

2020 Annual Stewardship Report -British Columbia-

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Executive Summary

The manufacturers, distributors and recyclers of lead batteries in British Columbia have had another successful year recovering just over 103.3% of the lead batteries sold in the province (Table 1). In total, there were over 23.2Mkg of consumer and commercial lead batteries recovered and recycled at regulated smelters in Canada, USA and South Korea. Approximately 99% of the lead is recovered in the smelting process and sold for a variety of purposes including the manufacture of new lead batteries. The sulphuric acid and plastic battery casings are recovered by the battery breaker and the acid and plastic casings are recycled into new batteries or manufactured into other products. The plastic separators within the battery cells are also recovered and used for energy recovery by the smelters.

A complete summary of the Targets and Key Performance Indicators for the lead battery program are summarized in Table 1. Some of the highlights of the program initiatives that support the recovery of lead batteries are summarized below.

In 2020, there were three waste characterization studies that analyzed 176 samples of residential, IC&I and C&D waste. No lead batteries were found in any of the 2020 waste samples. To date, the CBA has completed 567 samples of landfill waste and calculated a lead battery landfill diversion rate of 99.988% (Table 3). The high landfill diversion rate corroborates the high 2020 recovery rate for lead batteries.

With respect to accessibility, there was an increase of Return Collection Facilities (RCF) for a total of 255. The summary of RCF statistics for communities of different sizes is summarized below and Table 5 lists the RCFs by community. The RCF provides consumer accessibility to 99.52% of BC's population that lives one of the 174 communities listed in Table 5.

BC Communities Populations	Population	RCFs	RCF/Pop	Population Served	Average Distance To RCF (km)	Accessibility Target (km)	Pop. Served (%)
>30,000	3,396,554	111	28,785	3,396,554	2.0	5	100
<30,000 >4,000	735,644	93	7,652	735,644	2.3	10	100
<4,000 >1,000	113,705	37	2,317	99,528	17.2	15	87.5
<1,000	20,155	14	700	14,643	24.6	30	72.7
	4,266,058	255		4,245,584			99.5

Finally, the Canadian Battery Association will continue to work with Local Government and First Nation Communities to identify rural and remote communities that require additional accessibility.

Table 1: Summary of Targets and Performance Indicators for Lead Batteries

Table 1: Summary of Targets and Performance Indicators for Lead Batteries								
	2020 Lead Battery Sales and Recovery							
Program Metric	Target / Report	2020 Results	Follow-Up Action					
Lead Battery* Sales	Report	Sales in BC: 22,473,064kg Next Non-Financial Audit in 2022	None					
Lead Battery Recycled	Report	Recovered in BC: 23,214,499kg Next Non-Financial Audit in 2022	None					
Lead Battery Recovery Rate	Target >90%	Recovery Rate: 103.3% Target Met Next Non-Financial Audit in 2022	Achieved Circular Economy for Lead Batteries					
Recovery by Regional District	Report	See Table 2	Continue to work with Regional Districts to identify priority communities that would benefit from an RCF					
Sales per Capita	Report	4.85 kg/person/yr¹	Continue to Monitor and compare to other Provinces					
Recovery per Capita	Report	4.85 kg/person/yr ¹	Continue to monitor and compare to other Provinces					
Diversion Rate	Report	100% - Residential 99.96% - IC&I 99.988% - Overall See Table 3	Continue to conduct Waste Characterization Studies to corroborate recovery rates and identify priority sectors.					
	20	020 Lead Battery Consumer Av	vareness					
Per Cent Awareness based on Standardized Surveys	Report	See Table 4	Continue to monitor consumer awareness in 2022 using MoE approved standardized surveys					

