

The Canadian Battery Association's Manitoba Stewardship Plan for Lead-Acid Batteries

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Executive Summary

The Canadian Battery Association (CBA) has operated a Stewardship Program in Canada since 2011 and in 2015 the CBA and Interstate Battery Systems merged their Stewardship Programs into a comprehensive LAB Stewardship Program for Canada. As of January 1, 2016, the CBA's members account for more than 95% of the LAB's sold in Manitoba. The remaining 5% of LABs are sold in MB as a LAB within a new product – e.g. boat, motorcycle etc. or the LAB that is imported directly from the USA or Asia by commercial operations into MB without a Stewardship Program as required by the *Household Hazardous Material and Prescribed Material Stewardship Regulation*.

Every year, there are approximately 8,500,000 kg of lead-acid batteries (LABs) sold in MB by CBA members. Approximately 88% of the LABs are sold to consumers for use in vehicles and commercial trucks. The remaining 12% are motive LABs such as forklifts and golf carts and stationary LABs for energy storage and power backup. The motive and stationary LABs are business-to-business commercial transactions.

The CBA's Stewardship Program provides for a return-to-retail recovery program for consumer (i.e. automotive) LABs and a business-to-business recovery program for commercial LABs. Recovered consumer and commercial LABs will be transported to warehouse locations operated by CBA members using a reverse-distribution system and then the waste LABs will be bulk transported to smelters for recycling.

The LAB recovery rate by CBA members in 2015 is approximately 97.7% and is based on sales and recovery data collected from CBA members; however, the overall Product Recovery Rate is closer to 100% when the non-ferrous recyclers that recycle LABs outside the CBA's Stewardship Program are factored into the overall LAB Recovery Rate.

The CBA's collection network has a network of 87 retail return collection facilities that cover the urban and rural parts of Manitoba and there are 7 warehouse facilities operated by CBA members that collect industrial batteries from commercial operations.

Because of the relatively stable commodity price for lead, the CBA will not require a visible eco-fee on the purchase of LABs. The demand for lead provides sufficient economic incentive to recover LABs in urban and rural areas. Remote communities are a difficult challenge and the CBA is working with Indian and Northern Affairs Canada and other Stewards to ensure that LABs are recovered in remote First Nation communities.

1 Introduction

The Canadian Battery Association (CBA) has developed a National Stewardship Program for all lead-acid batteries (LABs) and the Stewardship Plan for Manitoba will be submitted to Green Manitoba and Eco Solutions for Approval later in 2016.

1.1 Regulatory Requirements

The Waste Reduction and Prevention Act and the *Household Hazardous Material and Prescribed Material Stewardship Regulation* is the regulatory framework in Manitoba that requires the stewardship of LABs.

In addition, there are a variety of Acts and Regulations that will have an influence on the development and implementation of the CBA's Stewardship Plan. Those Acts and Regulations are:

- *The Canadian Environmental Protection Act*
- *The Canadian Transportation of Dangerous Goods Act;*
- *Manitoba's Dangerous Goods Handling and Transportation Act and its regulations.*

These acts and regulations will be integrated into the CBA's Stewardship Plan to ensure the compliant collection, storage and transportation of LABs.

1.2 About Lead-Acid Battery Use in Manitoba

Lead acid batteries (LABs) are important in the daily lives of every person in Manitoba. LABs are used to:

- Start our internal combustion engines such as vehicles, buses, boats, recreational vehicles, trucks etc.
- Provide uninterrupted power for our computers, telecommunication systems, safety systems (e.g., emergency lighting, fire alarms) and data centres;
- Provide motive power for forklifts, scooters and carts;
- Store power for alternative energy applications.

LABs range in size from less than 1 kg in small medical and emergency systems to 17 kg in an average passenger battery to thousands of kilograms in commercial applications like forklifts and emergency backup systems for data centres.

Because of the wide range of LABs, the stewardship plan groups the LABs into the following 3 categories:

Category	Size (kg)	Typical Application
Starting Lighting and Ignition (SLI)	<1 – 10	Emergency Lighting, Fire Sensors, Motorcycles, ATVs
	10 – 20	Vehicle – Passenger & Light Truck
	25 -50	Vehicle - Commercial Truck
Motive	30 – 1500	electric forklifts, golf carts
Stationary	50 – 50,000	large power supply and emergency back-up

The average life span of a LAB varies depending on their design, application and maintenance. Vehicle and commercial truck batteries are designed to last approximately 60 months. Motive batteries (e.g., used in forklifts, golf carts) are a different design and are expected to last 7 years while Stationary batteries that typically serve as emergency or reserve power are much larger and can last for more than 20 years.

Approximately, 88% of LABs are SLI type batteries sold for vehicle and commercial truck applications. The remaining 12% are for motive and stationary applications.

1.3 Population Distribution in Manitoba

One of the key challenges of a Stewardship Plan is to provide accessibility to the consumer in urban and rural areas. Manitoba is a unique province in that its population is centred in one large city. Over 55% of the province’s total population live in Winnipeg. The next largest city is Brandon with 3.6% of the provinces population.

The population breakdown of Manitoba for the top 43 cities with a population over 1,000 is summarized in Appendix 2.

Based on the population analysis, one of the challenges of a Manitoba product stewardship program will be providing recovery services to the smaller rural communities – see Appendix 2.

