# The British Columbia Stewardship Program for the Lead-Acid Battery Category

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CBA
Canadian Battery Association
Representing the Industry Since 1970

www.canadianbatteryassociation.ca www.recyclemybattery.ca

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## Executive Summary

The Canadian Battery Association (CBA) has operated an approved Stewardship Program in British Columbia since 2011 and CBA's members account for more than 95% of lead batteries sold in British Columbia.

Every year, there are approximately 24Mkg of lead batteries sold by the Producers to resellers, retailers and commercial customers. Approximately 85% of the lead batteries are sold to consumers for use in vehicles and commercial trucks. The remaining 15% are motive lead batteries such as forklifts and golf carts and stationary lead batteries sold for energy storage and power backup.

Lead batteries are the most recycled product in Canada and the key metrics for lead batteries in British Columbia are:

- Recovery rate >100%
- Landfill diversion rate >98%
- Recycled content of approximately 80%

The primary driver of the key metrics is the manufacturers' core charge that:

- creates a deposit/refund type system where old lead batteries are exchanged with the seller that are then returned to the Producer
- obligates Producers to return waste batteries to the manufacturer so the batteries can be recycled and the components be re-manufactured into new lead batteries.
- Establishes a stable market for lead batteries collected by vehicle and metal recyclers.

The obligated Producers use an efficient reverse-distribution system in urban and rural communities to collect the lead batteries from their customers, reducing the need for an extensive network of public depots. The Producers will transport the recovered batteries in bulk to the manufacturers' processing locations using common carriers.

Despite the establishment of an effective collection system for urban and rural communities, lead batteries can become isolated in remote communities due to a variety of transportation barriers. To ensure lead batteries are recovered from remote communities, the CBA has partnered with the Indigenous Zero Waste Technical Advisory Group to establish eco-depots and transportation strategies throughout BC's remote First Nation communities.

# 1 Introduction

## 1.1 Obligated Batteries

Lead batteries that are obligated under the Recycling Regulation come in a variety of sizes and applications. The most common applications are:

- Consumer: includes batteries for vehicles, boats, ATVs, planes etc. account for about 85% of all sales and range from 4kg to 50kg depending on the size of the internal combustion engine
- Commercial: includes mobility batteries for wheelchairs, golf carts, forklifts etc. and account for about 8% of sales and will range from 4kg to 2500kg and stationary batteries for emergency or standby power for remote locations, telecom or UPS systems etc. and account for about 7% of sales and the stationary batteries will range from 0.5kg in fire and safety systems to >10,000kg for data centres and grid storage.

Approximately 15% of lead batteries sold in BC are embedded in a new product like a vehicle or equipment while the remaining 85% are replacement or aftermarket lead batteries.

## 1.2 Obligated Producers

Producers covered by this stewardship plan sell over 24M kg of lead batteries per year and account for approximately 95% of lead batteries sold in British Columbia. The remaining 5% is sold in BC without a Stewardship Program and includes lead batteries sold

- over the internet through 3rd party sellers
- within a new product – e.g., boat, motorcycle etc.
- imported directly from the USA or Asia by commercial operations.

The list of CBA members that meet the definition of Producers as defined by the Recycling Regulation are listed on our website at https://canadianbatteryassociation.ca/members/

Retailers and commercial customers of the above Producers are not required to register with the CBA's Stewardship Program because the Producers have assumed all stewardship obligations.

## 1.3 Regulatory Requirements

In addition to the requirements of the Recycling Regulation, lead batteries are subject to a variety of Federal and Provincial regulations that cover and impact the collection, storage and transportation of lead batteries and the implementation of the CBA's stewardship program.

The Federal Acts and Regulations focus primarily on the movement of Dangerous Goods and Hazardous Wastes. The primary Federal Acts are:

- *The Canadian Environmental Protection Act and its regulations*
- *The Transportation of Dangerous Goods Act and its regulations*

British Columbia's regulations include:

- *The Hazardous Waste Regulation*
- *The Spill Reporting Regulation*
- *The Occupational Health and Safety Regulations*

The CBA has prepared regulatory reference manuals that are available upon request that will help collectors, warehouse operators and transporters comply with the above Federal and Provincial regulations.

# 2 Management of the Stewardship Program

## 2.1 The Canadian Battery Association

The CBA is a Federally registered Not-for-Profit Industry Association and the CBA's Registration number with Industry Canada is 759912-9.

The Producers referenced in Section 1.2 will be represented by the Canadian Battery Association (CBA).

The administrative function of the CBA includes:

- developing and implementing the CBA's battery stewardship plan
- preparing reports for regulatory agencies, Board of Directors, and stakeholders
- preparing the communication materials for distribution
- overseeing budgets and developing strategies and actions designed to meet regulatory requirements.
- updating and maintaining the collection network for consumers.
- assisting CBA members meet all Federal and Provincial regulatory requirements for the safe collection, storage and transportation of lead batteries.
- resolving disputes and investigating complaints.

## 2.2 Governance

The CBA has a simple governance model. The Executive Director provides all the management of the battery stewardship program and the CBA's Board of Directors oversees the Executive Director and is comprised of representatives from manufacturers, distributors, and processors in Canada.

For a list of the current Board of Directors go to https://canadianbatteryassociation.ca/about/

## 2.3 Funding

Lead batteries are considered the most recycled product in Canada because of the value placed on the lead by the manufacturer's core charge. The core charge is not an Environmental Handling Fee, but it approximates the commodity value of the lead in the battery.

See Section 5.1 for a more detailed description of the manufacturers' core charge and how the core charge drives the collection and recycling of lead batteries.

All funds related to the management of the CBA's Stewardship Plan are covered by annual membership fees set by the obligated Producers. Virtually collection, transportation and processing costs of lead batteries are funded by Producers. The CBA will provide transportation funding to transport lead batteries from a remote community to a Producer.

## 2.4 Auditing

The CBA undertakes a Financial and Non-Financial audit every year of our Canadian operations and will be applicable to BC's battery stewardship program.

The Financial Audit is:

- completed by Scott Kelday of Kelday and Company Professional Corporation to ensure that funds are collected and expensed in accordance with the CBA's bylaws.

The Non-Financial Audit is:

- completed by MNP LLP to ensure that the sales and recovery rates reported in the Annual Report are accurate and verified
- With respect to sales, the financial sales reports and the weight of the different battery SKUs will be used to verify the weight of sales
- With respect to recovery, the weights listed on the Hazardous Waste movement documents issued by BC or Environment Canada will be used in the non-financial audit to calculate the weight of lead batteries sent for recycling.

# 3 Lead Battery Performance Metrics

The primary performance metrics of the CBA's Stewardship Program are Recovery Rate and Landfill Diversion Rate. All other stewardship elements such as deposit/refund systems, accessibility and awareness as discussed in Section 5, will influence the performance metrics for lead batteries to varying degrees.