	2020 Lead Battery Accessibility						
Total Number of RCFs in the Province	Report	Total Number of RCFs: 255	Continue to expand the number of RCFs especially and work with Provincial Government to harmonize the Hazardous Waste Regulation with the Recycling Regulation				
Total Number of RCFs by Regional District	Report	See Table 5 for list of RCFs	Continue to work with Regional Districts & FNs to identify priority communities that would benefit from an RCF				
Accessibility: Communities >30,000 Population	Target: <5km	Communities >30,000 Population 28 Communities 2.0km - average km to RCF 100% - Pop. served to target Target Met See Table 5 for details					
Accessibility: Communities <30,000 & >4,000 Population	Target: <10km	Communities <30,000 & >4,000 59 Communities 2.3km - Average km to RCF 100% - Pop. served to target Target Met See Table 5 for details					
Accessibility: Communities <4,000 Population	Report	Communities <4000 & >1,000 50 Communities 17.2km - Average km to RCF 87.5% - Pop. served to 15km Communities <1,000 37 Communities 24.6km - Average km to RCF 72.7% - Pop. served to 30km See Table 5 for details	Continue to expand the number of RCFs especially in small communities, remote locations and sensitive areas and work with Provincial Government to harmonize the Hazardous Waste Regulation with the Recycling Regulation				
Percent of Population Served using CBA Accessibility Goals	Report	Communities >30,000: 100% Communities > 4,000: 100% Communities >1,000: 87.5% Communities <1,000: 72.7% Population Served: 99.5%					

	Other 2020 Lead Battery Targets & KPIs						
Use of Permitted Recycling Facilities	Target: 100%	100% waste lead batteries sent to Permitted Recycling Facilities. Target Met	Monitor and track progress year over year				
Adherence to International Hazardous Waste Commitments	Target: 100%	100% Compliance to International Requirements. Target Met	Continue to Monitor and work with Transport Canada and Environment Canada and develop education and training programs for Transportation of Dangerous Goods and Hazardous Wastes				
Value per Lead Batteries in BC	Report	Queen Charlotte City: \$5.00 Port Hardy: \$5.00 Fort Nelson: \$5.00 Langley: \$12.00	Monitor Prices for Auto Batteries in Small Communities				
		Lead: About 99% Recovery in Smelting Process	The main use of recovered lead is the remanufacturing of new batteries				
Pollution Prevention Hierarchy	Report	Sulphuric Acid: Recovered by the Battery Breaker Process. Reused in various production processes	Recovered battery acid used in fertilizer production, battery manufacturing or galvanizing plants				
		Plastic Battery Casings: Recovered by Battery Breaker Process	Primarily pelletized and reused to make new battery casings				
		Plastic Cell Separators: Considered not recyclable	Used for energy recovery in the smelting process				

^{*} Consumer lead batteries includes automotive, small-sealed lead, AGM batterie and powersport batteries and Commercial lead batteries includes: golf cart, forklift, telco, energy storage and UPS batteries.

¹Population estimate from StatsCan https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1710000901

Table 2: 2020 Recovery of Lead Batteries by Regional District

Alberni-Clayoquot	30,456	147,712
Bulkley-Nechako	45,536	220,850
Capital	392,046	1,901,423
Cariboo	63,364	307,315
Central Coast	3,215	15,593
Central Kootenay	60,803	294,895
Central Okanagan	199,103	965,650
Columbia-Shuswap	53,028	257,186
Comox Valley	66,166	320,905
Cowichan Valley RD	85,459	414,476
East Kootenay	58,154	282,047
Fraser Valley	303,701	1,472,950
Fraser-Fort George	90,121	437,087
Metro Vancouver	2,592,227	12,572,301
Kitimat-Stikine	36,270	175,910
Kootenay-Boundary	29,205	141,644
Mount Waddington	11,127	53,966
Nanaimo	160,942	780,569
North Coast	16,842	81,684
North Okanagan	86,451	419,287
Northern Rockies	5,879	28,513
Okanagan-Similkameen	87,161	422,731
Peace River	62,231	301,820
Powell River	20,014	97,068
Squamish-Lillooet	43,274	209,879
Strathcona	46,572	225,874
Sunshine Coast	29,390	142,542
Thompson-Nicola	138,423	671,352

