Switch the ‘Stat

Annual Report to the Director

2014 Calendar Year

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This annual report is issued by the Heating, Refrigeration and Air Conditioning Institute of Canada (HRAI) in accordance with the British Columbia Recycling Regulation (Reg. 449/2004). The 2014 annual report documents the Switch the 'Stat program's activities and results in British Columbia from January 1 to December 31, 2014.

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1. Executive Summary

Products within plan	Thermostats (electronic and mercury-containing)
Program website	www.switchthestat.ca

Recycling Regulation Reference	Topic	Summary (5-bullet maximum)
Part 2, section 8(2)(a)	Public Education Materials and Strategies	• Outreach through HRAI, the Thermal Environmental Comfort Association (TECA), and the Mechanical Contractors Association of Canada (MCAC) & Mechanical Service Contractors of Canada (MSCC) • Print ads and eblasts with Mechanical Business and HPAC magazines; ads in regional district recycling calendars • Collaboration through Stewardship Agencies of BC (SABC) • Recycling Council of British Columbia (RCBC) hotline and Recyclepedia • In person engagement at RCBC annual conference and Coast Waste Management Association (CWMA) annual conference
Part 2, section 8(2)(b)	Collection System and Facilities	• 37 new collection points • 18 new drop-off locations • 343 total collection points • Collection points in 27 regional districts • 2 collection facilities
Part 2, section 8(2)(c)	Product Environmental Impact Reduction, Reusability and Recyclability	• 5,783 mercury-containing vessels collected (there can be anywhere between 1 to 4 mercury vessels contained in each thermostat) • 80.67 kilograms of metals recycled • 109.18 kilograms of plastics recycled • No new mercury-containing thermostats sold into the market
Part 2, section 8(2)(d)	Pollution Prevention Hierarchy and Product / Component Management	• New thermostats do not contain mercury, and also help reduce energy consumption • Recovered thermostats are not suitable for re-use • Greater than 99% of plastic and metal components are recycled, with a high degree of certainty • Mercury vessels are sent for retort and mercury is either put into long-term storage or reused in CFL and fluorescent production (depending on market demand) • Because greater than 99% of all components are recycled, and there is no better option in the pollution prevention hierarchy, no targets are in place

Recycling Regulation Reference	Topic	Summary (5-bullet maximum)
Part 2, section 8(2)(e)	Product Sold and Collected and Recovery Rate*	• Collected 2,639 mercury containing thermostats, 81 electronic thermostats, and 1,114 loose mercury vessels • Adjusted total: 3,435 mercury-containing thermostats and 81 electronic thermostats, for a total of 3,515 collected • 8% improvement from 2013 collection results
Part 2, section 8(2)(e.1)		See **Section 9** for breakdown per regional district
Part 2, section 8(2)(f)	Summary of Deposits, Refunds, Revenues and Expenses	N/A

*Switch the 'Stat does not report on Product Sold or Recovery Rate; see Section 7 for details.

Comparison of Key Performance Targets		
Part 2 section 8(2)(g); See full list of targets in Plan Performance		
Priority Stewardship Plan Targets* (as agreed with ministry file lead)	**Performance**	**Strategies for Improvement**
1. Collection: 9,450 thermostats	3,515 thermostats collected (37% of target) (adjusted total)	• Increase number of public drop-off locations • Increase number of collection points** • Improve communication with wholesalers so that all staff can effectively market the program at their location • Research to develop new 5 year plan has helped to develop more accurate and realistic targets for 2015
2. Collection points/Participants: 381	343 participants (90% of target)	• Increase outreach to wholesaler locations, especially those with multiple locations in the province. • Continue face-to-face communication at trade shows • Explore new recruitment options (eg. new marketing plan, and targeted outreach in regions with poor coverage)

**targets are pro-rated, using ½ of the year four target and ½ of the year five target, as the program years run from July 1 to June 30 of the following year, while the reporting period is based on the calendar year.*

***see Section 4 for descriptions of drop-off locations versus collection points*

2. Program Outline

Switch the 'Stat is the designated program for managing thermostats in British Columbia, both electromechanical (mercury-containing) and electronic models. The British Columbia Stewardship Plan for Thermostats is the approved five year plan for recovering these products, and spans a timeline of July 1, 2010 to June 30, 2015.

- Electromechanical thermostats(also referred to as "mercury-containing 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."

Switch the 'Stat is funded by thermostat manufacturers who have sold thermostats into Canada; a complete list of manufacturers is available online at http://www.switchthestat.ca/eng/program-facilitators.php . On behalf of the manufacturers, the program is administered by the Heating, Refrigeration, and Air Conditioning Institute of Canada (HRAI) and delivered by Summerhill. Additionally, the program is supported by the Canadian Institute of Plumbing and Heating (CIPH).

In accordance with the program plan, Switch the 'Stat collects thermostats in the province of British Columbia through one main collection channel (HVAC contractors/wholesalers & municipal/regional district collection) and two secondary collection channels (drop-off locations and a send-back option).

Based on estimates that 85 to 90 percent of thermostats sold in British Columbia are sold through contractors and wholesalers in the heating, ventilation and air-conditioning (HVAC) industry, this group logically makes up the primary channel through which to recover all types of thermostats. In order to support this channel and make the program more accessible to members of the public, any participating collection point can also register to be a drop-off location (typical drop-off locations are wholesalers, regional districts, and municipal locations). An up-to-date list of drop-off locations, searchable by postal code or by zooming in on a map, is always available on the Switch the 'Stat website. Finally, the send-back option provides access to the program to individuals who are not close to a drop-off location. A small pail and a pre-paid waybill addressed to the collection facility are shipped to the individual's home (or desired location), making program accessible to individuals in remote areas. Together these channels comprise all of the program participants, or "collection points" as they shall be identified throughout this report. See Section 3 below for a definition of "collection points" as distinct from "collection facilities."

As per the requirements under the British Columbia Recycling Regulation, this report has been prepared to summarize the program activities undertaken during the calendar year of 2014, and will be posted on the program website at www.switchthestat.ca.

3. Public Education Materials and Strategies

Initiatives

Switch the 'Stat operates by collecting thermostats through existing businesses and infrastructure, referred to in the program plan as "collection channels." As described in Section 2, the program uses one main collection channel (HVAC contractors/wholesalers) and two secondary collection channels (drop-off locations and send-back option) to recover mercury-containing thermostats. During Year Five, the focus of the program continued to be on increasing registrations, particularly in the contractor/wholesaler channel, and also on increasing collection in order to meet the Year Five participation and collection targets and ensuring that the program is as accessible as possible.

To support the participation goal, a detailed coverage map was developed (see Appendix A) to identify areas with fewer collection points and targeted outreach efforts were initiated; these efforts will continue in 2015. To support the collection target goal, a wholesaler engagement package was sent to all wholesalers and other public-facing drop-off locations in BC, providing new signage, brochures and stickers, as well as instructions to ensure that all staff members are aware of how the program works. The aim of this initiative is to improve wholesalers' ability to promote Switch the 'Stat to customers, ultimately leading to more collection results; we hope to continue to see the impact of this initiative through 2015 (participants take an average of 6 months to return a full pail).

In 2014, the program built on the foundation laid in previous years and broadened the audience that is reached by Switch the 'Stat messaging. Key areas of focus in 2014 were:

- Regular communication with participants (to keep them engaged)
- Increased marketing and outreach efforts to non-participants (particularly contractors and wholesalers)
- Increased public outreach (info about the program and how to participate)

To achieve these goals, the following initiatives were undertaken:

Initiative	Details	Audience/ Channel Reached	Type of Outreach
Ongoing outreach with HRAI national office	• Information about the program and a call to register were included in the HRAI Spring & Fall review newsletters, sent to all HRAI members. • Information about Switch the 'Stat (StS) accomplishments was included in the HRAI Accomplishment List, accompanying renewal letters sent to all HRAI members	Contractors/wholesalers	• Industry outreach (print)

Ongoing outreach with Canadian Institute for Plumbing and Heating (CIPH) national office • CIPHEX West Trade Show & Conference	• CIPH provided StS with a free booth at the CIPH Exhibition (CIPHEX) Trade Show & Conference in Calgary. Although it wasn't located in British Columbia, this is an important industry event that attracts attendees from nearby provinces.	CIPH	• Contractors/ wholesalers
Targeted outreach through the Thermal Environmental Comfort Association (TECA)	• Recruitment emails to all members • Recruitment phone calls to all members	Contractors	• Industry outreach
Partnership with Mechanical Contractors Association of Canada (MCAC) & Mechanical Service Contractors of Canada (MSCC)	• MSCC has offered its full support to the StS program and has promoted the program to its members • StS promoted in e-newsletter	Contractors	• Industry outreach
BC Stewards/Stewardship Agencies of BC (SABC)	• Formalized association of all BC stewardship associations allows all stewards to present a united front, and to collaborate on communicating to various stakeholder groups • Website (bcstewards.com) provides an overview of each of the programs (including Switch the 'Stat) • Recycling Handbook provides an overview of each of the programs (including Switch the 'Stat) • Action Plan developed by SABC to ensure the success of all programs, investigate potential gaps, and address feedback from BC Ministry of the Environment.	General Public	• Print media • Online
Region District waste calendars/brochures: • Peace River	• Program ad and link to drop off locations in calendar	General Public	• Print media

Regional District • Kootenay Boundary Regional District			
Cowichan Valley Regional District educational outreach	• Promotional materials provided for educational outreach	General Public	• Print media
Recycling Council of British Columbia (RCBC)	• Info about the program (materials accepted and nearest drop-off locations) made available to the public through a hotline and online tool (the Recyclepedia) o 99 hotline inquiries o 467 Recyclepedia searches • Attendance at the RCBC Annual Zero Waste conference, which provides an opportunity to conduct face-to-face outreach and engagement with representatives from Regional Districts, recycling depots, and other relevant stakeholders.	General Public; BC waste management industry	• Online • Phone • In person outreach
Coast Waste Management Association	• Attendance at the Coast Waste Management Association annual conference, which provides as opportunity to conduct face-to-face outreach and engagement with representatives from Regional Districts, recycling depots, and other relevant stakeholders.	BC waste management industry	• In person outreach
Mechanical Business Magazine	• StS appeared in all 6 issues, reaching over 15,000 contractors nationally each month • A banner ad appeared on the website for the whole year • Program info was also featured in July/August "By	Contractors/Wholesalers: General Public	• Print media • Online

	the Numbers" section		
HPAC/Canadian Contractor ads & eblast	• Print ad appeared in June issue of HPAC magazine (with a readership of approximately 18,800) • Eblast to MB, BC, AB, and SK subscribers of HPAC in April had a reach of ~6,000 viewers	Contractors/wholesalers	• Business-to-business print media
Northern Environmental Action Team (NEAT) • Based in Fort St. John, with reach across the Peace River Regional District and parts of the Northern Rockies RD	• Publicized program by deeming October "Switch the 'Stat Month" • Provided promotional materials for educational outreach	General Public	• Print media • Online
Wholesaler Engagement • Packages send July 2014	• Packages sent to all existing wholesaler participants and drop-off locations containing: o New "Drop-off" posters o "Proud Participant" stickers o Engagement letters (to ensure that all key employees are familiar with the program, and with the materials)	n/a	Wholesalers

In addition to the efforts listed above, the program was promoted through numerous voluntary channels. See examples in Appendix B.

