

**VIA EMAIL and US Mail**

March 29, 2016

Mr. Thomas Metzner  
Connecticut Department of Energy and Environmental Protection  
79 Elm Street  
Hartford, Connecticut 06106

Subject: Thermostat Recycling Corporation's 2015 Annual Report

Dear Mr. Metzner:

Since 1998, TRC's national program has collected more than **2.1 million thermostats**, diverting more than **10 tons of mercury** from the waste stream. TRC continues to do more by increasing its budget, visiting more states (up 38% compared to 2014), and modernizing its work force.

You will find attached TRC's annual collection report for calendar year 2015. TRC would like to highlight some aspects of the 2015 program in Connecticut:

- The program collected **3,395 thermostats in 2015**. This was a 37% increase compared to the number of thermostats collected in 2014.
- In 2015 the program **collected 30.0 pounds of mercury** in the state of Connecticut. Since 2001, the annual pounds of mercury collected in Connecticut has increased by an average of 41% per year. During the same time period, the pounds of mercury collected in the nation increased by 10% per year.
- TRC's website traffic continued to increase in 2015. There was a **78% increase of visitors** from Connecticut while TRC increased its total annual visitors by **71% compared to 2014**.
- The counties with the most bins returned in 2015 were **Hartford** (26 bins), **Fairfield** (22 bins), and **New Haven** (16 bins).

If the department would like to discuss any of these items in greater detail, please do not hesitate to contact me directly at 571-302-0877.

Sincerely yours,



Ryan L Kiscaden  
Executive Director



an industry-funded non-profit

# CONNECTICUT STATE ANNUAL REPORT

FY 2015

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# CONNECTICUT COLLECTIONS

In Connecticut, TRC recovered the equivalent of 3,865 mercury thermostats from 3,395 whole mercury thermostats plus 4,839 mercury switches removed from thermostats. A total of 30 pounds of mercury was diverted from solid waste.

TRC recovered 80.7% of mercury thermostat collections from HVAC wholesale distributors, 11.8% from contractors, and 7.5% from household hazardous waste (HHW) facilities.

## EXHIBIT 1: 2015 CONNECTICUT COLLECTIONS BY BRAND

<u>Brand Holder</u>	<u>Thermostats</u>	<u>Count Switches</u>	<u>Pounds Mercury</u>
Burnham Holdings	15	15	0.09
Carrier	55	84	0.52
Climate Master	1	2	0.01
General Electric Corporation	66	78	0.48
Goodman Global	9	18	0.11
Honeywell	2,888	3,551	22.02
Invensys	13	13	0.08
ITT Corporation	2	2	0.01
Lennox	63	104	0.64
Lux Products	13	13	0.08
Nordyne Corporation	3	3	0.02
Rheem	11	22	0.14
Sears Holdings	8	8	0.05
Taco, Inc.	6	6	0.04
Trane	55	113	0.70
White Rogers	161	183	1.13
York/Johnson Controls	13	22	0.14
<b>----- Non-Member Brands -----</b>			
ENERGY KNIGHT	1	1	0.01
HB SMITH	12	12	0.07
<b>----- NOM (Manufacturer not identifiable) -----</b>			
NOM	-	-	0.00
Loose Bulbs	-	589	3.65
<b>TOTAL</b>	<b>3,395</b>	<b>4,839</b>	<b>30.00</b>

# CONNECTICUT COLLECTIONS

## WASTE MERCURY-ADDED THERMOSTAT MANAGEMENT

Bins with waste mercury-switch thermostats are received at the fulfillment/processing center in Golden Valley, Minnesota. The facility is owned and operated by Honeywell International under contract with TRC.

Bins are received at the loading dock and sent to the TRC processing area. The bin and plastic liner are opened and the contents are identified, sorted, and tallied. The following data is recorded for each bin returned and processed: bin number, business name (location name), city, state, zip code, date returned, number of thermostats and mercury switches by manufacturer and any non-conforming material.

The bin is returned to the location that sent it in with a new prepaid address label within 72 hours of receipt. The thermostats are stored and staged in a plastic lined carton in a storage area for final processing. The containers are dated and processed in order received, first in-first out.

The containers are returned from the storage area to the TRC processing area to have the mercury bulbs removed from the plastic housing. Universal Waste Regulations require the disposal of waste within 12 months of generation. TRC's processor requires that the disposal occur within 6 months of generation and TRC follows the more stringent requirement. Small quantities of thermostats are removed from the container, which is then closed again, and placed at the bulb removal workstation on a tray that contains any potential mercury spillage. The bulbs are removed from the thermostats and placed into a 2 quart container at the work station. If a bulb breaks and the mercury spills, the work area is designed to contain the spillage and the operators are trained in the clean-up and disposal of mercury. The TRC processing area is equipped with special mercury vacuum cleaners and the work area is vacuumed at the end of the work day to assure that any spillage is cleaned up and not left to evaporate.

The 2 quart container is emptied into a special 55 gallon drum which is labeled and dated according to regulations. The drum is sealed with a band and is only opened when contents are

## CONNECTICUT COLLECTIONS

being added to it. Special negative pressure venting assures any fumes are drawn away and vented when the drum is opened.

The 55 gallon drum is then shipped to Veolia Environmental Services in Port Washington, Wisconsin for final processing of the mercury ampoules (switches) Veolia Environmental Services meets or exceeds all local, state, federal and EPA regulations for the management of the product. Veolia's approvals for mercury recovery/recycling include:

- EPA - identification WIR000130591 (Veolia Environmental Services, Inc.)
- EPA BDAT Requirement - satisfied by all recovery operations
- CERCLA (Comprehensive Environmental Response Compensation and Liability Act)
- Wisconsin Department of Natural Resources

All facilities processing thermostats shipped to TRC follow all EPA guidelines and regulations. TRC has a facility license from Hennepin County Minnesota for the operation of the TRC. Honeywell, Inc. has a Hazardous Waste Generator license from Hennepin County. All persons who handle mercury thermostats as part of the TRC operation receive training in the handling of Hazardous Waste and Universal Waste.

# PROGRAM EDUCATION AND OUTREACH

## DIRECT MAIL

TRC utilized direct mail throughout the year to target collection locations, HVAC contractors/technicians, and household hazardous waste (HHW) facilities.

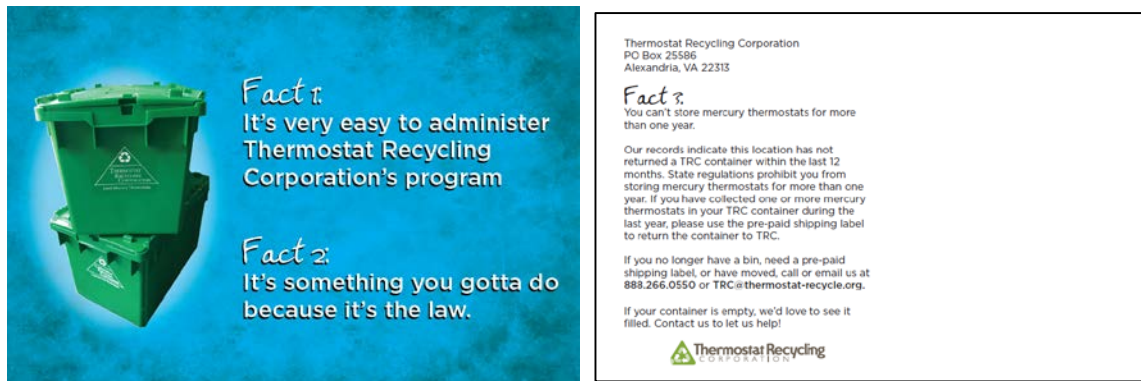
### TRC Collection Locations

- To encourage collection point participation and to stimulate the timely return of TRC collection containers, TRC mailed reminder postcards (Exhibit 2) to collection points that had not returned a TRC container within the last 12 months (in accordance with Universal Waste Regulations). TRC mailed 44 reminders in April, 44 in August, and 134 in November.
- On 7/17 TRC mailed a letter to seven Heating, Air-conditioning & Refrigeration Distributors International (HARDI) member CEOs with headquarters in Massachusetts. The letter encouraged them to conduct an original equipment manufacturer (OEM) Mercury thermostat cleanout at their branches, and included a sample memo for HARDI CEOs to distribute to their collection locations. (Appendix 1)
- On 9/4, TRC sent an email to a principal at Torrico Supply informing them that their HVAC branches were not compliant with state legislation. TRC received no response as a result of this email. (Appendix 2)
- On 10/28 TRC sent sales letters to 12 Winsupply wholesale locations without TRC bins in the state of Connecticut. The letter was sent to remind these branches of their lawful obligation to provide a mercury thermostat recycling option to customers and offered free bins to help them meet this obligation. TRC received one bin order response as a result of this letter. (Appendix 3)



# PROGRAM EDUCATION AND OUTREACH

## EXHIBIT 2: REMINDER POSTCARD



## HVAC Contractors/Technicians

TRC purchased all HVAC contractor lists from Hoover's, narrowing the results by SIC codes relating to the HVAC industry.

- TRC mailed an 11x6 sized postcard to 179 HVAC contracting business contacts with seven or more employees in September and November (Exhibit 3). The messaging targeted on an emotional appeal to fathers, since the industry is predominantly male, coming from their children in an appeal to "Get with the program." The postcard also offered a limited-time free recycling bin.
- In October TRC mailed an 18x24 sized full-color, double-sided poster (Exhibit 4) to 750 HVAC contracting business contacts with 2-6 employees. The mailing included a letter (Appendix 4) encouraging them to display the poster and informing them of TRC's program. It also offered a limited-time free bin.
- In December TRC mailed a full color letter to 709 HVAC contracting business contacts with two to six employees. (Appendix 5)
- In December TRC mailed a holiday cards to 187 HVAC contracting business contacts with seven or more employees. The card was holiday themed and offered the gift of a free mercury thermostat recycling bin. (Exhibit 5)



# PROGRAM EDUCATION AND OUTREACH

## EXHIBIT 3: 11X6 POSTCARD

### Side 1:



### Side 2:

Thermostat Recycling Corporation (TRC) offers an easy program to help your business comply with New York law.

State law requires HVAC contractors to recycle all mercury thermostats removed service. You can't leave them at the customer's premise.

If your business has **7 OR MORE TECHNICIANS**, order a **FREE** recycling container.

CALL TRC TOLL-FREE AT: 888-266-0550

ORDER ONLINE AT: [www.thermostat-recycle.org/contractor](http://www.thermostat-recycle.org/contractor)  
PROMO CODE: POSTCARD

Otherwise, bring them to any HVAC wholesaler in the state for free recycling.

LEARN MORE AT: [www.thermostat-recycle.org](http://www.thermostat-recycle.org)

Thermostat Recycling CORPORATION

Thermostat Recycling Corporation  
PO Box 25586  
Alexandria, VA 22313

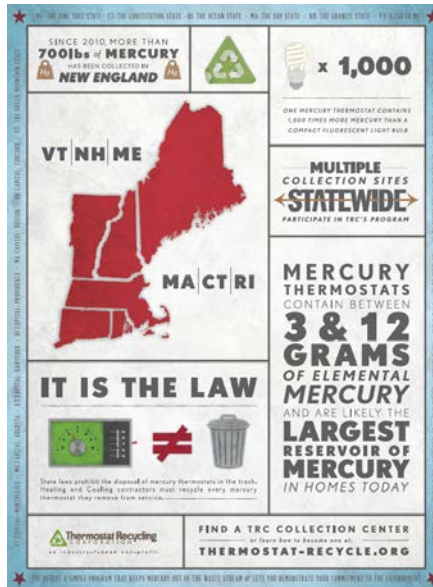
# PROGRAM EDUCATION AND OUTREACH

## EXHIBIT 4: 18X24 POSTER

Side 1:



Side 2:



## EXHIBIT 5: HOLIDAY CARD TO CONTRACTORS

Outside (front and back of folded card):



Inside:



# PROGRAM EDUCATION AND OUTREACH

## ADVERTISING

TRC's two primary advertising targets remain HVAC contractors/technicians and HVAC wholesale distributors. For the contractors/technicians segment, TRC focuses on residential and light commercial contractors because of their relatively high level of hands-on contact with waste mercury thermostats. The second segment of focus is HVAC wholesale distributor locations as they remain the most convenient location for the majority of Connecticut-based technicians/contractors to purchase replacement thermostats and recycle waste mercury thermostats.

Homeowners remain a secondary market as they represent a small segment of the market (+/- 10%). Since replacing a mercury thermostat is a rare event (if ever) for a consumer, TRC derives the greatest impact/value from its marketing activities by concentrating on the channel segment that conducts the vast majority of repeat thermostat replacements.

TRC's 2015 advertising campaign continued to focus mostly on "easy and free" and "It's the law" messaging (where applicable, as only a limited number of states ban the disposal of mercury thermostats in solid waste and/or require HVAC contractors to recycle all mercury thermostats removed from service).

The purpose of TRC's advertisements were two-fold: 1) continue to build brand/program awareness and 2) increase program participation by raising awareness of specific legal obligations to recycle and the ease of recycling.

## Print Advertising

TRC continued print-based advertisements in the following national/regional HVAC trade publications:

- ***HVAC Insider New England***, a regional publication which has a monthly circulation of 9,000 contractors, technicians, and wholesale distributors in New England, including

## PROGRAM EDUCATION AND OUTREACH

Vermont. TRC ran a 2-color 1/2 page advertisement in the May, June, November and December issues (Exhibit 6).

- **Johnstone Supply Flyer**, a printed version of their online catalogue that is mailed to more than 300,000 HVAC contractors nationwide. The flyer featured a full page TRC advertisement in their August issue to promote the TRC TV giveaway promotion (Exhibit 7). Johnstone Supply has three locations in Connecticut. Johnstone Supply provided this insertion at no-cost to TRC.
- **Distribution Center Magazine**, the exclusive publication of HARDI, with more than 11,000 bi-monthly subscribers. TRC ran a full-color 1/4 page advertisement in May and December promoting the Big Man on Planet competition. (Exhibit 8)
- **HVACR Business Magazine**, a national publication with approximately 34,000 qualified subscribers, of which approximately 1,544 are in New England. TRC ran a full color 1/4 page advertisement in January, March and July. (Exhibit 9)

### EXHIBIT 6: HVAC INSIDER NEW ENGLAND AD

The advertisement features the TRC logo at the top, which includes a recycling symbol and the text "Thermostat Recycling CORPORATION" and "an industry-funded non-profit". Below the logo, the text asks, "Are you recycling every mercury thermostat you remove from service?" in a handwritten font. Underneath, it states "If not, you're breaking the law." in red. Two images are shown: a mercury thermostat being placed into a recycling bin. The bin is labeled "THERMOSTAT RECYCLING CORPORATION". Below the images, the text reads: "State law\* requires contractors and technicians to recycle every mercury thermostat they remove from service, and all HVAC wholesalers in the state must take mercury thermostats off your hands at no cost." At the bottom, it provides contact information: "To find your nearest collection location visit [thermostat-recycle.org](http://thermostat-recycle.org), or call 888.266.0550 for more information." A small footnote at the very bottom states: "\*Disposal bans apply in the following states: CA, CT, IA, IL, ME, MA, MN, NY, NH, OR, PA, RI and VT."

# PROGRAM EDUCATION AND OUTREACH

## EXHIBIT 7: JOHNSTONE SUPPLY FLYER AD



## EXHIBIT 8: DISTRIBUTION CENTER MAGAZINE ADS

May:



December:





# PROGRAM EDUCATION AND OUTREACH

## EXHIBIT 9: HVACR BUSINESS MAGAZINE AD



### Digital Advertising

TRC continued the use of rotating banner advertisements in 2015, with changes in scheduling and scope and the addition of new outlets.

TRC follows the national trend of analyzing advertisement success by measuring each advertisement's impression and click-through rate. An impression is a measure of the number of times an ad is displayed, and a click-through rate (CTR) is the number of times a click is made on the advertisement divided by the total impressions.

TRC's new advertising in 2015 included:

- *ACHR News' AHR Wrap Up Enewsletter*, sent to 12,000 opt-in subscribers. This is an annual email sent in January at the conclusion of the Air-Conditioning, Heating, Refrigerating (AHR) Exposition, the largest HVAC industry trade show. TRC ran a Medium Rectangle ad within the email that received a 0.72% CTR. (Exhibit 10)

## PROGRAM EDUCATION AND OUTREACH

- *Distribution Center's* Enewsletter, sent to 4,000 weekly opt-in subscribers. TRC ran a Medium Rectangle ad in February, March and June receiving an average CTR of 2.5%. (Exhibit 10)
- NATE Enewsletter, sent bi-monthly to 31,900 opt-in subscribers. TRC ran a text ad that received a 0.14% CTR.

