

BC Major Appliance Stewardship Plan

Product Category:

Major Household Appliances within the Electronic and Electrical Product Category

Submitted to the Ministry of Environment by:
Major Appliance Recycling Roundtable



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Glossary of Terms and Abbreviations

AHAM	Association of Home Appliance Manufacturers
APF	Administrative Program Fee
Collection site	Facility that accepts end-of-life major appliances
DfE	Design for the Environment
EPR	Extended Producer Responsibility
GHG	Greenhouse gases
GWP	Global Warming Potential
IC&I	Industrial, commercial and/or institutional
LGAC	Local Government Advisory Council
Local Government	Municipalities, regional districts and First Nation governments
MARR	Major Appliance Recycling Roundtable
ODS	Ozone Depleting Halocarbon refrigerants subject to BC regulation B.C. Reg. 317/2012 <i>OZONE DEPLETING SUBSTANCES AND OTHER HALOCARBONS REGULATION</i> from residential products that utilize a vapor-compression refrigeration system listed in MARR's Product List and Definitions listed on MARR's website ¹ .
RCBC	Recycling Council of British Columbia
RCC	Retail Council of Canada
SABC	Stewardship Agencies of BC

¹ <http://www.marrbc.ca/documents/MARR-Product-List-Definitions.pdf>

1. Introduction

In British Columbia (BC), the Recycling Regulation² under the *Environmental Management Act* sets out the requirements of extended producer responsibility (EPR), including for approved product stewardship plans. These requirements for product stewardship plans are outlined in section 4 of the Recycling Regulation, stating:

“A producer must submit a product stewardship plan, at the time specified in the applicable Schedule, if any, and in a manner and format satisfactory to a director, for the products within the product category of the product the producer sells, offers for sale, distributes or uses in a commercial enterprise in British Columbia.”

This five-year product stewardship plan for major household appliances (“stewardship plan”) is being submitted by the Major Appliance Recycling Roundtable (MARR) in accordance with the Recycling Regulation under the *Environmental Management Act*. The stewardship plan covers major household appliances contained within the electronic and electrical product category of the Recycling Regulation, and includes the following major product types³:

- Refrigerators, wine coolers and beverage centers
- Freezers
- Portable, room and window air conditioners
- Portable dehumidifiers
- Clothes washers and dryers
- Ranges, built-in ovens and surface cooking units
- Built-in and over the range microwave ovens
- Range hoods and downdrafts
- Dishwashers
- Food waste disposers and trash compactors
- Electric water dispensers

This stewardship plan replaces the previous stewardship plan for major appliances submitted by the Association of Home Appliance Manufacturers Canada (AHAM Canada) and the Retail Council of Canada (RCC) approved on June 29, 2012.

² British Columbia Ministry of Environment, BC Recycling Regulation, BC Reg. 449/2004, as amended B.C. Reg. 88/2014, May 23, 2014. Accessed at http://www.bclaws.ca/civix/document/id/complete/statreg/449_2004.

³ For an up-to-date listing of the products covered by the Stewardship Plan, please refer to the detailed list of included and excluded products available at: <http://www.marrbc.ca/participants/products>

2. Duty of the Producer

As per section 2(1) of the Recycling Regulation under the Environmental Management Act:

“Except as otherwise specifically provided in this regulation, a producer must:

- a) have an approved plan under Part 2 [Product Stewardship Plans] and comply with the approved plan, or*
- b) comply with Part 3 [Product Stewardship Program Requirements If No Product Stewardship Plan]*

with respect to a product in order to sell, offer for sale, distribute or use in a commercial enterprise the product in British Columbia.”

3. Appointment of the Stewardship Agency

MARR is a not-for-profit stewardship agency created to implement and operate a stewardship plan for end-of-life major household appliances in BC. It acts on behalf of producers of major appliances who are obligated under the BC Recycling Regulation.

In registering, each producer must sign an Agency Appointment Agreement⁴ that formalizes the role of MARR as its agent to carry out the duties of the producer as set out in section 2(2) of the Recycling Regulation. This stewardship plan confirms the duties that MARR will perform on behalf of each registered producer. Copies of membership agreements are available upon request to the Director.

