



## **MANITOBA STEWARDSHIP PLAN FOR MERCURY-CONTAINING THERMOSTATS**

Submitted by:

Heating, Refrigeration and Air Conditioning Institute of Canada (HRAI)  
with the support of the Canadian Institute of Plumbing and Heating (CIPH)

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## **1. INTRODUCTION**

### **1.1 Overview**

In accordance with the Manitoba Regulation 16/2010 (February 3, 2010) and the final version of the draft Guideline for Household or Prescribed Household Material Stewardship program, the Heating, Refrigeration and Air Conditioning Institute of Canada (HRAI), with the support of the Canadian Institute of Plumbing and Heating (CIPH), is submitting this Stewardship Plan on behalf of manufacturers and distributors responsible for selling mercury-containing thermostats into Manitoba.

The ultimate goal of this Plan is to continue to deliver a high-quality program that satisfies the obligations of the thermostat manufacturers under the Manitoba Hazardous or Prescribed Household Material Stewardship program, and which is also part of a harmonized national program.

This version of the Plan covers a five-year period from April 1, 2016 to March 31, 2021, and as such, sets five-year targets for accessibility and collection. This Plan builds from the work that was completed in the original plan period of April 1, 2011 to March 31, 2016, and makes amendments to ensure that program performance shows continuous improvement. As per the Regulation 16/2010 guidelines, the collection program for thermostats will be ongoing and the Plan will be reviewed after five years of operations, with any necessary amendments being made at that time. Between five year plan revisions, the Thermostat Recovery Program will remain committed to achieving the targets set out in this Plan and demonstrating continual improvement.

### **1.2 Program Participants**

HRAI, with the support of CIPH, has taken the lead in developing this Plan on behalf of manufacturers and distributors responsible for selling mercury-containing thermostats into Manitoba. [Appendix A](#) includes a list of the manufacturers and distributors that sell mercury-containing thermostats into Manitoba. [Appendix B](#) lists the thermostat manufacturers and distributors that have already signed onto this Plan.

HRAI will be contacting the manufacturers and distributors listed in [Appendix A](#) to notify them about this Plan and, as a result, the list in [Appendix B](#) will continue to evolve. Currently, 21 manufacturers have signed on to this program, representing 100% of the thermostat brands collected by the program as of 2015. The list of participating manufacturers and distributors is posted on the program website ([www.hrai.ca/trp](http://www.hrai.ca/trp)), and will be updated regularly as new manufacturers agree to support the program.

As the agency appointed by the manufacturers and distributors listed in [Appendix B](#) to fulfill their legal obligation to develop and deliver a collection and recycling program for mercury-containing thermostats in Manitoba, HRAI will provide overall program management and delivery.

### **1.3 Program Products**

This plan covers all thermostat types defined as “products that sense and control room temperature through communication with heating, ventilation and air conditioning equipment from all sectors (residential and commercial), including:

- Electromechanical thermostats, which contain internal mercury switches (mercury in a sealed glass bulb) or snap switches to control the flow of electrical current; and,
- Electronic thermostats, which use sensors instead of switches to detect temperature levels and electronically control the flow of electrical current.”

The designed lifespan of a mercury-containing thermostat is 20–30 years. However, in reality, the majority of thermostats are replaced more frequently than that — on average every 7–10 years — as a result of renovations and/or replacing furnaces and other HVAC equipment. This long potential lifespan, coupled with the significant variability in the replacement rate presents a challenge in anticipating how many thermostats will become available for collection in a given year. As a result of this, targets must be based around collection totals rather than a recovery rate. Details will be provided below in the section describing [Collection Targets](#).

## **2. PRODUCT STEWARDSHIP PLAN**

### **2.1 Plan Development**

In 2006, Clean Air Foundation (now Scout Environmental) developed and operated a pilot program to collect mercury-containing thermostats. This program — Switch the ‘Stat — became a permanent, ongoing initiative of Clean Air Foundation in 2007. Then in early 2009, Scout Environmental (SE), HRAI, CIPH and a number of thermostat manufacturers and distributors partnered to use the existing Switch the ‘Stat program model and infrastructure as the basis for the Stewardship Plan for thermostats to meet the obligations of the provincial stewardship regulations, including the Manitoba Hazardous or Prescribed Household Material Stewardship program.

Since 2011, SE has been delivering Switch the ‘Stat, currently being rebranded as Thermostat Recovery Program (TRP) on behalf of HRAI, CIPH and the thermostat manufacturers and distributors under an approved stewardship plan in MB; SE has also been delivering under an approved plan in BC since 2010, and operating across the rest of Canada on a voluntary basis. Under the new Plan, TRP will be delivered by HRAI. TRP now reaches over 1,600 contractors and wholesalers across Canada, including 85 in MB, with HRAI providing education and outreach for both the participating home and/or business owners and contractors/wholesalers, as well as free collection containers and shipping for all thermostats collected.

### **2.2 Collection Infrastructure**

The Plan will use the following three channels to collect end-of-life thermostats in Manitoba:

1. Contractors/wholesalers who will remove and collect thermostats during the course of their operation, and act as drop-off locations for general public.
2. Send-back kits for members of the public in remote regions of the province, or who have mobility challenges.
3. Regional District and municipal collection points where the public can drop-off their old thermostats.

#### Contractor/Wholesaler Channel

This channel will be used as the primary collection channel for the Plan. It is estimated that a minimum of 85 to 90 per cent of thermostats sold into Manitoba are sold and installed via the contractor/wholesaler channel and, as such, we expect to see a similar proportion of thermostats collected and returned through this channel. This assumption has been proven through Manitoba’s collection results over the last five years, which demonstrate that only 5% of thermostats are recovered from other sources.