The recovery and landfill diversion rates will be measured annually and reported in the annual report at https://canadianbatteryassociation.ca/annual-reports/

## 3.1 Sales and Recovery

Sales and recovery volumes are measured based on sales and transportation records supplied by Producers. All sales and recovery volumes reported by the CBA have been audited by the accounting firm MNP.

After 15 years of data collection, the CBA has an accurate understanding of lead battery sales and recovery in BC.

### 3.1.1 Lead Battery Sales

The Producers represented by the CBA account for approximately 95% of sales of lead batteries sold in British Columbia. Most lead batteries are imported into BC by Producers and then distributed to resellers, retailers and Industrial, Commercial and Institutional (IC&I) customers.

The table below summarizes the annual sales of lead batteries by category.

| Battery Category | CBA Sales (kg) |
|---|---|
| **Consumer** | 21,200,000 |
| **Commercial** | 2,400,000 |
| **Total** | 23,600,000 |

Consumer batteries account for about 90% of the lead battery sales in BC and 85% of the consumer batteries are distributed by CBA members in the automotive "aftermarket" and the remaining 15% of consumer batteries are sold in a new product powered by an internal combustion engine (i.e., vehicles, boats, lawn mowers etc.).

Commercial batteries include motive (e.g., forklift and golf cart batteries) and Stationary (UPS and energy storage) batteries and account for about 10% of lead batteries sold in BC. The motive and stationary batteries are primarily sold to the IC&I sector for use in a variety of applications.

There are imports of batteries into BC that are not included in the above sales statistics. Lead batteries sold on the internet or in new products such as heavy equipment, buses, boats, ATVs, motorcycles etc. as well as the direct import of motive and stationary batteries from the USA and Asia. The CBA estimates this market to be less than 5% of total sales.

### 3.3.2 Recovery

The volumes for the two battery types by CBA members generated in an average year are summarized below:

| Battery Category | CBA Recovery (kg) |
|---|---|
| **Consumer** | 23,150,000 |
| **Commercial** | 1,750,000 |
| **Total** | 24,900,000 |

The lead batteries recovered in BC are recycled at smelters located in Canada and Asia.

- Metalex in Richmond, BC
- Teck in Trail, BC
- Terrapure Environmental in Mississauga, ON
- Exports to South Korea and Philippines

Approximately 70% of the lead batteries recovered in an average year are collected by the lead battery distributors using reverse distribution with their customers. Using the data from the different smelters, the CBA has determined that the "private" recycling of lead batteries by metal recyclers in BC accounted for the remaining 30% of the recovery rate.

The manufacturers' core program for consumer lead batteries is instrumental in creating a residual value for the lead batteries between $0.40 and $0.50/kg, and is the primary reason that lead batteries have a high recovery rate and recycled content.

## 3.2 Recovery Rate

The Recovery Rate is calculated based on the kilograms of lead batteries sold vs. the kilograms of lead batteries recovered for recycling.

$$\textit{Recovery Rate} = \frac{\textit{Weight of Lead Batteries Sent to Smelters}}{\textit{Weight of Lead Batteries Sold}}$$

| Battery Category | CBA Recovery Rate (%) |
|---|---|
| **Consumer** | 109% |
| **Commercial** | 73% |
| **Total** | 105% |

The high recovery rate for consumer batteries is caused by small commercial batteries (<20kg) being shipped for recycling with consumer batteries of similar size. When the consumer and commercial data are combined, the overall recovery rate is 105%.

The lead battery Recovery Rate targets for the next five years will include information from private recyclers and will exceed the 75% target required by the Recycling Regulation.

| Year | Product Recovery Rate Targets (%) |
|---|---|
| **2025** | 95% |
| **2026** | 95% |
| **2027** | 95% |
| **2028** | 95% |
| **2029** | 95% |

Given the stable nature of the commodity value of lead, the overall Product Recovery Rate for will be close to 100% in BC; however, variability is expected on a year-to-year basis.

## 3.3 Landfill Diversion Rate

One of the primary objectives of the CBA's Stewardship Program is to divert lead batteries from landfills. To validate this objective, the CBA led the development of the Waste Characterization Tool with other SABC members to determine the quantity of Stewarded Products (including lead batteries) that end up in BC landfills.

To date the SABC has conducted over 19 waste studies and 800 samples in BC and compared those results with similar studies in Nova Scotia, New Brunswick and the Yukon Territory.

In 2022, Tetra Tech was hired to analyze the BC data, and they estimated the landfill diversion rate for lead batteries was 98% using the methodology outlined in Section 3 of Environment Canada's 2020 National Waste Characterization Report.

| | Recovered Lead Batteries | | Samples | Sample Volume | Landfill Diversion Rate |
|---|---|---|---|---|---|
| | (#) | (kg) | (#) | (kg) | (%) |
| **Residential (SF/MF)** | 0 | 0 | 325 | 32,386 | 100.00% |
| **Dropoff (DO)** | 0 | 0 | 106 | 9,649 | |
| **Transfer Station (TS)** | 1** | 0.75 | 33 | 3,277 | |
| **Construction/Demo (C&D)** | 0 | 0 | 3 | 9,750 | |
| **IC&I (ICI/ICI-WC)** | 3*** | 6.92 | 215 | 21,649 | |
| **Overall** | 4 | 7.67 | 682 | 70,888 | 98.17% |

* Based on summary report prepared by Tetra Tech
** 0.75kg SSLA from a heart defibrillator at a Transfer Station – assumed to be non-residential
*** 5.85kg SLA from Metro Van and 2 SSLAs from Peace River RD totaling 1.07kg

While there is a high standard deviation inherent in waste composition data, the following observations can be made from SABC's waste characterization studies:

1. The high landfill diversion rate of >98% for lead batteries corroborates the high recovery rates discussed in Section 3.2
2. the four lead batteries recovered are typically used by commercial purposes
3. the source of lead batteries in the waste stream was from non-residential sources (i.e., the IC&I sector).

In addition, the BC data for lead batteries are similar with the waste characterization studies completed in Nova Scotia, New Brunswick and the Yukon Territory.

# 4 Product Life Cycle Management

Most used lead batteries are collected by distributors using their reverse distribution transportation systems and the batteries will be evaluated for their highest value. Because recycling has the lowest value for lead batteries, reuse, repair and refurbishing options will be considered.

This section summarizes how lead batteries will be reused, recycled, processed, recovered for energy, or otherwise managed as it relates to the Pollution Prevention Hierarchy.

## 4.1 Reuse, Repair and Refurbishing

Because of the wide range of sizes and applications, used lead batteries have a variety of reuse, repair and refurbishing (3Rs) options.