2 Program Administration

2.1 The Canadian Battery Association

The Canadian Battery Association (CBA) is a Federally-registered Not-for-Profit Industry Association. The CBA members account for more than 95% of the LAB sales in Canada and Manitoba. As an Industry Association, the CBA does more than Stewardship programs and the Association works on other initiatives with the Canadian Standards Association and Underwriters Laboratories Canada.

The CBA has three objectives:

- provide members with an efficient and effective stewardship program that meets their Federal and Provincial regulatory requirements;
- collect and collate the data and information required by the stewardship programs; and,
- ensure the stewardship program is cost-efficient, comprehensive, and includes a reverse-distribution retail and commercial return collection system.

The members of CBA are listed on the www.canadianbatteryassociation.ca. The CBA membership includes national and regional distributors, smelters and recyclers.

Retailers such as NAPA, Canadian Tire etc., are not required to become signatories to the CBA's Stewardship Plan because their National distributors have assumed their stewardship obligations.

2.2 Program Goals, Objectives and Principles

The goals of the CBA's Stewardship Program are:

- Provide a recycling program that is convenience to consumers, retailers and commercial users of lead-acid batteries;
- Provide a National stewardship program that meets the regulatory requirements of individual provinces;
- Promote the safe recovery, storage and transportation of new, used and waste lead-acid batteries.

The principles of the CBA Stewardship Program are:

- Integrate the Stewardship Program into the recycling initiatives of CBA members where possible;
- Develop systems that can be implemented across Canada;
- Do not interfere with the free market for the sale and collection of new, used or waste LABs;

- Use reverse-distribution systems to minimize transportation costs and ecological footprints;
- Develop solutions that meet corporate, social, environmental and economic goals of its members and regulatory agencies;

2.3 Organization Structure and Management in Manitoba

The CBA is managed across Canada by its Executive Director. The Executive Director is responsible for the preparation and implementation of the Stewardship Plan.

The administrative and implementation functions of the CBA include:

- development and updating of the CBA's 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 Performance Measures (see Section 6).
- undertaking stakeholder consultation and managing the Manitoba Steering Committee;
- assisting CBA members to meet all Federal and Provincial regulatory requirements for the safe collection, storage and transportation of LABs;
- resolving disputes and investigating complaints;

The CBA has a simple governance model. The Executive Director provides all the management and operational programs for the CBA. The CBA's Board of Directors oversees the Executive Director and is comprised of the six national representatives as well as 4 other members that represent manufacturers, distributors and smelters in Canada and the USA.

To ensure the regional representation, the Manitoba based businesses that sell and recycle LABs in Manitoba form the Manitoba Steering Committee. The Steering Committee ensures that Province-specific issues are reflected in the Manitoba's Stewardship Program. The purpose of the Steering Committee is to:

- Identify local and provincial issues that will need to be addressed in the Stewardship Plan;
- Provide Manitoba sales and recovery data as outlined in by CBA policy;
- Participate in events to recover lead-acid batteries in rural and remote locations.

2.4 Accountability and Transparency

The CBA provides accountability and transparency through a variety of mechanisms. The primary mechanism is the Financial and Non-Financial Audit of the Stewardship Program. These audits are published on the CBA website and are available to the public.

In addition, the CBA has become an active participant with the other Stewardship Programs in Manitoba and the CBA participates in conferences, forums and recycling programs that further the awareness of the CBA and the recycling of LABs.

Finally, the CBA website (www.canadianbatteryassociation/manitoba.ca) and www.recyclemybattery.ca will have an entire section devoted to Manitoba's:

- Stewardship Program including current recovery rates, health and safety information, location of battery recycling depots;
- Administrative information including financial information and the Stewardship Plan in downloadable format;
- The environmental story for lead acid batteries including the fate of lead-acid batteries, electrolyte and plastic;
- Forms and procedures for CBA members; and,
- Contact information.

2.5 Dispute Resolution

There are three dispute resolution stages utilized by the CBA to resolve differences between two parties.

First Stage:

The first stage is to encourage the two parties to come to a fair resolution of the issue. Should any one of the parties be unsatisfied with the outcome of this stage, they must provide in writing to the CBA that the first stage of the dispute resolution procedure has not been successful.

Second Stage:

The CBA will take an active role in the mediation between the two parties. During this stage, the two parties will have an opportunity to describe the problem to the CBA and the CBA will generate options and a recommendation for consideration by the two parties. Should any one of the parties be unsatisfied with the outcome of this stage, they must provide in writing to the CBA that the second stage of the dispute resolution procedure has not been successful.

Third Stage:

In the event that no resolution has been reached, the CBA will appoint a qualified mediator or an arbitrator under the Arbitration Act. The cost of the mediator and the remaining costs will be borne equally by the two parties.

In the event that the CBA is a party in the dispute, then Stage 2 would be by-passed because the CBA is a party in the dispute.

2.6 Reporting and Review

The CBA will review its Stewardship Program every five years and submit an updated stewardship plan to the Government for approval.

In addition, the CBA will prepare an annual budget for its national and provincial programs that will be available to the regulatory agencies upon request.

2.7 Financing Mechanism

The development, implementation and administration of the CBA Stewardship Program for Lead-Acid Batteries (LABs) will be borne by the members of the CBA through an annual membership fee.