HRAI will continue to identify and engage HVAC contractors and wholesalers via letters, emails, advertising in industry publications, and participation in industry meetings and tradeshow. Contractors and wholesalers can register for the TRP either via the program website ([www.hrai.ca/trp](http://www.hrai.ca/trp)) or by calling HRAI directly. Upon registration, HRAI sends the following materials to a new contractor/wholesaler participant:

- a collection container (United Nations approved for shipping mercury);
- an introductory letter;
- program instructions;
- information brochures to leave behind with their customers; and,
- a pre-paid courier waybill

Contractors remove old thermostats from homes or businesses and replace them with new thermostats, placing the old models in the provided collection containers, intact. Once the collection container is full, the participant can use their pre-paid waybill to return the collection container to the recycling facility. Participants will also be asked to send back any pail that is half-full or more during the collection sweeps, which take place bi-annually in May and September.

The program will continue to ensure that the courier and recycling companies used by the program have the appropriate certificates of approval to transport and receive all types of thermostats, including those containing mercury.

Once at the recycling facility, the thermostats will be counted, documented, and dismantled, and the number of thermostats collected by each participant will be reported back to HRAI on a monthly basis, along with a breakdown of the total quantities of mercury-containing and electronic thermostats, the total number of mercury vessels (each thermostat can have between 1-4), and the total weight of plastics and metals from each participant. The mercury vessels will be removed and stored temporarily before being shipped to a retort facility at least once a year, and the metal and plastic components of the thermostats will be sent to appropriate secondary recycling facilities.

For do-it-yourselfers or smaller contractor businesses (who do not collect a sufficient volume of thermostats to warrant having their own pail), the program promotes the contractors and wholesalers that participate in the program as year-round drop-off locations. The TRP website ([www.hrai.ca/trp](http://www.hrai.ca/trp)) will have a map with a search by postal code function that allows the general public to locate a participating contractor/wholesaler in their area.

#### Send-back Channel

This channel will continue to be used as a secondary collection channel for the Plan, after being tested as a pilot project in Years one through five. Though there has been no collection through this channel in Manitoba over the past five years, this channel is important in terms of offering fair and equitable access to thermostat recycling for northern and remote residents of Manitoba. This channel is provided as an option for Manitoba residents living in remote areas who do not have access to TRP drop-off locations. The TRP website will list a phone number and an online request option where the public can request a small shipping container (suitable for up to approximately 4 thermostats) with a pre-paid courier waybill to ship their old thermostat directly to the recycling facility.

#### Regional District/Municipal Collection

This channel will continue to be used as a secondary collection channel for the Plan, after being tested as a pilot project in Years 1 through 5, and being found to result in 5% of overall collection results. Regional District and Municipal Collection provides a way for the general public to easily

access the program, as these are locations that members of the public are likely already familiar with, and which often support collection of other stewarded materials as well.

### **2.3 Pollution Prevention Hierarchy**

#### Reduce/Redesign

The main environmental concern with thermostats is the mercury contained in many of the older models. While mercury-containing thermostats have been in use for more than 50 years, they are no longer manufactured by the major manufacturers. Honeywell stopped selling mercury-containing thermostats in Canada in 2006 and Emerson/White Rodgers stopped in spring 2007. As well, the government of Canada is working on a risk management strategy that bans the sale, manufacture and import of all mercury-containing products (excluding lamps and dental amalgam) into Canada. This ban will guarantee that mercury-containing thermostats are an obsolete material.

#### Reuse

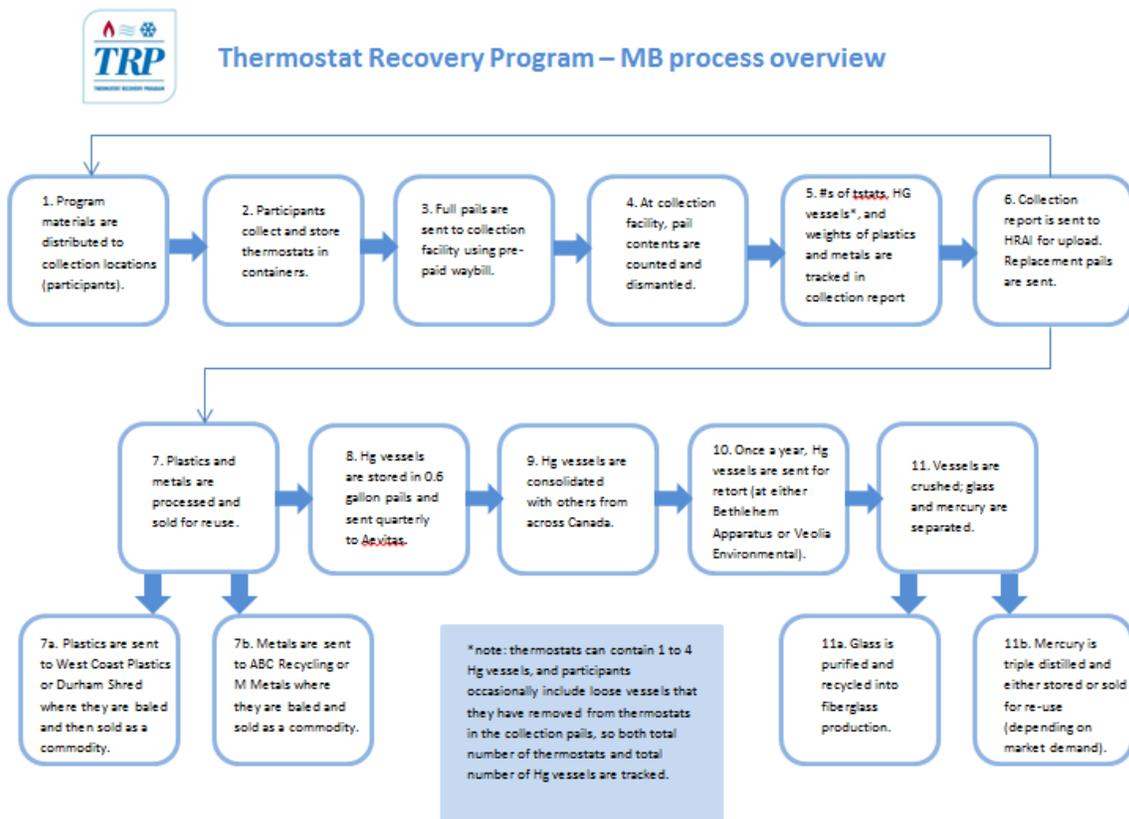
The TRP does not encourage the reuse of old thermostats collected through this program for a number of reasons. First, many of the old thermostats contain mercury and this program will ensure that the mercury is properly managed and recycled once in our collection channels. Second, for the non-mercury-containing thermostats, the risk in reusing them is that they will not meet the technical/safety specifications of new HVAC systems.