Table 3: Diversion Rate of Lead Batteries Based on Landfill Studies

	Recovered Lead Batteries		Samples	Sample Volume	Diversion Rate
	(#)	(kg)	(#)	(kg)	(%)
Residential (SF/MF)	0	0	251	24848	100.00%
Dropoff (DO)	0	0	106	9649	100.00%
Transfer Station (TS)	1*	0	33	3277	100.00%
Construction/Demo (C&D)	0	0	3	9750	100.00%
IC&I (ICI/ICI-WC)	2**	7.67	174	17436	99.96%
Overall	3	7.67	567	64960	99.988%

^{* 0.75}kg SSLA from a heart defibrillator at a Transfer Station – assumed to be IC&I.

^{**} SSLA=Small Sealed Lead Acid Battery

Table 4: Lead Battery Consumer Awareness Studies

Question Category	Subcategory	2013	2016	2018	2020
Currently have unwanted:	Lead Batteries	6%	8%	9%	6%
Do-it-Yourself (DIY):	Change Lead Batteries	45%	40%	38%	19%
Top-of-Mind Recyclables/Returnable/Safe Disposal	Lead Batteries				>2%
	Among all Respondents	76%	78%	77%	74%
Knowledge Recyclable/Safe Return of unwanted	Among those that currently have a Lead Battery				88%*
lead batteries:	Among DIYers that change Lead Batteries				90%
Variable of object to the converted land	Among those that usually have a Lead Battery	44%	50%	51%	64%
Knowledge of where to take unwanted lead	Among those that currently have a Lead Battery	54%	72%	69%	91%*
batteries:	Among DIYers that change Lead Batteries	58%	68%	68%	85%
					81% Go online
					8% Ask family/friend
	Among all Respondents				4% Throw out
					4% Not sure
Γ					73% Go online
.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Among those who currently have unwanted lead				10% ask family/friend
Likely to do if Recycle/Safe disposal unknown:	batteries				15% Throw out
					1% Not sure.
Γ					80% Go online
					12% Ask family/friend
	Among DIYers that change lead batteries				6% Throw out
					1% Not sure
-					61% Recycle/Return
	Among those who usually have unwanted lead				6% Throw out
	batteries				28% Someone else
					8% Not sure
F					73% Recycle/Return
	Among those who currently have unwanted lead				15% Throw out
Usual behaviour to get rid of unwanted products:	batteries				15% Someone else
	ľ				1% Not Sure
F					84% Go online
	ŀ				5% Throw out
	Among DIYers that change lead batteries				7% Someone else
					2% Not Sure
	Will when enough to make trip worthwhile				
F	Don't know where to take it				
ŀ	Can't be bothered				
Reasons for not recycling/returning/safe disposing	Not convenient				11%
of lead batteries – among those who have	Not sure				
unwanted lead batteries currently or those that	Other				
have thrown them away in the past	Didn't know it could be recycled				
<u> </u>	Can't get to place				
F	Plan to re-use, fix, sell				<u> </u>
	Among All Aware	75%	67%	72%	
Program Convenience - DIY Products	Among Users Aware				
Frogram convenience - Dir Froducts	Among DYI Aware	84% Go oi 5% Throw 7% Someor 2% Not S 32% 26% 14%	-		
	Among All Aware	84%	81%	84%	89%
Trust in Brogram	Among All Aware Among Users Aware	85%	88%	90%	92%
Trust in Program					
	Among DYI Aware	82%	87%	86%	93%