The membership fee will be set to ensure that the costs of the Stewardship Program for Manitoba are covered and a contingency budget is available for extraordinary circumstances. The membership fees will be reviewed each year and approved at the CBA's Annual General Meeting.

Consumers will not be charged an eco-fee at the retail level. Eco-fees are not required because the demand for recycled lead provides sufficient value for Stewards in Manitoba to collect, transport and recycle LABs in urban and rural communities.

The current commodity price of lead is \$2 per kg on the London Metal Exchange. An average vehicle battery weighing 17kg has approximately 10 kg of lead valued at close to \$20 when recycled. Because automotive LABs have a 5 year life expectancy, there is a significant demand for new automotive batteries and this demand drives the commodity value for recycled lead.

Because of the significant commodity value of the LAB, there is an active industry of independent lead recyclers that pursue the collection and recycling of LABs.

To compete with independent lead recyclers, some CBA members employ several strategies to ensure the collection of LABs. The strategies used include:

- implementing a business-to-business core charge (deposit) / core credit programs at the wholesale level to encourage the return of LABs from the retailer to the manufacturer. Typically these core charges / core credits programs are \$10 to \$15 per automotive battery with greater amounts for larger battery sizes and they are a business-to-business program that is not passed on to the consumer;
- purchasing LABs from private recyclers and commercial operations;
- organizing special collection of LABs through sweeps and events that promote recycling activities of LABs. (e.g., CAA Manitoba's Annual Earth Day Event).

Finally, Section 4(2)h the *Household Hazardous Material and Prescribed Material Stewardship Regulation* requires the CBA to pay the salaries and other costs of government for the administration and enforcement of the regulation. The payment by the CBA will be through a negotiated agreement with Green Manitoba Eco Services (GMES) under the guidance of the *Special Operating Agencies Financing Authority Act (SOAFFA)*.

To be compliant with Section 4(2)h, the CBA will provide payment directly to GMES as directed by the Minister of Environment or Finance. The CBA will provide payment to GMES on a Cost Recovery basis in an agreement required by SOAFFA for the following documented services:

- Provide enforcement services to upon request of the CBA;
- Work with the CBA to ensure proper interpretation of regulations and guidelines with respect to program plans and conditions set out in minister's program approval letter;
- Facilitate the process of stewardship plan amendments and renewals in accordance with *The WRAP Act* regulations on behalf of government;
- Review the CBA's Annual Reports and Stewardship Plans with respect to regulations and guidelines and work with the department to address any regulatory concerns.
- When required, work with the CBA to incorporate changes to program plans submitted under section 13 of the regulations and/or at the request of the Minister.
- Post and coordinate an annual forum of stakeholders involving Stewardship Agencies and Provincial Representatives.

3 Product Life Cycle Management

3.1 Product Life Cycle Management

This section summarizes the fate of the products, residuals and commodities. Lead-acid battery technology has been around for 150 years and its three basic components are all 100% recyclable. The following sections outline the fate of the lead-acid batteries and the numbers are taken from Battery Council International's brochure titled: Sustainability/Recycling.

3.1.1 Lead

The primary component of a LAB is lead and the recycling of LABs is essential for the battery industry as there is not sufficient virgin lead product to supply the lead-acid battery market.

Each cell of a lead-acid battery contains electrodes of elemental lead (Pb) and (PbO₂). Small amounts of antimony, tin, calcium or selenium are usually alloyed in the electrode to add strength and simplify manufacture. The lead electrodes, battery posts and lead oxide are used to manufacture lead for new grids, parts and lead oxide.

The recovered lead is separated and put through a Reverb Furnace. The furnace recovers a high percentage of the lead and the slag is considered hazardous waste because of the high residual lead content. The slag from the Reverb Furnace is sent to a blast furnace and the lead is extracted. Once the lead has been recovered by the blast furnace, the remaining "slag" is non-hazardous waste and can be safely disposed of in landfills.

3.1.2 Electrolyte

Sulphuric acid is the primary components of the electrolyte within the battery. The dilute sulphuric acid be 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 off 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.

3.1.3 Casing

The smaller SLA and transport batteries have a plastic casing while the larger industrial and commercial batteries have steel casings.

Both the plastic and steel casings are recovered and recycled into new cases for lead-acid batteries.

4 Stakeholder Consultation

The CBA will undertake consultation for the 2016 version of its Stewardship Program. The consultation will include internal meetings of the Manitoba Advisory Committee, conference calls and direct email notifications to local.

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 and the CBA will comply with Government's requirements for the Gazetting of the Stewardship Plan for public consultation.

5 Performance Measures

The CBA's programs performance will be measured and reported for Manitoba at www.canadianbatteryassociation.ca and www.recyclemybattery.ca. The following sections summarize the different performance measures and the actions used by the CBA to achieve its targets.

5.1 Recovery Rates

The primary performance measure of the CBA's Stewardship Program is Recovery Rate. All other performance measures influence the Recovery Rate for LABs to varying degrees.

The sales and recovery methodology reported by the CBA is audited by the accounting firm Green Horwood Co LLP. Copies of our audit reports can be found at www.canadianbatteryassociation.ca.

After 5 years of data collection, the CBA has an accurate and verifiable understanding of LABs sales and recovery volumes in Manitoba.