Unfortunately, the Sealed Lead Acid (SLA) batteries have limited 3R options because the units are sealed by the manufacturer so they cannot spill acid if mounted on their sides. SLAs are used primarily in critical infrastructure such as fire, security, telco, and health care applications where the batteries are replaced before they fail and cannot be reused for critical infrastructure applications.

Powersport lead batteries come in sealed and spillable designs and are typically <5kg. Powersport batteries do not have many 3Rs solutions because they are small, frequently sealed and in many cases, they are used for off-road applications in ATVs, ski-dos etc., where reliability is important.

Fortunately, small SLA and Powersport batteries comprise about 1% of sales while the remaining larger, more valuable automotive and commercial batteries have 3R options.

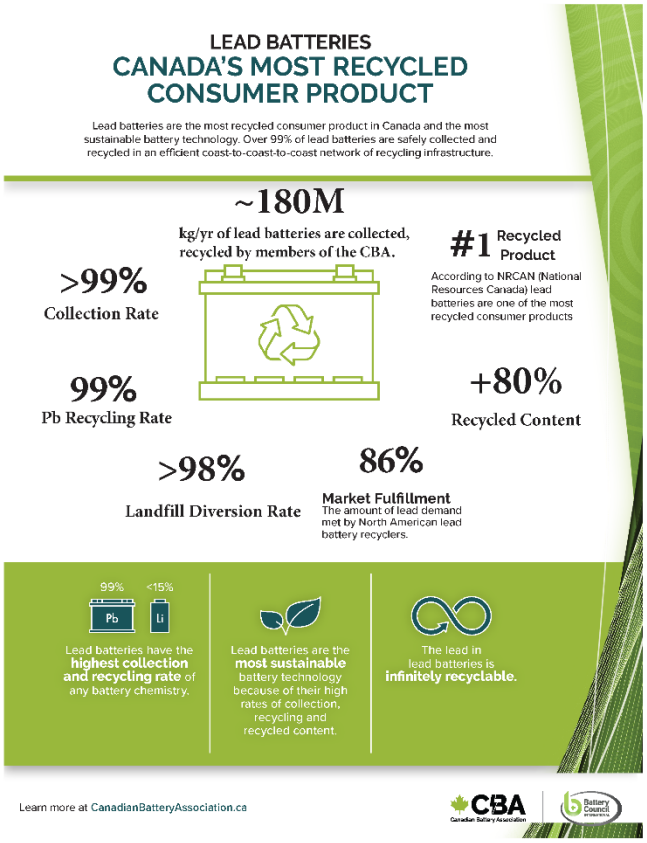
- Approximately 10% of the 12V automotive batteries can be refurbished by automotive recyclers and battery distributors and then resold as a refurbished battery
- larger forklift and stationary batteries can be disassembled into their component cells, tested and the refurbished cells can be reassembled and sold as a refurbished battery

Eventually, all lead batteries reach end of life and are required to be recycled. The average life span of the different types of lead batteries is:

- Small SLA: 3 years
- Powersport: 4 years
- Automotive: 5 years
- Forklift: 7 years
- Stationary: 15+ years

## 4.2 Recycling

Lead batteries are Canada's most recycled product with significant collection, transportation and processing capacity from coast-to-coast-to-coast.




Because of the high recovery and recycled content rates, lead batteries have a Material Circularity Indicator of 0.87 based on the methodology developed by the Ellen MacArthur Foundation and ANSYS Granta.

The high Material Circularity Index is the result of the battery manufacturers needing the recycled materials to make new batteries and the lead battery has only three components that are easy to recycle. The main components of a lead battery are:

- Lead in the form of elemental lead and lead oxide,
- Electrolyte consisting of 70% water and 30% sulphuric acid and
- Plastics: including a high impact resistant polypropylene plastic casing and specialized plastic separators that isolate the battery's internal cells.

The following sections outline the fate of the lead batteries, and the numbers are taken from studies conducted by Battery Council International https://batterycouncil.org/recycling-sustainability/battery-recycling/.

### 4.1.1 Lead

The primary component of an average lead battery is lead and lead oxide (~52%) and the collection and recycling of lead batteries is essential for the battery manufacturers to make new lead batteries. The average automotive battery has over 80% recycled content.

Small amounts of antimony, tin, calcium, or selenium are usually alloyed in the battery to add strength and simplify the manufacturing process.

The recovered lead in Canada is separated from the other battery constituents and put through permitted smelters in Canada, USA and Asia. The smelters typically recover >99% of the lead that is then sent to the manufacturer to be made into new lead batteries.

### 4.1.2 Electrolyte

The electrolyte in a new fully charged lead battery is 70% water and 30% sulphuric acid and an discharged end-of-life lead battery will have a much lower concentration of sulphuric acid. The dilute sulphuric acid recovered from lead batteries is reused and recycled in a variety of processes:

1. Filtered and used on site: Acid is drained from the used batteries and filtered to remove any particles. This filtered acid is then used in the Waste-Water Treatment Facility at the smelter.

2. Crystallized: Acid is put through a Crystallizer and in the process turned into Sodium Sulphate. The sodium sulphate is sold to manufacturers of glass, detergents etc.

3. Sold to Third Parties: The drained Acid is sold without any recycling or refining, to third parties. For example, to Tanneries.

4. Neutralized: The Acid is neutralized using Caustic Soda into a Non-hazardous waste that can be disposed of safely.

5. New Filter Process – (Experimental): The drained Acid can be filtered using a new process whereby the Acid can be re-used in the manufacture of new batteries.

### 4.1.3 Plastic

Most lead batteries have a high impact plastic polypropylene outer casing while some commercial UPS batteries have a clear acrylic casing.

Because the battery casings are high desirable high impact characteristics, the battery breaker pelletizes the plastic and sells to a variety of customers including battery manufacturers.

The majority of the aftermarket polypropylene battery casings are black to make the plastic more recyclable into a new battery casing.

# 5. Stewardship Program Drivers

There are three key stewardship elements that drive the high recovery and recycling rates for lead batteries.