Table 5: Summary of Lead Battery Return Collection Facilities by Community

Community	Community Population	# RCFs	Pop/RCF Ratio	Population Serviced to CBA Target	Closest RCF (km)	Target
Abbotsford	141,485	7	20,212	141,485	0.3	5km
Burnaby	238,728	7	34,104	238,728	2.8	5km
Campbell River	33,696	4	8,424	33,696	0.8	5km
Chilliwack	90,390	3	30,130	90,390	2.0	5km
Coquitlam	147,619	4	36,905	147,619	1.8	5km
Delta	101,997	3	33,999	101,997	4.1	5km
Kamloops	91,402	8	11,425	91,402	0.9	5km
Kelowna	125,737	9	13,971	125,737	3.0	5km
Langford	39,936	3	13,312	39,936	0.8	5km
Maple Ridge	85,653	2	42,827	85,653	3.4	5km
Mission	39,873	1	39,873	39,873	0.5	5km
Nanaimo	93,351	6	15,559	93,351	2.2	5km
New Westminster	73,771	1	20.220	73,771	2.3 4.3	5km 5km
North Cowichan North Vancouver, City of	30,229 52,794	3	30,229 17,598	30,229 52,794	3.0	5km
North Van, District Mun.	86,602		17,398	86,602	3.5	5km
Penticton	33,016	2	16,508	33,016	1.2	5km
Port Coquitlam	61,187	1	61,187	61,187	1.2	5km
Port Moody	34,193		01,107	34,193	3.7	5km
Prince George	70,912	6	11,819	70,912	1.1	5km
Richmond	213,392	7	30,485	213,392	0.3	5km
Saanich	110,889	2	55,445	110,889	2.1	5km
Surrey	543,940	13	41,842	543,940	3.6	5km
Vancouver	653,046	8	81,631	653,046	2.0	5km
Vernon	41,671	4	10,418	41,671	1.4	5km
Victoria	85,192	4	21,298	85,192	0.4	5km
West Kelowna	34,930	3	11,643	34,930	0.2	5km
West Vancouver	40,923			40,923	3.7	5km
Summary	3,396,554	111	28,785	3,396,554	2.0	100%
Community	Community Population	# RCFs	Pop/RCF Ratio	Population Serviced to CBA Target	Closest RCF (km)	Target
Armstrong	4,842	4	1,211	4,842	0.6	10km
Castlegar	7,934	2	3,967	7,934	3.2	10km
Central Saanich	15,895	1	15,895	15,895	1.2	10km
Coldstream	10,938	2	5,469	10,938	3.6	10km
Colwood	17,583	2	8,792	17,583	2.0	10km
Comox	14,400			14,400	3.9	10km
Courtenay	26,056	2	13,028	26,056	0.7	10km
Cranbrook	20,452	2	10,226	20,452	1.5	10km
Creston	4,661	1	4,661	4,661	0.8	10km
Dawson Creek	12,115	2	6,058	12,115	1.2	10km
Duncan	4,768	4	1,192	4,768	0.9	10km
Esquimalt	16,830	2	8,415	16,830	0.7	10km