#### Recycle

The following steps will continue to be taken to manage the materials recovered through the program:

- Once at the recycler, the thermostats are counted, documented, dismantled and the components are separated for appropriate recycling.
- The glass vials that contain the mercury will be removed from the thermostat and stored temporarily before being sent to a retort facility where the mercury is triple distilled to remove any impurities and then either sold as a commodity (depending on market demand) or put into long-term storage. The glass is crushed, distilled and sent for recycling in fiberglass applications.
- The metal and plastic components from the thermostats are separated and sent for recycling. Both the metals and plastics are sent from the primary recycling facility to secondary recyclers where the material is consolidated with material from various other sources and baled, then sold as a commodity.

The process is described in the following flow chart:



Both the Collection Infrastructure and the adherence to the Pollution Prevention Hierarchy, as well as the Program Performance (as described in the following section) were subject to an Independent Reasonable Assurance audit by Abrahamse Berkis Pinto (ABP). The details of this audit can be found in the 2015 Annual Report, which will be located online on the “[Program Results](#)” page of the TRP website ([hrai.ca/trp](http://hrai.ca/trp)).

### **3. PROGRAM PERFORMANCE**

#### ***3.1 Program Accessibility***

##### CONTRACTOR/WHOLESALE CHANNEL

In the previous approved Plan (2010-2015), it was estimated that there were approximately 150 businesses that could eventually act as collection points for thermostats. By reaching out to existing HRAI and CIPH contractor/wholesaler memberships, as well as the memberships of several other contractor associations, and by advertising in industry trade publications and attending industry meetings, the program has reached 95 participants, 85 of which are contractors and wholesalers. These contractors provide on-site collection for thermostats that they remove from homes and businesses.

The program has also worked to engage wholesaler branches as drop-off points for thermostats because all small contractor businesses will visit at least one wholesaler branch on a regular basis to pick-up supplies. Research conducted by the program team has also shown that many smaller contractor businesses prefer to visit drop-off locations rather than registering for the program, therefore it will not be possible to register 100% of the potential businesses. However, these businesses will still have access to the program through the drop-off locations. This finding will be reflected in the registration targets outlined below.

##### SEND-BACK COLLECTION

This channel was run as a pilot project in the original 5 year plan, to provide access to the TRP in rural and remote areas of the province. While the program did not see any collection through this channel, there is still value in making the program accessible to those residents of MB who are outside the areas currently serviced by existing participants and drop-off locations. This revised plan intends to continue to offer this channel.

##### REGIONAL DISTRICT/MUNICIPAL CHANNEL

To ensure that the program is as accessible as possible to the residents of MB, collection is also available through Regional Districts and Municipal collection channels. This channel provides convenient access to the program for members of the public who are “do-it-yourselfers” and prefer not to use a contractor for a thermostat replacement, as well as being a method of disposal that many residents are already familiar with.

This channel was run as a pilot in Year one of the previous Plan, and was determined to be a valuable method of collection, accounting for approximately 5% of returned thermostats. As a result of this, efforts have been made to engage with as many Regional Districts and Municipalities as possible to increase the availability of this channel. Whenever possible, TRP makes collection available at the same locations as other MB PRO programs, in order to improve the convenience to the public.

### Collection Location Targets

Program delivery over the previous plan period focused heavily on recruiting new collection locations, particularly in 2012 and 2013 to address the challenges in meeting these targets in previous years. The program has strong coverage in the Southern part of the province, and representation in all Regional Districts in Manitoba. Although the program has representation in all Regional Districts, the majority of participation falls within the Winnipeg Regional District, with participation in the northern part of the province being quite sparse.

HRAI will continue to contact contractors and wholesalers, as well as Municipal and Regional District locations with the intention of increasing the number of collection points outside of the Winnipeg Regional District. The communities serviced by TRP collection locations account for approximately 67% of the total population in Manitoba, with coverage in the rest of the province available through the send-back channel.

In order to ensure that all avenues for engaging potential collection locations have been explored and that outreach attempts are cost-effective and reach the target audience (based on above channels), ongoing research has been conducted throughout the term of the original Plan. Additional research has been conducted to support the development of revised targets for the 2016-2021 Plan; this research is as follows:

- Analysis of potential collection locations (via registration membership lists, and chapter outreach);
- Analysis of registration/participation trends;
- Annual participant survey; and,
- In-depth interviews with HRAI members.