The MARR program is open to all obligated producers of major household appliances in BC, including manufacturers, wholesalers and retailers. A current list of registered participants is available on MARR's website at <http://www.marrbc.ca/participants/registered>. As of August 2021, there were 150 individual companies registered with MARR.

As MARR currently administers the only approved stewardship plan for major household appliances in BC, it is expected that member producers represent the vast majority of major appliance sales in the province. With representation from major manufacturers, retailers and wholesalers, the more than 150 registered participants of MARR reported total unit sales of 1,238,084 major appliances for 2020 across all product types. MARR's registered producers represent the prevailing share of producers of major appliances obligated under the B.C. Recycling Regulation.

Agency Governance

MARR is a not-for-profit stewardship agency incorporated under the *Canada Not-for-Profit Corporations Act* on July 17, 2012. The Retail Council of Canada (RCC) and the Association of Home Appliance Manufacturers (AHAM) are the corporation's two members. MARR is governed by a Board of Directors comprised of representatives from major appliance manufacturers and retailers. . A list of current board members is published at www.marrbc.ca/about

MARR maintains transparency with its members and stakeholders by posting relevant policies, guidelines, reports and materials on its website. Rules and Policies, Annual Reports and Financial Statements are publicly available to members and stakeholders on the following webpages:

- Rules and Policies: www.marrbc.ca/participants/register
- Annual Reports and Financial Statements: www.marrbc.ca/about

The MARR-Local Government Advisory Council (LGAC) was created in 2013 to provide a forum for local governments involved in the collection of major household appliances to deliver their unique perspective and advice to MARR. The LGAC includes representation from regional districts and municipalities representing urban, rural and remote communities, allowing MARR to better understand municipal and regional needs, capabilities and capacities⁵.

⁴ Available on MARR's website at <http://www.marrbc.ca/documents/MARR-Agency-Appointment-Agreement-May-1-2013.pdf>

⁵ The current membership of the MARR-LGAC includes the Regional District of Mount Waddington, the Capital Regional District, the Metro Vancouver Regional District, the Regional District of Central Kootenay, the Regional District of Bulkley-Nechako, the Regional District of North Okanagan, the City of Vancouver and the First Nations Recycling Initiative.

4. Products Covered Under the Stewardship Plan

This stewardship plan covers a variety of large appliances as listed under **2(1)(c)**, “electronic or electrical appliances” and detailed in **Schedule 3** of the **Electronic and Electrical Product** category of the BC Recycling Regulation under the *Environmental Management Act*.

The plan covers major appliances that have been designated for residential use in BC, provided they are electrical or electrically powered. However, it also includes:

- Products that are dual fuel natural gas or propane products, provided the other power source is electricity;
- Appliances used in or sold for industrial, commercial and/or institutional (IC&I) applications that have essentially the same design characteristics as major household appliances; and
- Products that are used for refrigeration or freezing that contain a compressor and/or refrigerant gases.

MARR’s Stewardship Role

Currently there are no other agencies, aside from MARR, appointed to act in a product stewardship capacity for major appliances in British Columbia. As such, there are no other product stewardship agencies or plans covering the same products.

The stewardship plan covers the following products:

- Refrigerators, wine coolers and beverage centers;
- Freezers;
- Portable, room and window air conditioners;
- Portable dehumidifiers;
- Clothes washers and dryers;
- Ranges, built-in ovens and surface cooking units;
- Built-in and over the range microwave ovens;
- Range hoods and downdrafts;
- Dishwashers;
- Food waste disposers and trash compactors; and
- Electric water dispensers.

For a detailed list of included products and relevant definitions, please refer to the MARR website:

<http://www.marrbc.ca/documents/MARR-Product-List-Definitions.pdf>

5. Stakeholder Consultation

Section 5(1)(b) of the Recycling Regulation provides:

The producer has undertaken satisfactory consultation with stakeholders prior to submitting the plan for approval and will provide opportunity for stakeholder input in the implementation and operation of the product stewardship program

During 2021 and 2022, MARR undertook a consultation process that provided meaningful opportunities for public consultation and comment. An overview of that process is included in Appendix X.