### EXHIBIT 10: ACHR NEWS AND DISTRIBUTION CENTER ENEWSLETTER AD



TRC also continued digital advertisements on the following HVAC industry websites below:

- OESP Dedicated Eblast, a digital piece emailed to oil and energy service professionals predominantly from New York, Connecticut, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, Pennsylvania, Rhode Island, Vermont and Virginia. The email was exclusively about TRC's program and offered a limited-time offer to sign-up for a free TRC bin. The email was delivered to 1,674 subscribers in April, receiving a 3.6% CTR; and to 1,623 subscribers in September, receiving a 1.4% CTR. (Appendix 6).
- OESP Advantage News Brief, a weekly email with the same subscribers listed as above (OESP Dedicated Eblast). TRC ran a sponsored content ad for 13 consecutive weeks October – December which resulted in an average CTR of 0.2%. (Exhibit 11)
- HVACR Business "Ahead of the Curve" Enewsletter, a monthly newsletter that reaches approximately 9,000 opt-in readers each month. TRC ran a banner ad in July, August, November and December (Exhibit 12). The average CTR was 3.0%.



## PROGRAM EDUCATION AND OUTREACH

- HVACRBusiness.com, an HVAC publication website with 14,000 monthly visitors. TRC ran a banner ad in February and July that resulted in 92,848 impressions and an average CTR of 0.9%. (Exhibit 13)
- Contracting Business Magazine's dedicated Email Blast, which was sent twice with different messaging to opt-in subscribers in states with disposal bans, including Connecticut. The January mailing was sent to 5,980 subscribers and received a 25% open rate and a 0.5% CTR (Appendix 7), while the June mailing was sent to 8,970 subscribers and received a 13% open rate and a 0.5% CTR (Appendix 8).
- ACHRNews.com, a website that assists the decision-makers from all branches of the HVAC industry including contractors, manufacturers, distributors, parts and supply wholesalers, and service companies. More than 241,852 HVACR professionals visit the website every month, totaling more than 308,911 monthly website visits. TRC ran a Topic Sponsorship ad in January, February and September that resulted in an average 0.14% CTR. (Exhibit 14)
- ACHR Newsletter, a weekly email blast with more than 10,000 subscribers. TRC ran a banner ad for four issues in April and four issues in October with an average CTR of 4.7%. (Exhibit 14)
- HVAC-Talk.com, an online forum that averages more than 300,000 monthly visitors. TRC ran a rotating banner ad in February, March and July which resulted in 291,706 total impressions and an average CTR of .03%. (Exhibit 13)

### EXHIBIT 11: OESP ADVANTAGE NEWS BRIEF SPONSORED CONTENT AD

#### SPONSORED CONTENT

Promoted by

- [Thermostat Recycling Corporation makes disposal of mercury thermostats easy and free.](#)
- [Several states prohibit the disposal of mercury thermostats in the trash.](#)
- [Find your nearest mercury thermostat collection site for free disposal.](#)
- [Sign up for Thermostat Recycling Corporation's program to directly participate as a collection site.](#)
- [Learn more about how Thermostat Recycling Corporation's program works.](#)



# PROGRAM EDUCATION AND OUTREACH

## EXHIBIT 12: HVACR BUSINESS "AHEAD OF THE CURVE" ENEWSLETTER AD



## EXHIBIT 13: HVACRBUSINESS.COM AND HVAC-TALK.COM AD

Would you toss  
1,000 CFL bulbs  
into the trash?



Then why would  
you toss a  
mercury  
thermostat in  
the trash?

Find out how  
easy TRC makes  
it to recycle.



 Thermostat Recycling  
CORPORATION

The advertisement is a vertical graphic with a blue background. It features two illustrations: a grey trash can overflowing with CFL bulbs and a green recycling bin filled with mercury thermostats. The text is arranged in a vertical flow, starting with a question about CFL bulbs, followed by a question about mercury thermostats, and then a call to action to find out how easy TRC makes recycling. The Thermostat Recycling Corporation logo is at the bottom.

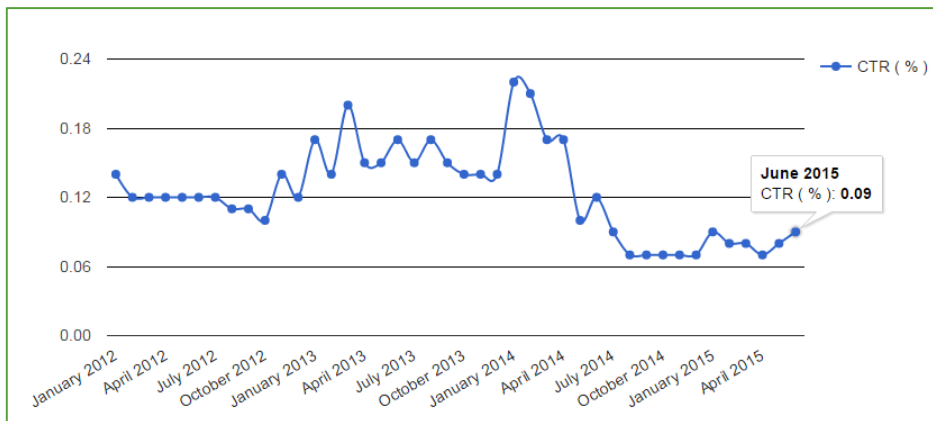
# PROGRAM EDUCATION AND OUTREACH

## EXHIBIT 14: ACHRNEWS.COM TOPIC SPONSORSHIP ADS



Exhibit 15 presents benchmark data from Google’s Display Benchmarks tool on average digital advertising CTR’s in the U.S. by year. It shows that the highest national average CTR in 2015 was 0.09%, so TRC’s CTR performance exceeded the national average.

## EXHIBIT 15: GOOGLE DISPLAY’S BENCHMARK TOOL



# PROGRAM EDUCATION AND OUTREACH

Additionally, the current average open rate for emails is 14%, and the average CTR in emails is 1.6%<sup>1</sup>, which TRC generally also exceeds.

## Google AdWords

Since 2011 TRC has deployed a Google AdWords campaign that geo-targets contractors/technicians and consumers (homeowners) in states with mercury thermostat disposal bans, including Connecticut (Exhibit 16). Advertisements appear on Google search results pages after an individual searches terms related to TRC's mission (E.g. thermostat replacement, contracting recycling regulations, mercury thermostat recycling, programmable thermostats, etc.).

TRC continued this campaign in 2015, running it the duration of the calendar year. This is TRC's preferred option to reach consumers because of the campaign's extensive and targeted reach.

The Connecticut campaign yielded 235,473 impressions with an average CTR of 0.58%.

## EXHIBIT 16: GOOGLE ADWORDS LANDING PAGE



The screenshot shows the website for Thermostat Recycling Corporation, an industry-funded non-profit. The page is titled "Connecticut Mercury Thermostat Recycling" and features a navigation menu with links for "Find a Site", "Sign Up", "State Recycling Programs", "Resources", "About", "News", "Blog", and "Contact Us". A search bar at the top right allows users to "Find A Collection Site Near You" by entering a zip code. The main content area includes a photograph of mercury thermostats being recycled, with the text: "Recycling mercury thermostats made easy. Compliance with state law made even easier. Find the nearest recycling location to you." Below this is a form to "Enter Zip Code" and a "Submit" button. A link is provided to "Find out more about Connecticut's mercury thermostat laws and collection programs." The footer contains a message about the importance of recycling mercury thermostats and provides instructions on how to use the search tool.

<sup>1</sup> "M+R Benchmarks 2015." *M+R and NTEN's 2015 Nonprofit Benchmarks Report*. 1 May 2015: 57. Print.

# PROGRAM EDUCATION AND OUTREACH

## EARNED MEDIA

In 2015 TRC continued to enjoy positive and frequent coverage within the industry trade press, appearing more than 20 times through a variety of publications. TRC issued many media releases that were published, generating additional exposure for the program.

Notably, TRC continued to receive coverage and editorial pieces in industry leading publications such as:

- The Air Conditioning and Refrigeration (ACHR) News (370,378 reach), including a front page editorial article (Exhibit 17)
- Distribution Center (11,000 circulation)
- Contracting Business (40,000 circulation)
- Wholesale distributor's on-hold phone messaging, including Johnstone Supply and Standard Supply
- Johnstone Supply's printed flyer (300,000 circulation)
- HVAC-Talk.com (408,769 monthly unique browsers)

Additionally, two of TRC's employees, Ryan Kiscaden and Christyn Zehnder, were voted onto HARDI's first 40 under 40 list. The list recognizes the HVAC industry's top performers and rising stars who are younger than 40. The list was published in the March 2016 issue of Distribution Center Magazine. There were hundreds of eligible HARDI members considered, making this a highly competitive group.

# PROGRAM EDUCATION AND OUTREACH

## EXHIBIT 17: ACHR NEWS FRONT PAGE EDITORIAL ARTICLE

Air Conditioning | Heating | Refrigeration

**the NEWS**  
THE HVACR CONTRACTOR'S WEEKLY NEWSMAGAZINE SINCE 1926

AUGUST 31, 2015 | \$3.00 | ONLINE AT WWW.ACHRNEWS.COM

### Teaching Greenhorn Techs Green Technologies

Contractors gain a competitive edge through renewable training and education

**BY BOB KOSKOFF**  
On the job site

The renewable energy sector of the HVAC marketplace continues to make strides in acceptance and understanding from consumers and the pros in the numbers.

For Manufacturers Tech Inc., more than 1 million professional (or general) contract jobs were sold in Q1 residential, commercial, and government buildings. And, that number is growing as U.S. homeowners install approximately 50,000 more professional heat pumps annually. Similarly, both wind and solar installations have risen steadily over the last decade, with solar accounting for 32 percent of the nation's new generating capacity in 2014, leading the efforts of both wind energy and solar for the second consecutive year, per Scientific American.

**PEOPLE OF THE WEEK** An renewable energy education center to give installability credit contractors in Connecticut must sign to work that learns with the knowledge necessary to install. Visit us online for more information. [www.the-news.com](http://www.the-news.com)

### Industry Unites Against Mercury Pollution

Strategic partnerships, contests boost mercury thermostat collection numbers

**BY MICHAEL MARSH**  
In the NEWS STAFF

Unites in past decades, the dangers of mercury exposure are well known today. According to the National Resource Defense Council, mercury is used as a component in many consumer products, like thermometers, batteries, and electronic devices, and can seep as a pollutant when these products are manufactured, broken during use, or, perhaps most importantly, incorrectly handled and disposed of at the end of the product's useful life. Mercury pollution becomes a serious threat when it settles into oceans and waterways, where it builds up in fish before it's often consumed by people. When mercury enters the human body it acts as a neurotoxin, harming the brain and nervous system. Mercury poisoning has been known to cause memory loss, tremors, and vision loss, and it can adversely affect fertility and blood pressure.

Since 1978, the Thermostat Recycling Corp. (TRC) has worked to collect thermostats containing mercury and properly dispose of the harmful substance by using HVAC wholesalers as collection points for contractors. "It's a simple waste distribution system," said Mark Feltman, executive director, TRC. "Contractors are bringing products back to distributors."

TRC's 2014 Mercury Recovery Index (MRI) reported a 13 percent increase

**RESIDENTIAL CONTRACTORS**  
Supter Systems Air Conditioning, Plumbing & Electric Inc., Capital, Florida named Greg Angell as its vice president.  
Conditioned Air Corp. of Naples, Naples, Florida has gained an early position through Google+ business pages (G+).

**COMMERCIAL CONTRACTORS**  
Mather Associates Inc. (St. Louis) named Steve Gillis vice president.  
Wingman Associates Inc. (St. Louis) named Michael Ansell project manager for its responsibility for managing new and renovation HVAC projects.

**MANUFACTURERS**  
Matsuo Products Inc., Okemos, Michigan named Timothy Peterson sales leader for HVAC markets in the U.S. and Canada.

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Attend the FREE Webinar! [achrnews.com/education](http://achrnews.com/education)

Changing Seasons: How IAQ Promotes Better Business

SEPTEMBER 10-11 (NEXT) Register for FREE at [webinars.achrnews.com](http://webinars.achrnews.com)

## TRC WEBSITE

TRC's website data is calculated through Google Analytics, and website traffic continued to increase in 2015. TRC increased its total annual visitors by 71% compared to 2014. There was a 78% increase of visitors from Connecticut. The increase in traffic reflects the impact of paid trade channel advertising, the Google AdWords campaign, and search engine optimization efforts.

In May TRC implemented an automated welcome email for collection sites that sign-up for the program through TRC's website. In November TRC transitioned its current website into a responsive website, meaning it is fully optimized for greater visibility across all devices including mobile and tablets.

TRC's social media presence increased as well. The TRC Twitter account saw a 42% increase in number of followers in 2015, and its Facebook page enjoyed an 83% increase of page "Likes."

# PROGRAM EDUCATION AND OUTREACH

## TRADE SHOWS, CONFERENCES AND PRESENTATIONS

TRC staff attended, exhibited and/or presented at the following regional and national shows pertaining to Connecticut:

- **January 13th: Honeywell International Webinar (NEW)**

Ryan Kiscaden presented a TRC Webinar to Honeywell International to an audience of 15 contractors. The webinar focused on ways for contractors to profit from recycling by using other industry items to increase their profitability.

- **January 25th – 28th: Air-Conditioning, Heating, Refrigerating Exposition.**

*Chicago, IL*

TRC staff attended and exhibited at the AHRI (Air-Conditioning, Heating, and Refrigeration Institute) Expo in Chicago. The show brought in over 2,000 exhibitors and 60,000 HVAC/R professionals, including more than 1,171 in the New England region.

- **February 9th – 13th: Association of Energy Service Professionals (AESP) Trade Show**

*Orlando, FL*

AESP is the premier organization for professionals in the energy efficiency industry. Over 300 industry professionals attend the event including utility professionals and industry advisors/implementers. TRC staff attended this show.

- **February 12th: Product Stewardship Institute Webinar (NEW!)**

TRC staff presented a webinar through the Product Stewardship Institute entitled “Connecting Rural HHW Program Managers to Manufacturer-Funded Take-Back Programs” to an audience of 25 professionals.

- **February 26th: AESP Brown Bag Webinar (NEW!)**

TRC staff presented a Brown Bag Webinar to AESP on recycling programs for utilities and utility implementers. The webinar was added to TRC’s YouTube page in April and received 33 views.

- **March 3rd-4th: Johnstone Supply Member Meeting**

*San Diego, CA*

Johnstone Supply is a cooperative wholesaler distributor of HVAC parts and equipment



## PROGRAM EDUCATION AND OUTREACH

with over 380 locations nationwide, including three in Connecticut. Johnstone's Annual Membership meeting is invitation only and TRC once again attended and exhibited as part of an ongoing effort with Johnstone to encourage and expand the cooperative's members' participation. The event is well attended by owners and senior staff and remains a unique opportunity to engage directly with key decision makers.

- **March 15<sup>th</sup> – 18<sup>th</sup>: ACCA and the IE3: Indoor Environment & Energy Expo**

*Dallas, TX*

Co-presented by Air Conditioning Contractors of America (ACCA), this expo is the largest marketplace for the indoor environmental and energy services contracting industry. TRC staff exhibited and promoted the program to attending HVAC contractors.

- **March 27<sup>th</sup>: YouTube Video Presentation (NEW!)**

TRC created and uploaded a video presentation entitled "Mercury Thermostats: A Historical Overview and Review of Current Legislation" to TRC's YouTube channel. The video received 39 views in 2015.

- **March 25<sup>th</sup>: ACCA Town Hall Webinar (NEW!)**

A Town Hall Webinar was presented to ACCA members regarding the TRC Program.

- **April 12<sup>th</sup>-14<sup>th</sup>: HARDI FOCUS Marketing & Sales Conference (NEW!)**

*Charleston, SC*

TRC staff attended this conference where marketing and sales professionals learn from joint sessions that help them align their strategies and improve synergy between departments.

- **May 18<sup>th</sup> – 20<sup>th</sup> OESP Road Show**

*Hershey, PA*

An annual convention with over 2,500 attendees representing close to 300 companies across New England. TRC staff again exhibited at this show.

- **May 28<sup>th</sup>: ACCA Webinar with Dynatemp (NEW!)**

TRC teamed up with Dynatemp, a refrigerant manufacturer and recycler, to present a Webinar on environmental compliance to the ACCA.

## PROGRAM EDUCATION AND OUTREACH

- **August 27<sup>th</sup>: Torrco Annual Trade Show (NEW!)**

*Plantsville, CT*

Torrco is an independent wholesale distributor of plumbing, piping, HVAC, kitchen & bath and propane supplies serving Connecticut, western Massachusetts and New York. TRC staff exhibited at the show for the first time.