As demonstrated in the table below, the program has continued to grow steadily from Year 1 through 4, positioning the program well to meet targets in Year 5. At this point, the program has conducted extensive outreach to contractor associations (including HRAI, CIPH, Mechanical Service Contractors of Canada, etc.) as well as reaching out to wholesalers to register all of their MB branches. The extensive research that was conducted in the preparation of this revised Plan, as well as research that has been conducted throughout the term of the original Plan indicates that many small contractor businesses prefer to visit drop-off locations rather than registering for the program themselves. Therefore while the original assumption as to the number of contractors and wholesalers who could potentially participate was accurate, the program has likely reached a saturation point as to the number that would actually register for the program.

The table below shows performance towards the targets for the number of collection points from the original Plan:

Program Year	Target Number of Collection Locations	Pro-rated Target for Calendar Year (for annual report)		Actual Collection Points (by calendar year)	Percentage Increase
Year 1 (April 1, 2011)	50	2011	38	8	n/a

– March 31, 2012)					
Year 2 (April 1, 2012 – March 31, 2013)	60	2012	58	46	475%
Year 3 (April 1, 2013 – March 31, 2014)	75	2013	71	72	57%
Year 4 (April 1, 2014 – March 31, 2015)	90	2014	86	87	21%
Year 5 (April 1, 2015 – March 31, 2016)	105	2015	101	95	9%

The original Plan aimed for between 20-25% growth in Year 1 through 4, with Year 5 aiming for a more modest target of 17%. The targets presented in this revised Plan for 2016-2021 aim for more modest growth of 10% in Year 6, 5% in Years 7 and 8, and then reaching a plateau in Year 8, after which point recruitment efforts will be focused on ensuring that coverage remains consistent and any collection locations that opt out of the program (for example, businesses that close down) are replaced. Growth in Years 6 through 8 will be focused on areas outside of the Winnipeg Regional District, which are currently under-serviced by the program. This revised strategy will allow the program to target resources to focus outreach on areas where recruitment has been more difficult. These targets are as follows:

Program Year	Target Number of Collection Locations	Percent Increase from Previous Year
2016*	111	10%
2017	117	5%
2018	123	5%
2019	123	0%
2020	123	0%
2021	123	0%

\*although part of 2016 is included in the original Plan (which extends to March 31, 2016) the calendar year results for 2016 are included in this plan for clarity and continuity

One additional change to the Collection Location targets is that they will be re-aligned to the calendar year rather than the program year in order to better facilitate reporting.

### 3.2 Consumer Awareness

As detailed above, the TRP is primarily focused on the HVAC and Plumbing industry, rather than the general public. However, 5% of all thermostats collected have come from Regional and Municipal channels; therefore, there is a need for some level of public awareness of the program.

In Year 1 through 5, the program engaged in targeted and cost-effective consumer outreach initiatives, expanding awareness of the program through municipal eco calendars, consumer-facing websites, and outreach events focused on waste reduction. The TRP will continue to engage in these initiatives and to explore various opportunities for outreach.

The messaging that is used for consumer awareness outreach focuses on why old thermostats need to be recycled (in particular because of the risks associated with the mercury found in many older thermostats), who funds the program (and the fact that it is completely free to participate), disposal options (contractor channel, drop-off locations, send-back), and program contact information for more information. This information is communicated through the following resources and channels:

- Program website —presents a comprehensive overview of the program, with periodic updates and an up-to-date list of disposal locations (i.e., participating contractors and wholesalers, drop-off locations and send back options);
- Printed brochures — consumer friendly brochures are made available at Regional District/Municipal collection locations (sent upon registration, or available upon request);
- Green Manitoba – key program information and a link to the program website currently appears on the Green Manitoba website. The eco calendar also features the program logo and URL, and provides eco tips about mercury and where to recycle thermostats;
- Recycle Manitoba – information about the program currently appears on the Recycle Manitoba website ([www.recyclemanitoba.ca/](http://www.recyclemanitoba.ca/));
- Advertising via the Mechanical Contractors Association of Manitoba website – information about the program and a link to the program website currently appears on the Service Contractors page.

In addition, manufacturers currently provide information on the packaging of new thermostats sold into North America to inform the customer that their old thermostat may contain mercury, along with a website ([www.thermostat-recycle.org](http://www.thermostat-recycle.org)) and a toll-free phone number so that customers can find out where and how to properly dispose of it in the United States. This Plan will continue to utilize this existing US infrastructure which includes a link to the TRP (<http://www.thermostat-recycle.org/resources/faqs>) .

Appendix C provides examples of the existing TRP program resources that are focused on consumer awareness.

Once the program transition is complete, HRAI will consult with Green Manitoba and Recycle Manitoba to determine appropriate metrics for optimizing the effectiveness of the program's consumer communications strategy.

### 1.3 Industry Awareness

Because TRP is industry-focused rather than consumer-facing, awareness efforts will primarily target contractors/wholesalers. To supplement the consumer facing initiatives detailed above, industry-facing materials are also available. The messaging for these materials is similar to the consumer-facing information, in that it focuses on why old thermostats need to be recycled (in particular because of the risks associated with the mercury found in many older thermostats) and who funds the program, but include a greater emphasis on the fact that it is completely free to participate. Materials also describe the ways that contractors or wholesalers can join the program (registering as a participant or a drop-off location, or the option for smaller businesses to visit drop-off locations), what they will receive once they register, and emphasize how easy it is to participate. This information is communicated through the following resources and channels:

