

Switch the 'Stat Annual Report to the Director 2012 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 2012 annual report documents the Switch the 'Stat program's activities and results in British Columbia from January 1 to December 31, 2012.

Please note that this report was previously submitted in draft form, pending the completion of the program's Third Party Assurance Audit. The audit has now been completed and this report is being resubmitted in conjunction with the completed audit report. Please note the following changes from the draft version: the program results have changed slightly (total number of thermostats, mercury vessels, volume of plastics and metals), also the language around the "Collection points" (formerly "Collection locations") has been adjusted for clarity.

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Table of Contents

| | |
|--|----|
| 1. Executive Summary | 4 |
| 2. Program Outline | 6 |
| 3. Public Education Materials and Strategies | 7 |
| 4. Collection System and Facilities | 11 |
| 5. Product Environmental Impact Reduction, Reusability and Recyclability | 17 |
| 6. Pollution Prevention Hierarchy and Product / Component Management | 18 |
| 7. Product Sold and Collected and Recovery Rate | 19 |
| 8. Summary of Deposits, Refunds, Revenues and Expenditures (N/A) | 20 |
| 9. Plan Performance | 20 |
| Appendices / Additional Information and Third Party Assurance | 22 |

Switch the 'Stat 2013 Report to Director, Waste Management

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 | <ul style="list-style-type: none"> • CIPHEX West tradeshow • Targeted outreach through the Thermal Environmental Comfort Association (TECA) • HPAC/Canadian Contractor marketing • Partnership with MCAC (Mechanical Contractors Association of Canada) & Mechanical Service Contractors of Canada • Media Planet "Recycling & Waste" supplement in Vancouver Sun |
| Part 2, section 8(2)(b) | Collection System and Facilities | <ul style="list-style-type: none"> • 91 new collection points • 33 new drop-off locations • 199 total collection points • Collection points in 26 regional districts |
| Part 2, section 8(2)(c) | Product Environmental Impact Reduction, Reusability and Recyclability | <ul style="list-style-type: none"> • 4,976 mercury-containing vessels (there can be anywhere between 1 to 4 mercury vessels contained in each thermostat) collected • 27.29 kilograms of metals recycled • 29.58 kilograms of plastics recycled • 0 new mercury-containing thermostats sold into the market |
| Part 2, section 8(2)(d) | Pollution Prevention Hierarchy and Product / Component Management | <ul style="list-style-type: none"> • New thermostats do not contain mercury, and are help reduce energy consumption • Recovered thermostats are not suitable for re-use • Plastic and metal components are recycled • 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) |
| Part 2, section 8(2)(e) | Product Sold and Collected and Recovery Rate | <ul style="list-style-type: none"> • Collected 1,887 mercury containing thermostats, 13 electronic thermostats, and 1,129 loose mercury vessels • Total 2,706 thermostats collected • 59% improvement from 2011 collection results |
| Part 2, section 8(2)(e.1) | | See Section 7 for breakdown per regional district |
| Part 2, section 8(2)(f) | Summary of Deposits, Refunds, Revenues and Expenses | N/A |

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| 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: 6,413 thermostats | 2,706 thermostat collected (42% of target) | <ul style="list-style-type: none"> • Increase from 1 to 2 collection sweeps • Increase number of public drop-off locations • Increase number of collection points |
| 2. Collection points/Participants: 264 | 199 participants (75.4% of target) | <ul style="list-style-type: none"> • Expand recruitment beyond core channels (eg. Municipalities/regional districts, demolition contractors) • Explore new recruitment options (eg. New marketing plan, new outreach events) |

**targets are pro-rated, using ½ of the year two target and ½ of the year three 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.*

Switch the 'Stat 2013 Report to Director, Waste Management

2. Program Outline

Switch the 'Stat is the designated program for managing thermostats in British Columbia, both 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.

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 (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.

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 2012, and will be posted on the program website at www.switchthestat.ca.

Switch the 'Stat 2013 Report to Director, Waste Management

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 Three, the focus of the program was on increasing participation, particularly in the main contractor/wholesaler channel.