Resources

To support these initiatives, a variety of educational and marketing materials were used. These materials are described below.

1. **Program Website:** The program's website, www.switchthestat.ca, is the primary educational tool, and features content directed at educating contractors and wholesalers as well as the general public. This site provides a comprehensive overview of the program, education about mercury and the dangers it presents, an interactive map of drop-off locations that is searchable

by postal code or by map and updated in real time as participants join the program, and an online registration form for residents who want to return a thermostat using the send-back option. The site is also kept up-to-date with cumulative totals of thermostats and mercury vessels that have been collected and the weight in kilograms of the mercury that has been recovered.

2. **Promotional Resources:** The Switch the 'Stat website also features an exclusive section that can only be accessed by registered collection points and program supporters who have been given the link to this part of the site. This exclusive section provides special promotional resources for participating collection points to use while outreaching to the public about thermostat recycling. The promotional resources portion of the website can be found at www.switchthestat.ca/resources and includes a variety of digital resources for participants to use to promote the program, such as downloadable Switch the 'Stat logos to add to their promotional materials, as well as web banners that can be added to a webpage or an e-newsletter to promote their participation in the program.
3. **Introduction letters:** Each collection kit issued to a newly registered collection point contains an outreach letter that includes educational information about the program and about mercury. These letters are important educational tools that help develop commitment from newly recruited participants. These letters also help new participants with their future outreach to the public, by providing them with information about the importance of recycling mercury-containing thermostats.
4. **"Thermostats Only" Stickers:** To prevent materials other than thermostats from being recovered in the Switch the 'Stat collection containers, the program developed new "thermostats only" stickers at the end of 2011. These stickers are placed on the top of all collection containers before they are shipped to participants and act as a visual reminder that only thermostats are accepted in the collection containers.
5. **Posters (Updated in 2014):** Promotional posters are continually available for participants to use in displays on-site at the collection locations. In 2014 the posters were redesigned to be more eye-catching and to be a more effective tool for drop-off locations. New posters were proactively sent to all wholesaler locations as part of the wholesaler engagement package, sent in July 2014.
6. **Brochures (Updated in 2014):** A stack of printed brochures is provided to participating collection points for distribution to their customers (in the case of contractors/wholesalers) or at public events, throughout 2014. These brochures include facts about mercury and information about the Switch the 'Stat program that is used to educate customers and the public. In 2014 a second brochure was developed so that there are now separate industry-facing and public-facing versions with tailored messaging.
7. **Proud Participant Stickers (New in 2014):** Each collection kit issued to a newly registered collection location includes a "Proud Participant" sticker. These promotional stickers are to use

in displays on-sire at the collection locations or on contractors trucks. Additional stickers are provided to wholesalers to make available to contractors who use them as a drop off point.

8. **Monthly Newsletter:** In order to remain in communication with existing participants, an e-newsletter on program milestones, collection sweeps and other news is published and sent monthly. The goal of the newsletter is to keep participants up to date with program happenings, to keep the program on participants' minds, to keep participant satisfaction high, and ultimately to increase collection results. The newsletter has three main sections: key news/information; "'Stat Chat," which addresses FAQs; and a version of the results counter from the switchthestat.ca homepage, which shows cumulative collection totals to date. As of December 31, 2014, the newsletter had 773 subscribers nationally, approximately 25% of who are in BC.
9. **Collection sweep postcards:** As part of our bi-annual collection sweep, reminder postcards were sent to all active collection points in May and September. Participants were asked to return their pail if it was at least half full, and given the opportunity to request new program materials.
10. **Print ads and eblasts:** Print ads were published in all 6 issues of Mechanical Business magazine, a national trade magazine reaching HVAC and plumbing contractors with a readership of 15,000. One print ad also appeared in the June issue of HPAC magazine, which has a readership of approximately 18,500 HVAC and plumbing contractors. As part of this marketing strategy, one e-blast was sent to HPAC's online base of 2,600 subscribers in BC during the week of April 15, 2014. Ads were also developed for the Peace River and Kootenay Boundary Regional District recycling calendars.
11. **Banner stands:** To support in-person events such as trade shows, banner stands are used to be versatile and eye catching. These banners support site-specific signage, and will be used through 2015 as well.

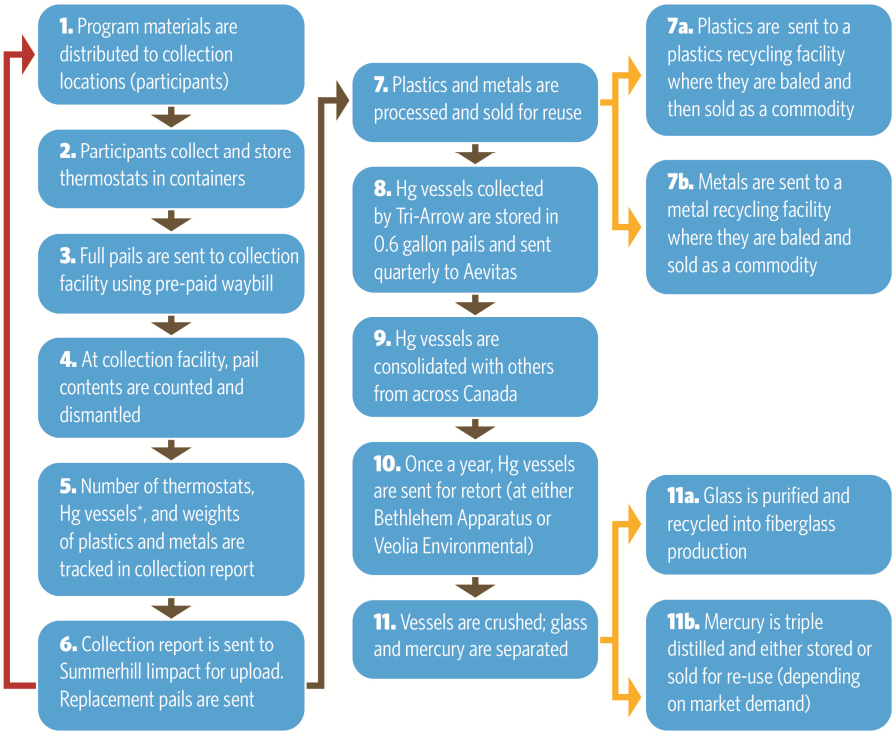
4. Collection System and Facilities

Collection System Overview

The Switch the 'stat collection system is comprised of the following:

1. Collection points (participants)
    - made up of the 3 collection channels described above
    - use collection containers to collect thermostats and send them to the collection facility
2. Collection facilities
    - Tri-Arrow Industrial Recovery or Aevitas Inc receive the collection containers from various collection points and process the thermostats (count, dismantle, and in the case of Tri-Arrow periodically ships Hg vessels to consolidation point)
3. Consolidation point
    - Aevitas Inc. receives Hg vessels from Tri-Arrow and consolidates them with vessels from across the country
    - All vessels are shipped to retort facility at least once a year
4. Retort facility
    - Final processing of Hg vessels

The relationship between these facilities is demonstrated in the flow chart below:



*Note: thermostats can contain 1 to 4 Hg vessels, and participants occasionally include loose vessels that they have removed from thermostats in the collection pails, so both total number of thermostats and total number of Hg vessels are tracked.

Collection Facilities

As described above, Switch the 'Stat uses two collection facilities: Tri-Arrow Industrial Recovery, located in Surrey, BC and Aevitas Inc, Located in Ayr, Ontario. These facilities receive collection containers full of thermostats from all collection points in BC, and begin processing the thermostats. The shipper of each pail is recorded in a monthly tracking sheet, as are the number of thermostats per pail (in total, and broken down by brand), the number of mercury vessels contained, the weight of the plastic and metal components, and any off-spec materials included in the collection containers.

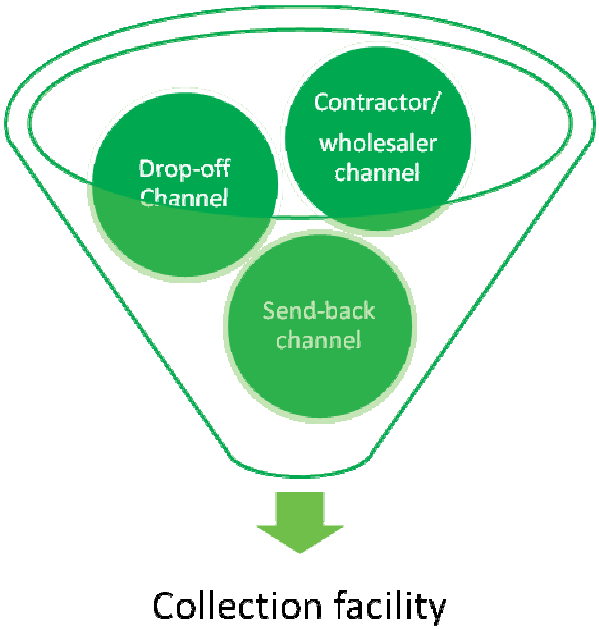
In the past, Aevitas has acted only as a consolidation point for thermostat vessels from BC, but is now receiving pails of intact thermostats directly from collection points as well (this is a function that Aevitas has served for collection points in other provinces since 2006). Therefore, our collection facilities have increased from one to two since 2013; however, the program is transitioning to use only Aevitas so the increase will be temporary. The primary reason for this shift is to streamline program operations in response to feedback from the third-party assurance provider in 2014, though it is also ultimately more cost-effective for the program.

Collection Points

As described in section 3 above, Switch the 'Stat uses 3 main collection channels: the contractor/wholesaler channel, public drop-off locations, and the send-back channel. The individual participants in each of the collection channels are referred to as "collection points" or "participants."

These collection points are a key part of the collection system, as they recover end-of-life thermostats and send them to the collection facility, Tri-Arrow or Aevitas.

Participants use the collection containers provided by the Switch the 'Stat program to collect end-of-life thermostat, and when the container is full, they use their pre-paid Purolator waybill to return the thermostats to the collection facility (all new waybills are addressed to Aevitas, so ultimately returns to Tri-Arrow will be phased out as participants use their older waybills). At the collection facility, the thermostats are processed (for more details about processing, please see Section 6). This process is illustrated below.



According to the stewardship plan, the goal was to have 381*registered collection points in 2014. Through outreach initiatives described above, 37 new businesses registered as collection points for end-of-life thermostats in 2014, 18 of which elected to act as drop-off locations and 1 of which registered as a send-back participant (see description in Section 2).

The following chart provides information regarding the businesses registered, including the types of business registered, if they have opted to be a drop-off location and the city where the business is located.