- **September 14<sup>th</sup> – 16<sup>th</sup>: NAHMMA National Conference**

*Austin, TX*

TRC staff attended the conference and sponsored the silent auction. The conference facilitated peer-group interaction and exchange of ideas and information relating to hazardous materials management. TRC staff gave a presentation on techniques for marketing to target audiences, which was attended by more than 30 HHW professionals.

- **October 6<sup>th</sup>: EEBA Excellence in Building Conference & Expo (NEW!)**

*Denver, CO*

After joining the association and speaking with their Executive Director, TRC staff attended the show for the first time. The conference focused on ways for both residential/commercial HVAC contractors and home performance contractors to work together.

- **October 7<sup>th</sup>: IFMA World Workplace Conference & Expo**

*Denver, CO*

Held annually, IFMA's World Workplace meets the educational and networking needs of professionals who support the built environment. IFMA promotes World Workplace year-round to more than 23,000 members in 85 countries; plus an additional 200,000 workplace professionals. TRC staff attended for the first time.

- **December 5<sup>th</sup> – 8<sup>th</sup>: HARDI National Conference**

*Orlando, FL*

TRC staff again exhibited and participated in the "Booth Program," which provides for 1-on-1 sessions with senior executive staff from HARDI member companies. This event targeted representatives of approximately 80% of the wholesale market for HVACR products. TRC also presented its annual "Big Man on the Planet Award."

# PROGRAM EDUCATION AND OUTREACH

## HVAC WHOLESALE DISTRIBUTOR OUTREACH

### Ferguson Enterprises Onboarding

Ferguson Enterprises is the number one wholesaler in the country, owning more than 200 HVAC locations nationwide. Ferguson's corporate made a business decision to engage in both HVAC and blended Ferguson stores regardless of state mandatory programs. As a result of this initiative, Ferguson signed up 90 Ferguson Enterprise stores for the program, 3 of its Lyon Conklin Co. stores, and 2 of its Air Cold Supply stores. In addition, Ferguson purchased a current HVAC distributor whom uses the TRC program, Redlon and Johnson.

Ferguson sent an email in July to 15,910 subscribers announcing its partnership with TRC and highlighting the program (Exhibit 18).

Due to these efforts, collections from Ferguson owned distributors increased 37% percent in 2015.

### EXHIBIT 18: FERGUSON NATIONAL EMAIL



# PROGRAM EDUCATION AND OUTREACH

## Promotions

TRC implemented several promotions to help incent and influence recycling behavior among HVAC contractors at wholesale distributor locations throughout the state.

### **Petro Oil**

For the calendar year of 2015, the TRC engaged with the Northeast's largest heating oil provider to offer an incentive campaign. Petro has offices in NJ, NY, CT, RI, and MA. The incentive program was available for up to \$5,000 of incentive categories focused on increasing overall bin shipments, number of mercury thermostats returned, and participation rates from its offices. Petro Oil Connecticut locations returned only 49 mercury thermostats, so no incentive was released.

### **Johnstone Supply**

In September, Johnstone Supply launched a 40 inch TV giveaway at 383 of their stores nationwide, including three in Connecticut. Each mercury thermostat recycled earned entry into the giveaway. The promotion was in partnership with Honeywell; a customer could earn additional entries by purchasing any new Honeywell thermostat. During the promotion, Johnstone Supply incorporated the TV giveaway promotion into their recorded messaging for customers calling who are put on hold. The message was 45 seconds long and was in rotation with several other messages.

TRC provided Johnstone Supply full color 18x24 posters and a new cardboard header (Exhibit 19) for the TRC merchandise display to promote awareness of the program in stores. A 4x6 sized postcard (Exhibit 20) was then sent to all Johnstone locations on 10/15 as a reminder to send in their bins after the TV promotion ended.

### **R.E. Michel**

In October 2014 TRC launched a gift card promotion at select New England R.E. Michel locations, including four locations in Connecticut. The promotion offers customers a \$5 Dunkin' Donuts gift card for every five mercury thermostats returned. TRC provided each participating location gift

# PROGRAM EDUCATION AND OUTREACH

cards and full-color counter cards to promote the program (Exhibit 21). The promotion is ongoing as of March 2016 and will continue until all cards are distributed.

## EXHIBIT 19: JOHNSTONE SUPPLY TV GIVEAWAY POSTER AND MERCHANDISE HEADER



## EXHIBIT 20: JOHNSTONE SUPPLY POSTCARD

**Front Side:**



**Back Side:**



# PROGRAM EDUCATION AND OUTREACH

## EXHIBIT 21: DUNKIN' DONUTS PROMOTION



### Big Man on Planet Competition

TRC partnered with HARDI for the fourth annual Big Man on Planet (BMOP) competition. The competition was restructured to allow for four distributor winners (as opposed to three in 2014) and included a \$500-\$1,000 employee incentive to the top four branch locations within each tier. The restructuring was implemented to provide a more fair tiered system, putting distributors with a similar number of branch locations in competition with one another. In April TRC mailed an invitation to the executives of 357 HARDI member principle contacts encouraging their participation in the program (Exhibit 22). The competition ran May 1<sup>st</sup> – October 31<sup>st</sup> and participating locations shipped a total of 432lbs of mercury during the competition.

# PROGRAM EDUCATION AND OUTREACH

## EXHIBIT 22: BMOP INVITATION TO HARDI MEMBERS

### Outside:



### Inside:

A flyer with a white background and a black border. It is divided into two main sections: "Sign Up to Compete:" and "Why Compete?". The "Sign Up to Compete:" section contains three numbered steps: 1. Confirm all branch locations have a TRC container and are collecting mercury thermostats through TRC's program. If not, contact TRC at 888-266-0550 to enroll in the program and mention "BMOP" for a limited-time free recycling container. 2. Sign up for the Big Man on Planet (BMOP) competition by May 31st at www.thermostat-recycle.org/bmop. 3. Market your BMOP participation to customers by using free promotional materials emailed to you after signing up. Below the steps is an image of a silver trophy. To the right of the trophy, it says "Winners will be determined by total pounds of mercury recovered from thermostats received by TRC between 5/1/15 - 10/31/15." The "Why Compete?" section explains that BMOP is a competition for HARDI members to see which distributor can recycle the most mercury thermostats. It lists three reasons to participate: • Show customers your commitment to the environment by offering them a simple recycling solution. • Go head-to-head with fellow distributors – don't give your customers a reason to recycle at your competitor. • Earn bragging rights and the "BMOP Cup" at the 2015 HARDI Annual Conference where 4 winning distributors will be recognized. At the bottom right, there is a green box that says "\$500 Store Incentives Available!" and a small text box that says "Visit www.thermostat-recycle.org/bmop for more details."

## Location calls

TRC staff made two phone calls to collection locations in Connecticut that hadn't returned a bin in more than 12 months. Calls reminded locations of the need to stay in compliance with accumulation time limits. TRC staff also offered to replace lost shipping labels, order FedEx Ground pickups for the bins, or provide free promotional materials. See Appendix 9 for a list of locations contacted.

## Site Visits

A total of 62 Connecticut collection locations were visited in several key markets. The majority of locations visited were those that had not returned a bin within the past 12 months. Visits were conducted to ensure location staff was knowledgeable about the program, prepare the bin and schedule a shipment if applicable, and supply any other necessary materials. See Appendix 10 for a complete list of locations visited.



# PROGRAM EDUCATION AND OUTREACH

## Merchandise Displays for TRC Bins

Throughout the year TRC distributed branded cardboard displays to HVAC wholesale distributor collection locations to showcase the TRC container (Exhibit 23). The purpose of the displays is to enhance the visibility and accessibility of the program to contractors at HVAC wholesale locations. These displays were provided at no-cost to distributors.

In 2014 when TRC last ran data, the five largest HVAC wholesalers using the TRC merchandise display (Johnstone Supply, R.E. Michel, CC Dickson, Gustave Larson, and US Air Conditioning Distributors) collectively had seen a 25% increase in pounds of mercury recovered and a 45% increase in frequency of TRC bin returns year-to-date. Therefore, TRC plans to continue providing and encouraging the use of merchandise displays at HVAC wholesalers to help increase thermostat collections.

### EXHIBIT 23: TRC MERCHANDISE DISPLAY



# PROGRAM EDUCATION AND OUTREACH

## HVAC CONTRACTOR OUTREACH

TRC staff helped develop a draft model HVAC contractor environmental policy and shared it with the trade group, ACCA (Appendix 11). TRC's goal is to work with ACCA and other trade groups to provide this template as a service for contractor's employee handbooks.

## HOUSEHOLD HAZARDOUS WASTE FACILITY OUTREACH

In September TRC developed a tri-fold brochure specifically for household hazardous waste (HHW) facilities to target their customers (Exhibit 24). It included information on how to locate HHW facilities nation-wide using TRC's website and information on how to properly prepare to dispose mercury thermostats. The brochure PDF is now available on TRC's website as a promotional toolkit download, and hard copies are available by request.

### EXHIBIT 24: HHW TRI-FOLD BROCHURE

#### Outside:

**It's free**

- There's no charge to you.

**It's easy**

- Store used mercury-switch thermostats safely once removed from service.
- Bring the used thermostats to a participating HHW facility to recycle.
- TRC requires no paperwork nor tracking for homeowners.

**It's the right thing to do**

- By recycling used mercury-switch thermostats, you help ensure a cleaner environment for all of us. One mercury thermostat contains at least 1000 times more mercury than a compact fluorescent light bulb.

**Thermostat Recycling Corporation**  
thermostat-recycle.org | 1-888-368-0350  
trc@thermostat-recycle.org

**Recycle Mercury Thermostats For Free**

Instead of storing old mercury thermostats or tossing them in the trash, contact your local Household Hazardous Waste facility to see how easy you can dispose of mercury containing thermostats, at no cost to you.

Visit our website or give us a call for a list of participating collection sites.

thermostat-recycle.org | 1-888-368-0350  
trc@thermostat-recycle.org

#### Inside:

**Frequently Asked Questions**

**What is the purpose of the Thermostat Recycling Corporation (TRC) program?**  
The goal is to recycle all mercury containing thermostats that are replaced.

**What should I do?**  
Drop your mercury thermostats off at your local HHW facility.

**What thermostats can I recycle?**  
All brands of wall-mounted, mercury switch thermostats.

**Which HHWs participate?**  
You'll find the recycling bins at hundreds of locations across the nation. View a list of participating collection sites at [thermostat-recycle.org](http://thermostat-recycle.org).

**How do I know if the thermostat contains mercury?**  
If the thermostat uses a dial or lever, odds are it contains mercury and needs to be recycled.

**Should I take out the mercury switch?**  
No. Return the entire thermostat intact, including the cover. The thermostat casing protects the mercury switch during shipment.

**What's not accepted under TRC's program?**

- Loose mercury switches (bulbs)
- Leaking mercury-switch thermostats
- Electronic thermostats and other thermostats without mercury switches
- Batteries, fluorescent light bulbs and other devices containing mercury

**How are thermostats collected?**  
Retail facilities and HVAC wholesale distributors place recycling bins in their locations. Retailers collect thermostats directly from customers. Contractors and homeowners collect out-of-use mercury thermostats through their normal business and can drop them off for collection at any location.

**What happens after I drop of the old thermostat?**  
When the collection site's bin is full they send it to TRC's recycling center. The switches are removed and forwarded to a mercury recycler.

**Do I have to recycle mercury thermostats?**  
Certain states prohibit the disposal of mercury thermostats in the trash. Some further require all HVAC contractors in the state to recycle every mercury thermostat removed from service. Visit our website to see these state regulations.

**What else should I know?**  
Most thermostats are replaced by HVAC contractors. We encourage you to ask your contractor what they do with old mercury thermostats and inform them of this free program if they are not participating.

## UTILITY PROGRAM/IMPLEMENTOR OUTREACH

The TRC staff engaged with the industry leading company, Cadmus to produce a report identifying current demand response projects. This report was able to show TRC which implementers had current projects of demand response that involved thermostat replacement components. TRC

## PROGRAM EDUCATION AND OUTREACH

focused efforts on these implementers as a source for large thermostat replacement in areas such as low-income and multi-family.

TRC staff wrote model utility implementer RFP requirements to share with utility companies (Appendix 12). The focus of the model is to help utilities expand environmental compliance requirements for their implementers. This language would essentially be a term of agreement between the utility company and the hired implementer. TRC also began engagement with two non-TRC members interested in the recycling mercury issue, ecobee and NEST, by submitting to them MOU's. All parties involved hope to do more with the TRC program.

TRC also engaged utility implementers who are members of Association of Energy Service Professionals (AESP). In May TRC sent an email to AESP's subscriber list to remind them of their regulatory obligations and offer them a free TRC recycling container (Appendix 13). TRC sent a follow up email in August (Appendix 14). The email in May received a 16% open rate and the one in August received an 18% open rate. TRC did not receive any requests for the free recycling bin offer.

### HVAC TECHNICIAN SURVEY

TRC hired a third-party to create a contractor behavior survey to collect first-hand accounts about recycling practices and compliance patterns of technicians as well as company level acceptance/resistance to compliance. The technician survey was conducted in-person by TRC staff and administered via touch screen devices at several HVAC trade shows nationwide, including the Torrco Annual trade show in Connecticut and the GasNetworks show in Massachusetts. The surveys were initiated by asking contractors to take a brief five minute survey regarding recycling behavior for a chance to win a Bosch Tool.

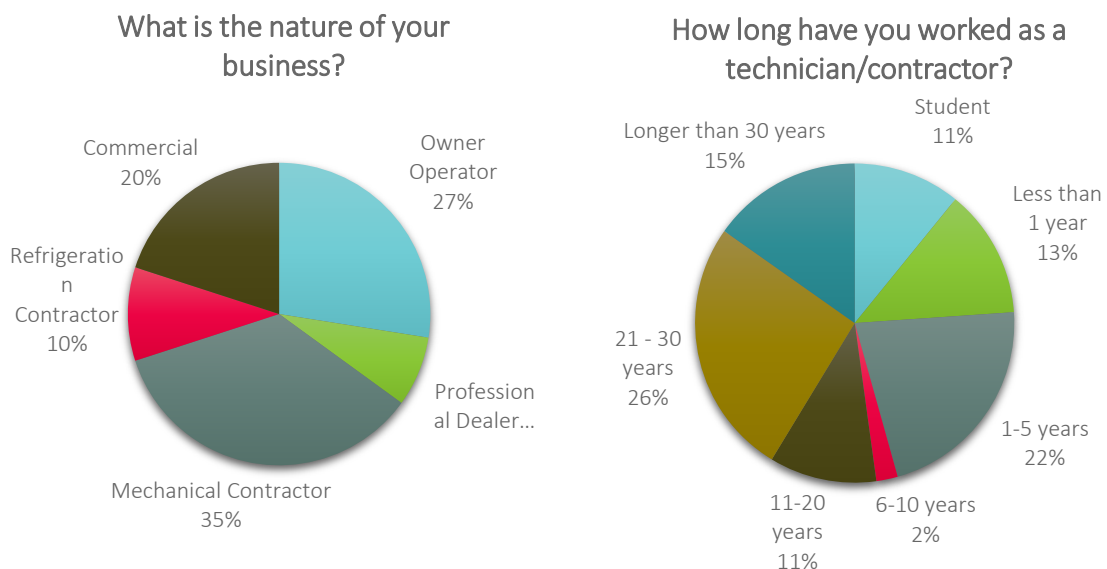
If a technician indicated interest in participating they were handed the survey in the form of a touch-screen tablet which had the survey questions already displayed for convenience. Survey participation was incentivized by entry into a prize raffle for a Bosch tool give-away. The survey

# PROGRAM EDUCATION AND OUTREACH

had 46 respondents, and while it included contractors from several states, generally contractor behavior tends to be similar nationwide.

## Demographic

The first questions asked of the technicians were to determine their demographic:



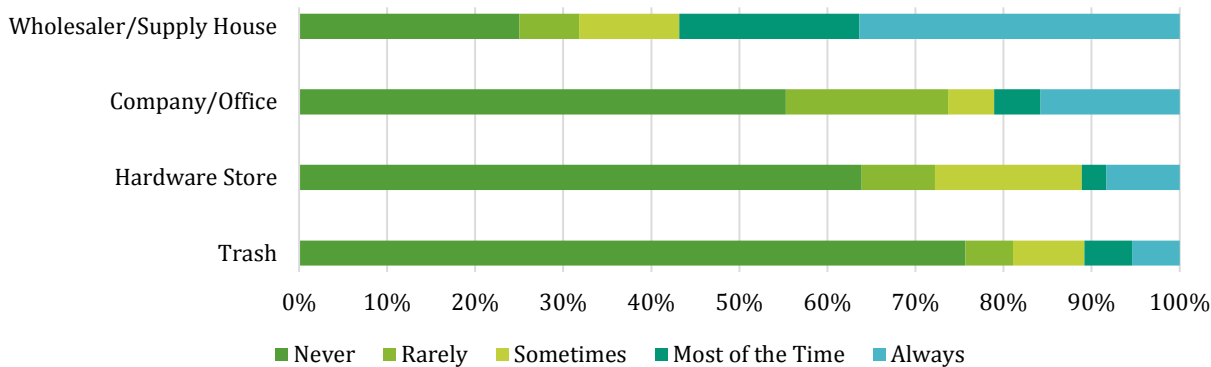
The demographic data shows that there was a widely varied mix of business sectors and experience levels. This means that the findings from the survey can be applied generally without a need for demographic qualifiers. The largest business sector was Mechanical Contractor followed by Owner Operator. These two sectors comprised 62% of the responding technicians. The experience range of the respondents was diverse, reflecting a balance of both new and experienced technicians.