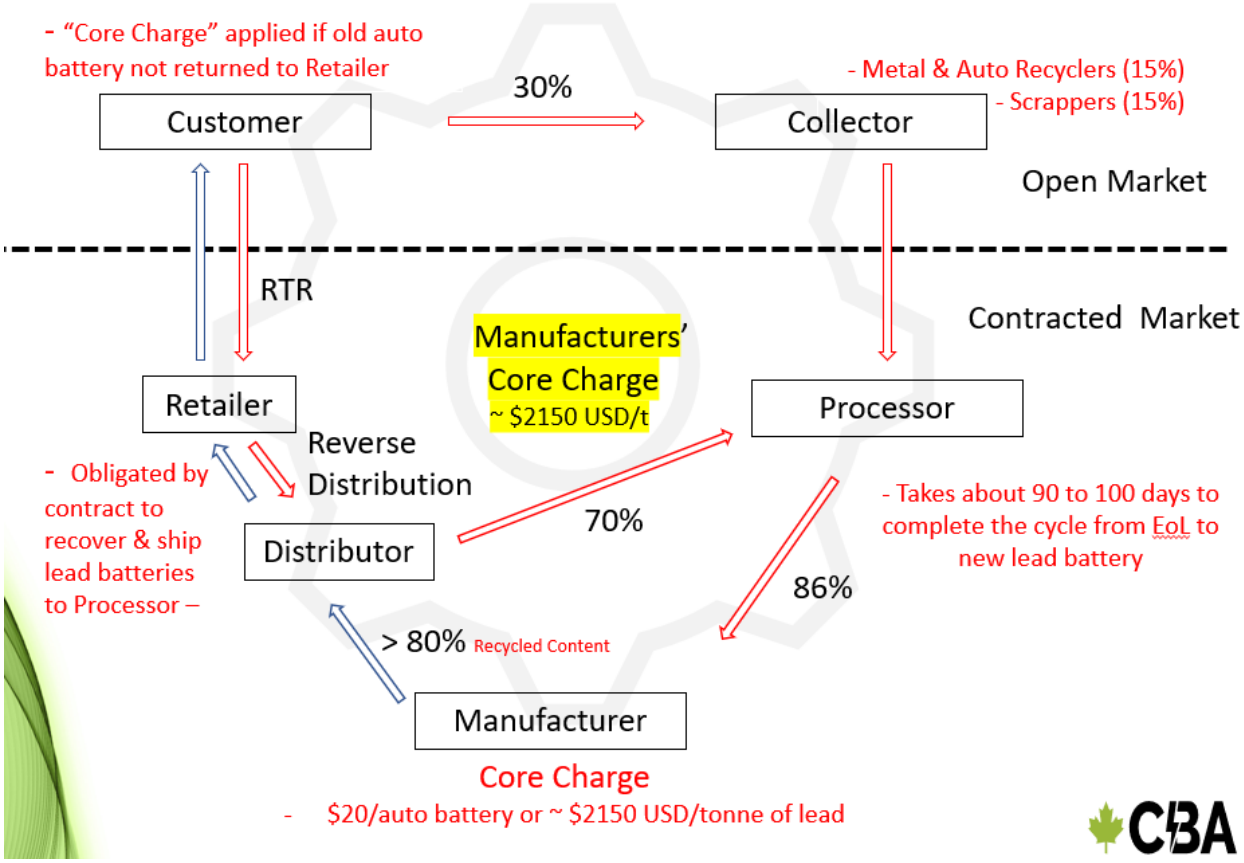
## 5.1 Manufacturers' Core Charge

The manufacturers' core charge is the most important stewardship element that drives the recovery and recycling of lead batteries. The core charge is a deposit-refund type system imposed by the manufacturer that encourages the customer to return and exchange their end-of-life lead batteries. The core charge:

- approximates the value of lead contained in the battery.
- creates a residual value for lead batteries at end-of-life.
- generates approximately $20M dollars per year in economic activity in BC related to the collection, transportation and recycling of the lead batteries.

The core charge is typically applied on aftermarket automotive batteries and will vary based on the size and application of the battery. The typical core charges are:

- $10 for powersport batteries
- $20 for automotive batteries
- $65 for large truck/equipment batteries



The core charge is a simple deposit/refund type system that drives the collection and recycling of lead batteries throughout North America. See the above diagram for a simplified representation of the Circular Economy for lead batteries created by the manufacturers' core charge.

The circular economy for lead batteries has two recycling pathways: the contracted pathway and the open market pathway. The contracted pathway requires the.

- retailers to collect approximately 70% of lead batteries they sell
- distributors to recover and ship the lead batteries that cannot be refurbished to a lead processor designated by the manufacturer.
- lead processors to process the batteries and return the recycled lead and plastic to the manufacturer.

On average, it takes about 90 to 100 days from the time a customer exchanges a lead battery at a retailer to when a new battery is made by a manufacturer. Approximately 86% of the lead required by North American battery manufacturers is supplied by the open and contracted markets and the average automotive battery will have approximately 80% recycled lead and plastic content.

In summary, the manufacturers' core charge is the primary reason lead batteries remain Canada's most recycled product and has a Material Circularity Index of 0.87 based on the methodology developed by the Ellen MacArthur Foundation and ANSYS Granta.

## 5.3 Awareness

Awareness is normally an important driver of product recovery and landfill diversion; however, consumer awareness is not the driving characteristic behind the recovery of lead batteries because the majority of new lead batteries are installed by a retailer at a mechanical repair shop to ensure that the:

- battery voltage and amperage are correct so that the vehicle or infrastructure is operating efficiently and not damaged.
- battery type (spillable vs. non-spillable) and dimension is correct.
- installation is done safely so there are no acid spills or short circuits.

### 5.2.1 Consumer Awareness Studies

Every two years, the Stewardship Agencies of BC (SABC) contracts with Leger to conduct a consumer awareness study that surveyed approximately 2,000 people. Leger asks the same questions in every survey to track any trends and changes.

The tables below summarize the consumer awareness results for lead batteries. Of particular interest to the CBA are the results from the Do-It-Yourself group of consumers because they are doing the installation of the replacement batteries.

| Question Category | Question Subcategory | | 2013 | 2016 | 2018 | 2020 | 2022 | 2024 |
|---|---|---|---|---|---|---|---|---|
| Currently have unwanted: | Lead Batteries | | 6% | 8% | 9% | 6% | 5% | 8% |
| Do-it-Yourself (DIY) | Change Lead Batteries | | 45% | 40% | 38% | 19% | 18% | 18% |
| Top-of-Mind Recyclables/Returnable/Safe Disposal | Lead Batteries | | | | | <2% | <2% | <1% |
| Knowledge Recyclable/Safe Return of unwanted lead batteries: | Among all Respondents | | 76% | 78% | 77% | 74% | 69% | 72% |
| | Among those that currently have a Lead Battery | | | | | 88% | 81% | 75% |
| | Among DIYers that change Lead Batteries | | | | | 90% | 88% | 87% |
| Knowledge of where to take unwanted lead batteries: | Among those that usually have a Lead Battery | | 44% | 50% | 51% | 64% | 59% | 65% |
| | Among those that currently have a Lead Battery | | 54% | 72% | 69% | 91% | 67% | 72% |
| | Among DIYers that change Lead Batteries | | 58% | 68% | 68% | 85% | 81% | 84% |
| Likely to do if recycle/safe disposal unknown: | Among all Respondents | Go Online | | | | 81% | 77% | 80% |
| | | Ask Family / Friend | | | | 8% | 10% | 9% |
| | | Throw Out | | | | 4% | 4% | 3% |
| | | Not Sure | | | | 4% | 6% | 5% |
| | Among those who currently have unwanted lead batteries | Go Online | | | | 73% | 70% | 75% |
| | | Ask Family / Friend | | | | 10% | 21% | 16% |
| | | Throw Out | | | | 15% | 8% | 8% |
| | | Not Sure | | | | 1% | 1% | 0% |
| | Among DIYers that change lead batteries | Go Online | | | | 80% | 79% | 84% |
| | | Ask Family / Friend | | | | 12% | 11% | 9% |
| | | Throw Out | | | | 6% | 3% | 4% |
| | | Not Sure | | | | 1% | 2% | 1% |