Company Name	Type	Drop Off	City
All Pro Plumbing & Heating Inc.	Contractor	Yes	Prince George
C T Gas Fitting Services Ltd	Contractor	No	Prince George
Cape Construction (2001) Ltd.	Contractor	Yes	Richmond
City of Terrace	Municipal	No	Terrace
Coast Mountain School District	Municipal	No	Kitimat
CW Plumbing	Contractor	No	Bonnington
Dunc's Plumbing & Heating	Contractor	No	Prince George
ECCO Heating Products Ltd.	Wholesaler	No	Langley
Ecco Supply - Burnaby	Wholesaler	No	Burnaby
Ecco SUpply - Chilliwack	Wholesaler	No	Chilliwack
Ecco Supply - Kelowna	Wholesaler	No	Kelowna
Ecco SUpply - Victoria	Wholesaler	No	Victoria
eCycle Solutions	Recycling Centre	No	Chilliwack
EMCO	Wholesaler	Yes	Surrey
EMCO CORPORATION	Contractor	Yes	Surrey
EMCO Ltd	Wholesaler	Yes	Dawson Creek
EMCO Ltd	Wholesaler	Yes	Prince George

EMCO Surrey - Branch 827	Contractor	Yes	Surrey
Fort Nelson Heating Ltd.	Contractor	No	Fort Nelson
Grips Recycling & Bottle Depot	Recycling Centre	Yes	Madeira Park
Herman Svab Heating Plulbing & Gas	Contractor	No	Smithers
Houle Electric Ltd. (Kelowna)	Contractor	Yes	Kelowna
Knox Mountain Metals Inc	Recycling Centre	No	Kelowna
M+K Plumbing & Heating	Contractor	Yes	cranbrook
Parky's Heating	Contractor	Yes	Golden
Pro Flame Contracting	Contractor	Yes	Powell River
Progress Plumbing & Heating Services	Contractor	No	Progress
RDKB	Municipal	No	Grand Forks
RH Jones & Son Mechanical Ltd	Contractor	Yes	Prince George
Salish Soils Inc.	Recycling Centre	Yes	Sechelt
Schmidt Bros. Mechanical Ltd.	Contractor	Yes	Vancouver
Send it back	Send Back	No	Fort St James
Veridis Plumbing and Heating Ltd	Contractor	No	Mill Bay
Wastech Services	Contractor	Yes	Coquitlam
Wastech Services Ltd., North Shore Transfer Statio	Recycling Centre	Yes	North Vancouver
Wastech Services Ltd., Surrey Transfer Station	Recycling Centre	Yes	Surrey
Zwick's Plumbing & heating	Contractor	No	Dawson Creek

* *as with collection targets, this number is pro-rated to compensate for difference between plan year and reporting year. See explanation in Section 9, below.*

Changes to Collection Points

Since 2013, there have also been five changes to existing collection points. These changes are as follows:

Company Name	Type	Drop Off	City	Change
Arete Mechanical	Contractor	Yes	Burnaby	No longer wishes to participate
Integrity Mechanical Ltd	Contractor	No	North Vancouver	No longer in business
Mayne Island Recycling Society	Recycling Centre	Yes	Mayne Island	No longer wishes to participate
Sims Recycling Solutions	Recycling Centre	No	Langley	No longer in business
Send it Back	Send Back	No	Fort St James	Only had one switch to return, did not wish to participate

Taking these changes into account, and combining the new participants with existing collection points from Year Four, as of December 31, 2014 there were 343 collection points in British Columbia.

These collection points are located in the following regional districts:

Region	Number of Collection Points
Alberni–Clayoquot Regional District	2
Capital Regional District	38
Cariboo Regional District	3
Columbia–Shuswap Regional District	18
Comox Valley Regional District	9
Cowichan Valley Regional District	9
Fraser Valley Regional District	29
Metro Vancouver (Greater Vancouver Regional District)	119
Northern Rockies Regional District	2
Peace River Regional District	11
Powell River Regional District	3
Regional District of Bulkley–Nechako	2
Regional District of Central Kootenay	6
Regional District of Central Okanagan	15
Regional District of East Kootenay	6
Regional District of Fraser – Fort George	9
Regional District of Kitimat–Stikine	3
Regional District of Kootenay Boundary	4
Regional District of Mount Waddington	2
Regional District of Nanaimo	11
Regional District of North Okanagan	8
Regional District of Okanagan–Similkameen	6
Skeena – Queen Charlotte Regional District	3
Squamish–Lillooet Regional District	4
Strathcona Regional District	4
Sunshine Coast Regional District	6
Thompson–Nicola Regional District	11

As this list demonstrates, there are collection points in 27 of British Columbia's 29 regions. The regions in which we do not yet have participants are as follows:

- Central Coast Regional District
- Stikine Region

Over the course of 2015, attempts will be made to register participants in the remaining 2 regional districts. However, it should be noted that people can participate in the program by taking advantage of our free send-back channel even if there is not a registered collection point in their region.

5. Product Environmental Impact Reduction, Reusability and Recyclability

Through the Switch the 'Stat program, all components of the recovered thermostats are sent for recycling, including the plastics, metals, glass, mercury and any electronics associated with the thermostat. Taking into account that occasional commingling of the materials may occur, greater than 99% of materials are recycled. In 2014, the breakdown of materials recovered and recycled from the province of British Columbia included:

- 5,783 mercury-containing vessels (there can be anywhere between 1 to 4 mercury vessels contained in each thermostat)
- 14.46 Kg of mercury (calculated based on 2.5 grams of Hg per vessel)
- 5.78 Kg of glass (calculated based on 1 gram of glass per vessel)
- 80.67 kilograms of metals
- 109.18 kilograms of plastics

The recyclability of mercury-containing thermostats cannot be improved, nor can the reusability of these products because they are obsolete. New programmable thermostats are more environmentally responsible as they contain no mercury and reduce energy demands (as compared to older set-back models). Further, it is dangerous to attempt to reuse mercury-containing thermostats due to potential incompatibility with newer HVAC systems, thus replacing them with newer thermostats and recycling the older models is the best choice for reducing the environmental impact of these products.

Because Switch the 'Stat is already able to recycle greater than 99% of materials recovered through the program with a high level of certainty, efforts to continually reduce environmental impacts have centered on improving the program's collection processes. One area of focus has been the reduction of non-thermostat materials which are sometimes sent back in collection pails. Efforts have included communications with participants, and the development of new "thermostats only" stickers (as described in Section 3) for the inside of the collection pails to act as a reminder for participants.

As the program expands and matures, additional reductions in environmental impact will be sought in order to ensure the program is effective in having a positive outcome for the environment and the citizens of British Columbia.

6. Pollution Prevention Hierarchy and Product / Component Management

As per the stewardship plan for thermostats, pollution prevention efforts have focused on recycling, rather than reduce/redesign or reuse. The breakdown as to why recycling is the preferred management technique out of the four "Rs" is provided below.

Reduce/redesign: The main environmental concern with thermostats is the mercury contained in many older models. While many of these thermostats may still be in use, they are no longer made by the major manufacturers and are no longer sold in Canada. New thermostats have been redesigned to eliminate mercury and to help reduce energy consumption.

Reuse: The plan does not encourage the reuse of old thermostats collected through this program for the reasons described below:

- Our primary goal is to collect old mercury-containing thermostats and ensure that the mercury and other component parts are properly managed, not to see them in continued use.
- Old non-mercury-containing thermostats may not meet the technical/safety specifications of new HVAC systems and do not have the same ability to reduce energy use that new programmable thermostats do, and therefore we recommend that these be recycled rather than reused.

Recycle: As per the program plan, the thermostats recovered from the province of British Columbia are counted, documented, dismantled and recycled. The components from the thermostats are separated for recycling as follows:

- The plastic components recovered are of mixed types; these are consolidated, at the collection facility, with other plastics from the facility and then sent to the downstream recycler, either West Coast Plastics or Durham Shred. Here the plastics are baled and then sold as a commodity.
- The metals collected are a mix of iron, nickel and aluminum which all have high reuse/recycling value. The metals are consolidated with other metals at the collection facility and the sent to the downstream processor, either ABC Recycling or M Metals. Here the metals are baled and then sold as a commodity.
- The glass vials containing the mercury are consolidated at the collection facility (Tri-Arrow or Aevitas) until a large volume has been collected and are then shipped to the consolidation point (Aevitas). At Aevitas these vessels are consolidated with vessels collected across Canada and then sent to an appropriate retort facility; this year they were sent to Veolia. During the retort process, the glass vials are crushed and glass and mercury are separated. The mercury is triple distilled and sent for resale/reuse in products and processes or put into long term storage (sequestered), depending on market demand. The glass is crushed, distilled and sent for recycling in fibreglass applications. The latest shipment of mercury-containing vessels was sent to Veolia on December 11, 2014. Appendix C contains the manifest for this shipment.

The following table describes the acceptable end fates for each of the components of a thermostat:

Component	Reuse	Recycle	Energy Recovery	Landfill	Other
Plastics	X	Preferred	X	X	NA
Metals	X	Preferred	X	X	NA
Mercury Vessels (glass)	X	Preferred	X	X	NA
Mercury Vessels (mercury)	Optional	X	X	X	Retort process and then long-term storage

For plastics, metals, and the glass components, greater than 99% of the materials collected by the program are recyclable and were managed in accordance with the program plan and the principles of pollution prevention. The percentage of mercury that is sold for re-use versus how much is put into long-term storage varies greatly depending on market demand in the US (their mercury export ban, enacted in January 2014 prohibits any mercury from being exported; since the US market for mercury is relatively small, increasingly large percentages are being put into long-term storage, though specific percentages are not available).

The following table describes processing pathways and criteria used to assess product end fate by product component:

	Nature of Processing					
	Transfer to direct processor (BC or ON)	Transfer to direct processor elsewhere in North America	Transfer to direct processor outside of North America	Multi-step processing (BC or ON)	Multi-step processing elsewhere in North America	Multi-step processing outside of North America
Basis of evidence for product treatment	• Due diligence in process for supplier selection (including detailed qualification of downstream suppliers by Aevitas) • Detailed contracts with collection facilities • Monthly reporting from collection facilities					
	• Annual site visit to review processes				• Official shipping manifest with product weights • Certificate of Destruction/Recycling provided by retort facility	
Component (% of component sold/transferred for processing that is treated under each processing pathway)						
Plastics	>99%	0%	0%	0%	0%	0%

Metals	>99%	0%	0%	0%	0%	0%
Mercury Vessels (glass and mercury)	0%	0%	0%	0%	100%	0%

7. Product Sold and Collected and Recovery Rate

The amount of product sold is not currently tracked as mercury-containing thermostats are no longer sold into Canada, thus there are no sales to report. As for newer programmable models, the sales of these devices are not currently tracked by the manufacturers with sufficient detail to produce reporting at the provincial level as sales are currently only tracked at the national level. It is also worth noting that thermostats can have a life span of 20-30 years, though renovations can reduce that life span to 7-10 years. These timelines are long enough to make any direct correlation between product sold into the market and product available for recovery per year difficult, even if sales data were available.

Given the above, Switch the 'Stat does not use a recovery rate as a measure of program performance, but instead measures the total amount of product collected measured against targets set out in the approved program plan. Collection totals and progress against targets will be discussed in Section 9, below.