## Disposal

To better understand where technicians dispose of mercury thermostats the following question was posed:

# PROGRAM EDUCATION AND OUTREACH

## Where do you dispose of the mercury containing thermostats you collect?

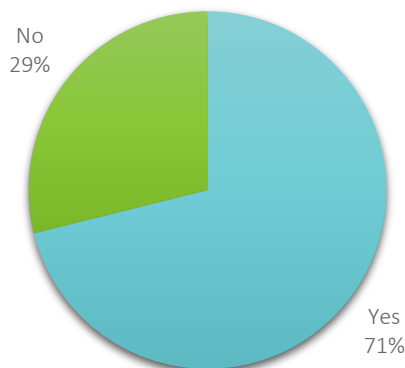


The above chart shows that the main location for the disposal of mercury containing thermostats is at the wholesaler. It also points out that roughly 25% of technicians do at least occasionally throw the thermostats in the trash. The data shows that when technicians do dispose of the mercury containing thermostats that they generally take them to the correct place, the wholesaler, but it also shows that there is room for improvement in keeping the thermostats out of the trash.

The survey then inquired about what internal mechanisms employers might be using to encourage technicians to recycle thermostats:

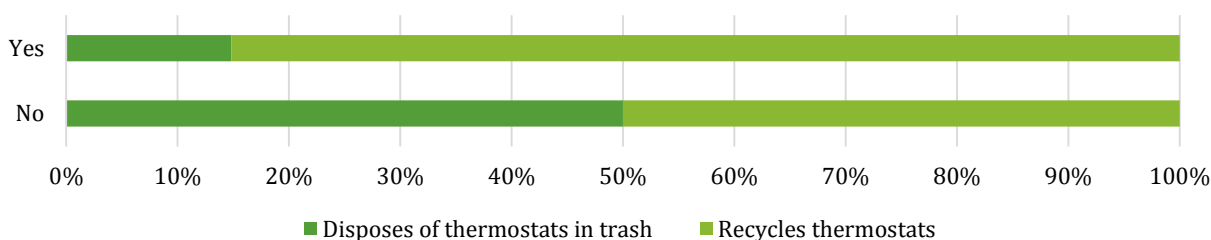
## PROGRAM EDUCATION AND OUTREACH

Are you required by your employer to recycle mercury containing thermostats?



The fact that only 71% of employers require their technicians to recycle mercury containing thermostats might explain why 25% of technicians may occasionally dispose of them in the trash. In order to verify this a cross reference was drawn between whether employers require recycling and technicians that throw away thermostats in the trash.

**Are you required by your employer to recycle mercury containing thermostats?**



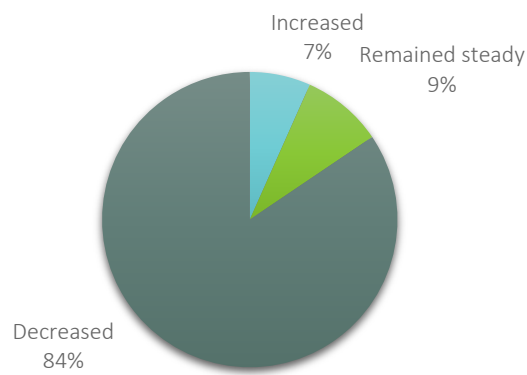
The above chart shows that 85% of technicians whose employer requires recycling of mercury containing thermostats actually recycle. By contrast, only 50% recycle without employer requirement. This strongly suggests that employer policies do have a substantive impact on recycling by employees.

# PROGRAM EDUCATION AND OUTREACH

## Mercury Containing Thermostat Prevalence

In an effort to determine how many mercury containing thermostats are still in use and whether the number in use has significantly decreased the following question was posed:

Would you say that during the time you have worked as a technician/contractor the number of mercury containing thermostats you encounter has...



When asked how the number of mercury containing thermostats encountered during their career had changed most technicians felt that there had been a decrease. This leads to the conclusion that the number of available thermostats has also decreased.

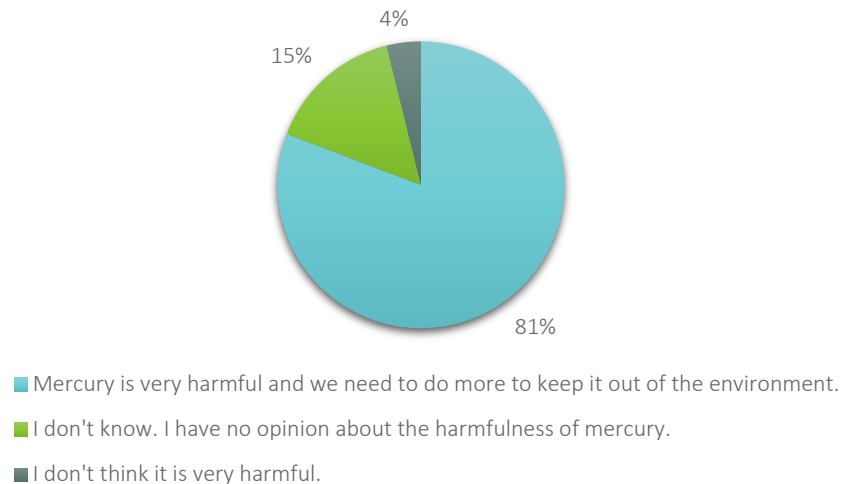
## Environmental Concern

To gauge the level of which technicians are concerned about the environment and how mercury plays in to that the following question was asked of technicians.



## PROGRAM EDUCATION AND OUTREACH

Which of the following statements best reflects your personal opinion of the harmfulness of mercury?



The above chart identifies that most technicians feel that mercury is very harmful and needs to be kept out of the environment. This suggests that a campaign that highlights the negative impact that mercury has on the environment and draws the connection to how technician recycling can help reduce these impacts may be an effective way to boost participation.

### Conclusions

The majority of technicians surveyed realize that mercury is harmful and needs to be kept out of the environment. However, 25% of technicians still dispose of mercury containing thermostats in the trash. Through this survey it is also known that over a quarter of technician employers do not require that their technicians recycle mercury containing thermostats. This suggests that TRC should work with employers to educate technicians on the program and encourage employers to require that mercury containing thermostats are disposed of properly. Since most technicians personally believe that mercury is bad for the environment creating an awareness campaign educating technicians on the importance of recovering mercury containing thermostats will aid in increasing participation. See Appendix 15 for survey raw results.

## NATIONAL PROGRAM EXPENSES

Below is a summary of TRC's national program expenses for 2015. A copy of TRC's 2014 IRS Form 990 is available by request.

### EXHIBIT 25: 2015 PROGRAM ADMINISTRATIVE EXPENSES

Program Component	2014	2015	% Change
TRC Staff and Administration	\$ 593,631	\$ 625,205	5%
Recycling Costs	\$ 356,043	\$ 347,555	-2%
Incentive/Promotional Payments	\$ 47,712	\$ 42,224	-12%
New Collection Containers	\$ 15,108	\$ 10,960	-27%
Travel	\$ 70,120	\$ 81,152	16%
Legal	\$ 40,373	\$ 21,228	-47%
Direct Expense for Marketing & Outreach	\$ 289,347	\$ 277,995	-4%
<b>Total (expenses)</b>	<b>\$1,412,333</b>	<b>\$1,406,319</b>	<b>0%</b>

Compared to last year, variances in these program components were flat. Causes for changes include:

- Recycling Costs:** A decrease in whole thermostats processed as compared to 2014. Recycling costs are directly related to how many whole thermostats are collected at TRC's processing facility in Golden Valley, MN. The program's collections decreased by a little over 2%.
- Incentive/Promotional Payments:** Incentive payments in Maine were flat. In Vermont they were up with more Retailers and Wholesalers participating. California incentive expenses were down slightly, and Illinois promotional payments were down significantly due to a large wholesaler choosing not to participate in an incentive program.
- New Collection Containers:** Orders were down 27%. TRC expects a continued decrease in container orders because the program is operating in a mature collection environment and available new locations to collect are decreasing.
- Travel:** The Director of National Accounts spent more than 60% of his time attending trade shows, site visits, and attending meetings with key corporate contacts. TRC visited 22 states, up 38% compared to 2014.

## NATIONAL PROGRAM EXPENSES

- Direct Expense for Marketing and Outreach:** The category used for Marketing Consulting was down considerably compared to 2014 due to the Director of Marketing and Communications taking on more responsibility. TRC also spent less on retail displays compared to 2014. This is as a result of declining available locations which were willing to accept merchandising displays for their businesses. Lastly, both Advertising and Graphic Design increased as TRC created its new 2016 marketing campaign, “Recycle every mercury thermostat, every time”.

### EXHIBIT 26: 2015 PROGRAM EXPENSES WITH CONNECTICUT SPECIFIC COSTS

Category	Total Expenses	National	CT
TRC Staff and Administration	\$ 625,204.88	\$ 469,218.76	\$ 27,818.31
Recycling Costs	\$ 347,555.25	\$ 199,057.25	\$ 5,941.25
Incentive/Promotional Payments	\$ 42,224.42	\$ -	\$ 154.43
New Collection Containers	\$ 10,960.00	\$ 10,960.00	\$ -
Travel	\$ 81,152.16	\$ 42,928.84	\$ 1,238.81
Legal	\$ 21,228.28	\$ 3,104.90	\$ 51.37
Direct Expense for Marketing & Outreach	\$ 277,994.50	\$ 147,352.68	\$ 6,379.96
<b>Total (expenses)</b>	<b>\$ 1,406,319.49</b>	<b>\$ 872,622.43</b>	<b>\$ 41,584.12</b>

- TRC Staff and Administration:** On July 1st 2015, TRC changed policy regarding tracking of employee’s time worked. This procedural change was predicated by state specific statutory regulations for TRC, particularly requirements on TRC to report costs associated with its employee’s time allocated to state specific activities. This policy change was for all TRC employees, including those who were exempt and non-exempt. The procedure was implemented starting in July to offset this requirement. Although not a perfect subset of data, the hours worked (as a percentage) were then mirrored to reflect employee’s time worked for the first half of the year. The decision to mirror time worked was determined due to the inaccuracies of having each employee go back to the start of the year and identify their hours worked by state, particularly for those employees whom were exempt. TRC acknowledges that it may under-estimate the hours worked in the state for 2015.

## NATIONAL PROGRAM EXPENSES

However, all new employees after July 1st 2015 and any time entered for 2016 will accurately capture each employee's actual time worked by state.

- **New Collection Containers:** Fulfillment of new collection containers is done annually at TRC's processing facility in Golden Valley, MN. TRC does not currently allocate the costs of new containers to specific states, instead choosing to keep this in one cost center and including any costs from an order for containers in "Recycling Costs". In 2015, Connecticut ordered 0.94% of all new container orders.

# 2016 PROGRAM PLANS

## 2016 ANNUAL GOALS

TRC again set annual goals for the organization for the calendar year of 2016. The 2016 goals were developed by TRC staff and incorporate each operational area of the organization, including:

- 1) Continue to increase efforts of collecting mercury thermostats by exploring non-traditional avenues
- 2) Steer TRC toward tactical, positive, cohesive messaging while implementing marketing strategies
- 3) Continue fulfilling all members' state specific legal requirements without losing continuity
- 4) Maximize human capital opportunities by utilizing available internal and external resources

Many of the activities which drive TRC's daily functions are captured in the spirit of these goals. Developing a list of high level external goals allows TRC to keep its focus on the ultimate mission of recycling every mercury thermostat, every time.

## COLLECTION LOCATION TOUCH CAMPAIGN

In 2016 TRC will launch a comprehensive location outreach plan that strategically coordinates and schedules outbound phone calls, reminder postcards, and site visits throughout the year. Designed around the year's site visit travel schedule, phone calls have been scheduled to occur within two months of TRC staff physically visiting a state, and postcards have been scheduled to follow up these phone calls within two months. Special attention will be focused on states with mandatory collection programs, including Connecticut, which will entail up to 120 phone calls to collection locations that have not returned a bin within the past year. States with non-mandatory collection programs will continue to receive up to 60 collection location phone calls in 2016.

Additionally, each state's TRC collection locations which haven't returned a bin within the last year will continue to receive reminder "Miss you" postcards every four months of the year. By strategically coordinating the time of outreach between these three mediums (site visits, phone calls, postcards) TRC hopes to maximize the impact of each initiated contact effort.

# 2016 PROGRAM PLANS

## BRANDING CAMPAIGN

In January TRC placed a full page color ad in *ACHR News*, one of the industry's leading HVAC publication with a weekly circulation of more than 33,000 (Exhibit 27). The ad appeared during the week of the AHR Expo, which is one of the more popular issues of the magazine. The ad tied TRC's members and affiliates together around the positive call to action of recycling every mercury thermostat, every time. TRC resized this ad to place a half-page size in the February issue of *HVACR Business Magazine* as well.

### EXHIBIT 27: ACHR NEWS FULL PAGE AD

**AN IMPORTANT MESSAGE TO HVAC CONTRACTORS:**

**EVERY MERCURY THERMOSTAT EVERY TIME**

**Mercury thermostats** contain between **3-12 grams of mercury**. As an industry, we sold and installed these devices. Now, let us work together to **properly manage their disposal**.

**JOIN US IN SUPPORTING MERCURY THERMOSTAT RECYCLING**

APR Supply Co. | Bard Manufacturing Corporation | Carrier Corporation | C.C. Dickson Co. | Chromalox  
Climate Master, Inc. | Crescent Parts and Equipment | Daikin Applied  
Emerson Electric Co. / White-Rodgers | Empire Comfort Systems | Ferguson  
Gustave A. Larson Company | G.W. Berkheimer | Honeywell International Inc. | Hunter Fan Company  
Ingersoll Rand | Irr Supply Centers | Johnson Controls | Johnson Supply | Johnstone Supply  
Lennox International Inc. | Lux Products Corporation | Nortek Global HVAC  
R.E. Michel Company, Inc. | Rheem Manufacturing Company | Taco Comfort Solutions | Uponor, Inc.  
U.S. Air Conditioning Distributors | Vaillant Corporation | W. W. Grainger

**Thermostat Recycling CORPORATION**  
an industry-funded non-profit

Additionally in January, TRC launched a new branding campaign, “Recycle every mercury thermostat, every time” (Exhibit 28). The campaign messaging is based off frequent feedback TRC staff receives when contractors say “What’s the big deal about mercury? I used to play with it in school as a kid.” This new messaging compares mercury thermostats to kids playing with HVAC

## 2016 PROGRAM PLANS

tools. HVAC tools are safe when used properly, just like mercury thermostats are safe when recycled and disposed of properly.

### EXHIBIT 28: NEW BRANDING CAMPAIGN



The advertisement features the Thermostat Recycling Corporation logo at the top left, which includes a green recycling symbol and the text "Thermostat Recycling CORPORATION". Below the logo is a green banner with the text "WOULD YOU LET YOUR KIDS PLAY WITH THESE?". The main image shows two children: a young boy on the left holding a power drill, and a young girl on the right holding a chainsaw. Below the image, the text reads "You may have played with mercury as a kid, but times have changed." and "RECYCLE EVERY MERCURY THERMOSTAT, EVERY TIME." At the bottom left is a green recycling bin, and at the bottom right is the website address "WWW.THERMOSTAT-RECYCLE.ORG".

TRC updated its trade show booth display with the new artwork and messaging, and the campaign will continue throughout the year in print and digital advertising placements with several different versions featuring different kids with tools.

### PAID ADVERTISING

Additionally, TRC is currently working to update its Google AdWords campaign to include display ads, which include images versus only text, to enhance the visibility of the ads. TRC also plans to

## 2016 PROGRAM PLANS

implement Facebook, and potentially YouTube, advertising in the spring and fall during the HVAC industry's shoulder (busier) seasons. Ads will have similar messaging to the Google AdWords campaign and be targeted to states with disposal bans.

