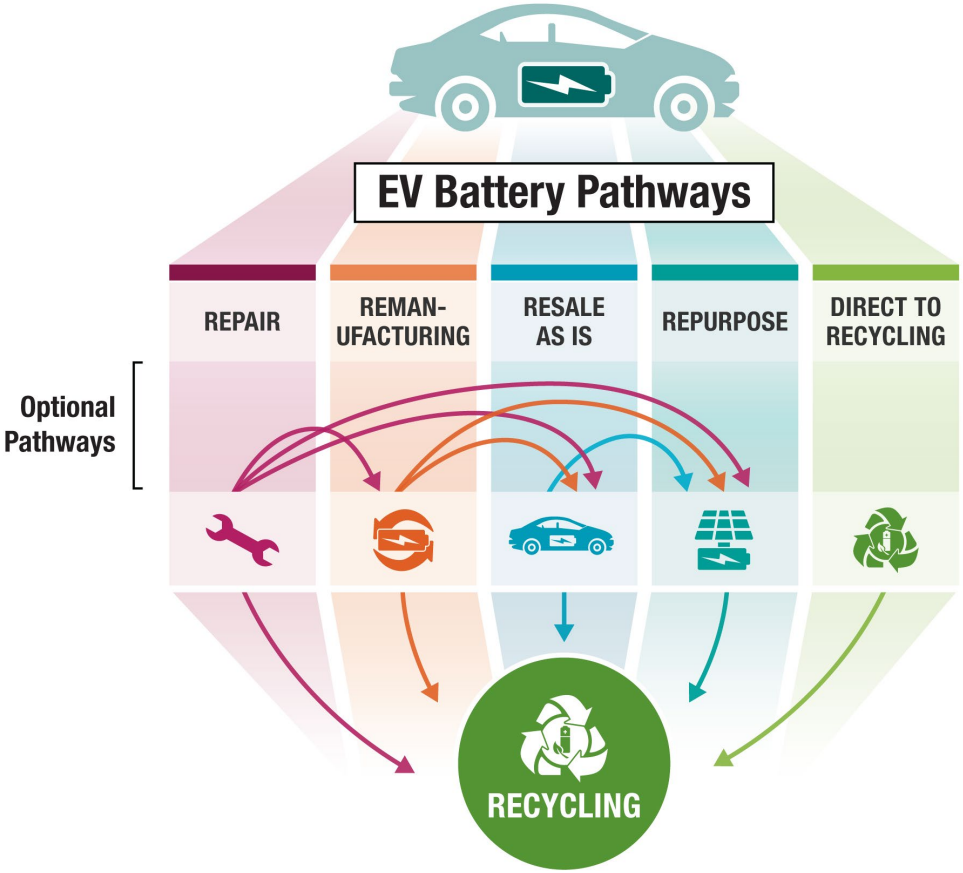
EV battery services
powered by Call2Recycle

- Leading Canadian organization for battery recycling, operating on behalf of 400+ battery producers and distributors, active since 1997 with over 40M kgs recycled.
- National scope with Extended Producer Responsibility (EPR) regulations: BC, Saskatchewan, Manitoba, Quebec and PEI, Ontario (IPR) and voluntary program across all other provinces.
- Recycling household batteries (up to 5 kg), eTransport batteries (for eBikes, eScooters, eSkateboards, Hoverboards) and Electric Vehicle (EV) batteries.
- Working with automotive OEMs and recyclers to expand recycling services for the EV sector in Canada.

Recycling EV Batteries: Call2Recycle's Program

- The batteries are collected by an authorized transporter.
- The batteries are shipped to a sorting site in Canada and sorted by type and chemistry.
- The batteries are then processed through one of the 5 pathways: repair / remanufacturing / resale / repurpose / recycling.
- All paths lead to recycling.



All paths lead to recycling.

Safety for EV Batteries

- Collaborative effort to enhance safety and promote responsible handling of Electric Vehicle (EV) batteries.
- Co-authored foundational document with Canadian Vehicle Manufacturers' Association (CVMA) *Electric Vehicle Battery Management at End-of-Vehicle Life*.
- Co-authored with the Suppliers Partnership guidance document *Electric Vehicle (EV) Battery Safe Handling and Storage*.
- Safe handling of EV batteries including battery identification, safety prevention, thermal runaway, and the roles of authorities.

The Road Ahead

- Quebec EV Battery Recovery Program.
- Safety guidance.
- EV battery recycling infrastructure expansion.

Thank you!

For more information:

- Come chat with me during networking breaks.
- Contact me at jmcquaid@call2recycle.ca.
- Find out more about Call2Recycle at www.call2recycle.ca.

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