5.1.1 Lead-Acid Battery Sales

Within Manitoba, the CBA members account for well over 95% of sales of LABs sold in Manitoba – 8,500,000 kg.

The 2014 LAB sales in Manitoba (including Interstate Battery Systems) are summarized below.

Battery Category	CBA Sales (kg)
Starting Lighting Ignition (SLI)	7,500,000
Motive	650,000
Stationary	360,000
	8,510,000

The Starting, Lighting and Ignition (SLI) batteries are designed to start internal combustion engines (eg the typical automotive battery). SLI batteries account for about 88 % of the LABs sales in Manitoba. Approximately 85% of the SLI batteries are distributed by CBA members in the automotive “aftermarket” and the remaining 15% of SLI batteries were sold in a new vehicle.

Motive (eg forklift and golf cart batteries) and Stationary (UPS and energy storage) batteries are also included in the CBA's stewardship plan and account for about 12% of LABs sold in Manitoba. The Motive and Stationary batteries are primary sold to commercial operations for use in a variety of industrial applications.

There are imports of lead-acid batteries into Manitoba that are not included in the above statistics. LABs in products such as heavy equipment, buses, boats, ATVs, motorcycles etc. as well as the direct import of speciality Motive and Stationary batteries from the USA and Asia. The CBA estimates this market to be less than 5% of total sales.

5.3.2 Recovery

The 2014 Recovery Volumes for the three battery types by CBA members is summarized below:

Battery Category	CBA Recovery (kg)
Starting Lighting Ignition (SLI)	8,030,000
Motive	367,000
Stationary	0
	8,400,000

In total, just over 8,400,000kg of LABs were recovered by CBA members in 2014.

LABs recovered in Manitoba are recycled at one of 5 smelters located in Canada or the USA.

- Teck Cominco in Trail, BC;
- Tonolli Canada in Mississauga, Ontario
- Exide's smelters in Indiana and Missouri;
- Gopher Corporation in Minnesota.

While the majority of LABs sold in Manitoba are recovered by CBA members, the CBA is working with the different smelters and private non-ferrous recyclers to determine the extent of "private" recycling of LABs in Manitoba.

5.1.3 Recovery Rate

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

$$\text{Recovery Rate} = \frac{\text{Weight of LABs Transported for Recycling}}{\text{Weight of Waste LABs shipped to Smelters}}$$

Battery Category	CBA Recovery Rate (%)
Starting Lighting Ignition (SLI)	107%
Motive	57%
Stationary	0%
	97.7%

The Recovery Rate for SLI LABs exceeds 100% in most years due to the high demand for LABs and the drifting of LABs from eastern Saskatchewan and western Ontario.

The Recovery Rates for the commercial Motive and Stationary batteries is lower because of the competition from private non-ferrous recyclers. The overall Product Recovery Rate for Motive and

Stationary LABs is approaching 100% if the CBA can obtain the recovery data from the “private” recyclers.

No Recovery Rate is set for CBA members because of the significant volume of LABs recovered by private recyclers and the proportion of batteries recovered by the private recyclers varies depending on commodity value of lead on the London Metal Exchange (LME).

When the LME commodity value for lead increases, the proportion of LAB recovery by private recyclers will increase and when the LME price of lead decreases the proportion of LAB recovery by CBA members will increase because the core value for batteries provides a base value for LABs.

The overall Performance Target for the Recovery Rate for LABs from CBA members and Private Recyclers will be average 100% in Manitoba recognizing that there will be annual fluctuations due to market conditions.

5.2 Awareness

5.2.1 Awareness

For LABs, the focus of awareness is with the commercial mechanical repair sector. For this sector there is a high awareness that the LABs have a value at end-of-life and that is what drives the high recovery rates for LABs.

For the awareness of the general public, the majority of Canadians have their batteries replaced at a licensed vehicle repair facility by a licensed technician. This observation is corroborated by the fact that the Green Manitoba’s Information Hotline and website receive virtually no information requests from the public for LABs on an annual basis.

Consequently, awareness of the general public has little to no influence on the overall Recovery Rate for LABs, consequently there is no Performance Target for Consumer Awareness of the LAB Stewardship Program.

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 for consumers and commercial operations.

Consumer Outreach

The CBA has developed a variety of websites to provide information to the consumer regarding the management of the Stewardship Program and the Return Collection Facilities for lead-acid batteries.

The primary interface with the consumer is the two CBA websites that distribute information to the consumer. The websites are: www.recyclemybattery.ca and www.canadianbatteryassociation.ca. In 2014, www.recyclemybattery.ca had just over 1239 visits originating in Manitoba.

In addition, the CBA is required to participate in the Green Manitoba Eco Solution's (GMES) website and in 2014 GMES received 1 phone call, 1 email and 1 other inquiry from the public plus 364 web searches.

The CBA is also partnering with the Manitoba division of the Canadian Automobile Association (CAA). The CAA operates the Great Battery Roundup on Earth Day every year. The CAA has the ability to communicate with 70% of Manitoba households and the CBA will ensure that the LABs collected are paid a premium price because all proceeds collected by the CAA are donated to FortWhyte Alive.

Finally, the CBA and Call2Recycle have formed a communications partnership to provide better communication on recycling of batteries to consumers. Having one communications message for the recycling of batteries will reduce confusion to the consumer and be more efficient operationally.