| Question Category | Question Subcategory | | 2013 | 2016 | 2018 | 2020 | 2022 | 2024 |
|---|---|---|---|---|---|---|---|---|
| Usual behaviour to get rid of items | Among Those Who Usually Have lead batteries | Recycle / Return | | | | 61% | 59% | 65% |
| | | Throw Out | | | | 6% | 11% | 9% |
| | | Someone Else | | | | 28% | 25% | 24% |
| | | Not Sure | | | | 8% | 12% | 8% |
| | Among those who currently have lead batteries | Recycle / Return | | | | 73% | 62% | 75% |
| | | Throw Out | | | | 15% | 20% | 18% |
| | | Someone Else | | | | 15% | 9% | 13% |
| | | Not Sure | | | | 1% | 8% | 0% |
| | Among DIYers that change Lead Batteries | Recycle / Return | | | | 84% | 81% | 81% |
| | | Throw Out | | | | 5% | 13% | 4% |
| | | Someone Else | | | | 7% | 9% | 10% |
| | | Not Sure | | | | 2% | 4% | 5% |
| Aided Reasons for Not Recycling/Returning/Safe Disposing | Among those who have unwanted lead batteries currently or those who have thrown them away in the past | Don't know where to take | | | | 26% | 22% | 12% |
| | | Will when enough to make trip | | | | 32% | 36% | 40% |
| | | Not Convenient | | | | 11% | 15% | 17% |
| | | Didn't know it could be | | | | 8% | 9% | 8% |
| | | Can't be bothered / No time | | | | 14% | 16% | 13% |
| | | Can't get to place | | | | 8% | 14% | 10% |
| | | Plan to re-use / fix / sell | | | | 7% | 20% | 12% |
| Lead Battery Program Convenience - DIY Products | Among all aware | | 75% | 67% | 72% | 75% | 71% | 68% |
| | Among users aware | | 85% | 81% | 81% | 81% | 83% | 79% |
| | Among DIY aware | | 81% | 73% | 77% | 85% | 80% | 76% |
| Trust in Lead Battery Program - DIY Products | Among all aware | | 84% | 81% | 84% | 89% | 86% | 87% |
| | Among users aware | | 85% | 88% | 90% | 92% | 90% | 90% |
| | Among DIY aware | | 85% | 87% | 86% | 93% | 89% | 87% |

Some key conclusions of the consumer awareness data are:

1. approximately 8% of respondents currently have unwanted lead batteries for recycling and that is a very low number when compared to other stewarded products.
2. most categories of awareness are stable and are similar to the other stewarded products associated with vehicles (i.e., tires and oil products)
3. the respondents in the Do-It-Yourself (DYI) category:
    - declined from 45% in 2013 to 18% in 2024 probably because cars are getting more complex, and manufacturer warranties may require installation of a new battery by the dealership.
    - >80% of DIYers go online to find a location to recycle the unwanted lead battery.
    - Probably have some sort of mechanical knowledge and have developed high awareness and trust in the program because battery stewardship has been a formal program in BC for over 35 years..

### 5.2.2 Consumer and Commercial Outreach

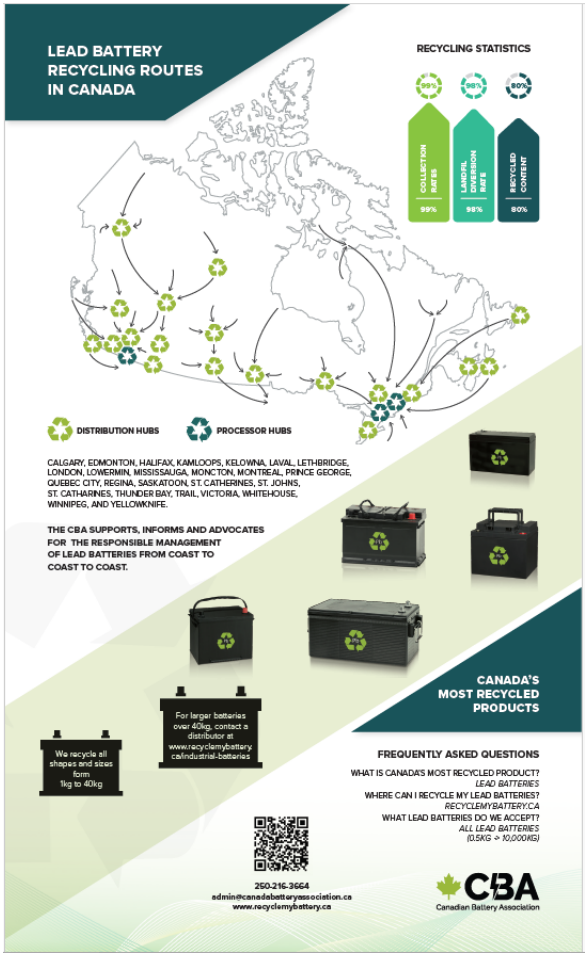
Over the past five years, the CBA has developed a variety of tools in both written and electronic format that promote the safe collection, transportation, and recycling of lead batteries.

Consumer Outreach

The primary interface with the consumer is through the Recycling Council of BC. The CBA contributes to the Recycling Hotline and Recyclepedia to provide a "one-stop shop" consumer outreach program. In a typical year, RCBC receives approximately 150 calls and 3500 web searches from consumers related to the recycling of lead batteries.

In addition, the CBA operates two websites to distribute information to the consumer. The websites are: www.recyclemybattery.ca and www.canadianbatteryassociation.ca.

Finally, the CBA has prepared a retail rack card that is available to retailers to give to their customers.




Commercial Outreach

The members of the CBA distribute more than 95% of all new commercial batteries to the IC&I sector. This allows the direct marketing of recycling information directly to the IC&I sector that generate waste batteries in BC.

First Nations Outreach

The CBA has partnered with the Indigenous Zero Waste Technical Advisory Group to develop and implement recycling strategies for First Nation communities in BC.