8. Summary of Deposits, Refunds, Revenues and Expenditures (N/A)

As Switch the 'Stat does not charge deposits, this section is not applicable.

9. Plan Performance

The following table describes progress made towards the targets set out in the approved stewardship plan for Switch the 'Stat.

Plan Target	2014 Results	Strategies for Improvement in 2015
*Performance Targets**		
1. Collection: 9,450 thermostats	Adjusted total:3,435 thermostats collected (36% of target)	• Increase number of public drop-off locations • Increase number of collection points through targeted outreach in areas of low coverage • Continue to improve communication with wholesalers so that they can effectively market the program at their locations
2. Participants: 381	343 participants (90% of target)	• Increase outreach to wholesaler locations, especially those with multiple locations in the province. • Improved face-to-face communication at trade shows • Explore new recruitment options (eg. new marketing plan, new outreach events)
Communication Targets		
3. Program website: monthly updates	• Website is updated in real time with any new drop-off locations • Quarterly updates are made to ensure that all information is as up to date as possible • There were 1,361 visits to switchthestat.ca from BC in 2014	
4. Printed brochures: a minimum of 5,000 brochures will be printed and distributed on an annual basis	Approximately 2,648 brochures distributed. 25 brochures are distributed to each new participant (825). Brochures were also distributed to all existing wholesalers listed as drop off locations (1,625) and extra brochures have been sent to participants upon request (198).	• Increase registration numbers (each new participant receives 25 brochures for distribution to their clients/stakeholders) • More public outreach (using program brochures as a tool to spread the word about the program)

Plan Target	2014 Results	Strategies for Improvement in 2015
5. Printed posters: a minimum of 20 posters will be printed and displayed in year 1 (the number will increase with number of retail events)	New posters were developed in 2014 with 65 distributed to wholesalers listed as drop off locations 557 posters distributed as requested by participants Note: retail events have been discontinued, due to poor results, but posters are still distributed to new participants, upon request to existing participants, and at outreach events.	
6. Advertising via the Recycling Council of British Columbia (RCBC)'s website and hotline	Switch the 'Stat info is available via both the Recyclepedia and RCBC's hotline.	
7. Advertising in waste reduction/ community calendars for regional districts (25 municipalities in Year 1, TBD based on effectiveness for years 2-5)	As described in Section 3, Switch the 'Stat advertised in the Peace River and Kootenay Boundary Regional District calendars, as well as being promoted in the Peace River and Northern Rockies Regional Districts by NEAT. In addition to advertising in these regional district calendars, the program was promoted through the SABC "British Columbia's Recycling Handbook", which provides a simple guide to what can be recycled under BC stewardship programs. A total of 5,000 handbooks were distributed to various stakeholders, including regional districts, community centers and libraries, school districts, and other relevant groups. A digital version is available at www.bcstewards.com.	

**targets are pro-rated, using ½ of the year four target and ½ of the year five target, as the program years run from July 1 to June 30 of the following year, while the reporting period is based on the calendar year.*

Progress Toward Collection Targets

The following table provides further information regarding the amount of product collected by the Switch the 'Stat program during the period of January 1 to December 31, 2014, measured against the targets outlined in the official stewardship plan, as well as the program growth as compared to the same period in 2013 and demonstrates the program's commitment to continuous improvement.

Collection of Mercury-Containing Thermostats: Progress Against Targets and Program Growth				
	Targets: ½ Year Four (January 1st-June 30th 2013) plus ½ Year Five (July 1-December 31st, 2014)*	**Results Achieved from January 1 to December 31, 2014**	**Results Achieved from January 1 to December 31, 2013**	**Percentage increase in 2014**
Number of Thermostats Collected	9,450 thermostats	2,639 mercury containing; 81 electronic; Total: 2,720	2,517 mercury containing; 6 electronic; Total: 2,523	8%
Number of Loose Vessels Collected	n/a	1,114	1,022	9%
Adjusted Total Thermostats Collected**	n/a	3,515	3,253	8%

**targets are pro-rated, using ½ of the year four target and ½ of the year five target, as the program years run from July 1 to June 30 of the following year, while the reporting period is based on the calendar year.*

***Although all participating collection points are encouraged to return only intact thermostats, loose vessels (which have been clipped out of thermostats) are occasionally returned as well. Using the industry-accepted standard of 1.4 vessels per thermostat, the number of loose vessels returned in 2014 is equivalent to 796 thermostats. The adjusted total number of thermostats collected in 2014 is then 3,515.*

Amount Collected by Regional District

The following chart presents the number of thermostats collected in each regional district.

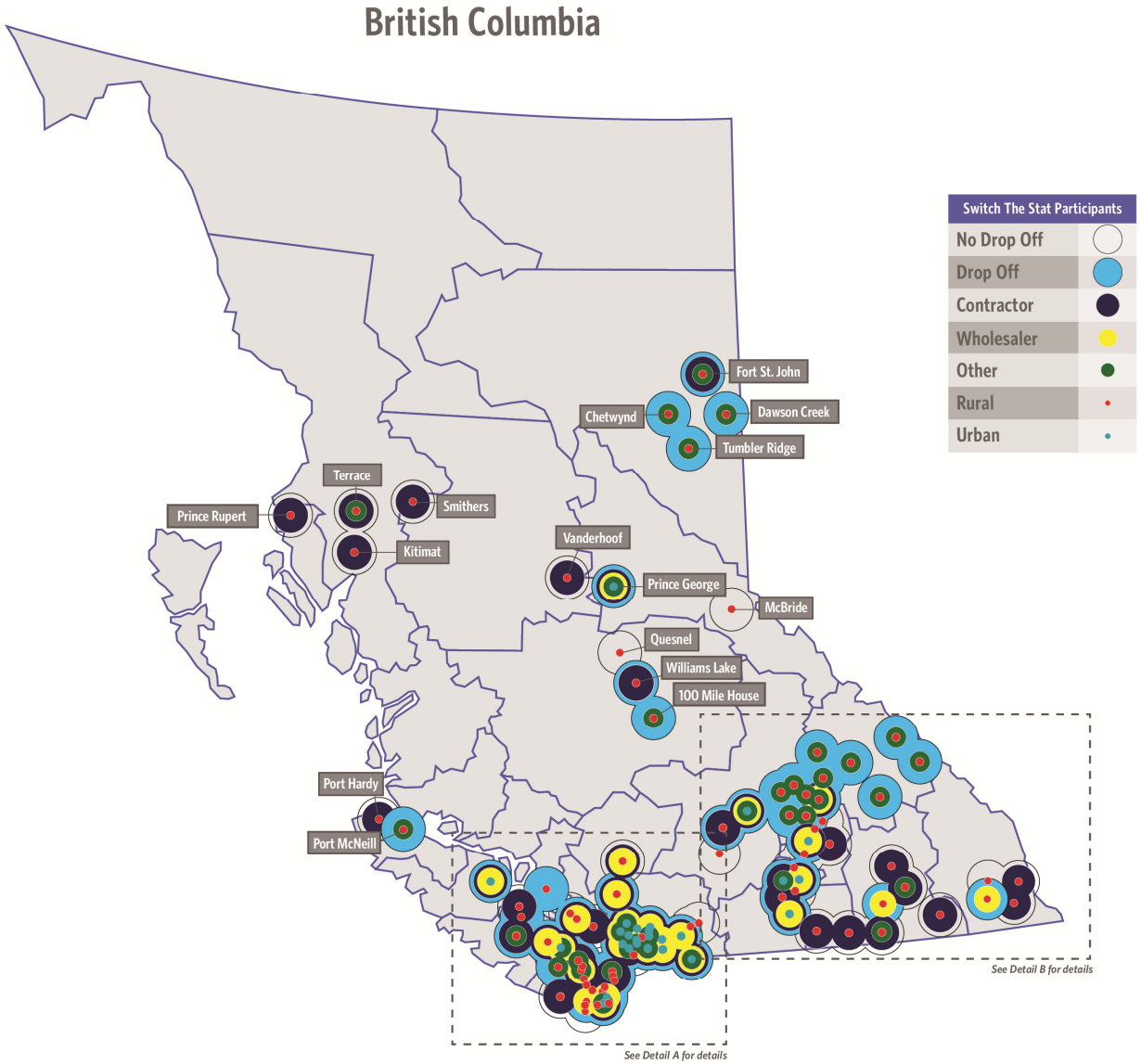
Region	Number of Thermostats Collected***	Number of Loose Vessels Collected
Capital Regional District	278	10
Cariboo Regional District	8	0
Cowichan Valley Regional District	102	0
Fraser Valley Regional District	72	236
Greater Vancouver Regional District	1,751	399
Regional District of Central Okanagan	247	114
Regional District of East Kootenay	40	0
Regional District of Kootenay Boundary	8	0

Regional District of Nanaimo	65	0
Regional District of North Okanagan	19	0
Regional District of Okanagan-Similkameen	6	332
Strathcona	15	23
Thompson–Nicola Regional District	109	0
TOTAL	**2,720**	**1,114**

***Number of intact thermostats (both mercury-containing and electronic)

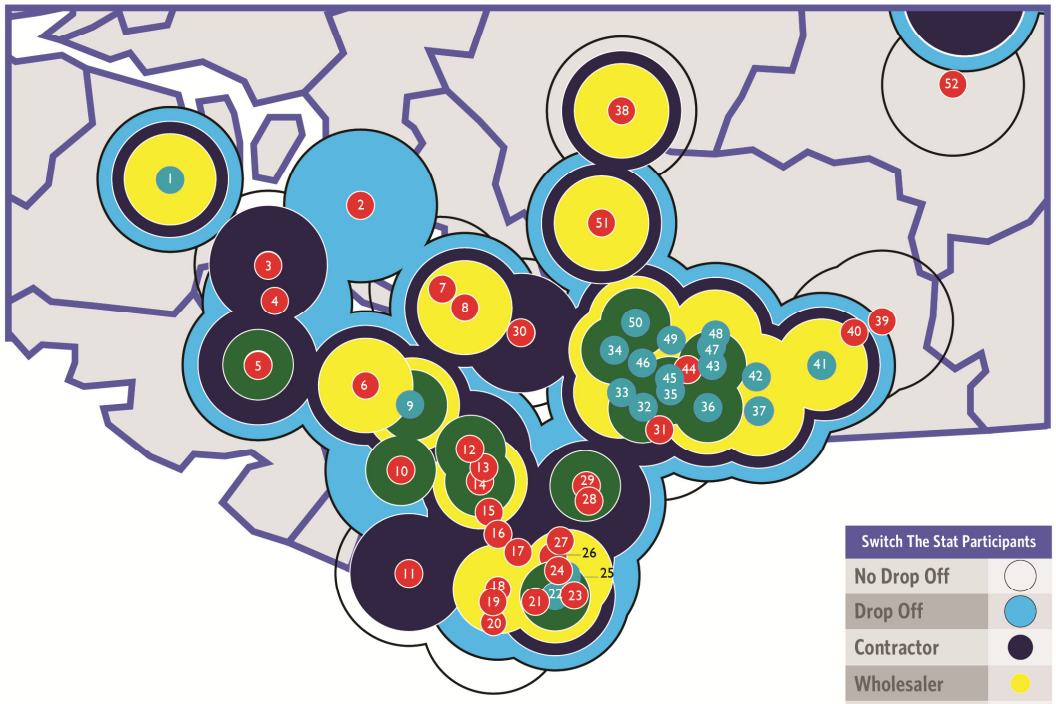
Appendices / Additional Information and Third Party Assurance