6. Collection System and Consumer Accessibility

With respect to the recycling of major household appliances, there exists a long-standing and effective market-based system for end-of-life product management. In a broad view, this market-based system exists largely because major household appliances currently have a financial value at end-of-life. That is, collectors and processors of end-of-life major appliances have a financial incentive to recycle the product, as it can be a revenue-generating activity.

The stewardship plan for major appliances builds on and supports the existing market-based system for end-of-life major appliances, rather than supplanting and replacing it with a traditional stewardship program model wherein all aspects of end-of-life product collection, transportation and processing are controlled and managed by a single stewardship agency. The imposition of a traditional stewardship model on the pre-existing market-based system has the potential to cause significant economic dislocation for businesses operating in that system, confusion for consumers and ultimately reduced environmental performance. In the view of MARR and its member companies, building upon the market-based system and the existing economic players within that system is the most responsible, economically efficient and environmentally prudent approach to maintaining and enhancing the already impressive performance of major appliance recycling in British Columbia.

The activities proposed in this plan are therefore meant to enhance the performance of the current system, to address specific circumstances and challenges affecting key stakeholder groups⁶, and to ensure continuous improvement with respect to the achievement of desired outcomes. Guiding the stewardship plan are the following commitments:

1. A commitment to reasonable and free consumer access to collection facilities. This will be accomplished by:
 - a) maintaining a robust network of collectors that provide collection of large appliances at no cost to the public, and
 - b) providing financial and administrative support to local governments or community organizations for organized collection events where the establishment of a permanent collection site is not feasible.
2. Through a network of approved collectors and community partners, a commitment to enhance the performance of the current system by paying the cost for:
 - a) the management, reporting, administration and collection of large appliances within the product categories;
 - b) safe removal of ODS from refrigerated appliances within the product categories; and
 - c) transportation of appliances to a processor should the metal value of the end-of-life appliances not cover transportation costs.

MARR will provide these economic incentives to qualified collectors who have executed a collector agreement, and who, upon verification have met the requirements specified in those agreements and will be subject to ongoing audit and compliance verification.

Recognizing that BC's geography is varied and having heard from stakeholders that they have differing

⁶ To inform this plan, stakeholders were engaged to better understand the challenges with respect to the current system, and areas for potential improvement. For more details on stakeholder consultation activities, please refer to Section 5.

needs based upon their location, MARR will operationalize these commitments in close consultation with impacted local governments. This is a recognition that one solution may not work for all communities, and that different communities have different operational models and requirements.

Collection System

A market-driven recycling system for major appliances has been in place in British Columbia for decades, historically driven by the positive financial value of these products at end-of-life. This system is comprised of a variety of collectors, including retailers, local governments, utilities and private companies, which accept major appliances and then channel those products to scrap metal consolidators and processors. As part of the larger commodities market, scrap metal companies process the products to recover metal components, which are sold to end-markets such as steel mills for recycling.

MARR's intention is to provide an opportunity for those currently involved in the collection of end-of-life appliances to become qualified collectors and to be part of the collection network upon signing a collection agreement with MARR

MARR has established a set of basic collector qualification standards to be met in order to qualify as a collector under the MARR program, such as free drop off service to residents, proof of all necessary licenses and permits, compliance with health and safety requirements, and specified liability and business insurance coverage. Qualification standards will also include reporting requirements to allow MARR to meet its reporting requirements to the MOE.

Qualified Collectors will be required to report data such as:

- a) Total metal tonnage, and number of units collected by category (ODS/ODS Empty/Non ODS and Product Category)
- b) Weight of ODS collected
- c) Weight of ODS sent for destruction

Drop-Off Collection Sites

There are over 200 contracted collection site locations in BC that offer free and ready collection of MARR products to the public as of August 1, 2021.

MARR continues to expand the collection network. The most current list of MARR authorized collection sites can be found at <https://www.marrbc.ca/collection-site-locator>.

Collection Events

Accessibility to free drop-off in some rural areas of British Columbia is challenging when local population numbers do not warrant permanent collection facilities. Often the collection of large appliances for recycling in small or remote communities is based on annual or semi-annual collection events organized by local government or community groups.