- Program website – presents a comprehensive overview of the program, with regular updates, an up-to-date list of disposal locations, and a quick link for registering for the program.
- Printed brochures – to be distributed by contractors/wholesalers at locations that sell new thermostats.
- Printed posters – to be displayed at participating drop-off locations to advertise to customers that the program is available at that location.
- “Proud Participant” stickers – to be displayed at participating drop-off locations to advertise to customers that the program is available at that location, or affixed to trucks that are out in the field to increase program visibility.
- Industry communications via newsletters and industry publications to inform the contractors/wholesalers about the program and how to register and participate.
- Wholesalers, distributors and manufacturers will promote the program to contractors and the general public via their websites, newsletters, signage, etc.
- Wholesalers and distributors provide on-site promotion and education for the small, one-person contractors via signage and printed information (posters, brochures and stickers), as well as allowing the contractors to use their collection containers if they want to (instead of acquiring their own collection pail).
- This Plan will continue to link to other initiatives and programs that HRAI is part of, such as the Refrigerant Management Canada (RMC) program and outreach to the Building Owners and Managers Association (BOMA) and Green Building Council to target the IC&I sector.

[Appendix D](#) provides examples of the existing TRP program resources that are focused on Industry Awareness.

The following metrics will be used as benchmarks to measure the effectiveness of the communications tools listed above:

- Program website – the program website will be updated monthly with collection results and new program participants and drop-off locations.
- Printed brochures – a minimum of 500 brochures will be printed and distributed on an annual basis.
- Printed posters – posters will be distributed to all new drop-off locations to be displayed on site.
- Industry-facing advertising – a minimum of 5 ads per year will target industry (for example, through industry associations, trade publications, e-blasts, etc.)

### 3.4 Collection Targets

The collection targets determined for the original plan were based on research conducted in Ontario as there was limited information available specific to the MB context. The data gathered was adjusted on a per capita basis for MB and adjusted upward to ensure the program set ambitious collection targets in its first years. The targets set in ON were appropriate for that context; however, the actual collection results in MB for years 1-4 have mostly suggested that these targets were slightly unrealistic. The table below provides the original five-year collection targets, and the actual collection results to date:

Year	Estimated Number of Mercury- containing Thermostats Available for Collection	Number of Thermostats to be Collected	% Capture	Actual Collection Results
Year 1 (April 2011 – March 2012)	1,650	415	25%	175
Year 2 (April 2012 – March 2013)	1,650	660	40%	434
Year 3 (April 2013 – March 2014)	1,650	910	55%	1,177
Year 4 (April 2014 – March 2015)	1,650	1,075	65%	753
Year 5 (April 2015 – March 2016)	1,650	1,240	75%	879*

\*Collection results as of March 1, 2016

In light of these findings, the original targets have been analyzed and additional research has been conducted to support the revision of Collection targets for the 2016-2021 Plan. The goals of the research were to seek more accurate sources of data, and consult with industry members to validate findings; this research is as follows:

- Analysis of central air conditioner (CAC) and furnace sales for 2009-2014 for MB and ON;
- Analysis of thermostat sales for 2009-2014 for MB, ON and Canada;
- Analysis of Program collection trends in MB and ON;
- Annual participant survey (9% response rate in MB); and,
- In-depth interviews with HRAI members (9 interviews)

This research has determined that adjusting the ON targets to account for the population of MB was slightly aggressive and did not result in accurate targets for the following reasons:

- Analysis of the available thermostat sales data, which was not available in the development of the original ON or MB plans, shows that sales into the MB market are approximately 19% of those in ON
- Analysis of Program participant surveys and collection trends in MB and ON suggest that the number of mercury-containing thermostats available for collection are declining
- Anecdotal evidence from interviews with HRAI members suggests that many older homes would have had electric heat that did not use mercury-containing thermostats

Based on this evidence, the total thermostats available for collection and the collection targets must both be adjusted. Based on the available thermostat sales data, there are approximately 16,110 thermostats sold into the MB market each year. To determine the retrofit market, the CAC and furnace sales were analyzed. The research conducted for the original plan development indicated that, according to industry sources, a reasonable assumption regarding the incidence of thermostat replacement is that half of the replacements occur when both the CAC and furnace are replaced, and the other half occurs when only one of the two (either the CAC or the furnace) are replaced. The retrofit market for CACs was determined to be 35% of sales, and for furnaces it represents 53% of sales; to estimate the percentage of thermostats going to retrofits rather than new builds, an average of 44% will be used. Therefore, an average of 7,088 thermostat replacements is occurring each year MB.

The next step is to determine the fraction of these that would be likely to contain mercury. The surveys that were conducted in preparation for the writing of this plan asked contractors what percentage of the programmable thermostats they installed were replacing mercury thermostats. According to the survey, 97% of households in the areas serviced by the contractors had a thermostat, and of those, 33% were non-programmable thermostats. Therefore, approximately 2,339 of the thermostats that are coming out of service each year are non-programmable.

The non-programmable thermostat segment is made up of electronic and mechanical categories. While mercury thermostats are part of the mechanical category, not all mechanical thermostats contain mercury. Because of this, it is difficult to estimate the fraction of non-programmable thermostats that are likely to contain mercury. This is compounded by the fact that manufacturers' transition to all non-mercury thermostats took place over a long period of time, and mercury thermostat sales decreased significantly as more accurate, more efficient all-electronic models became available. The most recent information available to determine the number of mechanical versus electronic thermostats that make up this non-programmable segment is from 2003, when mercury-containing thermostats were still being sold, and covers the entire North American market. This info is presented in the table below:

Type of Thermostat	Units Sold	Percent of Total Sales
Mechanical	5,180,000	36%
Electronic	9,100,000	64%
Total	14,280,000	

Source: Information provided by Product Stewardship Institute, using Frost & Sullivan 2003 data

The results of this research have not been reflected in the collection results in MB, where electronic thermostats have accounted for only 3% of all collection. Part of the discrepancy between the Frost & Sullivan numbers and the actual program results can be accounted for by market changes, but part could also be related to lack of awareness that electronic thermostats should also be recycled. However, it is also important to recognize that because mercury-containing thermostats are no longer being manufactured and sold into Canada, the number of these thermostats available for collection have declined and will continue to do so as the program matures. Subsequently, it is expected that the number of other mechanical and electronic thermostats will increase. Analysis of program trends in ON indicates that year over year the program has seen a steady decline in the number of mercury-containing thermostats, while electronic thermostat collection has gradually increased. The MB collection trends for mercury-containing thermostats are reflective of the ON numbers, and collection of electronic thermostats has seen significant growth as the Program has continued to mature, with a significant spike in collection from Year 2 to Year 4.