In 2012, the program focused on building on the foundation laid in previous years and broadening the audience that is reached by Switch the 'Stat messaging. Key areas of focus in 2012 were:

- Strengthening communication to current participants in order to keep participants engaged and, in turn, increase collection results
- Broadening reach and variety of communication efforts to non-participants (particularly contractors and wholesalers)
- Extending communication to the general public about the program, and how they can participate

To achieve these goals, the following initiatives were undertaken:

| Initiative | Details | Audience/ Channel Reached | Type of Outreach |
|--|---|------------------------------|--|
| Ongoing outreach with HRAI national office | <ul style="list-style-type: none">• 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 | <ul style="list-style-type: none">• Industry outreach (print) |
| CIPHEX West tradeshow | <ul style="list-style-type: none">• CIPH provided Switch the 'Stat with a free booth at CIPHEX West; StS used this outreach opportunity to increase program registration and awareness• StS ran a full page ad in the Plumbing and HVAC magazine show guide | Contractors/wholesalers | <ul style="list-style-type: none">• Face-to-face• Traditional print media |

Switch the 'Stat 2013 Report to Director, Waste Management

| | | | |
|---|--|-------------------------|--|
| Targeted outreach through the Thermal Environmental Comfort Association (TECA) | <ul style="list-style-type: none"> Information in TECA newsletters Recruitment email to members Recruitment phone calls to members | Contractors | <ul style="list-style-type: none"> Industry outreach |
| Partnership with MCAC (Mechanical Contractors Association of Canada) & Mechanical Service Contractors of Canada | <ul style="list-style-type: none"> MSCC has offered its full support to the StS program and has promoted the program to its members StS promoted in enewsletter | Contractors | <ul style="list-style-type: none"> Industry outreach |
| HPAC/Canadian Contractor ads & eblast | <ul style="list-style-type: none"> Print ads appeared in the March, April, and October issues of HPAC (with a readership of 18,500) and the April issue of Canadian Contractor (with a readership of 30,000) Eblasts to MB and BC subscribers of HPAC and Canadian Contractor in May and November had a reach of 3,300 viewers each | Contractors/wholesalers | <ul style="list-style-type: none"> Business-to-business print media |
| BC Stewards | <ul style="list-style-type: none"> 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) | General Public | <ul style="list-style-type: none"> Print media Online |
| Media Planet "Recycling & Waste" supplement in Vancouver Sun | <ul style="list-style-type: none"> ¼ page ad for Switch the 'Stat in a "Recycling & Waste" supplement in the June 24th issue of the Vancouver Sun | General Public | <ul style="list-style-type: none"> Traditional print media |

Resources

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

Switch the 'Stat 2013 Report to Director, Waste Management

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 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 mercury-containing 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 inside 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, as per the shipping regulations in the province of Manitoba and the goals of the program.
5. **Posters:** Two versions of promotional posters are available for participants to use in displays on-site at the collection points.
6. **Brochures:** 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. These brochures include facts about mercury and information about the Switch the 'Stat program that is used to educate customers and the public.
7. **Year opener letter:** In January a letter was sent to all program participants summarizing the activities and achievements of the previous program year, and highlighting some key upcoming activities. This letter also included a "Request for Materials" form, so that participants could

Switch the 'Stat 2013 Report to Director, Waste Management

easily get in touch with the program manager to request a new waybill or collection container, or any of the printed promotional resources described above (brochures, posters).

8. **Monthly Newsletter (new in 2012):** In order to improve communication with existing participants, a monthly enewsletter was launched in May 2012. The goal of the newsletter is to keep participants up to date with program news and events, and 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.
9. **Collection sweep postcard (new in 2012):** In May 2012, a collection sweep was initiated, reaching all Switch the 'Stat participants. Participants were asked to return their pail if it was at least half full. The sweep was announced in the inaugural edition of the Switch the 'Stat enewsletter, and supported by a postcard announcing the sweep and inviting participants to request additional materials or indicate that their pail was not yet half full.
10. **Print ads and eblasts (new in 2012):** To support the launch of the 2012 marketing campaign with HPAC and Canadian Contractor, creative for print ads and eblasts was developed.
11. **Banner stands (new in 2012):** To support in person events such as trade shows in 2012, banner stands were developed to be versatile and eye catching. These banners support site-specific signage, and will be used through 2013 as well.