In areas where gaps in accessibility to collection sites exist MARR is committed to supporting local drop off events by providing administration support, free transportation of all MARR products to the nearest authorized MARR collection site and the safe removal of ODS gas. MARR will report on the number collection events and the locations on an annual basis.

MARR also is a member of the Indigenous Zero Waste Technical Advisory Group (IZWTAG) and the First Nation Recycling Initiative (FNRI) where we support large appliance recycling by providing assistance where needed often in the form of transportation and logistical support for community collection events.

Pick-up Services

There are a number of options available to consumers to manage the exchange of new and old appliances. When a consumer purchases a new appliance, many retailers offer a delivery/take-back option that facilitates the proper recycling or resale of the used appliance on behalf of the consumer. According to survey results of 116 major appliance retailers conducted as a part of the System Study, 84 percent of respondents offered a take-back service to their customers when a new appliance was delivered.

Accessibility to Collection Sites

With over 200 collection sites accessibility to a MARR collection site is convenient to well over 90% of the population of British Columbia. MARR will calculate the accessibility by the presence of collection sites in each municipality or within 20 km of the municipality and the represented population. Population numbers will be retrieved annually from The Government of British Columbia:

<https://www2.gov.bc.ca/gov/content/data/statistics/people-population-community/population/population-estimates>

Accessibility to free drop-off locations for BC residents was estimated at 94.9 percent as reported in the MARR 2020 annual report. It is MARR's intention to continue to close this gap by continuing to add collection sites across BC and to maintain collection sites in every regional district in BC.

Accessibility to free drop-off in some rural areas of British Columbia is challenging when low population numbers do not support the development of permanent collection facilities. The collection of large appliances in rural and remote communities is achieved by holding community organized drop-off/round-up collection events as needed. In areas where gaps in accessibility to collection sites exist MARR is committed to supporting local drop off events by providing transportation and ODS removal for all MARR products.

Tracking Product Pathways Not Directly Managed by the Stewardship Program

Major appliance recycling utilizes the existing market-based system and MARR does not contract directly with all processors it is therefore not reasonable to obtain information on materials processed outside of the MARR Collection network. Because of the value of end-of-life appliances there are independent repair services, insurance and restoration companies and low volume scrap metal "peddlers" or non-contracted municipal governments that handle a small volume of end-of-life large appliances.

MARR regularly participates in waste audits conducted by local governments and to date there have been no reported instances of major appliances in the waste stream. It is our opinion that the vast majority of appliances are recycled through the MARR network and the remaining recycled through the pathways not managed by the stewardship program.

7. Consumer Awareness

Since the approval of the initial product stewardship plan for major appliances in 2012, MARR has developed detailed and well-rounded consumer awareness plan that includes materials and resources for producers, retailers and collectors, in addition to the resources for consumers. MARR has also partnered with other organizations to increase its presence and accessibility to consumers.

MARR is committed to working with partner stakeholders, including First Nations, local governments and non-profit associations – along with other stewardship agencies – to improve consumer awareness on an ongoing basis.

The cornerstone of MARR’s consumer awareness is the maintenance of a robust website that allows consumers and stakeholders access to program information including maps and a searchable database of collections sites, news and updates on the program, accepted products and Administrative Program Fees (APF’s) and access to MARR’s annual reports. Information for consumers on how to recycle major appliances, including a list of collection sites, is easily found on the MARR website at the following links:

- How to Recycle: <http://www.marrbc.ca/consumers/recycle>
- Collection Sites: <http://www.marrbc.ca/collection-site-locator>

In addition to MARR’s website, informational brochures and point-of-sale rack cards are provided at no charge for collectors and retailers. MARR also produces collection site signage and “what’s accepted” manuals for collectors.

Building on these efforts MARR undertakes an annual public consumer education plan. The details of the annual plan are reported in the annual report and may include a mix of any of the following:

- Digital media
- Social media
- Television
- Radio
- Print
- Video
- Google AdWords
- Community Recycling Calendars

MARR also maintains a toll-free number and a dedicated email address to be able to quickly respond to anyone that may have questions beyond what is covered by the communication materials. In addition to continuing with the strategies above, MARR will also move forward with the following activities to advance consumer awareness around the major appliance recycling system in BC:

- Engagement with other stewardship agencies to leverage consumer awareness events and activities.
 - Remote appliance stockpile recovery efforts, with a focus on community engagement and ongoing benefit.
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8. Management of Program Costs

MARR is funded by Administrative Program Fees applied to the sale and supply of new major household appliances in BC. The APFs for different products are established by MARR having regard to the cost to recycle the materials contained in the product and the cost of administering the program generally. Current APFs for products covered under the plan are listed on MARR's website at <http://www.marrbc.ca/participants/products>.