Appendix A – Coverage Maps (as of September, 2014)



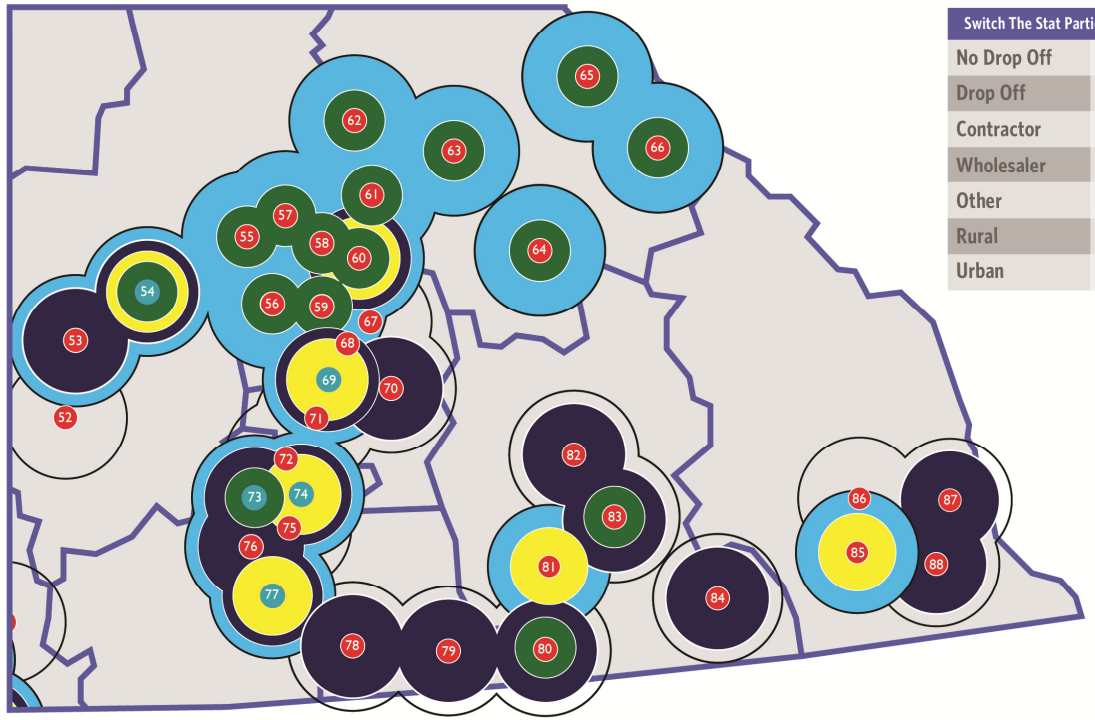
Detail A - Southwest

1. Campbell River
2. Powell River
3. Lazo
4. Lake Courtenay
5. Port Alberni
6. Parksville
7. Sechelt
8. Wilson Creek
9. Nanaimo
10. Lake Cowichan
11. Sooke
12. Ladysmith
13. North Cowichan
14. Duncan
15. Shawnigan Lake
16. Mill Bay
17. North Saanich
18. Langford
19. Colwood
20. Metchosin
21. Esquimalt
22. Victoria
23. Oak Bay
24. Central Saanich
25. Saanich
26. Saanichton
27. Sidney
28. Salt Spring Island
29. Galiano Island
30. Gibsons
31. White Rock
32. Delta
33. Richmond
34. Vancouver
35. Surrey
36. Langley
37. Abbotsford
38. Whistler
39. Hope
40. Kent
41. Chilliwack
42. Mission
43. Maple Ridge
44. Pit Meadows
45. New Westminster
46. Burnaby
47. Port Coquitlam
48. Coquitlam
49. Port Moody
50. North Vancouver
51. Squamish
52. Merritt



Detail B - Southeast

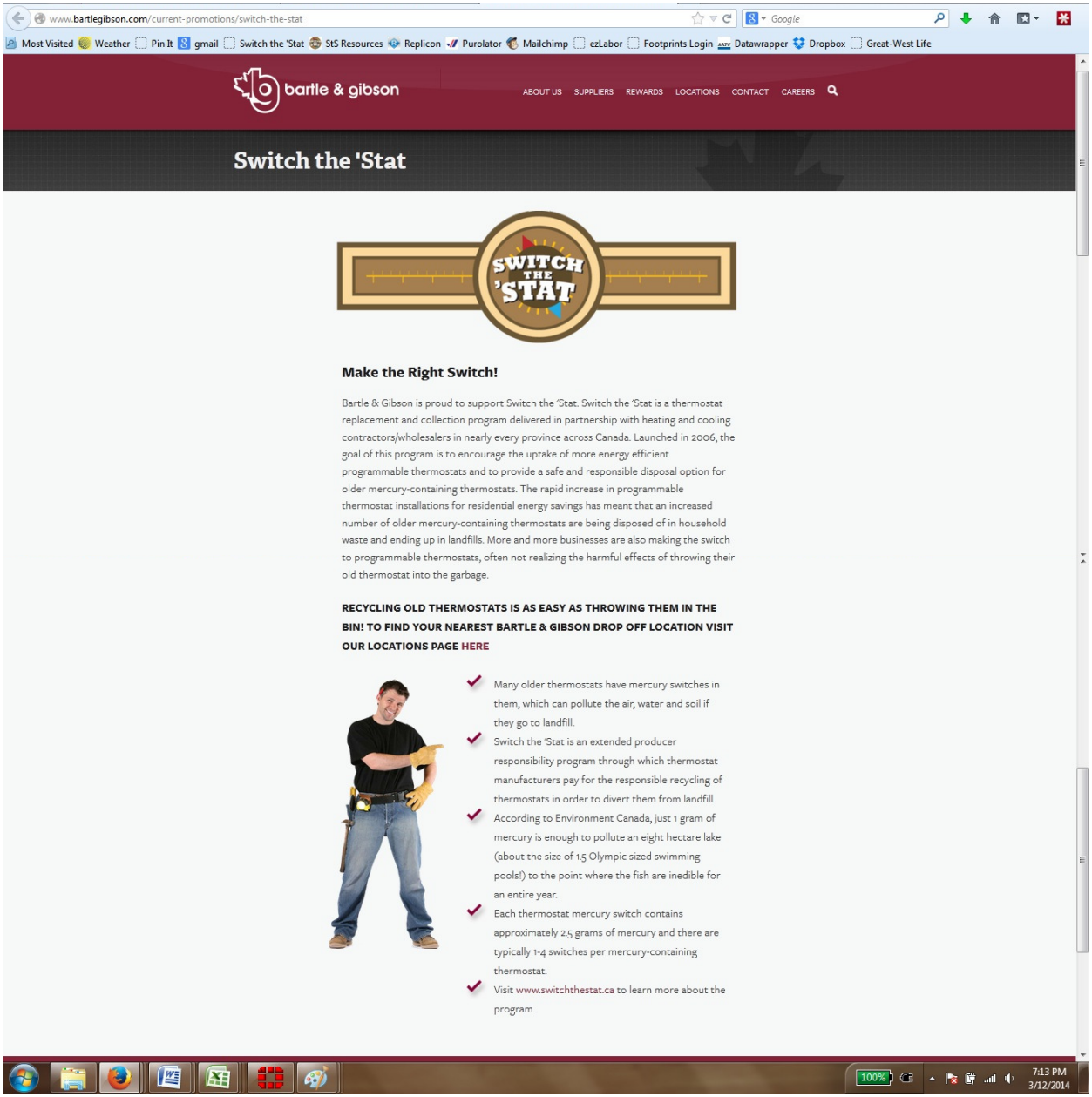
52. Merritt
53. Logan Lake
54. Kamloops
55. Tappen
56. Falkland
57. Scotch Creek
58. Sicamous Landfill
59. Glenemma
60. Salmon Arm
61. Malakwa
62. Seymour Arm
63. Revelstroke
64. Trout Lake
65. Golden
66. Parson
67. Armstrong
68. Spallumcheen
69. Vernon
70. Lumby
71. Coldstream
72. Lake Country
73. West Kelona
74. Kelowna
75. Peachland
76. Summerland
77. Penticton
78. Rock Creek
79. Grand Forks
80. Trail
81. Castlegar
82. Slocan City
83. Nelson
84. Creston
85. Cranbrook
86. Kimberley
87. Sparwood
88. Fernie



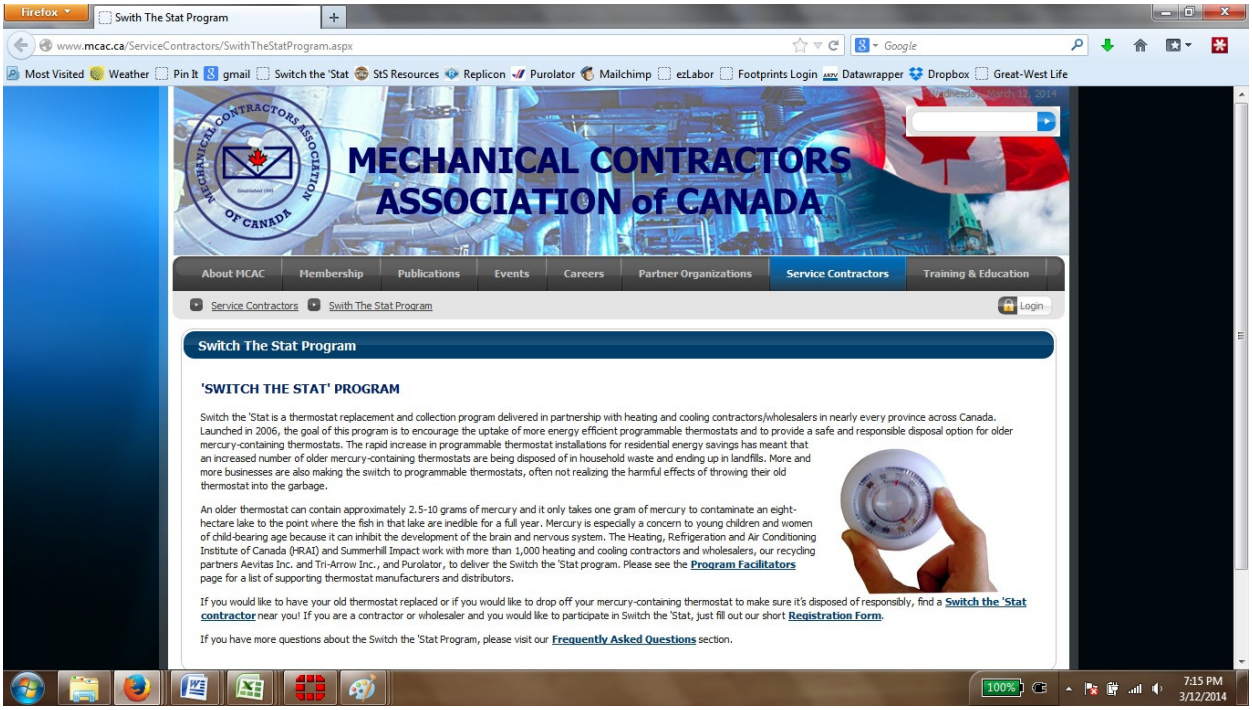
Switch The Stat Participants
- No Drop Off
- Drop Off
- Contractor
- Wholesaler
- Other
- Rural
- Urban