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Fernie	4,333	1	4,333	4,333	1.3	10km
Fort St. John	22,618	3	7,539	22,618	0.6	10km
Ganges	6,000	2	3,000	6,000	0.2	10km
Gibsons	4,550	1	4,550	4,550	3.2	10km
Grand Forks	4,029	1	4,029	4,029	4.5	10km
Норе	5,796	1	5,796	5,796	0.9	10km
Kent/Agassi	6,220	1	6,220	6,220	0.3	10km
Kimberley	7,050	1	7,050	7,050	5.1	10km
Kimberly	4,513	1	4,513	4,513	5.1	10km
Kitimat	7,664	1	7,664	7,664	4.0	10km
Ladysmith	8,342	2	4,171	8,342	1.1	10km
Lake Country	14,183	1	14,183	14,183	5.1	10km
Langley	27,283	7	3,898	27,283	0.6	10km
Langley, Township of	122,415	3	40,805	122,415	5.6	10km
Merritt	7,607	2	3,804	7,607	0.9	10km
Metchosin	4,792			4,792	5.7	10km
Nelson	11,249	1	11,249	11,249	0.5	10km
North Saanich	11,143	1	11,143	11,143	4.0	10km
Oak Bay	17,368			17,368	2.6	10km
Oliver	4,568	1	4,568	4,568	1.3	10km
Osoyoos	4,800	1	4,800	4,800	3.9	10km
Parksville	12,883	1	12,883	12,883	2.7	10km
Peachland	4,959	1	4,959	4,959	4.2	10km
Pitt Meadows	19,090			19,090	1.7	10km
Port Alberni	16,236	2	8,118	16,236	0.5	10km
Powell River	13,729	3	4,576	13,729	1.0	10km
Prince Rupert	11,261	1	11,261	11,261	2.4	10km
Qualicum Beach	8,687			8,687	7.3	10km
Quesnel	9,026	2	4,513	9,026	0.7	10km
Revelstoke	7,316	1	7,316	7,316	4.0	10km
Saanichton		1			1.0	10km
Salmon Arm	18,128	2	9,064	18,128	1.9	10km
Sechelt	9,490	2	4,745	9,490	0.3	10km
Sidney	11,129	1	11,129	11,129	1.4	10km
Smithers	5,462	2	2,731	5,462	0.0	10km
Sooke	11,868	2	5,934	11,868	3.4	10km
Spallumcheen	5,222			5,222	4.7	10km
Sparwood	4,078	1	4,078	4,078	2.0	10km
Squamish	19,067	2	9,534	19,067	1.8	10km
Summerland	11,375	1	11,375	11,375	2.6	10km
Terrace	10,659	4	2,665	10,659	0.7	10km
Trail	7,376	2	3,688	7,376	6.2	10km
Vanderhoof	4,526	1	4,526	4,526	0.4	10km
View Royal	10,137	1	10,137	10,137	0.7	10km
Whistler	10,627	1	10,627	10,627	1.8	10km
White Rock	19,288	1	19,288	19,288	2.3	10km
Williams Lake	11,028	2	5,514	11,028	2.2	10km
Summary	735,644	93	7,709	735,644	2.3	100%
	,		.,. 55	,		

Community	Community Population	# RCFs	Pop/RCF Ratio	Population Serviced to	Closest RCF	Target
	Population	KCFS	Katio	CBA Target	(km)	
100 Mile House	1,860	1	1,860	1,860	0.2	15km
Anmore	2,322			2,322	4.9	15km
Ashcroft	1,557			1,557	9.8	15km
Barriere	1,751	1	1,751	1,751	0.2	15km
Bella Coola	1,900				451	15km
Bowen Island	3,580	1	3,580	3,580	1.5	15km
Burns Lake	1,803	2	902	1,803	0.7	15km
Chase	2,365	1	2,365	2,365	0.4	15km
Chetwynd	2,877	1	2,877	2,877	0.3	15km
Clearwater	2,368	1	2,368	2,368	0.5	15km
Cobble Hill	1,775	1	1,775	1,775	0.7	15km
Cumberland	3,562	1	3,562	3,562	1.5	15km
Elkford	2,630				34.2	15km
Enderby	2,816	2	1,408	2,816	0.3	15km
Fort Nelson	3,902	1	3,902	3,902	1.4	15km
Fort St. James	1,755	1	1,755	1,755	0.2	15km
Fraser Lake	1,178	1	1,178	1,178	0.6	15km
Fruitvale	2,098			2,098	6.4	15km
Gold River	1,254	1	1,254	1,254	0.7	15km
Golden	3,862	2	1,931	3,862	1.6	15km
Harrison Hot Springs	1,407			1,407	7.3	15km
Langford (Highlands)	2,394	1	2,394	2,394	6.4	15km
Houston	3,155	1	3,155	3,155	0.6	15km
Hudson's Hope	1,022				41.2	15km
Invermere	2,941	1	2,941	2,941	1.8	15km
Kaslo	1,000				54.7	15km
Keremeos	1,348				20.1	15km
Lake Cowichan	3,169	1	3,169	3,169	2.7	15km
Lantzville	3,408			3,408	2.7	15km
Lillooet	2,403	1	2,403	2,403	1.8	15km
Lions Bay	1,325				17.2	15km
Logan Lake	2,099				35.8	15km
Lumby	1,722	3	574	1,722	0.4	15km
Mackenzie	3,492	1	3,492	3,492	0.5	15km
Montrose	1,020			1,020	2.8	15km
Nakusp	1,571	1	1,571	1,571	0.3	15km
Pemberton	2,511	1	2,511	2,511	0.3	15km
Pender Harbour	3,000	1	3,000	3,000	4.4	15km
Port Hardy	3,731	1	3,731	3,731	4.1	15km
Port McNeill	2,500	1	2,500	2,500	0.3	15km
Princeton	2,782	1	2,782	2,782	0.2	15km
Rossland	3,639			3,639	12.6	15km
Salmo	1,165	1	1,165	1,165	5.6	15km
Sicamous	2,468	1	2,468	2,468	3.0	15km
Taylor	1,544			1,544	13.9	15km
Telkwa	1,328			1,328	12.4	15km