APFs are reported and remitted to MARR on either a quarterly or annual basis by registered participants (i.e., manufacturers, distributors, retailers) who have joined MARR to fulfill their regulatory obligations. Currently, it is the decision of each participant on how to manage this business cost. APFs may be shown as a separate line item on the product invoice/receipt, incorporated directly into the price of the product or absorbed, at the discretion of the relevant participant(s). If an amount is charged by a MARR participant to its customer to recover the APF, the amount must not exceed the actual APF paid by the participant to MARR. Transparency of program costs and fees is an important principle to stakeholders, particularly consumers.

MARR is committed to providing reasonable and free collection to the public in accordance with the Ministry of Environment and Climate Change Strategy Guidance document "Producers Paying the Cost of Managing Obligated Materials and Dispute Resolution". MARR achieves this by following the procedures below:

1. Collectors are contractually obligated to accept all products covered by the plan at no cost to the consumer.
2. Collectors are paid a unit based Administrative Fee negotiated on a per contract basis. The administrative fee is not fixed, and it is intended to pay the costs of collecting and managing products within the product category covered by the plan.
3. Each collector must hire qualified ODS removal technicians and MARR fully reimburses the cost of ODS removal to the collector or pays the ODS collector directly.
4. The collector will sell the scrap metal as a commodity to help cover operating and transportation costs.
5. Should commodity values be insufficient to pay for the cost of transporting the Program Products to market, MARR reimburses Collectors for the difference between invoiced, current-market transportation costs for the major appliance portion (by weight) of any load and the price received for the metal. The weight of the major appliance portion will be determined by using the average weight of the appliances reported by the Collector to be contained in that load as determined by MARR.

MARR does not collect deposits nor pay associated refunds for products covered under the plan.

Financial Risk Management Principles

In 2015, the Board of Directors passed a resolution to establish a Restricted Reserve Fund. The purposes of the Restricted Reserve Fund are as follows:

- To assist in stabilizing eco fees by being available to manage year to year revenue and costs due to volume fluctuations.
 - To cover the costs of winding up the program by the decision of the members or because of regulatory change, in an orderly manner, not to exceed one year.
-

- To cover any claims against the program, Board of Directors or staff in excess of the program's insurance coverage.
- To cover the costs of any unanticipated or extraordinary items.
- To fund other special projects that enhances the recycling of major appliances.
- To fund the purchase of capital equipment.
- To cover the cost of managing products with long life spans, for which collection may occur well in the future.

Transfers to the fund are made upon resolutions passed by the Board of Directors. Total contributions to the Reserve Fund are targeted to be approximately one year's operating expenses.

Rates for APFs are set by MARR and are subject to change as needed to address changing program costs and commitments, as well as annual surpluses or deficits. The Reserve Fund, however, serves as a transitional measure and/or source of funds to manage APFs during periods of program change as well as annual surpluses or deficits. APFs are reviewed by MARR on a regular basis to ensure there are sufficient funds to operate the stewardship plan and maintain the appropriate level of reserves, consistent with the MARR not-for-profit mandate.

MARR's audited financial statements are also posted on the MARR website as part of its annual report. The Annual Report includes key financial information like revenues and expenditures along with additional performance measures such as number of large appliances sold and collected for recycling. This non-financial information will also be audited before being reported.

9. Management of Environmental Impacts

MARR strives to promote the principles of the pollution prevention hierarchy where technically feasible and economically viable, to divert as much material as possible from the waste stream. Options and strategies employed by MARR and its member organizations for managing end-of-life major appliances based on the pollution prevention hierarchy are described below, along with factors influencing the decision-making process, and areas for further research and development or materials processing. In addition, improvements in GHG performance can be achieved from the proper recovery and reuse of ODS materials.

