

ENVIRONMENTAL IMPACT

Detailed report on the reduction in greenhouse gas emissions, energy savings, and CO₂ equivalent reduced from recycling.

End Fate report for aluminum, plastic, glass, polycoat and other materials.

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DEER

5.1 ENVIRONMENTAL REPORT

The Government of British Columbia has adopted public policies intended to promote a low carbon economy. As a stewardship agency operating under a provincial regulation, Encorp compiles applicable data, analyzes and reports on the impacts of its stewardship activities.

In 2017, Encorp recycled 93,828 metric tonnes of used beverage containers. The energy saved through the recycling of these materials has been converted into tonnes of carbon dioxide equivalent (CO₂e) the common measure of greenhouse gases (GHGs), based on the US Environmental Protection Agency's Waste Reduction Model (WARM). The avoided emissions published in this report were calculated using the WARM version 13 [06/14] (Refer to End Fate table on page 21).

In total, Encorp's activities in 2017 contributed to the reduction of about 103.8 thousand tonnes of CO₂ equivalent being released into the atmosphere, compared to 101.9 thousand tonnes in 2016. The increase in reduction is primarily due to the increase in volume of material recycled.

While recycling has an overall net benefit in terms of energy and emissions savings, the recycling process itself requires energy and thus has GHG emissions associated with it. When estimating net savings Encorp calculates the GHG emissions specifically associated with its stewardship activities.

Since Encorp is not a manufacturing company, the majority of our associated GHG emissions come as a result of transporting materials as well as heating and powering our network of facilities.

Therefore, we define Encorp's GHG inventory boundary from the point that empty containers enter into the Encorp system at either a depot or retailer, right through to when the materials are

delivered to the end processors for recycling into new products.

Greenhouse gas emissions (GHGs) are estimated using conversion factors and methodologies developed by the World Resource Institute's Greenhouse Gas Protocol (WRIGGP). The collection, transportation and processing services provided to Encorp are done through third party independent contractors and the emissions produced by those activities are classified as Indirect Scope 3 GHG emissions in accordance with the WRIGGP. As there is limited data available for Scope 3 emissions we accept that our information may be less accurate.

Emission calculations from electricity purchased were based on data gathered from a number of depots and processors in each region of the province. Results were used to estimate the energy use per metric tonne of material collected, then extrapolated to the total weight of used beverage containers collected in the province.

The estimated energy consumption in kWhs was then converted into the carbon dioxide emissions using the calculators offered by the WRIGGP. For estimated emissions inventory refer to the table on page 20.

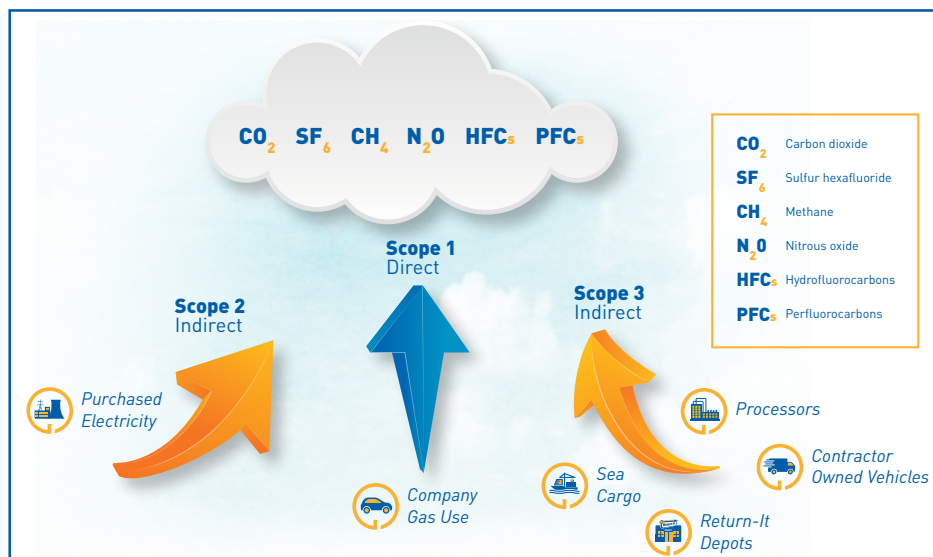
We attribute the reduction in emissions from all sources to changes in the mix of material collected and quantities shipped during the year.