## 5.3 Accessibility

Ensuring free and reasonable accessibility to a recycling network is an important consideration when developing any Stewardship Program. Unlike other stewarded products, the Stewardship Program for lead batteries does not use a return-to-depot type system to recover lead batteries because:

1. Hazardous Waste Regulations discourage depots and local governments from collecting lead batteries due to unnecessary regulatory requirements
2. Approximately 70% of lead batteries are generated onsite by retailers, car dealers and mechanical repair shops
3. The remaining 30% of lead batteries are generated by commercial and metal recycling facilities.

Because lead batteries are an atypical collection network managed primarily by the distributors of lead batteries coupled with the manufacturers' core charge, determination of accessibility for lead batteries used the basic Eunomia model and the Index of Remoteness developed by Statistics Canada.

The Index of Remoteness (IR) of Communities was developed by Statistics Canada as a relevant dimension in the analysis and delivery of policies and programs. For each populated census area in Canada, the IR is determined by the distance to all the population centres in a given travel radius plus their population size.

The Eunomia study recommended that lead batteries be considered a Group 4 product because when compared to other Stewarded Products lead batteries are large, hazardous and has a relatively long life. For Group 4 products, the Eunomia study recommended:

- 5 categories of census areas based on the area's IR
- Service target for each census area category
- Targets for Population Served for each census area

Note that the most current IR ratings from Statistics Canada in the table below uses population data from 2021 and the next update will be after the next census in 2026.

**Lead Battery Accessibility Statistics for British Columbia**

| Census Areas | Census Area Classifications | Index of Remoteness Thresholds | 2021 Census Area Population | Service Target (minutes) | Travel Target (km/hr) | Census Area Target (km) | Target: Population Served | Population Served | % Served |
|---|---|---|---|---|---|---|---|---|---|
| 67 | Easily Accessible | <0.1500 | 3,232,416 | 15.0 | 30 | 7.5 | 95% | 3,222,402 | 99.7% |
| 156 | Accessible | <0.2888 | 1,029,494 | 20.0 | 35 | 11.7 | 90% | 939,664 | 91.3% |
| 151 | Less Accessible | <0.3898 | 368,780 | 30.0 | 50 | 25.0 | 85% | 301,156 | 81.7% |
| 258 | Remote | <0.5532 | 349,847 | 40.0 | 60 | 40.0 | 50% | 184,154 | 52.6% |
| 119 | Very Remote | >0.5532 | 20,342 | 45.0 | 70 | 52.5 | 25% | 3,613 | 17.8% |
| 751 | | | 5,000,879 | | | | | 4,650,989 | 93.00% |

The summary of the accessibility for lead batteries is summarized in the above table and the method of calculating the population served was determined for each of the 751 census areas by the travel time and distance using Google Maps.

Despite the high recovery and circularity rates for lead batteries, the accessibility results combined with the Consumer Awareness and Waste Characterization studies suggest there are three areas of focus:

1. Do-It-Yourself consumers
2. Commercial and metal recycling networks
3. Remote Communities and Locations

### 5.3.1 Do-It-Yourself Consumers

As the awareness studies have shown, approximately 18% of consumers are Do-It-Yourself (DYI) and change their lead battery without the help of a technician and approximately 8% of those surveyed had an unwanted lead battery. It is the assumption that the majority of DYI live outside the urban areas and in the less accessible and remote census areas.

To encourage the DIYers exchange their batteries at the retailer where they bought the new battery, the stewardship program has:

- Prepared a rack card for retailers to encourage the DIY consumer to exchange the battery with the retailer at the time of purchase
- Financially support the Recycling Council of BC's Recyclepedia because according to the awareness studies 93% of DIY go online or ask family or friends to find a safe recycling location
- Created a second online tool www.recyclemybattery.ca that lists 43 return locations that the DIY customer can legally drop off their battery.

### 5.3.2 Commercial Customers and Vehicle Recycling Locations

The Waste Characterization Studies indicate that the lead batteries in the waste stream originate from the IC&I sector. Commercial customers account for over 2Mkg of end-of-life lead batteries while vehicle recyclers process over 300,000 end of life vehicles every year and will generate over 6Mkg of lead batteries for refurbishing or recycling.

Producers and distributors of lead batteries have a fleet of vehicles that routinely pick-up lead batteries from their commercial and recycling customers using reverse distribution.

The rack card prepared to improve awareness can be electronically distributed to commercial customers by Producers. While it is likely that the commercial customers do not intentionally discard the valuable lead batteries, reminding them of the importance of recycling will hopefully reduce lead batteries in the IC&I waste stream.

### 5.3.3 Remote Communities

Given the extensive recycling systems in place for populated areas and commercial operations throughout BC, the primary focus of the Stewardship Plan is to develop individual collection and transportation systems for remote and very remote communities in partnership with the Indigenous Zero Waste Technical Advisory Group (IZWTAG).

Remote communities are defined by the CBA as a community where the value of the core charge is not sufficient to cover the collection and transportation costs associated with recycling.

In BC, the regions of the province that are viewed as remote are:

- Small coastal island communities that do not have ferry access
- Haida Gwaii
- Communities that are at the end of a highway (e.g., Bella Coola, Fort Ware, Telegraph Creek etc.)

In addition, the CBA supports special projects that recover lead batteries under marinas and with First Nations that set up a hub and spoke collection network with their outlying remote communities.

The logistics of establishing a collection and transport program is complex because of the huge distances, the plethora of regulatory requirements and the seasonality of transportation corridors.

To support programs for remote communities, the CBA has developed a policy and a Hazardous Waste Eco-Depot reference manual for remote communities based on the collaborative work over the past 10 years with the:

- Ten stewardship programs in Manitoba developing and implementing a backhaul program for the winter-road First Nation communities in northern Manitoba
- Indigenous Zero Waste Technical Advisory Group in British Columbia
- North West Company that operates community logistics in the arctic.

The CBA in partnership with Interchange Recycling and Product Care are actively working with IZWTAG to establish eco-depots and transportation plans for remote First Nation communities throughout BC.

# 6. Operational Policies, Manuals and Procedures

## 6.1 Policies

The CBA operates Stewardship Programs across Canada and to guide each Provincial operation, a series of Policy Documents have been developed. The Policy Documents are available for download at https://canadianbatteryassociation.ca/download-category/cba-stewardship-plan-policies/

### 6.1.1 Littering

The first policy document is on littering because there is confusion over when a Stewardship Programs' responsibility starts and when it ends. It is important to remember that Provincial regulations require the owner or the person in control of a product is responsible for its proper disposal and the Stewardship Program is not responsible until the product is physically given to the Stewardship Program.

The CBA's Littering Policy is balanced by the Recycling Regulation's requirement to provide free and reasonable accessibility for the consumer to physically give the product at an appropriate location.

The challenge is to find the right balance so that there are no accessibility barriers for consumers and establish an adequate collection system in urban and rural areas. Remote locations and communities will require special considerations – see Section 6.1.3.