Appendix B – Earned Media

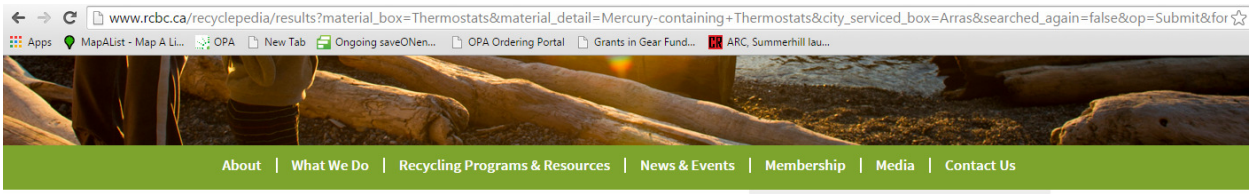
Bartle & Gibson website



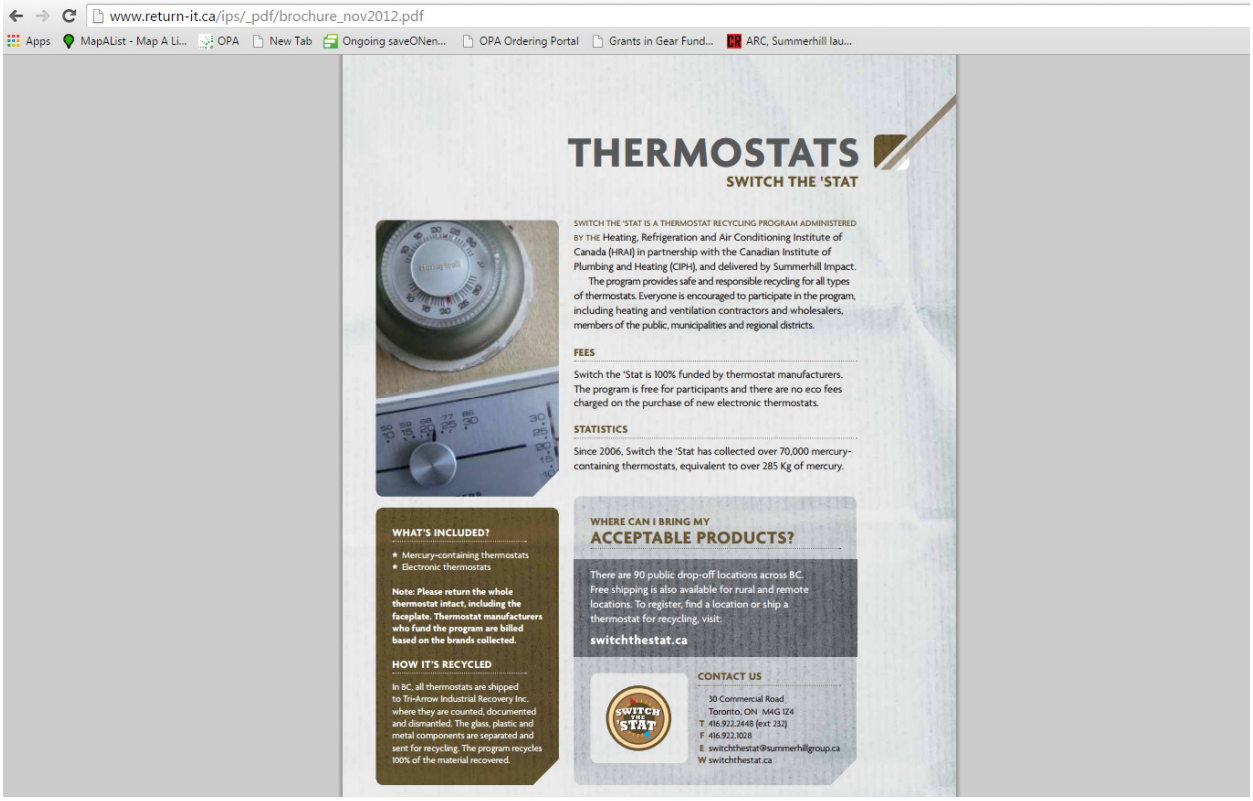
MSCC website



RCBC Recyclepedia



SABC Recycling Handbook



Peace River Regional District Waste Management Calendar

Green Cleaners

Try these simple and effective alternatives to harsh cleaning chemicals.

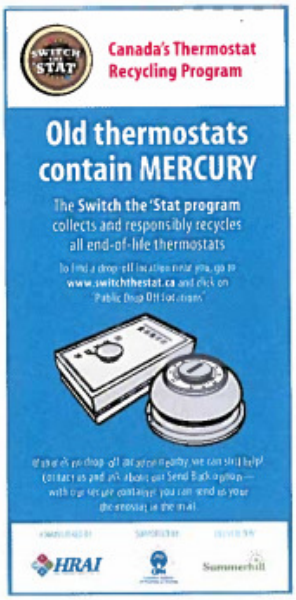
All Purpose Cleaner: Add ½ cup of Borax to 1 gallon (3.75L) of water.

Window Cleaner: Mix 2 Tbsp vinegar and 4 cups of water in a spray bottle.

Tub & Tile Cleaner: For a routine clean, apply baking soda to a wet sponge; scrub and wait for a few minutes before rinsing clean. Scrub tough soap scum with borax & lemon juice (or vinegar) paste, rinse thoroughly.

Drain Opener: Pour ¼ - ½ cup of baking soda into the clogged drain, then add ½ cup vinegar. Close/plug the drain until fizzling stops. Let sit 15 minutes. Flush with boiling water. Use plunger if necessary.

Furniture Polish: Mix 1 cup of olive oil with ½ cup lemon juice and apply sparingly to polish hardwood furniture.



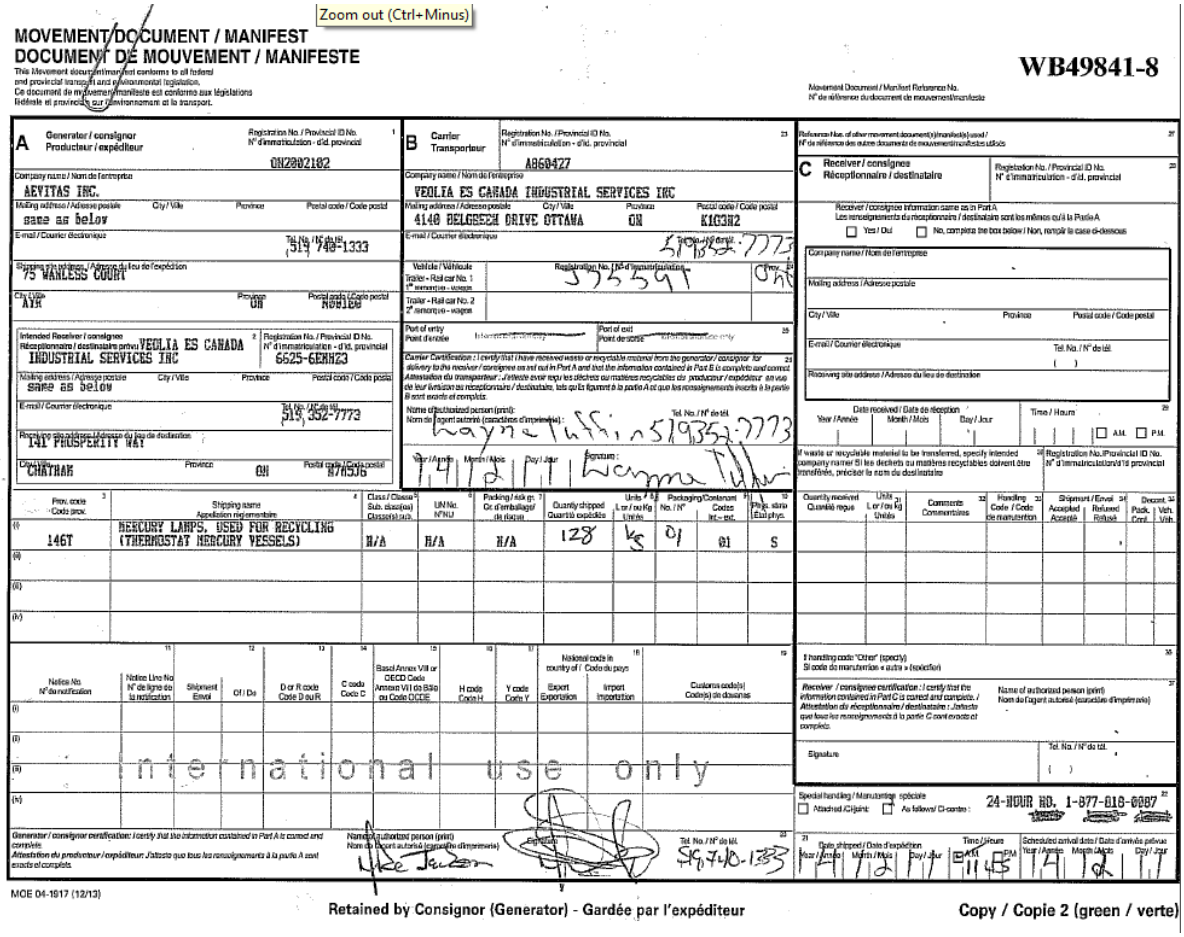
October 2014

AlarmRecycle

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
October is Switch the Stat & Alarm Recycle Awareness Month in the PRRD. Visit pRRRdy.com or call NEAT at 1-888-689-6328 for details.			1	2	3	4 Yom Kippur
5	6	7	8	9 Sukkoth begins	10	11
12	13 Thanksgiving	14	15	16	17	18
19	20	21	22	23	24 International Day of Climate Action	25
26	27	28	29	30	31 Halloween	

10

Appendix C – Retort Manifest



Zoom out (Ctrl+Minus)

MOVEMENT DOCUMENT / MANIFEST
DOCUMENT DE MOUVEMENT / MANIFESTE

This Movement document/manifest conforms to all federal and provincial transport and environmental legislation.
Ce document de mouvement/manifeste est conforme aux législations fédérale et provinciales sur l'environnement et le transport.