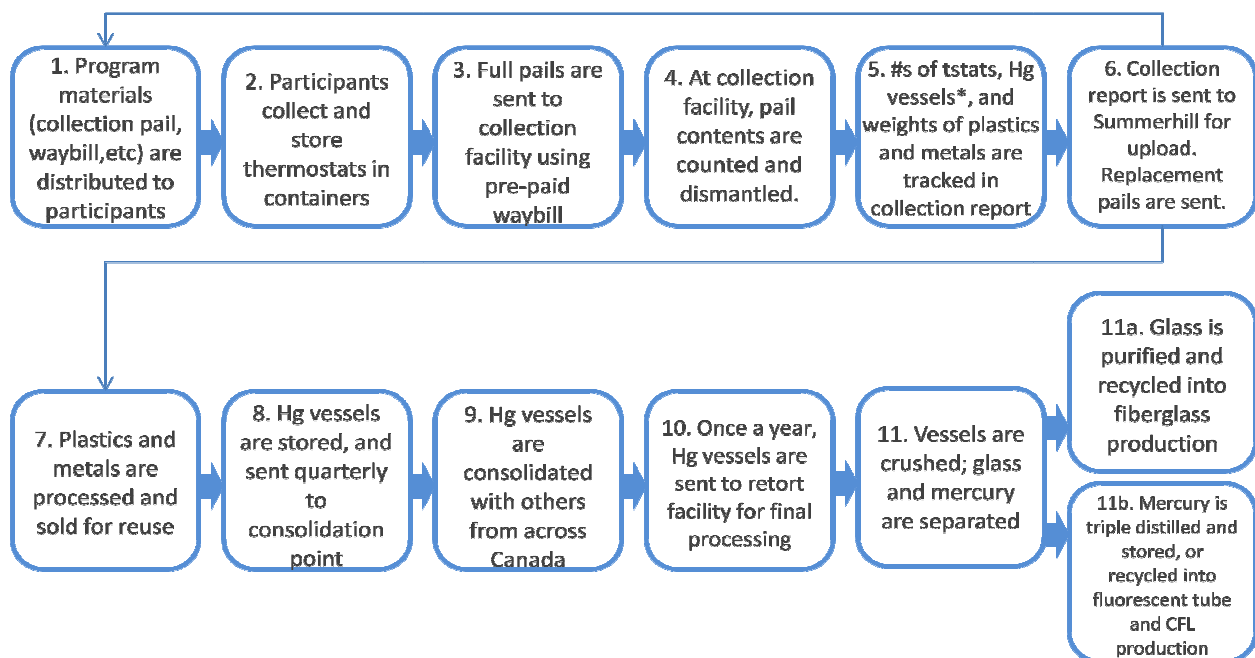
4. Collection System and Facilities

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 facility
 - Tri-Arrow Industrial Recovery receives collection containers from various collection points and processes thermostats (counts, dismantles, periodically ships Hg vessels to consolidation point)
3. Consolidation point
 - Aevitas Inc. receives Hg vessels from BC 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 we track both total number of thermostats and total number of HG vessels.*

Switch the 'Stat 2013 Report to Director, Waste Management

Collection Facility

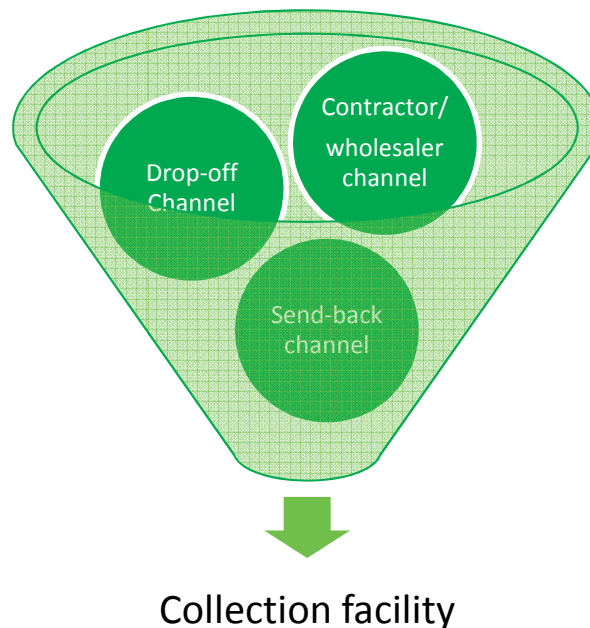
As described above, Switch the 'Stat uses only one collection facility, Tri-Arrow Industrial Recovery. This facility receives collection containers full of thermostats from all collection points in BC, and begins processing the thermostats. The shipper of each pail is recorded in a monthly tracking sheet, 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.