Some additional planned advertising and promotion (subject to change) include:

- 1/4pg full-color ad in *Distribution Center Magazine* for three months
- 1/2pg spot-color ad in *HVAC Insider New England* for four months
- Skyscraper banner ad on ACHRNews.com for two months
- Website Topic Sponsorship on ACHRNews.com for three months
- Top leaderboard ad in *ACHR News* newsletter for two months
- *ACHR News* digital edition video spotlight
- *ACHR News* digital edition sponsorship
- Feature leaderboard ad in NATE's bi-monthly newsletter for two months
- Medium rectangle banner ad in *Distribution Center's* weekly newsletter for two months
- Banner ad in AHRI's weekly newsletter for 13 weeks
- *HVACR Business Magazine's* web package for two months, including a video and three different sized ads on their website
- Continue to exhibit at regional and key national industry events.
- TRC plans on continuing efforts to engage larger contractors and HVAC wholesale distributors.



## INDEPENDENT EVALUATION

Appendix 17 examines the annual performance of the thermostat collection recycling program in terms of bins, thermostats, and mercury collected as well as the year over year progression of the program.

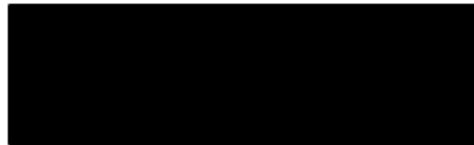
TRC notes, that the mercury auto switch (ELVS) program collections have been trending downward or flat at best in recent years in Connecticut. According to a recent report, “they have not been placed in vehicles since model year 2003.” Mercury switch thermostats have not been sold since the mid 2000’s. Moreover, many were replaced with non-mercury units because electronic programmable thermostats had become available many years earlier. Thus, given the correlation of neither discontinued product being placed in the market for 10 or more years, TRC results will reflect similar indicators from the mercury auto switch program.

# APPENDIX 1: LETTER TO HARDI CEO



1765 Duke Street | Alexandria, VA 22314 | [thermostat-recycle.org](http://thermostat-recycle.org)

July 17<sup>th</sup>, 2015



Subject: Free disposal of obsolete/New Old Stock (NOS) or waste mercury thermostats

Dear Mr. Trimbach:

Many thermostats manufactured prior to 2008 contained mercury and the sale of these devices have been banned by many states. Most distributors have written-off stranded inventory of mercury thermostats, but it has come to TRC's attention that many of these units have yet to be disposed of and may remain at either branch or central distribution locations.

Moreover, TRC routinely finds boxes or old TRC containers with waste mercury thermostats at branch locations. Federal regulations prohibit the accumulation of waste mercury thermostats for more than one year. Any waste mercury thermostats that have been at your facilities for more than one year should be shipped to TRC immediately.

Thermostat Recycling Corporation will assist you with the proper disposal of all mercury thermostats at your facilities. It costs over \$3 per pound for the proper disposal of these devices through a hazardous waste handler. Why incur these costs, when TRC will provide **FREE collection bins and pay all transportation/disposal costs to facilitate the proper disposal of these devices.**

Please review your inventory for any NOS mercury thermostats or waste mercury thermostats returned by customers at all of your facilities. Attached is a template of an internal memo to help facilitate this process. Please contact Ryan Kiscaden, TRC'S Director of National Accounts, at 571-302-0877 if you have any questions or need further assistance.

Sincere Regards,

A handwritten signature in black ink, appearing to read "Mark Tibbetts".

Mark Tibbetts  
Executive Director

P.S. Don't forget any mercury thermostat returned from your branches counts towards the Big Man on Planet Competition.

Enclosed:    Sample Memo  
                  TRC Procedure  
                  HVAC/R Wholesaler Participation Form

## APPENDIX 2: TORRCO LETTER



1765 Duke Street | Alexandria, VA 22314 | [thermostat-recycle.org](http://thermostat-recycle.org)

July 17<sup>th</sup>, 2015

Bender Plumbing Supplies  
ATTN: Anthony Alfone  
550 Grand Ave  
New Haven, CT 6511

Subject: Free disposal of obsolete/New Old Stock (NOS) or waste mercury thermostats

Dear Mr. Alfone:

Many thermostats manufactured prior to 2008 contained mercury and the sale of these devices have been banned by many states. Most distributors have written-off stranded inventory of mercury thermostats, but it has come to TRC's attention that many of these units have yet to be disposed of and may remain at either branch or central distribution locations.

Moreover, TRC routinely finds boxes or old TRC containers with waste mercury thermostats at branch locations. Federal regulations prohibit the accumulation of waste mercury thermostats for more than one year. Any waste mercury thermostats that have been at your facilities for more than one year should be shipped to TRC immediately.

Thermostat Recycling Corporation will assist you with the proper disposal of all mercury thermostats at your facilities. It costs over \$3 per pound for the proper disposal of these devices through a hazardous waste handler. Why incur these costs, when TRC will provide **FREE collection bins and pay all transportation/disposal costs to facilitate the proper disposal of these devices.**

Please review your inventory for any NOS mercury thermostats or waste mercury thermostats returned by customers at all of your facilities. Attached is a template of an internal memo to help facilitate this process. Please contact Ryan Kiscaden, TRC'S Director of National Accounts, at 571-302-0877 if you have any questions or need further assistance.

Sincere Regards,

A handwritten signature in black ink, appearing to read "Mark Tibbetts", is written over a light blue horizontal line.

Mark Tibbetts  
Executive Director

P.S. Don't forget any mercury thermostat returned from your branches counts towards the Big Man on Planet Competition.

Enclosed:      Sample Memo  
                    TRC Procedure  
                    HVAC/R Wholesaler Participation Form

## APPENDIX 3: LETTER TO WINSUPPLY LOCATIONS



1765 Duke Street | Alexandria, VA 22314 | [thermostat-recycle.org](http://thermostat-recycle.org)

October 28, 2015

Bristol Winnelson Co  
ATTN: Branch Manager  
95 Valley St  
Bristol, CT 06010

Dear Branch Manager:

I am writing you because HVAC Wholesale Distributors in the state of Connecticut are required to act as a collection point for waste mercury thermostats. Otherwise they are prohibited from selling any thermostat. Wholesale distributor locations are bound by this law only if they sell boilers. However, all Winsupply locations should be prepared to meet their customers' needs to properly dispose of waste mercury thermostats by having a recycling bin present. Thermostat Recycling Corporation (TRC) has no record of your branch location participating in its program and as such your business may not be in compliance with Connecticut law.

TRC is a non-profit organization funded by thermostat manufacturers. It operates the mandatory collection program in Connecticut and provides HVAC wholesalers an easy means of complying with the law. Participating wholesale locations are provided with a plastic recycling bin to collect and transport mercury thermostats. This bin contains a liner, instructions, and a pre-paid shipping label to be used to return the bin to TRC.

All that is required from wholesale distributors is to collect waste mercury thermostats from their customers and ship the recycling bin to TRC at least once per year. They also must promote the availability of the program using the provided marketing collateral. Upon receiving the bin, TRC empties it and returns it refilled with the materials repeating the process. There are no recurring fees to participate in the program.

Many Winsupply locations nation-wide are already participating. Complete the attached form to order a container. If you reply within two weeks, TRC will waive the customer \$25.00 participation fee. TRC can be found at [www.thermostat-recycle.org](http://www.thermostat-recycle.org) or please call me direct at 571-302-0877.

Looking forward to speaking,

Ryan L. Kiscaden  
Director of National Accounts

ENCLOSED:  
Connecticut State Law  
HVAC/r Wholesale Participation Form

## APPENDIX 4: LETTER ACCOMPANYING 18X24 POSTER



1765 Duke Street | Alexandria, VA 22314 | [thermostat-recycle.org](http://thermostat-recycle.org)

October 21, 2015



**Subject: Participation in Thermostat Recycling Corporation's Program**

Dear Mr. Johnson:

Thermostat Recycling Corporation (TRC) is providing you the enclosed poster to raise awareness and increase participation in TRC's thermostat collection program. Connecticut law requires HVAC contractors and their employees to recycle all mercury thermostats removed service. We encourage you to display this poster to remind your technicians to recycle.

The law also requires all HVAC wholesalers in the state to take mercury thermostats off your hands at no cost. So, on your next trip to your wholesaler, simply bring any mercury thermostats you've removed from service to recycle for free.

To learn more about the benefits of the program, visit [www.thermostat-recycle.org](http://www.thermostat-recycle.org).

Sincere Regards,

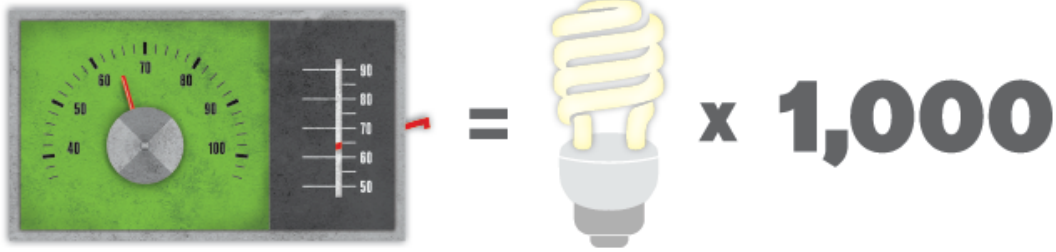


Christyn Zehnder  
Director of Marketing

[www.thermostat-recycle.org](http://www.thermostat-recycle.org) | 888-266-0550

## APPENDIX 5: DECEMBER FULL COLOR LETTER

Did you know?



One mercury thermostat contains approximately **1,000** times more mercury than a CFL bulb.

.....  
TRC runs a program where you can recycle mercury thermostats **for free** at HVAC wholesaler locations.



TRC's program offers a free and simple way to properly dispose of mercury thermostats. Next time you visit a participating HVAC wholesaler location, bring all mercury thermostats you've accumulated to recycle.



Visit [www.thermostat-recycle.org/search](http://www.thermostat-recycle.org/search) to see a full list of participating collection sites near you, or call TRC at **888-266-0550** with any questions.

# APPENDIX 6: OESP DEDICATED EBLAST



an industry-funded non-profit



[Thermostat-Recycle.org](http://Thermostat-Recycle.org)

[TRC@Thermostat-Recycle.org](mailto:TRC@Thermostat-Recycle.org)

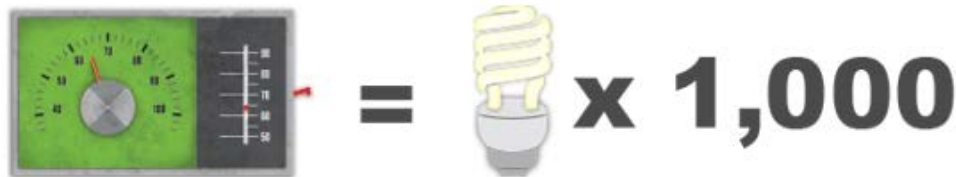
1-888-266-0550

## Every Thermostat, Every Time

### One Mercury Thermostat Contains 1,000x More Mercury Than a CFL Bulb

Would you throw 1,000 CFL bulbs in the trash? Trashing a mercury thermostat from time to time might not seem very significant, but it is, and they add up.

Not only is it bad for the environment, but disposing of mercury thermostats in the trash is also against the law in several states. Regulated as hazardous waste, failure to recycle could lead to fines up to \$25,000 per violation.



Thermostat Recycling Corporation (TRC) provides an easy way for you and your employees to comply with state law by recycling mercury thermostats at participating HVAC wholesale distributors. Additionally, HVAC contractors with seven or more technicians, or operating in rural communities, are eligible to participate in TRC's program directly.

**Sign up online by 10/31 and enter Promo Code OESP to receive a free recycling container** that holds approximately 100 mercury thermostats and contains all necessary materials for recurring shipments to TRC at no cost to you.

Visit [www.thermostat-recycle.org](http://www.thermostat-recycle.org) to learn more about how easy it is to take advantage of the program.

\*Disposal bans apply in the following states: CA, CT, FL, IA, IL, ME, MA, MN, NY, NH, OR, PA, RI, and VT.

[Sign Up](#)



# APPENDIX 7: CONTRACTING BUSINESS JAN EBLAST



Thermostat-Recycle.org  
TRC@Thermostat-Recycle.org  
1-888-266-0550

## Free Mercury Thermostat Recycling

### Stay in Compliance with State Laws

Your state prohibits the disposal of all mercury thermostats in solid waste\*. Many states go further by requiring all HVAC contractors to recycle every mercury thermostat removed from service — prohibiting them to leave them at the customer's premise. **Violations can result in fines up to \$25,000 per day.**

Thermostat Recycling Corporation (TRC) offers a program to help HVAC contractors comply with the law. As a non-profit, TRC provides mercury thermostat recycling containers to your local HVAC wholesalers to collect them at no cost to you.



If you are an HVAC wholesale distributor or contracting business with seven or more technicians, you may participate directly in TRC's program by ordering a collection container. **Sign up by 2/13 and enter Promo Code CBEMAIL to receive a free recycling container** that holds approximately 100 mercury thermostats and contains all necessary materials to return the container to TRC at no cost to you.

Visit [www.thermostat-recycle.org](http://www.thermostat-recycle.org) to learn more about how easy it is to take advantage of the program.

\*Disposal bans apply in the following states: CA, CT, FL, IA, IL, ME, MA, MN, NY, NH, OR, PA, RI, and VT.

[Sign Up](#)

## APPENDIX 8: CONTRACTING BUSINESS JUN EBLAST



[Thermostat-Recycle.org](http://Thermostat-Recycle.org)  
[TRC@Thermostat-Recycle.org](mailto:TRC@Thermostat-Recycle.org)  
1-888-266-0550

## Free Mercury Thermostat Recycling

### Stay in Compliance with State Laws

Your state prohibits the disposal of all mercury thermostats in solid waste\*. Many states go further by requiring all HVAC contractors to recycle every mercury thermostat removed from service - prohibiting them to leave them at the customer's premise. **Violations can result in fines up to \$25,000 per day.**

Each mercury thermostat contains at least 1,000 times more mercury than a CFL bulb. Would you throw 1,000 CFLs in the trash? Make sure to recycle every mercury thermostat, every time.



Thermostat Recycling Corporation (TRC) offers a program to help HVAC contractors comply with the law. The non-profit provides mercury thermostat recycling containers to your local HVAC wholesalers to collect them at no cost to you.

If you are an HVAC wholesale distributor or contracting business with seven or more technicians, you may participate directly in TRC's program by ordering a collection container. **Sign up by 6/30 and enter Promo Code CBEMAIL to receive a free recycling container** that holds approximately 100 mercury thermostats and contains all necessary materials for recurring shipments to TRC at no cost to you.

Visit [www.thermostat-recycle.org](http://www.thermostat-recycle.org) to learn more about how easy it is to take advantage of the program.

\*Disposal bans apply in the following states: CA, CT, FL, IA, IL, ME, MA, MN, NY, NH, OR, PA, RI, and VT.