Commercial Outreach

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

Finally, the CBA has prepared technical and recycling information that can be used by its members to educate their staff and their IC&I customers on the safe collection, storage and transportation of LABs to ensure compliance with the Federal Transportation of Dangerous Goods and the Provincial Hazardous Waste regulations. CBA members promote the Stewardship Program as part of sales and service to their commercial customers.

First Nations Outreach

The CBA will continue its collaborative work with Indigenous and Northern Affairs Canada (INAC) and the other Stewardship Programs to develop and implement recycling strategies for First Nation communities in Manitoba.

The work with INAC and other Stewardship Programs began at with the pilot project on the St Theresa Point First Nations community. In 2015, approximately 600 kg of LABs were recovered from the community and the community was paid over \$500 for the batteries recovered and sold in Winnipeg.

5.3 Accessibility

Accessibility to the recycling infrastructure for consumers and commercial operations is an important factor to ensure a high Recovery Rate.

The CBA program is based on a reverse-distribution network where the distributors of LABs in Manitoba will deliver new LABs to the retail and commercial locations and pick up the used LABs at the same time. Approximately 98% of all automotive LABs sold in Manitoba are collected in this reverse-distribution network and the system works effectively in urban and rural communities where there is a high density of retailers of new LABs.

In addition to the CBA's reverse-distribution network, there are a variety of private non-ferrous recyclers throughout Manitoba that will collect LABs from consumers and commercial operations.

5.3.1 Urban Communities

There are approximately 87 retail facilities for the consumer to drop off LABs in urban locations. Canadian Tire, Kal Tire, Piston Ring and Federated COOP are the primary LAB return collection facilities in Manitoba.

In addition, the following CBA members operate 8 warehouses that will receive used motive and stationary LABs. The warehouses in Winnipeg and Brandon are located on the CBA website www.recyclemybattery.ca/industrial-batteries .

The Performance Target for urban communities is a return collection facility within 30 minutes of a consumer and the return-to-retail system used by the CBA accomplishes this goal in urban communities.

5.3.2 Rural Communities

One of the key challenges of any stewardship program is the delivery of recycling facilities in rural areas. The majority of rural communities will have some sort of retail outlet for new LABs that will serve as a collection point for the CBA's reverse-distribution network.

The Performance Target for rural communities is a return collection facility within 45 minutes of the consumer.

Manitoba has great coverage of rural communities through the Battery Bucks program operated by Federated COOP.

Appendix 2 summarizes the number of return-to-retail locations in the different rural communities in Manitoba. The Appendix identifies rural communities that have a return collection facility for the public.

5.3.3 Remote Communities and Remote Locations

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

Remote communities however usually have some sort of mechanical repair facility to repair vehicles and that facility will collect LABs that are then transported to a city or town and sold.

The most common remote community will be First Nations Community. As such, the CBA has begun work with Indigenous and Northern Development Canada and other Stewardship Programs to ensure that LABs in remote First Nations communities are collected, stored and transported in a safe manner to recycling facilities in urban centres. The pilot project at St Theresa Point was an important starting point to develop a program for remote First Nation Communities in Manitoba.

Remote locations are commercial / industrial LAB applications (e.g., Coast Guard lights, Telco relay stations, mines etc) where there is no surrounding community. The operators of remote commercial operations are responsible to recover and return the LAB to an appropriate point within the CBA's reverse distribution network or the private recycling network.

The CBA also does special projects in remote locations upon request. To date, the CBA has helped recycled LABs recovered

under a marina on the Sunshine Coast and an iron-ore mine on Baffin Island.

5.4 Generation, Storage and Transportation

Because the storage and transportation of new, used and waste LABs are heavily regulated, the CBA has implemented *The Management of Recyclable Lead-Acid Batteries - Collection, Storage & Transportation in Canada in Manitoba*.

Each of the 8 warehouses operated by a CBA member are included in the program. The program is designed to provide education and information to CBA members so that they are in compliance of all Provincial and Federal laws and they have an appropriate Operational, Contingency and Closure Plans to respond appropriately to spills and emergencies.

5.4.1 Generation, Storage and Transportation

New, used and waste LABs are considered a Dangerous Good under the Federal Transportation of Dangerous Goods Regulation and waste LABs are considered a hazardous waste in Manitoba.

To ensure compliance to Federal and Provincial regulations, the warehouses will need to be in compliance with the following requirements:

Generation: All facilities that recover waste LABs in Manitoba will need to have a MB Generator Registration Number.

Storage: All facilities that store over 2,000kg of waste LABs in their warehouse will require a storage permit or compliance to Sections 6 to 10 of the Hazardous Waste Regulation.

Transportation: In Manitoba, all shipments of new, used and waste LABs must conform to the requirements of the Transportation of Dangerous Goods Act. The shipments >205 kg of waste LABs within the Province require a manifest. In addition, the trans-boundary shipments >1,000 kg of waste LABs require a manifest or permit as required by the Federal Canadian Environmental Protection Act (CEPA) and the Export and Import of Hazardous Wastes Regulation under CEPA.

5.4.2 Training and Education of Employees

The collection, storage and transportation LABs pose a variety of environmental, health and safety hazards and employees involved in the of LABs will have a variety of training and education requirements. For example, all drivers of new, used or waste LABs must have the Transportation of Dangerous Goods Certificate.