Managing the safe removal of ODS gas from all units collected that contain refrigerant gasses used for cooling purposes is the primary environmental focus of the MARR plan. Safe handling is defined as removal of ODS gas by a technician that possesses a valid certificate number for refrigerant handling under the current BC regulation who records and reports the quantity of ODS collected by weight, the tank numbers and provides a certificate of destruction/recycling to MARR on a timely basis. Based on historic collection reports MARR estimates that 20% of refrigerated appliances that reach end-of-life have no refrigerant and lack the ability to cool. This can be from natural wear and tear, damage from relocation or other causes. MARR will investigate collectors that exceed this threshold of ODS empty and attempt to determine the root cause of the empty units if possible.

MARR will report annually on the following:

- Report the percentage of units collected that had the ODS gas removed prior to collection.
- Report the efforts to investigate ODS empty that exceed the 20% empty threshold
- The procedures for safe handling and disposal of ODS gasses.
- Efforts taken by or on behalf of producers to reduce environmental impacts throughout the product life cycle and to increase reusability or recyclability at the end of the life cycle.

Pollution Prevention

Major appliance manufacturers continue to focus significant attention on incorporating Design for the Environment (DfE) principles into the manufacturing of home appliances, specifically:

- Reducing the amount of materials used in the manufacture of the products,
- Incorporating new very low Global Warming Potential (GWP) refrigerant and foam blowing agent chemicals, such as cyclopentane, hydrofluoroolefins (HFOs) or isobutane (r600a).

Manufacturers have eliminated the use of mercury switches and PCB containing capacitors and continue to explore ways to reduce the amount and weight of material used in the manufacturing of appliances, as well as its packaging. Light-weighting of products results in lower transportation costs (both in the outbound supply chain and in the end-of-life supply chain), as well as improvements in GHG emissions. Efforts to improve the amount and weight of material used in the manufacturing of appliances must always be balanced against ensuring consumer safety and the overall protection and lifespan of the product.

Significant changes have and will continue to be made in the types of refrigerants and foam blowing agents used in refrigerators and freezers as manufacturers incorporate refrigerants and insulation with very low greenhouse gas impacts as mandated by new regulations and laws in the U.S. and Canada. Currently, virtually all if not all refrigerator/freezers have transitioned out of HFCs for foam blowing

agents. The transition to very low refrigerants in refrigerator/freezers will be largely completed by January 1, 2022 and the remaining products (built-in products) by January 1, 2023. This effort builds on a history of environmental stewardship that includes significant gains in energy efficiency and the phasing out of ozone depleting substances without losing efficiency gains⁷.

Reuse and Recycle

According to research conducted by AHAM in 2017, major appliances typically have a lifespan of between 10 and 20 years⁸. This is consistent as the System Study previous conducted by MARR cites similar lifespans.⁹ The long life can result in products having many different owners over its lifetime, usually facilitated by a used appliance retailer, private sale/donation or refurbisher. Refurbishers are organizations involved in appliance reuse or the reuse of parts. They generally receive used major appliances from commercial generators or through retailers. The main goal of the refurbisher is to resell the unit into the second-hand market, or at least use some of the parts for appliance repair

Once an appliance is retired, or reaches end-of-life, it enters the collection system described above in Section 6. MARR collectors sell the appliances to consolidators that in turn sell the material for processing, or directly to recyclers where the appliances are shredded and the metal is recycled. Major appliances are primarily metal (both ferrous and non-ferrous) with smaller amounts of other materials like glass, rubber, foam, paper, electronics, refrigerants, oils and other substances where applicable. The shredded material is then sorted and ferrous and non-ferrous metals are separated from other materials such as plastic and foam.

The material composition of major appliances is reported to be approximately 74 percent metal. Of this metal, processors report that 98 percent of the ferrous and non-ferrous metal that enters the shredder is recovered and recycled back into the commodities market.¹⁰

Pollution Control and Disposal

Prior to shredding, products undergo decommissioning to remove refrigerant and to look for any other substances of concern. In general, the System Study identified that refrigerant was extracted responsibly, but some gaps remained. Most retailers surveyed transferred major appliances with refrigerant to secondary collectors, and most processors had onsite staff to perform refrigerant removal. At local government sites that accept appliances with refrigerants, most contracted out the removal of refrigerants as part of the scrap metal removal contract. Refrigerant removal generally occurs at the first location to receive the appliance. The refrigerant was removed by a technician and subsequently sent for recycling or destruction.