[Sign Up](#)

## APPENDIX 9: COLLECTION LOCATION PHONE CALLS (SORTED BY DATE, THEN ALPHABETICALLY BY CITY)

<b>Date</b>	<b>Collection Location</b>	<b>City</b>
8/19/2015	Connecticut Refining Co.	West Haven
8/19/2015	Carrier Enterprise-Wallingford	Wallingford

## APPENDIX 10: COLLECTION LOCATION VISITS

(SORTED BY DATE, THEN ALPHABETICALLY BY CITY)

Date of visit	Collection Location	Billing Street	City	Zip Code	County
8/24/2015	B Lipnick Supply Co Inc	2016 Kings Hwy E.	Bridgeport	06604	Fairfield County
8/24/2015	Bell Simons Company	805 Wood Avenue	Bridgeport	06604	Fairfield County
8/24/2015	Plimpton & Hills Supply	146 King Hwy E	Fairfield	06825	Fairfield County
8/24/2015	R.E. Michel Company, Inc-Norwalk	23 Perry Avenue	Norwalk	06850	Fairfield County
8/24/2015	Carrier Enterprise-Norwalk	4 Wilton Ave.	Norwalk	06851	Fairfield County
8/24/2015	The Bell Pump Company-Stamford	20 Victory St.	Stamford	06902	Fairfield County
8/24/2015	Dunphey & Associates Supply Co., Inc.-Stamford	43 Homestead Ave.	Stamford	06902	Fairfield County
8/24/2015	Stamford Winnelson Co.	95 Elmcroft Road	Stamford	06902	Fairfield County
8/24/2015	TRANE Commerical Systems and Services	47 Harbor View Avenue	Stamford	06902	Fairfield County
8/24/2015	ABCO HVACR Supply & Solutions-Stamford	845 Canal Street	Stamford	06902	Fairfield County
8/24/2015	Abco Hvacr Supply-Stamford	198 Lawn Ave.	Stamford	06902	Fairfield County
8/24/2015	United Refrigeration #G6	17 Viaduct Road	Stamford	06907	Fairfield County
8/25/2015	Branford Winnelson Co.	22 Mcdermott Road	Branford	06405	New Haven County
8/25/2015	Essex Winnelson Company	186 Westbrook Road	Essex	06426	Middlesex County
8/25/2015	Portland Winair Co.	70 Tuttle Road	Middletown	06457	Middlesex County
8/25/2015	Johnstone Supply - Milford		Milford	06460	New Haven County
8/25/2015	The Granite Group-North Haven	300 Sackett Point Rd	North Haven	06473	New Haven County
8/25/2015	Petro - North Haven	212 Elm Street	North Haven	06473	New Haven County
8/25/2015	The Granite Group-Old Saybrook	8 Custom Dr	Old Saybrook	06475	Middlesex County
8/25/2015	Shelton Winair Co.,	740 River Road	Shelton	06484	Fairfield County
8/25/2015	Torrington Supply-New Haven	87 Union Street	New Haven	06511	New Haven County
8/25/2015	Trane Supply - New Haven	178 Wallace Street	New Haven	06511	New Haven County

## APPENDIX 10: COLLECTION LOCATION VISITS (SORTED BY DATE, THEN ALPHABETICALLY BY CITY)

8/25/2015	The Bell Pump Company-New Haven	209 Forbes Avenue	New Haven	06512	New Haven County
8/25/2015	Star Supply Company	118 Gando Drive	New Haven	06513	New Haven County
8/25/2015	FW Webb - New Haven	650 Ella T Grasso Blvd	New Haven	06519	New Haven County
8/25/2015	Quality Plumbing Supply	380 Davenport Avenue	New Haven	06519	New Haven County
8/25/2015	Carrier Enterprise-Stratford	650 Long Beach Blvd	Stratford	06615	Fairfield County
8/25/2015	Sid Harvey Industries-Stratford	700 Lordship Blvd	Stratford	06615	Fairfield County
8/25/2015	R.E. Michel Company, Inc-Stratford	840 Access Road	Stratford	06615	Fairfield County
8/25/2015	Torrington Supply	40 Mead Street	Stratford	06615	Fairfield County
8/25/2015	United Refrigeration #57	3633 Reynolds Road	New haven	33803	Pinellas County
8/26/2015	Modern Plumbing Supply	152 Berlin Tpke	Berlin	06037	Hartford County
8/26/2015	Manchester Winnelson Co.	160 Hartford Road	Manchester	06040	Hartford County
8/26/2015	Plimpton & Hills - Manchester	401 New State Road	Manchester	06040	Hartford County
8/26/2015	New Britain Supply	211 John Downey Dr.	New Britain	06051	Hartford County
8/26/2015	MITCHELL FUEL CO., INC.	P.O. BOX 1163	SOUTH WINDSOR	06074	Hartford County
8/26/2015	Torrington Supply - East Windsor	38 Prospect Hill Road	East Windsor	06088	Hartford County
8/26/2015	Johnstone Supply - Hartford		Hartford	06101	Hartford County
8/26/2015	Supply New England	235 Newfield Avenue	Hartford	06106	Hartford County
8/26/2015	R.E. Michel Company, Inc-East Hartford 2	91 Prestige Park Cr. Unit 4	East Hartford	06108	Hartford County
8/26/2015	Commercial Heating Supply	85 James St.	East Hartford	06108	Hartford County
8/26/2015	Hartford Winnelson Co.	287 Homestead Avenue #R	Hartford	06112	Hartford County
8/26/2015	Carrier Corporation-Hartford	70 Meadow Street	Hartford	06114	Hartford County
8/26/2015	Plimpton & Hills	2 Brainard Road	Hartford	06114	Hartford County
8/26/2015	Sid Harvey Industries-Hartford	206 Murphy Rd.	Hartford	06114	Hartford County
8/26/2015	FW Webb - Hartford	150 Locust Street	Hartford	06114	Hartford County

## APPENDIX 10: COLLECTION LOCATION VISITS

(SORTED BY DATE, THEN ALPHABETICALLY BY CITY)

8/26/2015	Central Aire Supply Inc.	118 Ledyard St.	Hartford	06114	Hartford County
8/26/2015	United Refrigeration #G1	230 Wawarme Avenue	Hartford	06114	Hartford County
8/26/2015	Kasden Fuel Company	340 Tolland Stret	East Hartford	06180	Hartford County
8/27/2015	Carrier Enterprise-Wallingford	2 Northrop Ind. Park Road	Wallingford	06492	New Haven County
8/27/2015	FW Webb -Waterbury	737 Bank Street	Waterbury	06708	New Haven County
8/27/2015	Torrington Supply-Waterbury	100 N. Elm Street	Waterbury	06723	New Haven County
8/27/2015	Torrco Supply Inc. - Torrington	261 Oak Avenue	Torrington	06790	Litchfield County
8/27/2015	Petro - Brookfield	125 Commerce Street	Brookfield	06804	Fairfield County
8/27/2015	N & S Supply Inc.	15 Starr Road	Danbury	06810	Fairfield County
8/27/2015	Sid Harvey Industries-Danbury	17 Eagle Rd.	Danbury	06810	Fairfield County
9/1/2015	Supply of New England - Guilford	640 Boston Post Road	Guilford	06437	New Haven County
11/18/2015	Thames Valley Winnelson	975 North Road	Groton	06340	New London County
11/18/2015	The Granite Group-Groton	553 Gold Star Highway	Groton	06340	New London County
11/18/2015	Sid Harvey Industries-New London	266 Bridge Street	Groton	06340	New London County
11/18/2015	FW Webb - Waterford	570 Vauxhall Ext Street	Waterford	06385	New London County
11/19/2015	The Granite Group-Putnam	71 - 81 Front St	Putnam	06260	Windham County



# APPENDIX 11: CONTRACTOR COMPLIANCE POLICY

HVAC Contractor Employee Compliance Policy – MERCURY THERMOSTAT DISPOSAL

## **Company Name**

### **Mercury Thermostat Disposal Overview**

It is **XXX**'s policy to be an environmentally conscious company while complying with all state and federal regulations. As such, **XXX** will make every effort to educate both our customers and employees on the regulations pursuant to **Section XXX** of the **NAME OF BILL** and **description of the bill**. This education will include the risks and dangers associated with mercury pollution into the environment along with any regulatory, legal and/or business obligations or responsibilities related to the recycling of mercury thermostats.

**XXX** will comply with all regulations and industry requirements concerning the safe disposal of mercury thermostats. Further, it is the responsibility of the company and each employee who, as a matter of course, deals with mercury thermostats and/or customers, to be aware of this policy and the associated legal requirements.

It is the responsibility of each **XXX** employee to be aware of the information regarding disposal of mercury thermostats to the extent necessary to perform his or her duties in an environmentally sensitive nature and to explain to our customers what we are doing to prevent the improper disposal of mercury thermostats.

### **Background on Mercury Thermostats**

**Health/Safety Concerns:** Mercury is a neurotoxin which has both negative impacts on human and ecological populations. The toxicity is fatal if inhaled, consumed, or exposed into the blood stream. It may also damage fertility or an unborn child. Mercury can also cause damage to organs through prolonged or repeated exposures.

**Mercury Thermostat Sources:** Mercury thermostats were first manufactured and sold starting in 1956 and began a final cease in production around 2006. As mercury thermostats are replaced, the available inventory to recycle diminishes until eventually all in-service thermostats are upgraded to a mercury free control device. While estimates vary, there were millions of mercury thermostats sold in the United States.

These units still remain in service in the following types of facilities;

- Residential single family homes either in attached, detached, or semi-attached
- Residential multifamily homes such as apartments or low income housing
- Light commercial buildings such as hotels, restaurants, banks, and retail
- Educational buildings such as schools, colleges, and museums
- Military building such as barracks

When a mercury thermostat is discovered during the direct installation of replacement thermostats, **XXX** Proper Disposal Policy will be followed. If it is deemed that the Proper



# APPENDIX 11: CONTRACTOR COMPLIANCE POLICY

## HVAC Contractor Employee Compliance Policy – MERCURY THERMOSTAT DISPOSAL

Disposal Policy is insufficient, XXX will contact the Thermostat Recycling Corporation (TRC) on guidance on how to properly dispose of mercury thermostats<sup>1</sup>.

### Regulatory History

#### **U.S. Federal Rules and Regulations**

The Resource Conservation and Recovery Act (RCRA)<sup>2</sup> was enacted in 1976 to protect human health and the environment from the potential hazards of waste disposal, to conserve energy and natural resources, to reduce the amount of waste generated, and to ensure that wastes are managed in an environmentally sound manner.

The Universal Waste Rule within RCRA is designed to reduce the amount of hazardous waste items in municipal solid waste stream, encourage recycling and proper disposal of certain common hazardous wastes, and reduce the regulatory burden on businesses that generate these wastes. Universal wastes includes mercury thermostats that contain as much as 3 grams of liquid mercury and are located in almost any building, including commercial, industrial, agricultural, community, and household buildings.

#### **State Rules and Regulations**

Many states regulate the installation, disposal and sale of mercury bearing equipment such as mercury thermostats, with varying requirements and methods of compliance for contractors and distributors. In many states enforcement authority is granted through the state's EPA.

When XXX has a job where the customer's address is located in any of the following states; CA, CT, FL, IL, IA, LA, ME, MD, MA, MI, MN, MT, NH, NY, OH, OR, PA, RI, VT, and WA XXX's employees will follow the Proper Disposal Procedure. See Appendix 2 for chart.

---

<sup>1</sup> For a one-time fee of \$25.00 participating locations are provided with a reusable plastic recycling container, a 5mil plastic liner, and wire zip ties to seal the liner and the bin for transport. Each container also comes with a pre-paid Federal Express label to return the container to TRC. The container will hold up to 150 waste mercury thermostats. A participating location simply needs to accumulate waste mercury thermostats for up to one year, prepare the container for shipment, and arrange pick-up with carrier. TRC is an automatic return program, and the same container will be returned to the location within 10 business days, restarting the process. The TRC program operates under Universal Waste Regulations and there is no requirement to manifest to maintain records of shipments. TRC only accepts whole mercury thermostats. No other item, particularly mercury containing items, can be stored or shipped in the TRC container. TRC reserves the right to terminate participation if a collection location ships items other than whole mercury thermostats.

<sup>2</sup> <http://www2.epa.gov/rcra>

# APPENDIX 11: CONTRACTOR COMPLIANCE POLICY

HVAC Contractor Employee Compliance Policy – MERCURY THERMOSTAT DISPOSAL

## **XXX Proper Disposal Procedure**

To be compliant with this proper disposal of mercury thermostats procedure, **XXX** will take the following actions to ensure effective monitoring and assessment of compliance:

- **XXX** will assign an employee to oversee compliance including but not limited to: owners, service managers, service technicians, and any and all employees whom generate mercury thermostat waste. This employee will be assigned the responsibility of record keeping (if necessary) and ensuring compliance by all **XXX**'s employees.
- Commit (1) hour of employee training on what a mercury thermostat is and how to dispose of them properly following federal, state, and local regulations. Visit [www.thermostat-recycle.org](http://www.thermostat-recycle.org) with questions.
- Require each new employee who generates mercury thermostat waste to order a mercury spill kit as a condition of employment or **XXX** will provide each new employee a mercury spill kit upon employment, and replace it when necessary.
- Create a working environment in which employees can report violations of the Proper Disposal Procedure.
- Consider direct participation with TRC when the Proper Disposal Procedure is insufficient. **XXX** may consider ordering a mercury thermostat recycling container for each shop, work van/truck, or employee as necessary<sup>3</sup>.

As per this policy, the employee will do the following; **See Appendix 3 for flow chart.**

1. Sign the Employee Compliance Policy herein.
2. Remove the mercury thermostat during work order
3. Place the mercury thermostat in a 5 gallon bucket with a lid
4. Locate the closest collection point to job site
5. Drop off mercury thermostat at collection point as soon as convenient
6. Repeat as necessary

<sup>3</sup> <http://www.thermostat-recycle.org/signup/>

# APPENDIX 11: CONTRACTOR COMPLIANCE POLICY

HVAC Contractor Employee Compliance Policy – MERCURY THERMOSTAT DISPOSAL

## Appendix 1 – Employee Proper Disposal Compliance Policy Form

### **XXX Section XXX of the XXX of XXX** **Employee Proper Disposal Compliance Policy**

It is the policy of XXX to strictly adhere to XXX of the XXX of XXX.

Employee compliance, as required by law, is required.

Therefore, as the undersigned, I agree to fully comply with this policy which includes properly disposing of all mercury thermostats I generate and to use the prescribed method of disposal set forth by **Company Name**. I also agree to **NEVER** intentionally dispose of mercury thermostats and to not leave the device(s) behind with the customer.

Should I fail to comply with the foregoing statements, I understand that I am in non-compliance with the law and accept full personal liability in connection with any action or actions that may occur.

Signed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_

By: \_\_\_\_\_ (Print Name)

\_\_\_\_\_ (Sign Name)

# APPENDIX 11: CONTRACTOR COMPLIANCE POLICY

## HVAC Contractor Employee Compliance Policy – MERCURY THERMOSTAT DISPOSAL

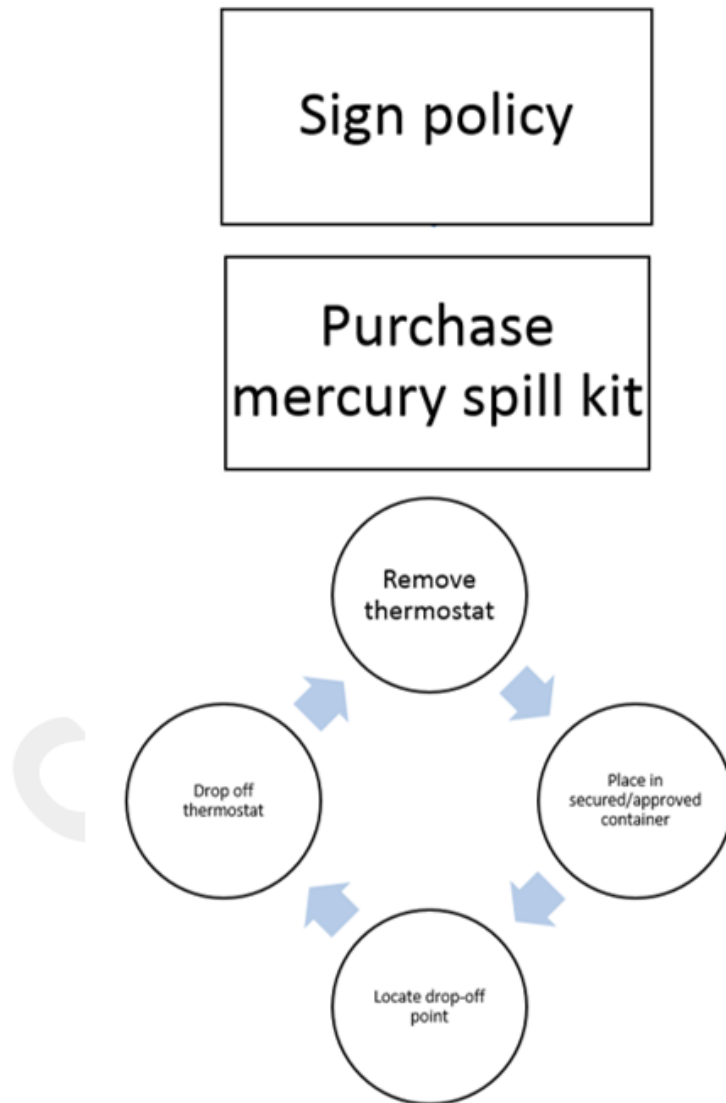
### Appendix 2 - Table with state specific legislation

State	Sales Ban	Installation Ban	Disposal Ban	Mandatory Wholesale Distributor Collection	Mandatory Contractor Recycling
California	X	X	X	X	X
Connecticut	X		X	X	X
Florida	X	X	X		
Illinois	X	X	X	X	X
Iowa	X	X	X	X	X
Louisiana			X		
Maine	X		X	X	X
Maryland	X				
Massachusetts	X		X	X	X
Michigan	X				
Minnesota	X		X		X
Montana	X	X		X	
New Hampshire	X	X	X	X	X
New York	X		X	X	X
Ohio	X				
Oregon	X	X	X		X
Pennsylvania	X		X	X	X
Rhode Island	X		X	X	X
Vermont	X		X	X	X
Washington	X				

# APPENDIX 11: CONTRACTOR COMPLIANCE POLICY

HVAC Contractor Employee Compliance Policy – MERCURY THERMOSTAT DISPOSAL

## Appendix 3 – Proper Disposal Procedure Flow Chart



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# APPENDIX 12: SAMPLE UTILITY IMPLEMENTER RFP REQUIREMENTS

## Standard RFP Language for Management of Waste Mercury Thermostats Generated through direct installation (DI) of thermostats or HVAC Equipment

### **Background**

Mercury thermostats were widely used to control heating and cooling systems starting in the 1950s. Mercury thermostats dominated the market until the early 1990s when electronic thermostats began to gain wider acceptance in the market. All major manufacturers ceased production of mercury switch thermostats by 2009. While the number remaining in use is unknown, they are still found on some heating and cooling systems installed prior to 2006.