The training and education is the responsibility of the individual CBA member; however, the CBA will help members prepare training and education materials as part of its Environmental Management Program.

5.4.3 Inspection of Recycling Infrastructure

As part of the CBA's ongoing commitment to the Stewardship of LABS, the CBA will visit each CBA member operating a warehouse in Manitoba and ensure compliance to environmental, health and safety regulations.

5.5 Residuals Management

Lead-acid batteries are one of the most recycled products sold today. Waste LABs are needed by battery manufacturers to ensure they have a supply of lead to manufacturer a new LAB. This section describes the fate of the used LAB once it has been recovered by a CBA member.

5.5.1 Reuse

Some LABs that are no longer wanted by the customer can be refurbished – especially the industrial batteries. Approximately 10 to 15% of LABs can be refurbished and resold as a used battery.

In addition, the CBA has developed a protocol for the refurbishing of the large forklift batteries that have been declared a hazardous waste. The *Protocol for Refurbishing and Delisting "Waste" Lead-Acid Batteries* has been submitted to the BC Ministry of Environment for Approval and a copy of the Protocol is available from the CBA upon request.

5.5.2 Recycling

For used LABs that cannot be refurbished and resold, they are declared a Hazardous Waste at one of the 20 warehouses and the waste LABs are sent to one of five smelters for recycling:

- Tech Cominco in Trail, BC;
- Tonolli Canada in Mississauga, Ontario;
- Exide Technologies' smelters in Indiana and Missouri;
- Gopher Resources smelter in Minnesota;

All recovered LABs collected by CBA members are sent to recycling and smelting facilities that have valid permits and/or approvals. The recycling requirements and emission levels for recyclers and smelters are set by Provincial or State governments as part of their permit/approval processes for the recycling and smelting facilities.

The smelters break the battery into its different components before it is recycled. Battery Council International provides the following information on how a battery is recycled.

Material	Description	Fate
Metals	99% of lead is recovered during the smelting process	Lead ingots are sold as a Commodity on the open market.
	1% of lead from the smelting process is not recovered and is contained in dross – a waste from the smelting process	Private Landfill
	Antimony and Calcium are used to provide strength within the lead plates	Remain as an alloy of the lead after smelting.
Electrolytes	Sulphuric Acid is recovered and sold as an input to another manufacturing process.	Recycled and sold as a commodity.

Plastics	<p>The Polypropylene Case that provides structure to most batteries.</p> <p>Stationary batteries have a clear casing made of Acrylic.</p> <p>Within each battery, Plastic Separators are used to Isolate the Positive and Negative plates in a cell.</p>	<p>About 70% of the plastic is recycled and used to make new battery casings. Acrylic casings are not recyclable and are burned for energy recovery.</p> <p>The Plastic Separators are burned at the smelters for energy recovery and creating an oxygen free environment during the smelting process.</p>
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5.5.3 Landfill

The objective of the CBA’s Stewardship Program is to divert 100% of the LABs from landfills. To validate this objective, the CBA lead the development of the Waste Characterization Tool to determine the quantity of Stewarded Products (including LABs) in landfills.

In 2014 and 2015, the Stewardship Agencies of BC (SABC) worked with the Sunshine Coast Regional District (SCRD) and Metro Vancouver to conduct two landfill waste characterization studies. Both studies focused on the occurrence of LABs and other stewarded products in the Municipal and IC&I waste streams.

The study in Gibsons and Sechelt focused on the household waste stream and no LABs were recovered in that study. The study in with Metro Vancouver was more comprehensive and focused on the Municipal and IC&I waste streams. Like the household study on the Sunshine Coast, no LABs were recovered in the household waste stream in Metro Vancouver; however, a single LAB weighing 6kg was recovered in the IC&I Metro Vancouver waste stream.

The recovered LAB from the IC&I stream was a Sealed LAB that would have been used to provide ignition or back up power to a product. The battery would have been imbedded in a product that was manufactured in Asia and sold into BC. The battery was not part of the CBA’s Stewardship Program and was not sold in compliance with the Recycling Regulation.

The results of the Metro Vancouver study indicate that small sealed LABs may be present in the IC&I waste stream and that LABs that were purchased outside of the CBA's Stewardship Program will be more likely to be present in the IC&I waste stream because these products do not have a reverse-logistics recycling program operated by CBA members.

6 Program Management

6.1 Program Efficiency

In addition to the CBA's the reverse distribution recycling system established by its members to recover LABs in urban and rural communities, the CBA has partnered with other Stewardship Agencies to improve operational and program efficiency.

There are three notable partnerships that have helped the CBA reduce costs and increase efficiency:

6.1.1 Manitoba Stewardship Programs

The CBA is an active collaborator with other Stewardship Programs in Manitoba on a variety of initiatives for remote First Nation Communities. The pilot project on St Theresa Point was an important project to demonstrate how stewardship programs need to work together to remove stewarded products from a remote First Nation community. The CBA will continue to work with Indigenous and Northern Affairs Canada to expand the programs for First Nation communities.

6.1.2 Call2Recycle

Call2Recycle and the Canadian Battery Association both have National Stewardship Programs for batteries. The CBA focuses on lead-acid batteries and Call2Recycle focuses on single use and small rechargeable batteries.