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.

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, Tri-Arrow. At Tri-Arrow, the thermostats are processed (for more details about processing, please see section 6). This process is illustrated below.



Switch the 'Stat 2013 Report to Director, Waste Management

According to the stewardship plan, the goal was to have 288 registered collection points in Year Three of operations. Through outreach initiatives described above, 91 new businesses registered as collection points for end-of-life thermostats in 2012, 33 of which elected to be drop-off locations.

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 |
|---------------------------------------|------------------|----------|-----------------|
| Gold Trail Recycling LTD | Recycling Centre | Yes | 100 Mile House |
| Direct Heat/J & J Cleaning | Contractor | Yes | Abbotsford |
| Homestead Heating & Air Ltd. | Contractor | Yes | Abbotsford |
| Pacific Breeze Heating & Cooling Inc | Contractor | Yes | Abbotsford |
| Wagner Heating & Air Ltd. | Contractor | Yes | Abbotsford |
| G.P. Peterson & Son Heating Ltd. | Contractor | Yes | Abbotsford |
| Arctic Air Conditioning Ltd | Contractor | No | Burnaby |
| Arete Mechanical | Contractor | Yes | Burnaby |
| Artisan Plumbing & Heating LTD | Contractor | No | Burnaby |
| Coast Mountain Air | Contractor | No | Burnaby |
| EMCO HVAC | Wholesaler | Yes | Burnaby |
| Solace Home Comfort Ltd. | Contractor | No | Burnaby |
| Synergy Plumbing & Heating | Contractor | No | Burnaby |
| Unique Plumbing Ltd | Contractor | No | Burnaby |
| Service Pro Plumbing & Heating | Contractor | Yes | Campbell River |
| Andrew Sheret Ltd. | Wholesaler | No | Chilliwack |
| John Mulder Heating Ltd. | Contractor | No | Chilliwack |
| Todd's Plumbing | Contractor | No | Chilliwack |
| Thermo Tec Mechanical Ltd. | Contractor | No | Courtenay |
| Absolute Plumbing & Heating LTD | Contractor | Yes | Delta |
| Heli Cool HA/CR Ltd | Contractor | No | Fernie |
| Tru Hardware | Contractor | No | Fort St John |
| Halliday Refrigeration Ltd. | Contractor | No | Kamloops |
| Roto-Rooter Plumbers | Contractor | Yes | Kamloops |
| E&S Heating | Contractor | Yes | Ladysmith |
| Air One Heating Service Ltd. | Contractor | Yes | Langley |
| Fort Security Systems Inc | Contractor | No | Langley |
| Township of Langley | Municipal | No | Langley |
| Defense Construction Canada | Contractor | No | Lazo |
| Tank's Plumbing & Heating | Contractor | No | Lumby |
| Hein Mechanical Services Inc. | Contractor | No | Nanaimo |
| Regional District of Central Kootenay | Municipal | No | Nelson |
| Babcock Gas Services | Contractor | No | North Vancouver |
| North Shore Plumbing & Heating | Contractor | No | North Vancouver |
| Glacier Industries Inc. | Contractor | Yes | Parksville |
| Fehling's Sheet Metal Ltd | Contractor | Yes | Penticton |
| canro boiler service and repair ltd. | Contractor | Yes | Port Coquitlam |
| Lillie Family Heating & Plumbing Co. | Contractor | No | Port Coquitlam |
| Groundsource Plumbing & Heating | Contractor | No | Powell River |