WB49841-8

Movement Document / Manifest Reference No. / N° de référence du document de mouvement/manifeste

A Generator / consignor / Producteur / expéditeur — Registration No. / Provincial ID No. / N° d'immatriculation - d'id. provincial: ON2002182

Company name / Nom de l'entreprise: AEVITAS INC.
Mailing address / Adresse postale: same as below
E-mail / Courrier électronique
Tel. No. / N° de tél.: 519 748-1333
Shipping site address / Adresse du lieu de l'expédition: 75 WANLESS COURT
City / Ville: AYR — Province: ON — Postal code / Code postal: N0B1E0

B Carrier / Transporteur — Registration No. / Provincial ID No. / N° d'immatriculation - d'id. provincial: A060427

Company name / Nom de l'entreprise: VEOLIA ES CANADA INDUSTRIAL SERVICES INC
Mailing address / Adresse postale: 4140 BELGRESCH DRIVE OTTAWA — City / Ville — Province: ON — Postal code / Code postal: K1G3N2
E-mail / Courrier électronique
Tel. No. / N° de tél.: 519 852-7773
Vehicle / Véhicule — Trailer - Rail car No. 1 / 1re remorque - wagon: 373591 — Prov.: ON
Trailer - Rail car No. 2 / 2e remorque - wagon
Port of entry / Point d'entrée — Port of exit / Point de sortie

Intended Receiver / consignee / Récipiendaire / destinataire prévu: VEOLIA ES CANADA INDUSTRIAL SERVICES INC
Registration No. / Provincial ID No. / N° d'immatriculation - d'id. provincial: 6525-6ENHZ3
Mailing address / Adresse postale: same as below — City / Ville — Province — Postal code / Code postal
E-mail / Courrier électronique
Tel. No. / N° de tél.: 519 352-7773
Receiving site address / Adresse du lieu de destination: 141 PROSPERITY WAY
City / Ville: CHATHAM — Province: ON — Postal code / Code postal: N7M5J6

Carrier Certification: I certify that I have received waste or recyclable material from the generator / consignor for delivery to the receiver / consignee as set out in Part A and that the information contained in Part B is complete and correct. / Attestation du transporteur : J'atteste avoir reçu les déchets ou matières recyclables du producteur / expéditeur en vue de leur livraison au récipiendaire / destinataire, tels qu'ils figurent à la partie A et que les renseignements inscrits à la partie B sont exacts et complets.
Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): Wayne Tuffin
Tel. No. / N° de tél.: 519 352-7773
Year / Année: 14 — Month / Mois: 11 — Day / Jour: 17
Signature: Wayne Tuffin

C Receiver / consignee / Récipiendaire / destinataire — Registration No. / Provincial ID No. / N° d'immatriculation - d'id. provincial
Reference No. of other movement document(s)/manifest(s) used / N° de référence des autres documents de mouvement/manifestes utilisés
Receiver / consignee information same as in Part A / Les renseignements du récipiendaire / destinataire sont les mêmes qu'à la Partie A — ☐ Yes / Oui ☐ No, complete the box below / Non, remplir la case ci-dessous
Company name / Nom de l'entreprise
Mailing address / Adresse postale
City / Ville — Province — Postal code / Code postal
E-mail / Courrier électronique
Tel. No. / N° de tél.
Receiving site address / Adresse du lieu de destination
Date received / Date de réception: Year / Année — Month / Mois — Day / Jour
Time / Heure: ☐ A.M. ☐ P.M.
If waste or recyclable material is to be transferred, specify intended company name / Si les déchets ou matières recyclables doivent être transférés, préciser le nom du destinataire
Registration No. / Provincial ID No. / N° d'immatriculation/d'id provincial

Prov. code / Code prov.	Shipping name / Appellation réglementaire	Class / Classe: Sub. class(es) / Classe(s) sub.	UN No. / N° ONU	Packing / Mark gr. / Gr. d'emballage / de façon	Quantity shipped / Quantité expédiée	Units / Unités	Packaging / Containers / Codes	Phys. state / Etat phys.
(i) 146T	MERCURY LAMPS, USED FOR RECYCLING (THERMOSTAT MERCURY VESSELS)	N/A	N/A	N/A	128	KG	01	S
(ii)								
(iii)								
(iv)								

Notice No. / N° de notification	Notice Line No. / N° de ligne de la notification	Shipment / Envoi	Of / De	D or R code / Code D ou R	C code / Code C	Based Annex VIII or OECD Code / Annexe VIII ou Base ou Code OCDE	H code / Code H	Y code / Code Y	National code in country of / Code du pays: Export / Exportation	Import / Importation	Customs code(s) / Code(s) de douanes
(i)											
(ii)											
(iii)	International use only										
(iv)											

Handling code "Other" (specify) / Si code de manutention « autre » (spécifier)

Receiver / consignee certification: I certify that the information contained in Part C is correct and complete. / Attestation du récipiendaire / destinataire : J'atteste que tous les renseignements à la partie C sont exacts et complets.
Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie)
Signature
Tel. No. / N° de tél.

Special handling / Manutention spéciale: ☐ Attached / Ci-joint: ☐ As follows / Ci-contre:
24-HOUR NO. 1-877-018-0087

Generator / consignor certification: I certify that the information contained in Part A is correct and complete. / Attestation du producteur / expéditeur : J'atteste que tous les renseignements à la partie A sont exacts et complets.
Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie): Mike Jackson
Signature
Tel. No. / N° de tél.: 519-740-1333
Date shipped / Date d'expédition: Year / Année: 14 — Month / Mois: 11 — Day / Jour: 17
Time / Heure: 11:45 ☐ A.M. ☐ P.M.
Scheduled arrival date / Date d'arrivée prévue: Year / Année: 14 — Month / Mois: 11 — Day / Jour: 17

MOE 04-1917 (12/13)

Retained by Consignor (Generator) - Gardée par l'expéditeur

Copy / Copie 2 (green / verte)

Appendix D – Third Party Assurance

June 29, 2015

Independent Reasonable Assurance Report

To the Directors of the Heating, Refrigeration and Air Conditioning Institute of Canada on selected non-financial information included in the HRAI 2014 Annual Report

We have been engaged by the Heating, Refrigeration and Air Conditioning Institute of Canada ("HRAI") to perform a reasonable assurance engagement in respect of the following information (the "Selected Information") detailed in Appendix A, and also included within HRAI's Annual Report to the Director, Waste Management for the year ended December 31, 2014:

1. The location of collection facilities, and any changes in the number and location of collection facilities from the prior year in accordance with Section 8 (2) (b) of the Recycling Regulation;
2. The description of how recovered product was managed in accordance with the pollution prevention hierarchy in accordance with 8(2)(d) of the Recycling Regulation;
3. The total amount of the producers' product sold and collected and the recovery rate for the year ended December 31, 2014 in accordance with 8(2)(e) of the Recycling Regulation; and
4. The description of performance for the year in relation to targets in the approved stewardship plan under Sections 8(2)(b), (d) and (e), in accordance with Section 8(2)(g) of the Recycling Regulation.

Our opinion does not constitute a legal determination on HRAI's compliance with the British Columbia Regulation 449/2004 Recycling Regulation ("Recycling Regulation").

Responsibilities

Preparation and fair presentation of the Selected Information in accordance with the evaluation criteria as listed in Appendix A is the responsibility of HRAI's management. Management is also responsible for such internal control as management determines is necessary to enable the preparation of the Selected Information such that it is free from material misstatement. Furthermore management is responsible for preparation of suitable evaluation criteria in accordance with the *Third Party Assurance Requirements for Non-Financial Information in Annual Reports, Version 3*, dated February, 2015 ("Assurance Requirements") as specified by the Director under section 8(2)(h) of the Recycling Regulation of the Province of British Columbia.

Our responsibility is to express an opinion on the Selected Information based on the procedures we have performed and the evidence we have obtained.

Methodology and Assurance Procedures

We conducted our reasonable assurance engagement in accordance with the International Standard on Assurance Engagements 3000 (ISAE 3000), "*Assurance Engagements other than Audits or Reviews of*

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T: +1 416 863 1133, F: +1 416 365 8215, www.pwc.com/ca

Historical Financial Information" published by the International Federation of Accountants. This standard requires that we comply with independence requirements and plan and perform the engagement to obtain reasonable assurance about whether the Selected Information is free of material misstatement. A reasonable assurance engagement includes examining, on a test basis, evidence supporting the amounts and disclosures within the Selected Information. The procedures selected depend on our judgment, including the assessment of the risks of material misstatement in the Selected Information due to omissions, misrepresentation and errors. In making those risk assessments, we consider internal control relevant to the entity's preparation and fair presentation of the Selected Information in order to design assurance procedures that are appropriate in the circumstances, but not for the purpose of expressing a conclusion on the effectiveness of the entity's internal control. A reasonable assurance engagement also includes assessing the evaluation criteria used and significant estimates made by management, as well as evaluating the overall presentation of the Selected Information.

The main elements of our work were:

- Obtaining an understanding of the management systems, processes, and controls used to generate, aggregate and report the data;
- Testing relevant controls, documents and records on a sample basis;
- Testing and re-calculating quantitative information related to the Selected Information on a sample basis; and,
- Reviewing the consistency of the Selected Information with the related disclosures in the Annual Report of HRAI.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our conclusion.

Inherent limitations

Non-financial performance information is subject to more inherent limitations than financial information, given the characteristics of the Selected Information and the methods used for determining and calculating such information. Qualitative interpretations of relevance, materiality and the accuracy of data are subject to individual assumptions and judgements. Furthermore, the nature and methods used to determine such information, as well the evaluation criteria and the precision thereof, may change over time. It is important to read our report in the context of evaluation criteria.

Conclusion

In our opinion, the Selected Information for the year ended December 31, 2014 presents fairly, in all material respects, in accordance with the evaluation criteria listed in Appendix A:

1. The location of collection facilities, and any changes in the number and location of collection facilities from the prior year;
2. The description of how the recovered product was managed in accordance with the pollution prevention hierarchy;
3. The total amount of the producers' product sold and collected and the recovery rate; and
4. The description of performance for the year in relation to targets in the approved stewardship plan.

Emphasis of matter
Without qualifying our opinion, we draw your attention to Appendix B which describes why certain items required by the Assurance Requirements to be included in the Appendix A have been excluded. Our opinion is not qualified in respect of this matter.

Other matters
Our report has been prepared solely for the purposes of HRAI's compliance with the reporting requirements relating to Sections 8(2)(b), (d), (e) and (g) of the Recycling Regulation and is not intended to be and should not be used for any other purpose. Our duties in relation to this report are owed solely to HRAI, and accordingly, we do not accept any responsibility for loss occasioned to any other party acting or refraining from acting based on this report.