Therefore, in order to set realistic new Collection Targets, the Plan will assume that approximately 65% of thermostats coming out of service each year will be mercury-containing, for a total of 1,520 available annually. As with the previous plan, the targets will be based on a percent capture basis and will emphasize modest program growth. As with the collection location targets, the collection targets will also be re-aligned to the calendar year rather than the program year in order to facilitate reporting. The targets for 2016-2021 are outline in the table below:

Year	Estimated Number of Mercury-Containing Thermostats Available for Collection	Number of Thermostats to be Collected	% Capture
2016	1,520	1,216	80%
2017	1,520	1,292	85%
2018	1,520	1,368	90%
2019	1,520	1,444	95%
2020	1,520	1,520	100%
2021	1,520	1,520	100%

Targets focus on capture of available mercury-containing thermostats, as they are much more damaging to the environment and human health if not properly disposed of. Other types of thermostats will also be collected and reflected in all reporting, but collection numbers to date have not been sufficient to necessitate setting collection targets. The Program will continue to monitor the ratio of mercury-containing versus electronic thermostats that are collected each year to determine the length of time mercury-containing thermostats will be available for collection.

### Monitoring

The quantities collected and diverted as a result of the Plan will be monitored via monthly reporting from the recycler to HRAI and will include the number of thermostats collected from specific contractors and wholesalers, and regional/municipal channels.

### Remedial Actions

If the collection targets are not met, the Plan will focus on scaling-up both consumer and industry awareness initiatives, as well as increasing communication to all collection locations. This communication will emphasize the importance of properly recycling mercury-containing thermostats, as well as education about collection of non-mercury-containing thermostats.

## **4. PROGRAM ADMINISTRATION**

### ***4.1 Program Financing***

The Plan will be managed and funded by the manufacturers and distributors that sell and/or import thermostats into Manitoba. The manufacturers and distributors pay per unit fees based on return share of the thermostats collected.

### ***4.2 Steward Compliance***

HRAI will actively identify and recruit manufacturers and distributors that sell and/or import thermostats into Manitoba who are not participating in the Plan. Techniques to identify these companies will include audits of collected materials and information received from the industry associations and member companies.

Once a company is identified, HRAI will issue communications (letter, email or phone call) to advise the steward of their regulatory obligation to participate in a stewardship program. If the company does not comply, HRAI will issue a letter to Manitoba Conservation advising of the circumstances and requesting investigation and appropriate enforcement.

### ***1.4 Dispute Resolution***

HRAI will contract with all suppliers and service providers by the use of formal contracts and agreements. Any disputes arising will be resolved using appropriate legal procedures.

### ***1.5 Cooperation with Other Thermostat Collection Programs***

HRAI is committed to working with any other agencies that operate approved stewardship programs for thermostat collection in Manitoba to ensure the programs operate cooperatively and as effectively as possible.

## 5. ANNUAL REPORT

An annual report will be submitted to Manitoba Conservation as stated in the regulation. The annual report will also be available on the program website as a PDF file. The report will include, but not be limited to, the following information:

- Plan performance measures, including the number of mercury-containing thermostats collected, documented product recovery rate information, including the aggregated data of the total amount of thermostats collected, along with the estimated thermostat recovery rate;
- A comparison of the approved plan performance for the year with the performance requirements and targets in the regulation and the approved plan;
- The number of thermostats collected in each regional district;
- The number and location of collection facilities;
- A summary of the educational materials and educational strategies used for the Thermostat Recovery Program in Manitoba;
- The steps taken to manage the materials recovered through the Plan, including a description of how recovered thermostats were managed in accordance with the pollution prevention hierarchy, and information on the final destination of recyclable materials recovered through the Plan; and,
- A summary of the research and development efforts conducted throughout the year and results that they have yielded.

## 6. STAKEHOLDER CONSULTATION

On April 13, 2016, Scout posted the final draft version of the “Manitoba Stewardship Plan for Thermostats” on the current public TRP program website at <http://switchthestat.ca/eng/stewardship-plans.php>.

On April 19, 2016, a notice of the draft Plan and the associated consultation webinar was sent to Manitoba Association of Regional Recyclers (MARR) members, and through the HRAI and TRP newsletters. Stakeholders were also informed that if they were unable to participate in the consultation at the specified date and time, they could submit written comments to the Plan until April 28, 2016.

The consultation webinar was held on Friday April 22, 2016 from 11:00 am – 12:30 pm. There were two registrants; one from a recycling depot, and one HVACR contractor.

The webinar included a PowerPoint presentation that provided an overview of the Plan, as well as opportunities to ask questions and provide feedback to the Plan via the associated conference call or chat function during the webinar. The PowerPoint presentation developed for the webinar is provided in [Appendix E](#).

There were no comments or feedback during the webinar, nor were there written comments received through other channels.