Switch the 'Stat 2013 Report to Director, Waste Management

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|---------------------------------------|------------------|-----|--------------------|
| Tempco Heating & Cooling Specialists | Contractor | Yes | Powell River |
| Polar Refrigeration | Contractor | No | Prince George |
| Sullivan Mechanical Ltd. | Contractor | No | Prince Rupert |
| Richard's Heating | Contractor | No | Rock Creek |
| JB Sheet Metal Ltd. | Contractor | No | Saanichton |
| Col-Chris Plumbing | Contractor | No | Salmon Arm |
| EMCO Corporation | Wholesaler | No | Salmon Arm |
| Andrew Sheret Ltd. | Wholesaler | No | Salmon Arm |
| Proair Heating/Cooling | Contractor | Yes | Salmon Arm |
| Outer Limits Sheet Metal Ltd. | Contractor | Yes | Salt Spring Island |
| Salt Spring Island Recycling Depot | Recycling Centre | Yes | Salt Spring Island |
| Mercury Refrigeration | Contractor | No | Shawnigan Lake |
| Coastal Heat Pumps & Refrigeration | Contractor | No | Sidney |
| I.T.S. HVAC Inc. | Contractor | No | Sparwood |
| Jyko Plumbing & Heating Ltd | Contractor | No | Squamish |
| GPH Mechanical Ltd. | Contractor | Yes | Summerland |
| Corix Water Products | Contractor | No | Surrey |
| Day & Knight Plumbing & Heating Ltd | Contractor | Yes | Surrey |
| Fortis BC | Wholesaler | No | Surrey |
| Fraser Valley Heating LTD | Contractor | No | Surrey |
| Gasit Mechanical | Contractor | No | Surrey |
| Good Guys Heating, Cooling & Plumbing | Contractor | Yes | Surrey |
| Good Guys Plumbing & Heating | Contractor | No | Surrey |
| John Sadler Plumbing & Heating | Contractor | No | Surrey |
| Nor Dyne Mechanical | Contractor | No | Surrey |
| Pacific Rim Eco Solutions | Contractor | No | Surrey |
| Surrey Mechanical Ltd | Contractor | No | Surrey |
| Barker & Co. Plumbing and Heating | Contractor | Yes | Vancouver |
| Broadway Refrigeration & AC | Contractor | No | Vancouver |
| CCI Renovations | Contractor | No | Vancouver |
| Groundlink Systems | Contractor | No | Vancouver |
| Hillcrest Plumbing And Heating | Wholesaler | Yes | Vancouver |
| Lambert Plumbing and Heating Ltd. | Contractor | Yes | Vancouver |
| Lew Plumbing and Heating Ltd. | Contractor | No | Vancouver |
| Pro Gas Ltd | Contractor | No | Vancouver |
| Refrigerative Supply | Wholesaler | No | Vancouver |
| Spears Sales & Service | Wholesaler | No | Vancouver |
| Sundawn Integrated Services Inc. | Contractor | Yes | Vancouver |
| Airstream Heating & AC Inc | Contractor | No | Vancouver |
| Shaper Sheet Metal Ltd | Contractor | No | Vanderhoof |
| EMCO Plumbing and Heating | Wholesaler | Yes | Vernon |
| Vernon Ace Mechanical | Contractor | No | Vernon |
| Care Systems services Ltd. | Contractor | Yes | vernon |
| 4 Seasons Heating | Contractor | No | Victoria |
| ACRO Radiant Floor Heating | Contractor | No | Victoria |
| Good Grade Plumbing & Gas | Contractor | No | Victoria |
| Island Energy Inc. | Contractor | No | Victoria |
| Kage Mechanical | Contractor | No | Victoria |

Switch the 'Stat 2013 Report to Director, Waste Management

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| Victoria Coal & Heating Ltd | Contractor | Yes | Victoria |
| Alpine Recycling | Recycling Centre | Yes | Victoria |
| J. Wright Plumbing & Heating (1984) Ltd. | Contractor | Yes | WEST Kelowna |
| Burgess Plumbing, Heating, & Electrical Co. Ltd. | Contractor | Yes | Williams Lake |

Changes to Collection Points

Since 2011, there have also been five changes to existing collection points. These changes are as follows:

| Company Name | Type | Drop Off | City | Change |
|--------------------------------------|------------------|----------|--------------|----------------------------|
| Independent Supply Company | Wholesaler | No | Burnaby | Merged with another branch |
| Plumbingworks | Contractor | No | Vancouver | Closed |
| Noble | Wholesaler | Yes | Coquitlam | Name change |
| 7 Mile Landfill and Recycling Centre | Recycling Centre | Yes | Port McNeill | Name change |
| Newport Auto Inc | Contractor | Yes | Squamish | Re-Activated |

Taking these changes into account, and combining the new participants with existing collection points from Year One, as of December 31, 2012 there were 199 collection points in British Columbia.