5.1 ENVIRONMENTAL REPORT

EMISSIONS INVENTORY SUMMARY








Type of Emission	2017 (tonnes CO ₂)	2016
<u>Direct emissions</u> are emissions from sources that are owned or controlled by Encorp		
Employee travel – gas use	10	14
<u>Indirect emissions</u> occur as a consequence of Encorp’s activities, but are from sources not owned or controlled by Encorp. Included are emissions from purchased electricity consumed by Encorp’s offices, depots, processors and transporters. ⁱ		
<u>Offices</u> (excluding head office)		
Purchased electricity in leased buildings	4	1
Employee domestic air travel/business ferry travel	17	11
<u>Depots</u> – all purchased electricity/all natural gas consumed in owned or leased buildings		
	232	209
<u>Processors</u> – all purchased electricity/gas consumed in owned or leased buildings		
	46	65
<u>Transportation</u> – depots to processors		
Diesel fuel (trucks)	3,617	3,657
<u>Transportation</u> – processors to end markets		
Diesel fuel (trucks)	2,276	2,335
Sea Cargo (based on metric tonne km)	2,884	3,042
Total Emissions from all sources	9,086	9,334

ⁱ All indirect emissions except for office use were calculated based on the sample data provided by selected depots, processors, and transporters.



5.2 CONTAINER RECYCLING END FATE REPORT

All containers collected by Encorp in 2017 were shipped to recyclers for further processing into new material in accordance with Section 8 of the Recycling Regulation.

Material Type	Fate of Material (2017)	Containers Sold (% of total)	Recovery % (by weight)	Energy savings	Weight diverted from landfill (mt)	Tonnes CO ₂ reduced
Aluminum 	Aluminum cans were sold and shipped to a re-melt facility in the USA and turned back into aluminum sheet stock for new cans.	33.4%	80.4%	93%	5,149.6	52,045
Plastic 	Plastic containers were sold to end markets in British Columbia (B.C.) and shipped to their two separate facilities in B.C. and Alberta to be cleaned and pelletized to become new raw material for manufacturers of various plastic products including new containers, strapping material and fibres.	39.6%	73.5%	86%	10,888.0	12,338
Glass 	Glass containers were processed in British Columbia and shipped to various end markets including a plant that produces fiberglass insulation in Alberta; a facility that produces new glass bottles in Seattle, USA; a facility that manufactures sandblasting materials in Quesnel, B.C.; and municipal sites that use crushed glass as construction aggregates.	17.6%	87.3%	34%	75,200.1	26,169
Polycoat 	Polycoat containers collected in 2017 were sold to end markets in the USA and shipped to manufacturing plants in South Korea and USA for material recovery and production of tissue paper from the recovered fibre.	8.2%	66.7%	53%	1,813.2	12,102
Pouches 	Stand up pouches made of layers of plastic and aluminum foil as well as the laminated plastic bags used inside bag-in-box were stored in Delta, B.C. Samples of this material were sent to a manufacturing company in South Korea for material testing. More recently (2018) Encorp has found an end market for stand up pouches in the USA. The material will be used to make composite decking.	0.5%	31.2%	53%	12.4	21
Bag-In-Box 	Cardboard from the outer layer of the box was recycled by local processors.	0.3%	48.1%	53%	463.0	517
Bi-Metal 	Other metal containers including bi-metal were sold to scrap metal dealers in B.C. for metal recovery.	0.4%	76.9%	82%	301.2	618
2017 TOTAL		100%	84.1%		93,827.5	103,810
2016 TOTAL			85.4%		92,910.3	101,915