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Tofino	2,190	1	2,190	2,190	5.2	15km
Tumbler Ridge	2,853				75.0	15km
Ucluelet	1,634	1	1,634	1,634	1.1	15km
Warfield	1,669			1,669	9.2	15km
Summary	113,705	37	2,317	99,528	17.2	87.5%
Community	Community Population	# RCFs	Pop/RCF Ratio	Population Serviced to CBA Target	Closest RCF (km)	Target
Alert Bay	435			435	11.4	30km
Belcarra	618			618	7.7	30km
Boston Bar	800	1	800	800	3.7	30km
Cache Creek	972	1	972	972	0.2	30km
Canal Flats	744				42.6	30km
Cherryville	930	1	930	930	1.9	30km
Clinton	629	1	629	629	1.5	30km
Elko	163	1	163	163	0.4	30km
Falkland	600	1	600	600	1.8	30km
Granisle	307				61.4	30km
Greenwood	688			688	12.0	30km
Hazelton	257		400	257	6.1	30km
Kitwanga	420	1	420	420	5.4	30km
Lytton	240				38.9	30km
Mabel Lake	050	1			10.9	30km
Masset	859				109.0	30km
McBride	576	1	667	667	80.1	30km
Midway	667	1	667	667	1.8	30km
New Denver	519	1	642	642	41.5	30km
New Hazelton	642	1	642	642	0.9	30km
Port Class and	785				29.4	30km
Port Clements	366			47.4	68.5	30km
Port Edward	474			474	13.4 6.4	30km
Pouce Coupe	689			689	12.5	30km
Radium Hot Springs	764			764	63.0	30km
Sechelt (Ind Gov.)	311 821			021	0.5	30km
Secheit (Ind Gov.) Silverton	831 199			831	45.2	30km 30km
Slocan	309				32.8	30km
Stewart	423	1	423	423	1.0	30km
Sun Peaks	457		723	723	30.5	30km
Tahsis	295				46.5	30km
Valemount	947	1	947	947	0.2	30km
Queen Charlotte	943	1	943	943	0.7	30km
Wells	231		3.3	3.3	60.0	30km
Youbou	966	1	966	966	0.9	30km
Zeballos	99		333		61.3	30km
Summary	20,155	14	700	13,858	24.6	68.8%

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* Establishment of Return Collection Facilities in Sensitive Areas (e.g., Boat Marinas) is on hold until amendments to the Hazardous Waste Regulation (HWR). The amendments to the regulation will allow for the collection of lead batteries at temporary sites and then transported to an established Return Collection Facility in a larger community. Amendments to the HWR maybe completed by the end of 2021.