These collection points are located in the following regional districts:

| Region | Number of Collection Points |
|---|-----------------------------|
| Alberni–Clayoquot Regional District | 1 |
| Capital Regional District | 21 |
| Cariboo Regional District | 2 |
| Columbia–Shuswap Regional District | 4 |
| Comox Valley Regional District | 4 |
| Cowichan Valley Regional District | 6 |
| Fraser Valley Regional District | 14 |
| Metro Vancouver (Greater Vancouver Regional District) | 86 |
| Peace River Regional District | 3 |
| Powell River Regional District | 2 |
| Regional District of Bulkley–Nechako | 1 |
| Regional District of Central Kootenay | 2 |
| Regional District of Central Okanagan | 8 |
| Regional District of East Kootenay | 3 |
| Regional District of Fraser – Fort George | 3 |
| Regional District of Kitimat–Stikine | 1 |
| Regional District of Kootenay Boundary | 3 |
| Regional District of Mount Waddington | 1 |
| Regional District of Nanaimo | 8 |
| Regional District of North Okanagan | 6 |
| Regional District of Okanagan–Similkameen | 4 |

Switch the 'Stat 2013 Report to Director, Waste Management

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|--|---|
| Skeena – Queen Charlotte Regional District | 2 |
| Squamish–Lillooet Regional District | 3 |
| Strathcona Regional District | 1 |
| Sunshine Coast Regional District | 2 |
| Thompson–Nicola Regional District | 8 |

As this list demonstrates, there are collection points in 26 of British Columbia's 29 regions. The regions in which we do not yet have participants are as follows:

- Central Coast Regional District
- Northern Rockies Regional District
- Stikine Region

Over the course of 2013, attempts will be made to register participants in the remaining 3 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 recycled, including the plastics, metals, glass, mercury and any electronics associated with the thermostat. In 2012, the breakdown of materials recovered and recycled from the province of British Columbia included:

- 4,976 mercury-containing vessels (there can be anywhere between 1 to 4 mercury vessels contained in each thermostat)
- 29.58 kilograms of metals
- 27.29 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 100 percent of materials recovered through the program, 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, which are baled together and then sold to manufacturers to be used in new products in a 30/70 mix of recycled to new plastics.
- The metals collected are a mix of iron, nickel and aluminum which all have high reuse/recycling value.
- The glass vials containing the mercury are sent to Bethlehem Apparatus, where the glass vials are crushed and glass and mercury are separated. The mercury is quadruple distilled and sent for resale/reuse in products and processes. The glass is crushed, distilled and sent for recycling in fibreglass applications. The latest shipment of mercury-containing vessels was sent to Bethlehem Apparatus on November 9, 2012. Appendix A contains the manifest for this shipment.

100 percent of the materials collected by the program are recyclable and were managed in accordance with the program plan and the principles of pollution prevention.

Switch the 'Stat 2013 Report to Director, Waste Management

7. Product Sold and Collected and Recovery Rate

The section below will focus on the amount of product collected, measured against the targets outlined in the official program plan. 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 country level.

The following table depicts information on the recovery rate achieved by the Switch the 'Stat program during the period of January 1, 2011 to December 31, 2012 based on product collected compared against the targets set out in the official stewardship plan. The results achieved are compared against the target rates for portions of the program plan for Years Two and Three operations, because the official stewardship plan covers the period of July 1st to June 31st, whereas the annual report follows the calendar year.

| Expected vs. Actual Product Recovery Rate for Mercury-Containing Thermostats | | | | |
|--|--|---|--|---------------------------------------|
| | Targets: ½ Year Two (January 1 st -June 30 th) plus ½ Year Three (July 1-December 31 st , 2012)* | Results Achieved from January 1 to December 31, 2012 | Results Achieved from January 1 to December 31, 2011 | Percentage increase from 2011 results |
| Number of Thermostats Collected | 6,413 thermostats | 1,887 mercury containing; 13 electronic; Total: 1,900 | 1,331 mercury containing; 3 electronic; Total: 1,334 | 42% |
| Number of Loose Vessels Collected | n/a | 1,129 | 513 | 120% |
| Adjusted Total Thermostats Collected** | n/a | 2,706 | 1,700 | 59% |

*targets are pro-rated, using ½ of the year two target and ½ of the year three 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 2012 is equivalent to 806 thermostats. The adjusted total number of thermostats collected in 2012 is then 2,720.