In the fall of 2015, Call2Recycle and the CBA entered into a Memorandum of Understanding to focus on areas of common interest. The MoU focuses on three areas:

- 1) Common messaging to the consumer.
- 2) Reverse Logistics Recycling Infrastructure.
- 3) Leverage Program Expertise.

See Section 7.1 for more details how the MoU will be implemented out.

6.1.3 Canadian Automobile Association - Manitoba

In 2016, the CBA will work with CAA Manitoba to promote and expand their Great Battery Roundup event held every year on Earth Day. The event will raise funds for FortWhyte Alive.

6.2 Quality of Service

To track customer satisfaction, the CBA has integrated into the consumer awareness program an estimate of community and partner satisfaction, number and nature of complaints, number and nature of service disruptions.

To date, there have not been any complaints about the CBA's Stewardship Program.

The Quality of Service results in the Consumer Awareness studies will be reported in the CBA's Annual Report to the Ministry of Environment.

6.3 Management Performance

To ensure the CBA is accountable to Regulators, members and stakeholders, the CBA will be subject to a variety of audits and reports.

6.3.1 Financial Audit

The CBA undergoes an annual Financial Audit by James A. Boyko. Mr Boyko is a Chartered Accountant in Toronto and has prepared the CBA's Auditor's Report since FY 2011.

The CBA's Audit Report is presented to CBA Members at their Annual General Meeting and the Audit Report is available to regulatory agencies upon request.

6.3.2 Non-Financial Audit

The CBA has undergone a non-financial audit by Green Horwood & Co LLP in Victoria since 2013.

The purpose of the non-financial audit is to verify the methodology of the CBA calculation of sales and recovery data that is included in the CBA's Annual Stewardship Program Report. The key elements include auditing of:

- Number of Return-Collection Facilities operated by the CBA;
- Recovery Rates by CBA members;
- Fate of recovered LABs.

The CBA's Non-Financial Audits are posted on the CBA's website www.canadianbatteryassociation.ca

6.3.3 Reporting

The CBA will publish on its website:

- The Stewardship Plan for Manitoba;
- Annual reports to the Ministry of Environment;
- Results of its stakeholder consultations;
- Priorities, goals and targets set by the Board of Directors;
- News and events.

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 CBA's Approved Performance Targets.

7 Priorities for Next 5 Years

The CBA has accomplished several goals in the first five years of its Stewardship Program in Manitoba. Notably, the CBA has:

- established a verifiable reporting system that reports sales, recovery and end-fate of the LABs collected in Manitoba;
- established a comprehensive network of Return Collection Facilities that provide easy access for consumers in urban and rural communities;
- reduced the level of retail non-compliance to levels estimated to be below 5% of LAB sales;
- brought the battery industry together to establish a National Stewardship Program that represents the majority of LAB manufacturers and distributors and a significant proportion of battery recyclers and smelters;
- become an active participant with the Stewardship Agencies in Manitoba.

The CBA plans to build on the progress in the first 5 years and the CBA's Board of Directors have set a number of Program priorities for the next five years.

7.1 Partnership with Call2Recycle

Call2Recycle and the Canadian Battery Association both have National Stewardship Programs for batteries. The CBA focuses on lead-acid batteries and Call2Recycle focuses on single use and small rechargeable batteries.

In the fall of 2015, Call2Recycle and the CBA entered into a Memorandum of Understanding to focus on areas of common interest. The MoU focuses on three areas:

- 1) Common messaging to the consumer. The average consumer wants a common communication message on how to recycle batteries. While different batteries require different collection systems and recycling solutions, the consumer needs a single and focused message that batteries are easy to be recycled and that batteries should not be landfilled.
- 2) Reverse-Distribution Recycling Infrastructure. The members of the CBA have a coast-to-coast-to-coast distribution network for new, used and waste LABs. While there are some Transportation of Dangerous Goods issues to be resolved, there is the potential for both programs to share the transportation costs from the distribution warehouses to the smelters.
- 3) Leverage Program Expertise. Both Stewardship Programs have expertise that can be shared. Call2Recycle has expertise in consumer outreach and the CBA members have expertise in IC&I outreach. This expertise combined with a common communication message will be beneficial to both the consumer and commercial customers.

7.2 Rural Communities

The CBA has completed an analysis of the gaps in the Return Collection Facilities for rural and remote communities in Manitoba – see Appendix 2.

The goal of the CBA is to have some sort of LAB collection option in the majority of rural communities by the end of 2017.

In addition, the merger of the Interstate Battery Systems recycling network and the CBA's recycling network will help fill gaps in rural recycling network for LABs in rural communities.

7.3 Remote and First Nation Communities

The CBA is working with Indigenous and Northern Development Canada and other Stewardship Agencies to include LABs in the recycling strategies for rural and remote First Nation communities in Manitoba.

In 2015, the CBA contributed to the development of *B.C. First Nations Guide to Recycling Vehicles and Other Stewarded Products*. The Guidebook will assist First Nation communities develop recycling strategies for their communities and the guidebook can be expanded to Manitoba.

7.4 Health and Safety

In 2016, WorksSafeBC is setting tighter regulations on lead exposure for workers that may be exposed to lead dust. The CBA will prepare programs and materials for CBA members to comply with the new WorksSafeBC regulations and these programs will be expanded to Manitoba when completed.