## Appendices

### Appendix A — List of Manufacturers and Distributors Responsible for Selling Mercury-Containing Thermostats into Manitoba

- Bard Manufacturing Corporation
- Carrier Canada Inc
- Chromalox
- Climate Master, Inc.
- Emerson Electric Corporation/White-Rodgers
- Empire Comfort Systems
- General Electric Corporation
- Honeywell Corporation
- ITT Corporation
- Invensys Controls/Robertshaw
- Johnson Controls Inc.
- Johnson Controls-UPS Division (York)
- Lennox International Inc.
- Lux Products
- McQuay International
- NORDYNE/Nordyne Corporation
- Rheem Manufacturing Company
- Schneider Electric
- Sears Holdings
- TPI Corporation
- Trane Residential Systems

## **Appendix B — List of Thermostats Manufacturers and Distributors Signed-on to Participate in the Stewardship Plan**

Registered Thermostat Manufacturers and Distributors:

- Bard Manufacturing Company Inc.
- Carrier Canada Ltd.
- Chromolox
- Climatemaster Inc.
- Emerson /White-Rodgers
- Empire Comfort Systems Inc.
- General Electric
- Honeywell
- International Comfort Products
- ITT Corporation
- Johnson Controls
- Lennox International Inc.
- Lux Products Corporation
- McQuay International/Daikin Applied
- Nordyne
- PSG Controls Inc.
- Schneider Electric
- Sears Canada Inc.
- Tekmar Control Systems Ltd.
- TPI Corporation
- Thomas & Betts Ltd.
- Trane Residential Systems
- Uponor Ltd.
- Waterfurnace International, Inc.

Appendix C: Consumer-facing Outreach Materials

Consumer-facing Brochure



This is a mercury switch – Something that still exists in millions of older mechanical thermostats. Mercury is highly toxic and dangerous to the health of people and wildlife.

Switching to newer and more energy-efficient programmable thermostats and responsibly disposing of old mercury containing thermostats reduces energy consumption and prevents mercury from contaminating our soil, water and air.



**NOW THE CHOICE IS YOURS!**

If you dispose of your old thermostat with your household waste, you are sending mercury to landfill.



Old mechanical thermostats have one to four switches, each containing approx. 2.5 grams of mercury.



Mercury is a potent neurotoxin. It only takes one gram of mercury to contaminate an eight-hectare lake to the point the fish is not edible for a full year.



If you participate in the Thermostat Recovery Program, you'll conserve energy, save money, and prevent mercury releases to the environment.



➔ **STEP 1:** With the help of your participating Thermostat Recovery Program contractor, change to a newer, more energy efficient programmable thermostat.

➔ **STEP 2:** Responsibly dispose of your old mercury containing thermostat through your local Thermostat Recovery Program contractor. A recycling facility will dismantle the thermostat, recycle the parts, and prevent the mercury from contaminating soil, water and air.



**FOR MORE INFORMATION**  
1(800) 267-2231, x 224 Email [pthompson@hrai.ca](mailto:pthompson@hrai.ca)

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## Appendix D: Industry-facing Outreach Materials

### Industry-facing Brochure

Front:



Recycling with the Thermostat Recovery Program is safer for you and the environment.

**We recycle all components of a thermostat:** plastic, metal, electronics and mercury (which is particularly hazardous)

**DO YOUR PART AND JOIN THE MORE THAN 1,500 CONTRACTORS ALREADY PARTICIPATING IN THE PROGRAM.**

Back:



Mercury is a potent neurotoxin. It only takes one gram to contaminate an eight hectare lake (about the size of 1.5 Olympic sized swimming pools) to the point where the fish are inedible for an entire year. Each thermostat can contain 2.5-10 grams of mercury!

**Let us take care of them for you in 3 easy steps:**

- 1 SIGN UP**
- 2 COLLECT STATS IN THE PAIL**
- 3 SEND THE PAIL BACK**

(and we will send you a free replacement pail)

**FOR MORE INFORMATION**  
1(800) 267-2231, ext. 224  
Email [pthompson@hrai.ca](mailto:pthompson@hrai.ca)

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Canadian Institute of Heating & Cooling



**EASY. SAFE. FREE.**  
THERMOSTAT RECYCLING

# DROP OFF LOCATION

- + BRING US YOUR FULLY INTACT THERMOSTATS FOR SAFE RECYCLING
- + WE RECYCLE ALL COMPONENTS, INCLUDING HAZARDOUS MERCURY
- + SHOW YOUR CUSTOMERS YOU ARE DOING YOUR PART TO PROTECT THE ENVIRONMENT!

**1,500+**  
**CONTRACTORS**  
ALREADY PARTICIPATING  
ACROSS CANADA

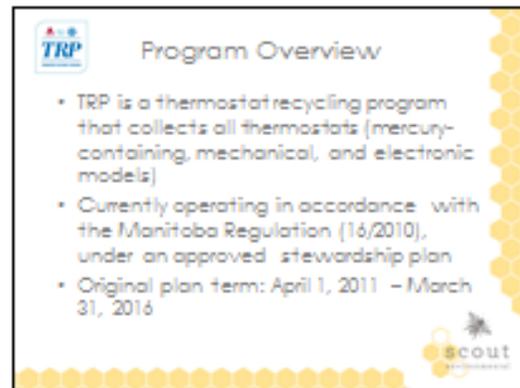
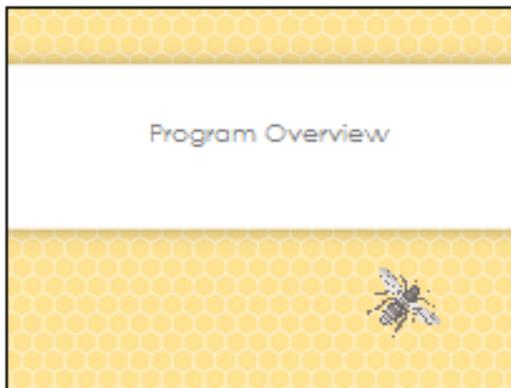
FOR MORE INFORMATION 1(800) 267-2231, x 224 / Email [pthompson@hrai.ca](mailto:pthompson@hrai.ca)

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***Proud Participant Sticker***

Currently being rebranded. Coming soon.