Mercury thermostats are still prevalent in the following types of facilities;

- Residential single family homes - either attached, detached, or semi-attached
- Residential multifamily homes such as apartments or low income housing structures
- Light commercial buildings such as hotels, restaurants, banks, and retail outlets
- Educational buildings such as schools, colleges, and libraries
- Barracks and other military installations

### **Statutory Authorities**

Title 21 Section 27-2105 of New York Environmental Conservation Law (ECL) prohibits knowing disposal of mercury thermostats in solid waste and waste mercury thermostats can be managed as “Universal Wastes” under the Federal Resource Recovery and Conservation Act (40 CFR Part 273)“

Title 29, Section 27-2909 of ECL also requires the following:

## APPENDIX 12: SAMPLE UTILITY IMPLEMENTER RFP REQUIREMENTS

§ 3. 1. Any person or contractor who replaces a mercury-containing thermostat from a building shall deliver the mercury-containing thermostat to an appropriate collection site.

And:

3. Any department, authority, instrumentality, or municipal corporation of the state administering a program that involves the removal or replacement of mercury containing thermostats as a result of any statutory requirement, shall inform contractors of their statutory obligations to deliver the mercury-containing thermostats to a collection site and prohibiting the disposal of such thermostats in a solid-waste facility.

4. Any contractor, organization or subcontractor of such organization, who contracts with or receives funding or financing provided in whole or in part by or through any department, agency, instrumentality, or political subdivision of the state for the installation, service, or removal of heating, ventilation, or air-conditioning components resulting in the removal or handling of out-of-service mercury thermostats, shall ensure the collection, transportation and proper management of out-of-service mercury thermostats in accordance with the provisions of title 29 of article 27 of the environmental conservation law.

### RFP Language

The vendor, all subcontractors, and affiliated parties in the trade channel including but not limited to trade allies, preferred installation vendors or rebate processors must comply with all applicable federal, state, local regulations in relation to the proper management and disposal of waste mercury thermostats generated in the performance of the requested scope of work. The vendor will describe efforts to inform program subcontractors and affiliated parties in the trade channel including but not limited to trade allies, preferred installation vendors or rebate processors on New York law relative to the removal and disposal of mercury thermostats. The vendor should also describe any planned steps to support and/or facilitate the collection of mercury thermostats generated through this program by direct participation in the TRC program. The vendor will describe procedures



## APPENDIX 12: SAMPLE UTILITY IMPLEMENTER RFP REQUIREMENTS

all technicians (direct installers) will follow to identify mercury thermostats and ensure proper management of all mercury thermostats removed from service. The vendor will also describe the procedures to monitor and document (report) compliance with the above requirement and for meeting post project reporting requirements below. The successful vendor may be required to provide more information to verify its compliance with above requirement which will include at a minimum;

- A post project report of the following information;
  - Total number of thermostats installed
  - The number of mercury thermostats removed from service
  - The number of mercury thermostats recycled and the location(s) where the thermostats were recycled.

# APPENDIX 13: MAY EMAIL TO AESP SUBSCRIBER LIST

## Mercury Thermostats

### Curtailment Providers Regulatory Obligations

When you direct install HVAC equipment you will likely generate waste mercury thermostats. U.S. EPA and state environmental agencies regulate the disposal of these devices.

Failure to properly manage waste mercury thermostats and recycle them could lead to fines up to \$25,000 per violation.

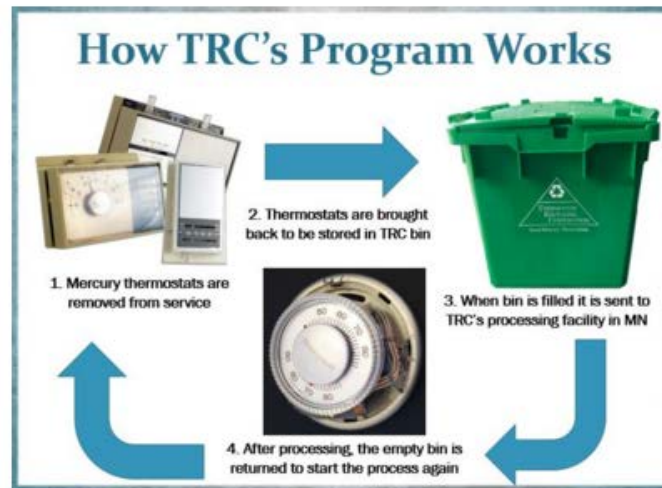
Each mercury thermostat contains at least 1,000 times more mercury than a CFL bulb. Recycle every mercury thermostat, every time.

### Take Advantage of the Non-profit Stewardship Program for Recycling

Sign up [online](#) by 5/31/15 and enter AESP in the Promo Code field to receive a free recycling container from TRC. The container holds approximately 100 mercury thermostats and contains all necessary materials for recurring shipments to TRC at no cost to you.

If you need more than one recycling container, or for more information about the program, please call me at (571) 302-0877 or [email](#) me directly.

[Order Free Bin](#)



### Join Others in the Industry Using TRC's Program

Here's a sample of implementors that have taken advantage of TRC's program:

- Honeywell Utility Solutions (Wichita, KS; Deer Park, IL; Brooklyn Heights, OH)
- Franklin Energy (Chicago, IL; Grand Rapids, MI; Green Bay, WI)
- CleaResult (Downers Grove, IL; Negaunee, MI; Okemos, MI)
- Converge (Cincinnati, OH; Beltsville, MD; Mays Landing, NJ)

# APPENDIX 14: AUGUST EMAIL TO AESP SUBSCRIBER LIST

## Curtailment Provider Regulatory Obligations

The disposal of mercury thermostats is regulated under **federal** and **state law**. Compliance begins with understanding your legal obligations nationally and in certain states. Any mercury thermostat removed from a commercial building must be recycled. Recycling requirements for mercury thermostats removed from residential buildings varies by state.

Don't contribute to mercury pollution. Integrate recycling into all of your projects that replace mercury thermostats.

Non-compliance in certain states can lead to **fines up to \$25,000** per incident. Besides, these devices contain at least **1,000 times more mercury than a CFL bulb** and they shouldn't be put in the trash.

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## Free Mercury Thermostat Recycling

The good news is that **Thermostat Recycling Corporation (TRC)** will offer free recycling containers and ongoing disposal to curtailment providers. **This program does not increase your costs and is completely free.**

To start free recycling, contact Ryan Kiscaden by 8/31 via [email](#) or at 571-302-0877.



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## Join Others in the Industry Using TRC's Program

Here's a sample of implementers that have taken advantage of TRC's program:

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- Franklin Energy (Chicago, IL; Grand Rapids, MI; Green Bay, WI)
- CleaResult (Downers Grove, IL; Negaunee, MI; Okemos, MI)
- Comverge (Cincinnati, OH; Beltsville, MD; Mays Landing, NJ)

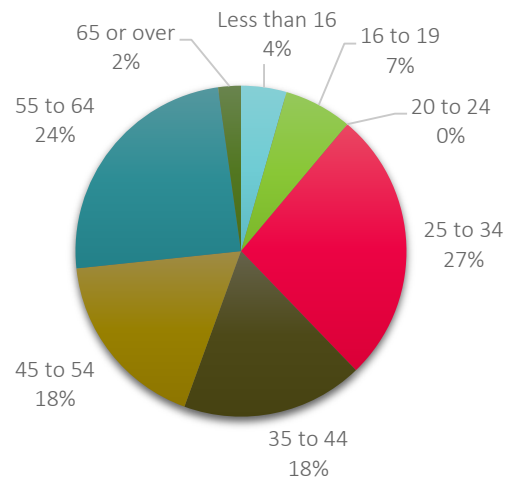
# APPENDIX 15: TECHNICIAN SURVEY RAW RESULTS

## DEMOGRAPHIC

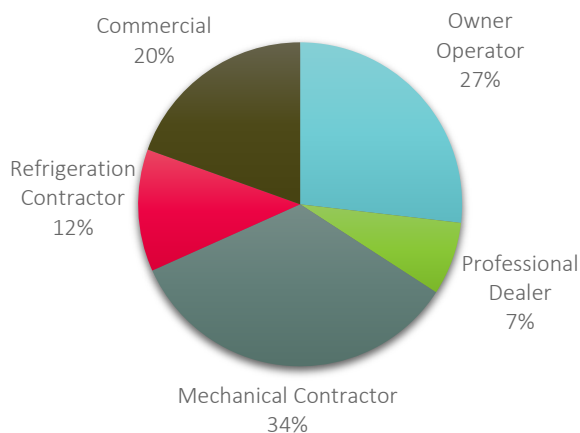
What is your gender?



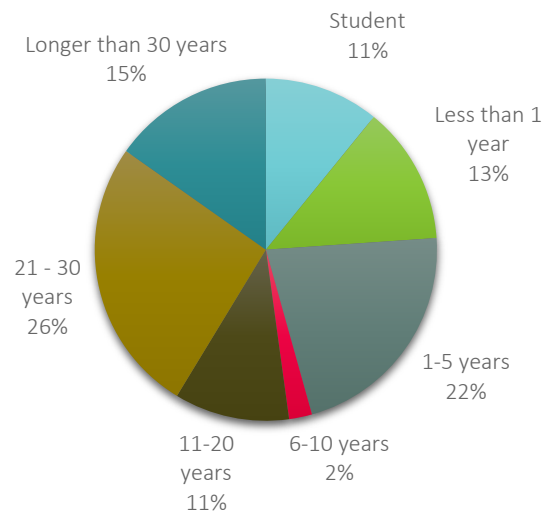
What is your current age?  
(U.S. Census)



What is the nature of your business?



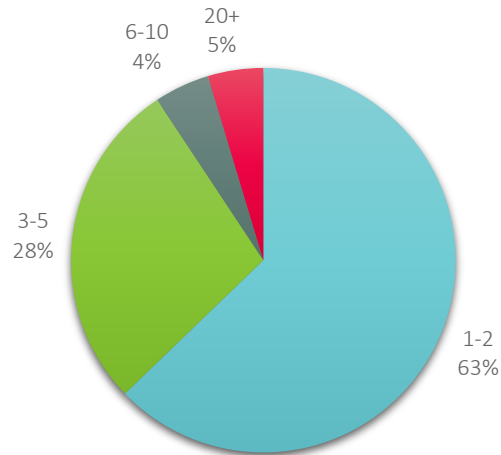
How long have you worked as a technician/contractor?



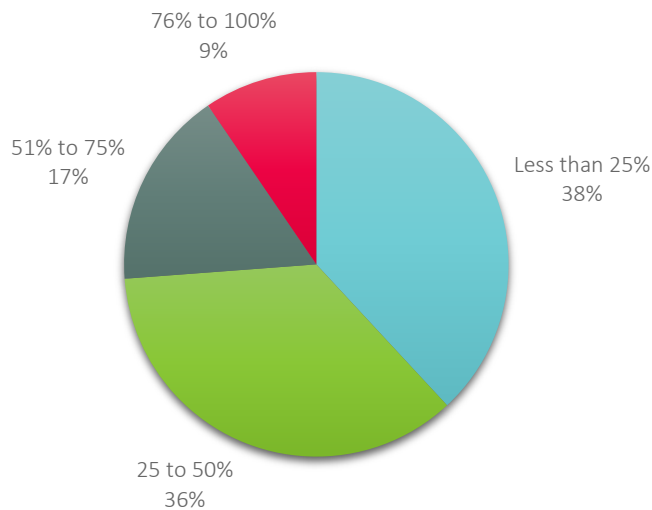
# APPENDIX 15: TECHNICIAN SURVEY RAW RESULTS

## THERMOSTAT REPLACEMENT

How many thermostats do you remove/replace in an average week as part of your job?



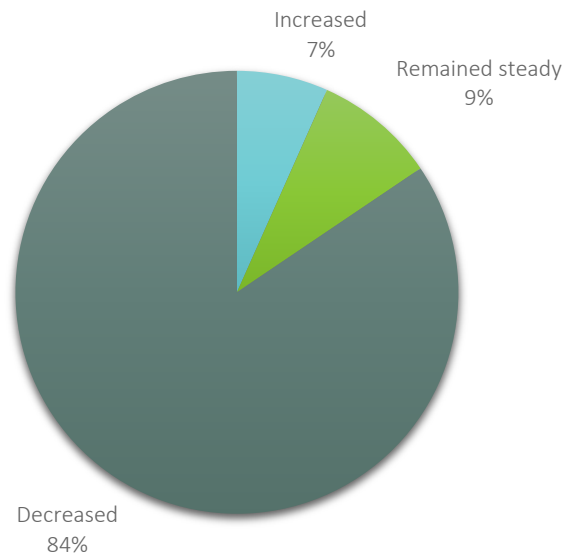
What percentage of the thermostats you replaced in 2014 would you estimate contained mercury?



## APPENDIX 15: TECHNICIAN SURVEY RAW RESULTS

### MERCURY CONTAINING THERMOSTAT PREVALENCE

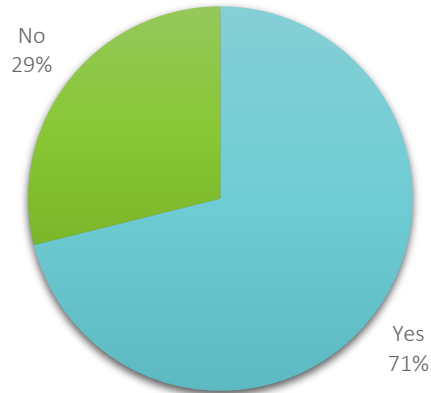
Would you say that during the time you have worked as a technician/contractor the number of mercury containing thermostats you see has...



# APPENDIX 15: TECHNICIAN SURVEY RAW RESULTS

## EMPLOYER POLICIES

Are you required by your employer to recycle mercury containing thermostats?



## INCENTIVES

To your knowledge, are there any incentives provided by utilities (eg. energy companies) to encourage recycling of thermostats?

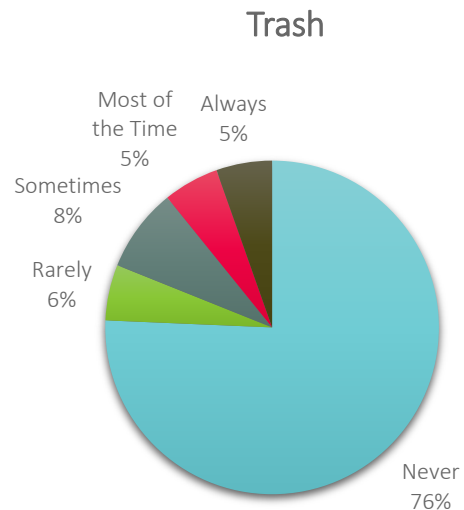
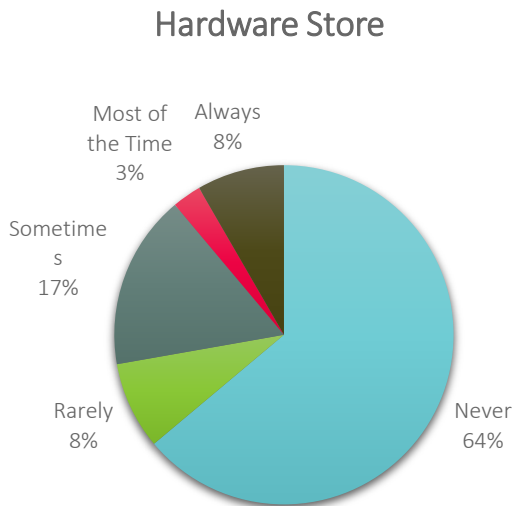
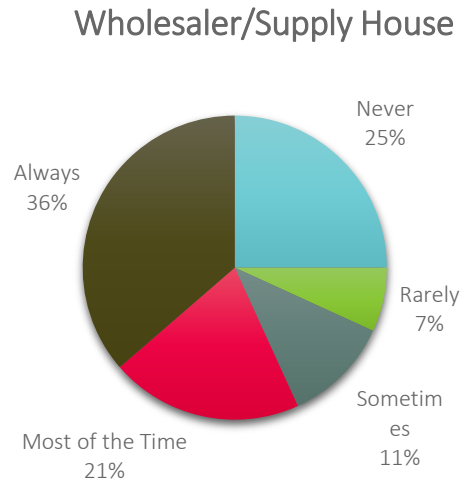
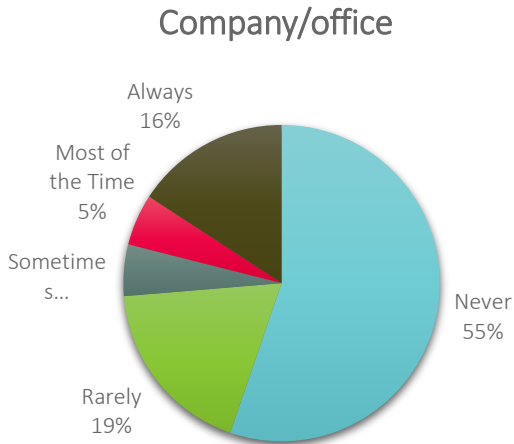




# APPENDIX 15: TECHNICIAN SURVEY RAW RESULTS

## DISPOSAL

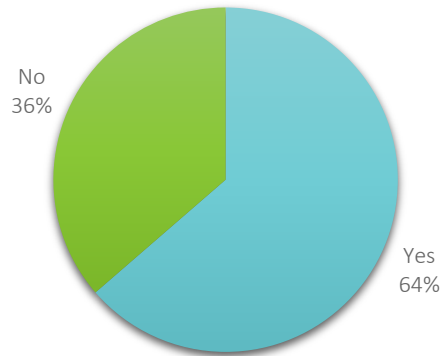
Where do you dispose of the mercury containing thermostats you collect?