This initiative will be integrated into the CBA's Environmental Management Program for CBA members.

7.5 Improved Data Verification of Private Recycling Network

Currently, the private recycling network accounts for approximately 15% of all LABs recovered in Manitoba and the smelters process virtually 100% of all LABs recovered. But because the recyclers and smelters are not considered "Brandowners" under the Recycling Regulation, they are not obligated to report their recovery data and information to the CBA.

The goal of the CBA is to develop an overall Recovery Rate for LABs and the CBA has had some success working with the non-ferrous recyclers and smelters of LABs to share their recovery data in a

confidential format so that an overall Product Recovery Rate can be determined and verified.

The CBA will continue to work with recyclers and smelters to develop a better understanding of the fate of all LABs collected in Manitoba and generate a robust Product Recovery Rate.

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Appendix 1: Consultation Summary for Canadian Battery Association

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Appendix 2: Manitoba Community Analysis for CBA Return Collection Facilities

Altona	Town	4,088	1
Arborg	Town	1,152	2
Baldur	Village		1
Beausejour	Town	3,126	1
Berens River	Indian Reserve	1,028	
Birtle	Town	690	1
Blumenort (North)	Population Centre	1,133	
Boissevain	Town	1,572	1
Brandon	City	46,061	3
Carberry	Town	1,669	
Carman	Town	3,027	1
Chemawawin	Indian Reserve	1,134	
Churchill	Town	850	
Cross Lake	Indian Reserve	1,751	
Cross Lake	Indian Reserve	1,937	
Cypress River	Community		1
Dauphin	City	8,251	3
Deloraine	Community	977	1
Domain	Hamlet		1
Ebb and Flow	Indian Reserve	1,297	
Elkhorn	Village		1
Elm Creek	Community		1
Ericksdale	Rural Municipality		1
Erickson	Town		1
Fisher Branch	Rural Municipality		1
Fisher River	Indian Reserve	1,168	
Flin Flon	City	5,363	2
Fort Alexander	Indian Reserve	2,099	
Garden Hill First Nation	Indian Reserve	2,776	
Gilbert Plains	Town		1
Gillam	Town	1,317	
Gimli	Population Centre	1,916	1
Gladstone	Town		1
Glenboro	Village		1
God's Lake	Indian Reserve	1,341	
Grunthal	Population Centre	1,479	
Ile-des-Chenes	Unincorporated Urban Centre	1,253	
Killarney	Population Centre	2,197	1
La Broquerie	Local Urban District	1,073	1
La Salle	Unincorporated Urban Centre	1,957	
Lac du Bonnet	Town	1,328	1
Landmark	Local Urban District	1,326	
Long Plain	Indian Reserve	1,078	
Lorette	Population Centre	2,361	

Lowe Farm	Community		1
MacGregor	Community		1
Manitou	Town		1
Marguette	Community		1
Mariapolis	Community		1
Melita	Town	1,069	
Miniota	Community		1
Minnedosa	Town	2,587	1
Minto	Community		1
Mitchell	Population Centre	1,136	
Moose Lake	Population Centre	1,137	
Moosehorn	Community		1
Morden	City	7,812	
Morris	Town	1,797	
Neepawa	Town	3,629	1
Nelson House	Indian Reserve	2,399	
Niverville	Town	3,540	
Norway House	Indian Reserve	4,758	
Notre Dame de Lourdes	Community		1
Oakbank	Population Centre	2,944	
Opaskwayak Cree Nation	Indian Reserve	2,319	
Oxford House	Indian Reserve	1,864	
Peguis	Indian Reserve	2,609	
Pierson	Community		1
Pilot Mound	Community		1
Pinawa	Local Government District	1,444	
Portage la Prairie	City	12,996	3
Powerview-Pine Falls	Town	1,314	1
Pukatawagan	Indian Reserve	1,826	
Rivers	Town	1,189	
Riverton	Village		1
Roblin	Town	1,774	1
Rosburn	Town	550	1
Russell	Town	1,669	1
Sandy Bay	Indian Reserve	2,509	
Selkirk	City	9,834	1
Shilo CFB-BFC	Canadian Forces Base	1,421	
Sioux Valley Dakota Nation	Indian Reserve	1,147	
Souris	Town	1,837	
Split Lake	Indian Reserve	2,107	
St. Adolphe	Population Centre	1,036	
St. Claude	Village		1
St. Jean Baptise	Community		1
St. Joseph			1
St. Malo	Local Urban District	1,148	
St. Theresa Point	Indian Reserve	2,871	
Ste. Anne	Town	1,626	
Ste. Rose du Lac	Town	1,023	1

Steinbach	City	13,524	3
Stonewall	Town	4,536	
Stony Mountain	Population Centre	1,696	
St-Pierre-Jolys	Town	1,099	
Strathclair	Rural Municipality		1
Swan River	Town	3,907	2
Teulon	Town	1,124	1
The Pas	Town	5,513	1
Thompson	City	12,829	2
Tyndall-Garson	Local Urban District	1,313	
Virden	Town	3,114	1
Wasagamack	Indian Reserve	1,411	
Wawanesa	Village		1
Waywayseecappo	Indian Reserve	1,219	
Winkler	City	10,670	1
Winnipeg	City	663,617	17
Winnipeg Beach	Town	1,011	
		Totals	87