Amount Collected by Regional District

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

Switch the 'Stat 2013 Report to Director, Waste Management

| Region | Number of Thermostats Collected*** | Number of Loose Vessels Collected |
|---|------------------------------------|-----------------------------------|
| Alberni–Clayoquot Regional District | 3 | 0 |
| Capital Regional District | 11 | 0 |
| Comox Valley Regional District | 20 | 0 |
| Fraser Valley Regional District | 130 | 70 |
| Greater Vancouver Regional District | 1,309 | 1008 |
| Regional District of Central Okanagan | 243 | 11 |
| Regional District of Nanaimo | 91 | 5 |
| Regional District of Okanagan–Similkameen | 53 | 35 |
| Thompson–Nicola Regional District | 27 | 0 |
| TOTAL | 1,887 | 1,129 |

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

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

| Plan Target | 2012 Results | Strategies for Improvement |
|-------------------------------------|--|--|
| <i>Performance Targets</i> | | |
| 1. Collection: 6,413 thermostats* | 2,706 thermostats collected (42% of target) | <ul style="list-style-type: none"> • Increase from 1 to 2 collection sweeps • Increase number of public drop-off locations • Increase number of collection points |
| 2. Participants: 264** | 199 participants (75.4% of target) | <ul style="list-style-type: none"> • Expand recruitment beyond core channels (eg. Municipalities/regional districts, demolition contractors) • Explore new recruitment options (eg. New marketing plan, new outreach events) |
| <i>Communication Targets</i> | | |
| 3. Program website: monthly updates | <ul style="list-style-type: none"> • 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 1,872 visits to switchthestat.ca from BC in 2012 | |

Switch the 'Stat 2013 Report to Director, Waste Management

| Plan Target | 2012 Results | Strategies for Improvement |
|--|---|--|
| 4. Printed brochures: a minimum of 5,000 brochures will be printed and distributed on an annual basis | Approximately 4,500 brochures distributed. 25 brochures are distributed to each new participant (2,275); as the program is below the participant target, it is also below the brochure distribution target. Brochures have also been distributed at outreach events and through partner associations (approx 475), and extra brochures have been sent to participants upon request (1,753). | <ul style="list-style-type: none"> • 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) |
| 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) | 204 posters distributed (102 each of 2 different posters) 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) | <p>Instead of advertising in community calendars for regional districts, 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.</p> <p>A total of 5,000 handbooks were distributed to various stakeholders, including regional districts, community centers and libraries, school districts, and other relevant groups.</p> <p>A digital version is available at www.bcstewards.com.</p> | |

**pro-rated target: see details in section 7, above.*

*** as with collection target, this number is pro-rated to compensate for difference between plan year and reporting year. See explanation in section 7, above.*

| | |
|-------------------|-----------------------|
| Manifest Number | JP137358-0 |
| Bill of Lading No | AS9774 |
| Date Shipped | 9 November 2012 |
| Receiver Name | Bethlehem Apparel Co. |

Appendix A – Retort Manifest

Page 22

JPL 13758-0

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Appendix B – Third Party Assurance



October 4, 2013

Independent Reasonable Assurance Report to the Directors of Heating, Refrigeration, and Air Conditioning Institute of Canada ("HRAI")

Scope

We have been engaged by Heating, Refrigeration, and Air Conditioning Institute of Canada (the "Association" or "HRAI") to perform a reasonable assurance engagement in respect of the following information presented in the 2012 Annual Report to the Director, Environmental Quality Branch, Ministry of the Environment ("MOE") as hosted on the Association's and British Columbia ("BC") MOE's website¹ for the year ended 31 December 2012 (together the "selected information"):

1. the location of its collection facilities, and any changes in the number and location of collection facilities from the previous report; and
2. the total amount of the producer's product collected.