Few appliances reaching end of life contain mercury switches. Mercury switches were primarily used in chest freezers until they were phased out in approximately 2000 and replaced by mechanical switches. ODS technicians identify and remove mercury switches as part of the ODS removal process. Collected

⁷ Home Appliance Industry Sets Goal to Eliminate use of HFC Refrigerants (February 9, 2016), available at www.aham.org.

⁸ Burns & McDonnell Engineering Company, Inc. (July 2017). Analysis of Appliance Recycling in the U.S. and Canada. Report for the Association of Home Appliance Manufacturers

⁹ Ecoinspire Planning Services. (May 2014). Study on the Operations and Effectiveness of the Major Appliance Collection and Recycling System in British Columbia. Report for MARR. The study also included weighted average composition for new and old appliances.

¹⁰ Based on survey responses from the two processors in BC currently operating shredders.

switches are shipped to a facility for safe processing and recovery of the mercury. MARR pays the cost of removal, shipping and processing of the mercury switch.

Material End Fates and Product and/or Material Processing Pathways

The table below illustrates the downstream management process for each material stream (based on results from the System Study)

Material Commodity	Recycled	Landfilled	Safely Destroyed
Ferrous Metal	X		
Non-Ferrous Metal	X		
Plastic		X	
Refrigerant	X		X
Other		X	

It is estimated that 74 percent of materials are recycled (mostly ferrous and non-ferrous metal). The remaining 26 percent, including plastic, glass, rubber and foam, does not undergo further processing, and is currently sent to landfill.¹¹ MARR continues to examine the management of shredder residue and identify opportunities for achieving higher end uses of residual materials. For example, in some cases, plastic residuals may be sent to waste-to-energy facilities. In 2017, MARR met with other stewardship organizations and metal recyclers to discuss this issue and will continue to consider options for achieving higher end uses of residual materials. Metal recyclers are continually upgrading equipment and processes to minimize shredder residuals.

Plastic waste reduction, tracking and recycling is an area of focus. MARR will undertake studies to determine:

- Current available options for processing and recycling
- Time and movement studies to establish the cost of recycling plastics

Program Environmental and Safety Risk Management and Due Diligence

In 2016, MARR completed the development of a Major Appliance Processing Standard to ensure the proper decommissioning of end-of-life appliances and the safe handling of substances of concern, including mercury switches and refrigerants. MARR met with private scrap metal facilities across the province to promote and encourage adoption of the standard.

Initially, the intention was to have the collectors of major appliances (retailers, municipalities etc.) to agree to decommission the appliances they collect in accordance with the standard or require their processors to whom they sell or provide their appliances to be certified against the standard. Part of this framework includes a certification and audit program to ensure that applicable processors are processing appliances in accordance with the standard. MARR initially approached collectors to obtain agreement with such a standard in 2015 but received little response. As a result, MARR introduced the Voluntary Processing Standard in 2016. In 2019 the Voluntary Processing Standard evolved to become a contractual commitment for all MARR collectors and is now known as the MARR Processing Standard.

¹¹ Ibid

10. Dispute Resolution

Should any disputes arise involving MARR with respect to the implementation of the product stewardship plan, MARR will first discuss the issue directly with the involved party, and may pursue standard commercial legal procedures should the need arise, including mediation, arbitration and civil proceedings, where necessary. Prior to any commercial legal procedures a dispute should be made in writing to: Major Appliance Recycling Roundtable, 100 - 4259 Canada Way Burnaby, BC V5G 4Y2

This dispute resolution procedure was made with regard to the Ministry of Environment and Climate Change Strategy Guidance document “Producers Paying the Cost of Managing Obligated Materials and Dispute Resolution” and MARR commits to a timely and staged approach to all dispute resolutions.