PricewaterhouseCoopers LLP

Chartered Professional Accountants
June 29, 2015

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pwc

Appendix A to the Assurance Report

1. **The location of collection facilities, and any changes in the number and location of collection facilities from the previous report as presented in Section 4 on page 14 of HRAI's Annual Report to the Director, Waste Management.** "...Switch the 'Stat uses two collection facilities: Tri-Arrow Industrial Recovery, located in Surrey, BC and Aevitas Inc., Located in Ayr, Ontario." "...Aevitas has acted only as a consolidation point for thermostat vessels from BC, but is now receiving pails of intact thermostats directly from collection points as well..." "Therefore, our collection facilities have increased from one to two since 2013..."
Evaluation criteria: • "Program Products" are all products included in the program as listed in the currently approved product stewardship plan dated February 3, 2010 Section 1.3. • "Collection Facilities" are considered to be locations with a signed contract with Summerhill (HRAI's agent) for the purpose of collecting, processing, shipping, and reporting on Program Products at any point during the reporting year. • "Collection Points" are mechanisms for collection. This term was new to the program as of the 2012 reporting year. In prior years, the collection points were considered the collection facilities. Collection Points may include the following types of businesses (also known as 'participants') and have either signed a formal document or a had a verbal discussion outlining their agreement with the Agency to take part in the program: o Contractors o Wholesalers o Local or regional government recycling centers or transfer stations o Direct send-back • Reporting Period: January 1st to December 31st annually. • Summerhill ('the Agency') currently considers Tri-Arrow and Aevitas Inc. to be the only Collection Facilities. The rationale being that the "Collection Points" are more of a mechanism of recovery that increases access to the public similar to the function of a Canada Post or Courier outlet. • The number of Collection Facilities is reported on the basis of the number of Collection Facilities who have a signed contract with the Agency to collect, process, ship, and report on collected program products during the reporting period. • The changes in number and location of Collection Facilities are calculated by tracking the additions and removals of Collection Facilities throughout a given reporting year. This information is further compared with the equivalent data from the end of the prior year.

2. **The description of how the recovered product was managed in accordance with the pollution prevention hierarchy under Section 8(2)(d) of the Recycling Regulation as presented in Section 1 on page 4, Section 5 on page 18, and Section 6 on page 19 of the Annual Report to the Director, Waste Management.** "5,783 mercury-containing vessels collected (there can be anywhere between 1 to 4 mercury vessels contained in each thermostat)" In 2014, the breakdown of materials recovered and recycled from the province of British Columbia included: "80.67 kilograms of metals recycled" "109.18 kilograms of plastics recycled" "14.46 Kg of mercury (calculated based on 2.5 grams of Hg per vessel)" "5.78 Kg of glass (calculated based on 1 gram of glass per vessel)" The acceptable end fates for each of the components of a thermostat, as presented within the table on page 20 of the Annual Report. The processing pathways and criteria used to assess product end fate by product component, as presented within the table on page 20 of the Annual Report.

• The Pollution Prevention Hierarchy includes the following:
• "Reuse" includes all Program Products that are refurbished or can be reused "as-is" through either, resale, return to inventory, or donation.
• "Recycle" includes:
  ○ Any Program Product that cannot be Re-used; and
  ○ is harvested for parts or produces commodities through the recycling process.
• "Recover" relates to processing activities after the recycling stage and includes:
  ○ Any element of the Program Product that is harvested to generate energy.
• "Component" is defined as a separately identifiable part of a Program Product that is composed of two or more commodities. For instance, a mercury vessel is a part of a thermostat and is comprised of two commodities (glass and mercury).
• "Commodity" is defined as a separately identifiable and homogenous type of material that comprises a Program Product. For instance, mercury vessels contain two commodities, mercury and glass.
• "Waste" includes any products not captured in the three streams above.
• "End of fate" is defined as final processed state of each commodity before entering a re-use stream or shipment to landfill / sequestration.
• Reporting Period: January 1st to December 31st annually.

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Processor due diligence

i. The Agency satisfies itself with the sufficiency of all downstream processors of Program Products, up to and including end of fate, based on an established due diligence process including qualification by primary processors and/or annual site visits).

ii. The due diligence process is administered or overseen by the Agency, and considers the qualifications and capabilities of the processors, in line with the goals of the Program as set out in the approved product stewardship plan dated February 3, 2010, prior to selection and on a periodic basis subsequent to selection.

iii. If the due diligence process is administered by the processors (i.e., a primary processor assessing a secondary processor), the results of the due diligence are assessed by the Agency for sufficiency.

iv. The rigor of the due diligence process is tailored using a risk-based approach to assess the likelihood that, and impact of, the associated Program Products/materials will enter a waste stream.

v. Processors are responsible for designing and maintaining their own system of internal control over the Program Product reporting process, as well as assessing the system of internal control of the downstream processors as part of the selection and ongoing due diligence process.

Processor reporting

i. The Primary Processors are responsible for maintaining the records for Program Products processed, for each separately identifiable commodity of Program Products, and reporting the results, including those from downstream processors, up to and including end of fate, on a consistent and timely basis to the Agency. Reporting includes both quantitative and qualitative end of fate data for Program Products.

Primary Processors by Commodity	
Mercury	Aevitas
Glass	Aevitas
Plastics	West Coast Plastics, Durham Shred
Metals	ABC Metals, M Metals

Method of reporting

- Program Products collected are reported by end of fate both by commodity and by process on the Pollution Prevention Hierarchy:
- Reuse: N/A - no Program Products are reused per the approved product stewardship plan dated February 3, 2010.
- Recycle: Products are reported by each separately identifiable end of fate commodity (e.g. plastics, metals, glass, etc.) either based on the number of units for the mercury vessels; or based on weight in Kgs for the plastics, metals, mercury and glass.
    - The weight in Kgs of glass is calculated by multiplying the total number of mercury vessels by the industry standard of 1 gram of glass per vessel
    - The weight in Kgs of mercury is calculated by multiplying the total number of mercury vessels by the industry standard of 2.5 grams of mercury per vessel
- Recover: N/A - No Program Products are recovered.

- Waste: N/A – all Program Products collected are expected to be 100% recyclable. Non- program products that may be included in shipments are not recorded or reported by the program but efforts are made to dispose of them in accordance with the pollution prevention hierarchy.

3. **The description of total amount of the producer's product sold and collected, and if applicable, the producer's recovery rate, as presented in Section 1 on page 4 and 6, Section 9 on page 22, 24 and 25 of HRAI's Annual Report to the Director, Waste Management.** "Collected 2,639 mercury containing thermostats, 81 electronic thermostats, and 1,114 loose mercury vessels" "Adjusted total: 3,435 thermostats collected" Note: Product Sold and Recovery rate have been excluded.
Evaluation criteria: • "Program Products" are all products included in the program as listed in the currently approved product stewardship plan dated February 3, 2010 Section 1.3. • "Product Collected" is the amount of all Program Products collected from sources known to be located within the province of BC that occurred through the Collection Facilities. The amount of Product Collected is reported as the total number of thermostats, Adjusted total number of thermostats, total number of Mercury ("Hg") vessels, and number of loose Hg vessels received by the Collection Facilities during the reporting year. • "Product Sold" is the total amount of sales of Program Products by eligible Producers in British Columbia. This amount is not currently reported by HRAI per the approved product stewardship plan dated February 3, 2010. • "Recovery Rate" refers to the Adjusted total number of thermostats collected as compared to the target number as set out in the approved product stewardship plan dated February 3, 2010. • Reporting Period: January 1st to December 31st annually. **Product Sold:** The Program Products fall into the electronics category of the Recycling Regulation. There are two types of thermostats that are relevant to the program: 1. Electromechanical thermostats (also referred to as "mercury-containing thermostats"): These are no longer being sold by Producers; as such there are no sales to report. 2. Electronic thermostats: Sales of these devices are not currently tracked by the Producers with sufficient detail to produce reporting at the provincial level as sales are currently only tracked at the country level (i.e., they can only report on the total number of devices distributed into Canada). **Product Collected:** Quantification of Product Collected is based on the number of Thermostats and Hg vessels reported by the Collection Facilities as having been received/collected and diverted as a result of the approved product stewardship plan dated February 3, 2010 during the reporting year. • These amounts are monitored on a monthly basis through information collected that includes the number of thermostats and Hg vessels collected by geographic location. • Although all participating collection points are encouraged to return only intact thermostats, loose vessels (which have been clipped out of thermostats) are occasionally returned as well. The equivalent number of thermostats is calculated by dividing the number of loose vessels by the industry-accepted

standard of 1.4 vessels per thermostat (determined through averages provided by the industry and confirmed during a pilot study conducted by the Agency in 2006).
    - The "Adjusted total number of thermostats" collected is calculated by summing the total number of thermostats collected and the equivalent number of thermostats calculated above.
- Additional information is also collected for internal tracking purposes such as:
    - weight of plastics and metals collected;
    - brand of the thermostat collected; and
    - details of the mechanism used for collection (e.g. name and location of the Collection Point/Participant)

Recovery Rate:
The recovery rate is calculated and reported as the annual "Adjusted" total number of thermostats collected divided by the expected number of devices available in the market for collection as set out in the approved product stewardship plan dated February 3, 2010. As such, the recovery rate is not reported as a measure of product collected compared to product sold. This is due to the fact that product sold is not currently being reported as noted above.

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4. **The description of performance for the year in relation to targets in the approved stewardship plan under Sections 8(2)(b), (d) and (e) in accordance with 8(2)(g) of the Recycling Regulation as presented in Section 1 page 6 and Section 9 page 22 of HRAI's Annual Report to the Director, Waste Management.**

Priority Stewardship Plan Targets* (as agreed with ministry file lead)	Performance	Strategies for Improvement in 2014
1. Collection: 9,450 thermostats	3,435 Adjusted total thermostats collected (36% of target)	• Increase number of public drop-off locations • Increase number of collection points • Improve communication with wholesalers so that all staff can effectively market the program at their location • Research to develop new 5 year plan has helped to develop more accurate and realistic targets for 2015

Note: Performance for the year in relation to targets in the approved stewardship plan under Sections 8(2) (b) and (d) of the Recycling Regulation have been excluded.

Evaluation criteria:

Specific targets set out in the approved Stewardship Plan (adjusted for reporting period by taking 1/2 of Year 4 & 1/2 of year 5) - see below:

i. Section 8(2)(b) - targets set for collection points, not collection facilities
ii. Section 8(2)(d) - no target set for how the product is managed in accordance with the pollution prevention hierarchy (because Switch the 'Stat is already able to recycle greater than 99% of materials recovered through the program, efforts to continually reduce environmental impacts have centered on improving the program's collection processes)prevention hierarchy
iii. Section 8(2)(e) - no targets set for product sold (Product sold is not calculated or reported)
iv. Section 8(2)(e) - 9,450 thermostats to be collected
v. Section 8(2)(e) - 70% capture rate

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Appendix B to the Assurance Report

HRAI has not reported the performance for the year in relation to producer's product sold and recovery rate in accordance with 8(2)(e) of the Recycling Regulations for the year ended December 31, 2014 as the approved stewardship plan does not outline the requirement to report product sold or recovery rates. This is because mercury-containing thermostats are no longer sold into Canada, and subsequently Switch the 'Stat does not use a recovery rate as a measure of program performance.

HRAI has not reported its performance for the year in relation to approved targets under 8 (2) (b) and (d) in accordance with 8 (2) (g) of the Recycling Regulation for the year ended December 31, 2014 as HRAI is not required to report this to the Director as there are no targets set in the approved stewardship plan for these two sections applicable to the reporting year.