Our opinion does not constitute a legal determination on the Association'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 the Association'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*, dated July 31, 2012 ("Assurance Requirements") as specified by the Director under section 8(2)(h) of the Recycling Regulation and International Standard on Assurance Engagements 3000 ("ISAE 3000"), "Assurance Engagements other than Audits or Reviews of Historical Financial Information" published by the International Federation of Accountants.

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

Criteria

The evaluation criteria used by HRAI are described in Appendix A. We consider the evaluation criteria to be suitable for our engagement.

¹ The maintenance and integrity of HRAI's website is the responsibility of Management; the work carried out by PricewaterhouseCoopers does not involve consideration of these matters and, accordingly, PricewaterhouseCoopers accepts no responsibility for any changes that may have occurred to the reported information or criteria since they were initially presented on the website.

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² "PwC" refers to PricewaterhouseCoopers LLP, an Ontario limited liability partnership.



Methodology & assurance procedures

We conducted our procedures in accordance with the ISAE3000 standard. This standard requires that we comply with independence requirements and plan and perform our procedures 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 controls 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 controls. 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.

Within the scope of our work we performed, amongst others, the following procedures:

- Obtaining an understanding of the management systems, processes, and controls used to generate, aggregate and report the data;
- Testing relevant 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 2012 Annual Report to the Director, Environmental Quality Branch, MOE.

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

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 overtime. It is important to read the Report in the context of evaluation criteria. For instance, with respect to indicator #2 as listed under the "Scope" section, the evaluation criteria are primarily focused on the process followed for reporting the data.



Basis for qualified opinion

In common with many stewardship associations, we were not appointed as auditors of the company until after December 31, 2012 and thus were unable to obtain sufficient appropriate audit evidence about the number and location of collection facilities at the beginning of the year. We were unable to satisfy ourselves by alternative means concerning the number and location of collection facilities held at December 31, 2011 which are stated in the 2011 Annual Report to the Director, Environmental Quality Branch, MOE. As a result, we were unable to determine whether any adjustments to the changes in number and location of collection facilities were necessary.

Qualified opinion

In our opinion, except for the matter described in the "Basis for qualified opinion" section, the selected information for the year ended December 31, 2012 presents fairly in accordance with the evaluation criteria, in all material respects:

1. the location of collection facilities, and any changes in the number and location of collection facilities from the previous report; and
2. the total amounts of the producer's product collected.

Our opinion has been formed on the basis of our assurance procedures and is subject to the inherent limitations set out herein.

Other matters

Our report has been prepared solely for the purposes of HRAI to comply with the Assurance Requirements 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 BC MOE, 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 Accountant
October 4, 2013



Appendix A to the Assurance Report

| | |
|--|--|
| <p>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 pages 11 and 12 of HRAI's 2012 Report to the Director, Environmental Quality Branch, MOE.</p> <p>The number of collection facilities is 1 location</p> | <p>Evaluation criteria:</p> <ul style="list-style-type: none"> - Collection Facility 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 is new to the program for 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: <ul style="list-style-type: none"> o Contractors o Wholesalers o Local or regional government recycling centers or transfer stations o Direct send-back - The total 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. 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 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. - 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. |
|--|--|



| | |
|---|--|
| <p>2. The total amount of the producer's product collected as presented in Section 5 on page 17 and Section 7 on page 19 of HRAI's 2012 Report to Director, Environmental Quality Branch, MOE.</p> <p>Total amount of producer's product collected is estimated as:</p> <ul style="list-style-type: none"> o 1,887 Hg Thermostats containing 4,976 Hg Vessels, o 1,129 Loose Hg Vessels; and o 13 Electronic Thermostats. | <p>Evaluation criteria:</p> <ul style="list-style-type: none"> - 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 thermostats and total number of Hg vessels received by the Collection Facilities during the reporting year. - The 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 Plan during the reporting year. <ul style="list-style-type: none"> o These amounts are monitored on a monthly basis through information collected that includes the number of thermostats and Hg vessels collected by geographic location. o Additional information is also collected for internal tracking purposes such as: <ul style="list-style-type: none"> • 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) - 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. |
|---|--|