## Appendix E – PowerPoint Presentation from the Public Consultation Webinar



## Program Partners

**TRP** Program Partners

TRP is an EPR program funded by thermostat manufacturers (specifically, any manufacturer who has ever sold mercury-containing thermostats in Canada)

- HRAI is the Program Administrator and is responsible for Program Delivery 
- CIPH is the Program Supporter 



## Current Program Performance

**TRP** Current Program Performance

**Current Targets:**

- Collection Location Targets (registered participants)
- Collection Targets (units of thermostats)

Other Performance Indicators:

- Consumer Awareness



**TRP** Collection Location Targets

**Progress Against Targets:**

Program Year	Total Number of Collection Locations	Target Number for Annual Report	Actual Number of Collection Locations	Percentage Achieved
TRP 1 (2011-2012) (WMSI #1-1000)	48	50	48	96%
TRP 2 (2012-2013) (WMSI #1-1000)	48	50	48	96%
TRP 3 (2013-2014) (WMSI #1-1000)	70	70	70	100%
TRP 4 (2014-2015) (WMSI #1-1000)	70	70	67	96%
TRP 5 (2015-2016) (WMSI #1-1000)	70	70	70	100%



**TRP** Collection Targets

**Progress Against Targets:**

Year	Submitted Number of Mercury-containing Thermostats Available for Collection	Number of Thermostats to be Collected	% Capture	Actual Collection Results
TRP 1 (2011-2012) (WMSI #1-1000)	1,400	470	34%	170
TRP 2 (2012-2013) (WMSI #1-1000)	1,400	400	29%	160
TRP 3 (2013-2014) (WMSI #1-1000)	1,400	570	41%	1,177
TRP 4 (2014-2015) (WMSI #1-1000)	1,400	1,070	77%	700
TRP 5 (2015-2016) (WMSI #1-1000)	1,400	1,000	71%	877

\*Collection results of Staff 10, 11, 12



**TRP** Consumer Awareness

- Program website
- Green Manitoba website and eco calendar
- Recycle Manitoba website
- Mechanical Contractors Association – Service Contractors page



2016-2021 Plan



**TRP** 2016-2021

**Key Changes:**

- Targets will be aligned to calendar year rather than plan year (facilitates reporting)
- Changes to Collection Location Target growth
- Changes to Collection Targets



**TRP** Collection Location Targets: 2016-2021

**Revised Collection Location Targets:**

- Focus on more modest growth in underserved areas
- Allow for greater focus on collection results

Program Year	Target Number of Collection Locations	Percent Increase from Previous Year
2016	111	10%
2017	117	5%
2018	123	5%
2019	129	5%
2020	135	5%
2021	141	5%

\* Although part of TRP's work for Program year 2016, collection locations for 2016 are not included in this table.



**TRP** Collection Targets

Research to determine validity of existing targets:

- Analysis of central air conditioner (CAC) and furnace sales for 2009-2014 for MB and ON;
- Analysis of thermostat sales for 2009-2014 for MB, ON and Canada;
- Analysis of Program collection trends in MB and ON;
- Annual participant survey (9% response rate in MB); and,
- In-depth interviews with HRAI members (9 interviews)



**TRP** Collection Targets 2016-2021

**Revised Collection Targets:**

Year	Estimated number of mercury-containing thermostats	Number of mercury-free thermostats	% Capture
2016	1,200	1,215	80%
2017	1,200	1,290	83%
2018	1,200	1,365	85%
2019	1,200	1,440	87%
2020	1,200	1,515	89%
2021	1,200	1,590	91%



 Other Performance Measures

- Consumer Awareness
  - Program delivery currently transitioning from Scout Environmental to HRAI
    - Once program transition is complete, HRAI will consult with Green Manitoba and Recycle Manitoba to determine appropriate metrics for optimizing effectiveness of program's consumer engagement strategy
- Industry Awareness
  - Make program materials available
  - Industry-facing advertising and events



Questions?



## Appendix F: Summary of Program Performance Measures

Measures	Targets/Goal				
	2017	2018	2019	2020	2021
<b>Collection Location Targets (participation)</b>	117	123	123	123	123
<b>Collection Targets</b>	1,292	1,368	1,444	1,520	1,520
<b>Consumer Awareness</b>	<ul style="list-style-type: none"> <li>• Green Manitoba eco calendar – tips for recovery and proper disposal of thermostats will be supplied to Green Manitoba for the annual eco calendar;</li> <li>• Recycle Manitoba website – information about the Switch the ‘Stat program will be supplied to Recycle Manitoba for use on their website.</li> </ul>				
<b>Industry Awareness</b>	<ul style="list-style-type: none"> <li>• Program website – the program website will be updated monthly with collection results, new program participants and drop-off locations.</li> <li>• Printed brochures – a minimum of 500 brochures will be printed and distributed on an annual basis.</li> <li>• Printed posters – posters will be distributed to all new drop-off locations to be displayed on site.</li> <li>• Industry-facing advertising – a minimum of 5 ads per year will target industry (for example, through industry associations, trade publications, e-blasts, etc.)</li> </ul>				