### 6.1.2 Producer Pays the Cost

The second policy is to outline the obligations of Producers to pay for the collection, processing and recycling of lead batteries and ensure there are no financial barriers for consumers to properly dispose of lead batteries.

As outlined in Section 5.1, the manufacturers of lead batteries have created a circular economy that ensures there is sufficient recycled lead to manufacture new lead batteries. The circular economy for lead batteries includes contracts that obligate the Producers to pay for the collection and transportation of end-of-life lead batteries.

The circular economy for lead batteries and the residual value of lead batteries in urban and rural communities does not require the stewardship program to implement Environmental Handling Fees to cover the cost of collection, transportation and processing or compensating independent depots that collect lead batteries.

### 6.1.3 Remote Communities

Despite the comprehensive collection network and financial incentives to collect and process lead batteries in urban and rural communities, small quantities of lead batteries can become stranded in remote communities, and community specific collection and transportation logistics are required and financed by the CBA's Stewardship Program.

The CBA's policy on remote communities outlines a program that was developed to backhaul stewarded products from the winter road communities in northern Manitoba. The policy now forms the basis of the CBA's partnership with the Indigenous Zero Waste Technical Advisory Group (IZWTAG) that provides support to the First Nation communities in BC.

The partnership with IZWTAG has established recycling systems for lead batteries in a number of communities including Bella Bella, Kitasoo and the communities of Tla-o-qui-aht First Nation.

### 6.1.4 Financial Transparency

The Financial Transparency policy outlines the CBA's Financial Reporting and because the CBA does not charge an Environmental Handling Fee there is no public reporting of how funds are spent on Stewardship initiatives.

To meet various Financial Transparency obligations set by the Federal Company's Act and the CBA's Constitution, the CBA will undertake a financial audit every fiscal year and present that budget at the CBA's Annual General Meeting.

A copy of the CBA's Financial Statements is available upon request to CBA members that fund the stewardship programs in BC.

### 6.1.5 The CBA's Emergency Response

The last of the CBA's policies is the support of emergency response following a flood, fire or other catastrophic event and a State of Emergency has been declared.

To ensure a coordinated approach during a State of Emergency, the Stewardship Agencies of BC (SABC) has developed an emergency response protocol, and consistent with the SABC protocol, the CBA will support all requests made by the Emergency Response Coordinators.

In addition, the CBA has prepared specific emergency response protocols for lead batteries that are to be used by contractors tasked with the clean up after an emergency. The emergency response protocols summarize the collection, storage and transportation requirements that must be used during the clean-up phase of an emergency.

## 6.2 Regulatory Reference Manuals

New, used and waste lead batteries are considered Dangerous Goods and Hazardous Waste that are regulated by a variety of Federal and Provincial regulations that affect all aspects of the collection, storage and transportation of lead batteries. A summary of the regulatory requirements that are germane to the stewardship of lead batteries is outlined below and more detailed reference manuals are available upon request.

The list of Reference Manuals available to manufacturers, distributors and contractors associated with the collection, storage and transportation of lead batteries are:

1. TDG Refence Manual for Lead Batteries in Canada
2. Hazardous Waste Reference Manual for the Collection, Storage and Transportation of Waste Batteries in British Columbia
3. Emergency Response Technical Criteria for Lead Batteries
4. Lead-Exposure Control Program for Handling of Lead Batteries
5. Remote Community Reference Manual

The training modules specific to handling of lead batteries includes:

1. WHMIS 2015 for Employees
2. Class 8 TDG Certification in English and French
3. Blood Lead – Prevention and Control for Distribution Warehouses

### 6.3 CBA Depot Operational Requirements

To support the Return Collection Facilities and communities that operate Eco-Depots meet the wide variety of regulatory requires, the CBA has prepared

1. Eco-Depot Reference Manual for Hazardous Wastes
2. Templates for Operational and Contingency Plans
3. Emergency Response Procedures

## 7 Stakeholder Consultation

The CBA will undertake consultation for the 2025 version of its Stewardship Program using online platforms, meetings and webinars with stakeholder groups.

Over the next three months, the consultation will include meetings and webinars with:

- BC Product Stewardship Council
- Indigenous Zero Waste Technical Advisory Group
- Coast Waste Management Association
- Producers and contractors that deliver the Stewardship Program's day-to-day operations
- Federal, Provincial and Local Government officials

In addition, the CBA's draft Stewardship Plan will be posted on www.canadianbatteryassociation.ca and the CBA will engage in a variety of webinars and if there is sufficient interest, the CBA will hold up to private meetings with key stakeholder groups as requested.

The consumer will not be directly consulted as the CBA's Stewardship Program does not require the use of eco-fees and hence consumers are not financially impacted by the Stewardship Program.

# 8 Summary of Targets and Performance Indicators

The CBA's Stewardship Program has set a variety of Targets and Performance Indicators that will measure the overall performance of the program and be reported annually in an annual report. The following table summarizes the targets and indicators and the indicators that are verified by the non-financial audit.

| **Sales and Recovery Indicators** | | | |
|---|---|---|---|
| **Program Metric** | **Target / Report** | **Results** | **Comments** |
| Sales | Report | Sales in BC (kg) | Verified by Non-Financial Audit |
| Recovery | Report | Recovered in BC (kg) | Verified by Non-Financial Audit |
| Recovery Rate | Target >95% | Recovery Rate (%): | Verified by Non-Financial Audit |
| Recovery by Regional District | Report | kg estimated for each Regional District | Estimate kg recovered by Regional District using Recovery per Capita |
| Sales per Capita | Report | kg/person/yr[2] | Monitor and compare to other Provinces |
| Recovery per Capita | Report | kg/person/yr[2] | Monitor and compare to other Provinces |
| Landfill Diversion Rate | Report | % - Residential<br>% - IC&I | Continue to conduct Waste Characterization Studies to corroborate recovery rates and identify priority sectors |
| **Consumer Awareness Indicators** | | | |
| Per Cent Awareness based on Standardized Surveys | Report | See Table in Section 5.2.1 for Awareness Indicators | Continuing to monitor consumer awareness every two years starting in using MoE approve standardized surveys |

| Accessibility Indicators | | | |
|---|---|---|---|
| **Program Metric** | **Target / Report** | **Results** | **Comments** |
| Total Number of RCFs in the Province | Report | Total Number of RCFs | Verified by Non-Financial Audit |
| Total Number of RCFs by Community | Report | List of Census Areas with RCFs | Verified by Non-Financial Audit |
| Accessibility: Easily Accessible Census Areas | Target 95% | • 67 Census Areas<br>• % of Pop. served to 15-minute target | Starting in 2025 and every 5 years undertake a GIS analysis using the Eunomia criteria and the Index for Remoteness for BC's Census Areas |
| Accessibility: Accessible Census Areas | Target 90% | • 156 Census Areas<br>• % of Pop. served to 20-minute target | |
| Accessibility: Less Accessible Census Areas | Target 85% | • 151 Census Areas<br>• % of Pop. served to 30-minute target | |
| Accessibility: Remote Census Areas | Target 50% | • 258 Census Areas<br>• % of Pop. served to 40-minute target | |
| Accessibility: Very Remote Census Areas | Target 25% | • 119 Census Areas<br>• % of Pop. served to 45-minute target | |