11. Performance Monitoring and Reporting Commitments

Performance Measure	Target and/or Reporting Commitments	NFA						
<i>Governance</i>								
Changes to Operating Structure and Board of Directors	Report annually	N						
<i>Collection System and Consumer Accessibility</i>								
<ul style="list-style-type: none"> • The total amount of the producer’s product sold. • The total amount of the producer’s product collected. • The total amount of the product recovered in each regional district. • The total amount of the product recovered per capita for each regional district and for the province. • The varying collection performance for the sub-categories of products covered under the stewardship plan and the actions that will be taken to increase the collection of these products. • The location of collection facilities, and any changes in the number and location of collection facilities from the previous report. • The number and location of community collection events 	Report annually	Y						
<p>MARR will target accessibility to free drop-off locations for the BC population in accordance with the schedule shown. MARR will calculate the accessibility by the presence of collection sites in each municipality or within 20 km of the municipality and the represented population retrieved annually from:</p> <p>https://www2.gov.bc.ca/gov/content/data/statistics/people-population-community/population/population-estimates</p>	<p>Performance Target:</p> <table border="1" data-bbox="873 1562 1382 1675"> <tr> <td>Year 1 – 95%</td> <td>Year 2 – 95.2%</td> </tr> <tr> <td>Year 3 – 95.4%</td> <td>Year 4 - 95.6%</td> </tr> <tr> <td>Year 5 – 95.8%</td> <td></td> </tr> </table>	Year 1 – 95%	Year 2 – 95.2%	Year 3 – 95.4%	Year 4 - 95.6%	Year 5 – 95.8%		Y
Year 1 – 95%	Year 2 – 95.2%							
Year 3 – 95.4%	Year 4 - 95.6%							
Year 5 – 95.8%								

<i>Consumer Awareness</i>								
MARR will report on the program's consumer awareness materials and strategies, including: <ul style="list-style-type: none"> The number of unique visitors to MARR's website The number of RCBC inquiries for MARR program materials 	Report annually.	N						
<ul style="list-style-type: none"> Percentage of surveyed adults in British Columbia that are aware they can recycle large appliances. MARR will target a consumer awareness level shown that will be determined by an annual survey with a margin of error of less than +/-5% 	Performance Target: <table border="1" data-bbox="873 541 1382 653"> <tr> <td>Year 1 – 80%</td> <td>Year 2 – 80.5%</td> </tr> <tr> <td>Year 3 – 81%</td> <td>Year 4 – 81.5%</td> </tr> <tr> <td>Year 5 – 82%</td> <td></td> </tr> </table>	Year 1 – 80%	Year 2 – 80.5%	Year 3 – 81%	Year 4 – 81.5%	Year 5 – 82%		N
Year 1 – 80%	Year 2 – 80.5%							
Year 3 – 81%	Year 4 – 81.5%							
Year 5 – 82%								
<i>Financial Management</i>								
MARR commits to producing and publishing independently audited financial statements annually, detailing: Revenues and expenditures for any fees associated with the approved stewardship plan that are charged separately and identified on the consumer receipt of sale.	Report annually.							
Maintenance of a reasonable restricted reserve fund	Performance target: MARR should maintain a reasonable restricted reserve fund that is expected to be around the annual budgeted operating cost of the program. Publish independently audited financial statements annually.	Y						
<i>Environmental Management</i>								
MARR will report annually on: <ul style="list-style-type: none"> The percentage of units collected that had the ODS gas removed prior to collection. The procedures for safe handling and disposal of ODS gasses. Efforts taken by or on behalf of producers to reduce environmental impacts throughout the product life cycle and to increase reusability or recyclability at the end of the life cycle. A description of how the recovered product was managed in accordance with the pollution prevention hierarchy, including: 	Report annually. Collectors will be required to adopt the MARR Processing Standard for Recyclers of Major Appliances in order to become Qualified Collectors and be eligible to receive incentives.							

<ul style="list-style-type: none"> • Conformance with acceptable product and/or material end disposition. 		
<ul style="list-style-type: none"> • Safe Removal of ODS gas from all units collected that contain refrigerant gasses used for cooling purposes. • Report the percentage of units collected that had the ODS gas removed prior to collection. 	<p>Performance Target:</p> <p>Removal of ODS gas from all units collected that contain refrigerant gasses used for cooling purposes.</p>	<p>Y</p>