| Other Targets & Performance Indicators | | | |
|---|---|---|---|
| Use of Permitted Recycling Facilities | Target 100% | 100% waste lead batteries sent to Permitted Recycling Facilities | Monitor and track progress year over year |
| Adherence to International Hazardous Waste Commitments | Target 100% | 100% Compliance to Environment Canada's Requirements | Monitor the export of lead batteries by CBA members under export permits issued by Environment Canada |
| Pollution Prevention Hierarchy | Report | Lead: About 99% Recovery in Smelting Process<br><br>Sulphuric Acid: Recovered by the Battery Breaker Process. Reused in various production processes<br><br>Plastic Battery Casings: Recovered by Battery Breaker Process<br><br>Plastic Cell Separators: Considered not recyclable | The main use of recovered lead is the remanufacturing of new batteries<br><br>Recovered battery acid used in fertilizer production, battery manufacturing or galvanizing plants<br><br>Primarily pelletized and reused to make new battery casing<br><br>Used for energy recovery in the smelting process |
| Material Circularity Indicator | Report | Use formula developed by Ellen MacArthur Foundation and ANSYS Granta. (2019). Circularity Indicators: An Approach to Measuring Circularity. | Update every 5 years in partnership with data collected by the CBA and Battery Council International |

# 9 Annual Reporting

The CBA's Annual Report to the Ministry of Environment will include:

- a description of the CBA's educational materials and strategies used in the previous calendar year and changes proposed for the current calendar year;
- the location of the CBA's return collection facilities in urban and rural areas and any changes in the number and location of collection facilities from the previous report and proposed changes in the current calendar year;
- the number of activities and events to recover LABs from remote communities and locations and proposed activities and events for the current calendar year;
- efforts taken by the CBA to reduce environmental impacts throughout the product life cycle and to increase reusability or recyclability of LABs at the end of the product's cycle;
- a description of how the recovered product was managed in accordance with the pollution prevention hierarchy and proposed projects to improve operational efficiency;
- the total amount of the product sold and collected by the CBA members will be used to determine the CBA's Collection rate. In addition, the CBA will work with the other Stewardship Program to prepare sales and collection rates for the industry as a whole;
- a comparison of the approved plan's performance for the year with the performance requirements and targets in the Recycling Regulation and the CBA's approved plan.

## Appendix 1: List of British Columbia Return Collection Facilities for Lead Batteries (recyclemybattery.ca)

| | | | |
|---|---|---|---|
| ABC Recycling | 8081 Meadow Avenue | Burnaby | V3N 2V9 |
| ABC Recycling | 4318 Terminal Place | Campbell River | V9H 1V5 |
| ABC Recycling | 9631 78 Street | Fort St John | V1J 4J8 |
| ABC Recycling | 3258 Hwy 97 N | Kelowna | V1X 5C1 |
| ABC Recycling | 750-C Jackson Road | Nanaimo | V9X 1J2 |
| ABC Recycling | 10338 Willow Cale Forest Servic | Prnce George | V2N 5T3 |
| ABC Recycling | 19355 54 Avenue | Surrey | V3S 8E5 |
| ABC Recycling | 2550 Queensway Drive | Terrace | V8G 3X8 |
| Canadian Energy | 791 Cave Street | Esquimalt | V9A 5T6 |
| Canadian Energy | 1440 Battle Street | Kamloops | V2C 2N8 |
| Canadian Energy | 1891 Springfield | Kelowna | V1V 5V5 |
| Canadian Energy | 4848 275 Street | Langley City | V4W 0A3 |
| Canadian Energy | 541 1st Avenue | Prince George | V2L 2Y2 |
| DC Power Group | 1258 Boundary Road | Burnaby | V5K 4T6 |
| DC Power Group | 150 Victoria Street W | Kamloops | V2C 1A4 |
| DC Power Group | 4313 25th Avenue | Vernon | V1T 1P5 |
| East Penn Batteries | 7152 Curragh Avenue | Burnaby | V3N 1B3 |
| East Penn Batteries | 1505 Hardy Street | Kelowna | V1Y 7W9 |
| East Penn Batteries | 26988 56th Ave | Langley | V4W 1N9 |
| East Penn Batteries | 20131 Industrial Ave | Langley | V3A 4K6 |
| East Penn Batteries | 6468 King George Boulevard | Surrey | V3W 4Z3 |
| Ellice Recycle | 524 David Street | Victoria | |
| EnerSys Canada | 13303 78th Avenue | Surrey | V3W 4N1 |
| Grand Forks Bottle Depot | 8058 Donaldson Dr | Grand Forks | V0H 1H2 |
| HUB Power | 114 - 4238 Lozells Avenue | Burnaby | V5A 0C4 |
| Interstate Batteries | 1651 Old Island Hwy | Colwood | V9B 1H9 |
| Interstate Batteries | 311 Banks Road | Kelowna | V1X 6A1 |
| Interstate Batteries | 20148 102nd Ave | Langley | V1M 4B4 |
| Interstate Batteries | 3584 Massey Drive | Prince George | V2N 2M4 |
| KC Recycling - Trail | 9350 Waneta Hwy | Trail | V1R 4W6 |
| Magnacharge | 890 Dalton Road | Kelowna | V1X 0A9 |
| Magnacharge | 1722 Ogilvie St S #3 | Prince George | V2N 4W1 |
| Magnacharge Batteries | 1279 Derwent Way | Delta | V3M 5V9 |
| Motive Power Products | 2188 Mason Street | Abbotsford | V2T 0J8 |
| Phil's Batteries and More | 12332 Pattullo Place | Surrey | V3V 8C3 |
| Radius Recycling | 5551 Duncan Bay Road | Campbell River | V9H 1N6 |
| Radius Recycling | 13271 Trans Canada Highway | Cassidy | V9G 1L8 |
| Radius Recycling | 12195 Musqueam Drive | Surrey | V3V 3T2 |
| Radius Recycling | 307 David Street | Victoria | V8T 5C1 |
| RME Energy Ltd | 3155 21331 Gordon Way | Richmond | V6W 1J9 |
| The Battery Doctors | 1972 Windsor Road | Kelowna | V1Y 4R5 |
| Tla-o-la-qui-at First Nation | Nuu-Put-Tah-Chilth Road | Esowista | |

## Appendix 2: Example of Commercial and Consumer Awareness Material Available in Both Official Languages