# APPENDIX 15: TECHNICIAN SURVEY RAW RESULTS

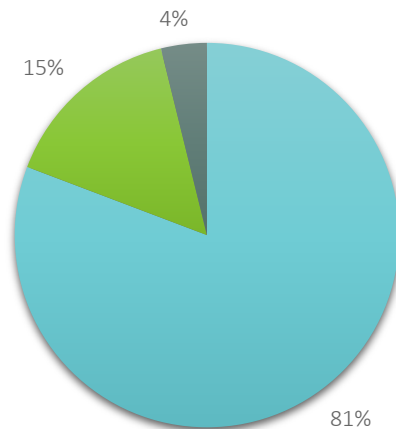
## GREEN BIN UTILIZATION

If you recycle thermostats, do you recycle them in a green bin?



## MERCURY HARMFULNESS

Which of the following statements best reflects your personal opinion of the harmfulness of mercury?



- Mercury is very harmful and we need to do more to keep it out of the environment.
- I don't know. I have no opinion about the harmfulness of mercury.
- I don't think it is very harmful.

## APPENDIX 16: THERMOSTATS RETURNED BY COLLECTION LOCATION (SORTED ALPHABETICALLY BY CITY)

Collection Location Name	Business Type	Street 1	City	Zip	County	Count-Bins at Location	Total Stats	Total Switches	Total Hg	Date(s) of Bin(s) Receipt
Modern Plumbing Supply	Wholesalers	152 Berlin Turnpike	Berlin	06037	Hartford County	1	0	0	0.00	
New Britain Supply	Wholesalers	154 Woodlawn Road	Berlin	06037	Hartford County	1	0	0	0.00	
Branford Winnelson	Wholesalers	22 Mcdermott Road	Branford	06405	New Haven County	1	0	0	0.00	
Dougherty Oil Co Inc	Contractor	31 Acorn Road	Branford	06405	New Haven County	2	0	0	0.00	
B. Lipnick Supply Co., Inc.	Wholesalers	2016 Main Street	Bridgeport	06604	Fairfield County	2	0	0	0.00	
Bell Simons Co.	Wholesalers	805 Wood Ave	Bridgeport	06604	Fairfield County	1	0	306	1.90	09/10/2015, 09/24/2015
City Of Bridgeport, Department Of Public Facilities	HHW Facility	999 Broad St	Bridgeport	06604	Fairfield County	1	0	0	0.00	
M & O Corporation	Contractor	164 Alex Street	Bridgeport	06607	Fairfield County	1	0	0	0.00	
New England Heating Supply	Wholesalers	805 Wood Avenue	Bridgeport	06604	Fairfield County	1	0	0	0.00	
Santa Fuel	Contractor	154 Admiral St.	Bridgeport	06605	Fairfield County	2	0	0	0.00	
Standard Oil Of Ct	Contractor	299 Bishop Avenue	Bridgeport	06610	Fairfield County	1	100	103	0.64	08/12/2015
Bristol Winnelson Co	Wholesalers	95 Valley Street	Bristol	06010	Hartford County	1	0	0	0.00	
City Of Bristol Solid Waste	HHW Facility	685 Lake Ave.	Bristol	06010	Hartford County	1	0	0	0.00	

## APPENDIX 16: THERMOSTATS RETURNED BY COLLECTION LOCATION (SORTED ALPHABETICALLY BY CITY)

Transfer Station										
The Shaffer Company	Contractor	242 Main Street	Bristol	06010	Hartford County	1	25	31	0.19	12/04/2015
Housatonic Resources Recovery Authority	HHW Facility	162 Whisconier Road	Brookfield	06804	Fairfield County	1	75	82	0.51	05/29/2015, 10/12/2015
Petro	Contractor	125 Commerce Drive	Brookfield	06804	Fairfield County	1	0	0	0.00	
Valley Energy Co.	Contractor	321 Albany Tpk	Canton	06019	Hartford County	1	0	0	0.00	
Plimpton & Hills Corp.	Wholesalers	24 Nod Road	Clinton	06413	Middlesex County	1	0	0	0.00	
The Granite Group	Wholesalers	464 South Main St	Colchester	06415	New London County	1	0	0	0.00	
N&S Supply	Wholesalers	15 Starr Road	Danbury	06810	Fairfield County	1	3	3	0.02	09/04/2015, 09/17/2015
Plimpton & Hills Corp.	Wholesalers	30 Federal Road	Danbury	06810	Fairfield County	1	3	3	0.02	02/05/2015
Sid Harvey Industries	Wholesalers	17 Eagle Rd.	Danbury	06810	Fairfield County	1	0	0	0.00	
Plimpton & Hills Corp.	Wholesalers	210 East Canaan Road (Rt..44)	East Canaan	06024	Litchfield County	1	7	7	0.04	01/22/2015
Automatic Tlc	Contractor	64 Oakland Avenue	East Hartford	06108	Hartford County	3	0	0	0.00	
Brothers Oil Company	Contractor	486 School St.	East Hartford	06108	Hartford County	1	3	3	0.02	12/01/2015
Commercal Heating Supply	Wholesalers	85 James Street	East Hartford	06108	Hartford County	1	0	0	0.00	

## APPENDIX 16: THERMOSTATS RETURNED BY COLLECTION LOCATION (SORTED ALPHABETICALLY BY CITY)

Kasden Fuel	Contractor	340 Tolland Street	East Hartford	06108	Hartford County	1	4	10	0.06	09/03/2015
R.E. Michel Company, Inc	Wholesalers	91 Prestige Park Cr. Unit 4	East Hartford	06108	Hartford County	4	296	319	1.98	01/12/2015, 09/03/2015, 12/31/2015, 05/28/2015
Torrco	Wholesalers	38 Prospect Hill Road	East Windsor	06088	Hartford County	1	37	39	0.24	09/04/2015
Essex Winair Co.	Wholesalers	11C Bokum Road	Essex	06426	Middlesex County	1	63	67	0.42	08/19/2015
Essex Winnelson Company	Wholesalers	186 Westbrook Road	Essex	06426	Middlesex County	1	14	15	0.09	02/02/2015, 11/20/2015
Plimpton & Hills Corp.	Wholesalers	146 Kings Highway East	Fairfield	06825	Fairfield County	1	7	8	0.05	08/31/2015
Bell Simons	Wholesalers	519 Cooke Street	Farmington	06032	Hartford County	1	0	0	0.00	
Plimpton & Hills Corp.	Wholesalers	2 Eastview Lane	Farmington	06030	Hartford County	1	11	30	0.19	01/28/2015
Southeast Connecticut Regional Resources Recovery Authority	HHW Facility	7 Hurlbutt Road	Gales Ferry	06335	New London County	13	171	184	1.14	01/13/2015, 09/23/2015
Laplaca Oil & Propane	Contractor	498 North Street	Goshen	06756	Litchfield County	1	0	0	0.00	
Town Of Granby	HHW Facility	15 N. Granby Road	Granby	06035	Hartford County	2	0	0	0.00	
Sid Harvey	Wholesalers	266 Bridge St.	Groton	06340	New London County	1	97	105	0.65	11/25/2015

## APPENDIX 16: THERMOSTATS RETURNED BY COLLECTION LOCATION (SORTED ALPHABETICALLY BY CITY)

Thames Valley Winnelson	Wholesalers	975 North Road	Groton	06340	New London County	1	0	0	0.00	
The Granite Group	Wholesalers	553 Gold Star Highway	Groton	06340	New London County	1	0	0	0.00	
R&B Refrigeration Inc.	Contractor	18 Graves Avenue	Guilford	06437	New Haven County	1	94	124	0.77	05/13/2015
Supply New England	Wholesalers	640 Bost Post Road	Guilford	06437	New Haven County	1	0	0	0.00	
Carrier Enterprise	Wholesalers	70 Meadow Street	Hartford	06114	Hartford County	1	13	21	0.13	09/03/2015
Central Airesupply Inc.	Wholesalers	118 Ledyard Street	Hartford	06114	Hartford County	1	0	0	0.00	
Fw Webb	Wholesalers	150 Locust St	Hartford	06114	Hartford County	2	9	10	0.06	09/04/2015
Johnstone Supply	Wholesalers	255 Locust Street	Hartford	06114	Hartford County	2	105	119	0.74	09/02/2015
Plimpton & Hills Corp	Wholesalers	2 Brainard Road	Hartford	06114	Hartford County	1	0	0	0.00	
R.E. Michel Company, Inc	Wholesalers	295 Murphy Road	Hartford	06114	Hartford County	2	70	115	0.71	05/20/2015
Robinson Supply Co	Wholesalers	226 Prestige Parkway	Hartford	06108	Hartford County	1	0	0	0.00	
Sid Harvey Industries	Wholesalers	206 Murphy Rd.	Hartford	06114	Hartford County	2	33	36	0.22	09/03/2015
The Bell Pump Company	Wholesalers	319 Murphy Road	Hartford	06114	Hartford County	2	313	512	3.17	03/25/2015, 09/23/2015, 12/31/2015, 03/12/2015, 04/24/2015

## APPENDIX 16: THERMOSTATS RETURNED BY COLLECTION LOCATION (SORTED ALPHABETICALLY BY CITY)

The Metropolitan District	HHW Facility	555 Main Street	Hartford	06103	Hartford County	1	0	0	0.00	
Trane Supply	Wholesalers	485 Ledyard Street	Hartford	06114	Hartford County	1	11	133	0.82	05/08/2015
United Refrigeration #G1	Wholesalers	230 Wawarme Avenue	Hartford	06114	Hartford County	1	0	0	0.00	
Manchester Winnelson	Wholesalers	160 Hartford Road	Manchester	06040	Hartford County	1	0	0	0.00	
Nutmeg Mechanical Service Inc.	Contractor	130-3 Utopia Road	Manchester	06042	Hartford County	1	0	0	0.00	
Plimpton & Hills Corp.	Wholesalers	401 New State Road	Manchester	06040	Hartford County	1	6	7	0.04	10/13/2015
Town Of Manchester Transfer Station	HHW Facility	311 Olcott Street	Manchester	06040	Hartford County	2	0	0	0.00	
Portland Winair Co.	Wholesalers	70 Tuttle Road	Middletown	06457	Middlesex County	1	47	85	0.53	08/19/2015
Johnstone Supply	Wholesalers	21 Shady Street	Milford	06460	New Haven County	4	0	0	0.00	
Plimpton & Hills Corp.	Wholesalers	189 Chestnut Street	New Britain	06050	Hartford County	1	109	115	0.71	01/21/2015, 09/21/2015
Carrier Enterprise	Wholesalers	185 Wallall Street	New Haven	06511	New Haven County	1	141	196	1.22	03/06/2015, 03/30/2015
Fw Webb	Wholesalers	650 Ella T Grasso Blvd	New Haven	06519	New Haven County	1	46	64	0.40	08/28/2015
Quality Plumbing Supply	Wholesalers	380 Davenport Ave.	New Haven	06519	New Haven County	1	0	0	0.00	



## APPENDIX 16: THERMOSTATS RETURNED BY COLLECTION LOCATION (SORTED ALPHABETICALLY BY CITY)

Sid Harvey	Wholesalers	75 Hamilton St.	New Haven	06511	New Haven County	2	132	136	0.84	07/21/2015, 07/21/2015
Star Supply Company	Wholesalers	118 Gando Drive	New Haven	06513	New Haven County	2	242	384	2.38	04/30/2015, 11/18/2015
The Bell Pump Company	Wholesalers	209 Forbes Avenue	New Haven	06512	New Haven County	1	0	0	0.00	
Torrco	Wholesalers	87 Union Street	New Haven	06511	New Haven County	1	24	25	0.16	08/31/2015
Trane Supply	Wholesalers	178 Wallace Street	New Haven	06511	New Haven County	1	0	0	0.00	
United Refrigeration #48	Wholesalers	190 Wallace Street	New Haven	06511	New Haven County	1	0	0	0.00	
Htg Oil Ptnr/Ddlc Energy	Contractor	410 Bank St	New London	06360	New London County	3	0	0	0.00	
The Bell Pump Company	Wholesalers	91 Crystal Avenue	New London	06320	New London County	1	101	198	1.23	08/19/2015
The Granite Group	Wholesalers	75 Jefferson Ave	New London	06320	New London County	1	0	0	0.00	
Petro	Contractor	212 Elm Street	North Haven	06473	New Haven County	1	45	45	0.28	09/02/2015
The Granite Group	Wholesalers	300 Sackett Point Rd	North Haven	06473	New Haven County	1	0	0	0.00	
Carrier Enterprise	Wholesalers	4 Wilton Ave.	Norwalk	06851	Fairfield County	1	23	25	0.16	08/31/2015
Petro	Contractor	55 Bay Street	Norwalk	06854	Fairfield County	1	0	0	0.00	

## APPENDIX 16: THERMOSTATS RETURNED BY COLLECTION LOCATION (SORTED ALPHABETICALLY BY CITY)

R.E. Michel Company, Inc	Wholesalers	23 Perry Avenue	Norwalk	06850	Fairfield County	1	79	88	0.55	10/13/2015
The Granite Group	Wholesalers	55 North Main St	Norwich	06360	New London County	1	0	0	0.00	
Viking Supply	Wholesalers	31 Connecticut Avenue	Norwich	06360	New London County	1	0	0	0.00	
The Granite Group	Wholesalers	8 Custom Dr	Old Saybrook	06475	Middlesex County	1	0	0	0.00	
The Granite Group	Wholesalers	873 Norwich Rd	Plainfield	06374	Windham County	1	2	2	0.01	09/11/2015
Daniels Oil Co., Inc.	Contractor	8 High Street Po Box 32	Portland	06480	Middlesex County	2	0	0	0.00	
Valley Oil	Contractor	36 Brownstone Ave.	Portland	06480	Middlesex County	3	0	0	0.00	
The Granite Group	Wholesalers	71 - 81 Front St	Putnam	06260	Windham County	1	0	0	0.00	
Shelton Winair Co.,	Wholesalers	740 River Road	Shelton	06484	Fairfield County	2	17	28	0.17	08/31/2015
Mitchell Fuel Co. Inc.	Wholesalers	1209 Sullivan Ave.	South Windsor	06074	Hartford County	1	26	26	0.16	08/19/2015
Stafford Mechanical Services	Contractor	4 Industrial Park Drive	Stafford Springs	06076	Tolland County	1	0	0	0.00	
Abco Hvacr Supply-Stamford	Wholesalers	198 Lawn Ave.	Stamford	06902	Fairfield County	1	0	0	0.00	
Dasco - Dunphey & Associates Supply Co., Inc.	Wholesalers	43 Homestead Ave.	Stamford	06902	Fairfield County	1	0	0	0.00	

## APPENDIX 16: THERMOSTATS RETURNED BY COLLECTION LOCATION (SORTED ALPHABETICALLY BY CITY)

Fw Webb	Wholesalers	200 Richmond Hill Ave.	Stamford	06902	Fairfield County	1	0	0	0.00	
Johnstone Supply	Wholesalers	156 Magee Avenue	Stamford	06902	Fairfield County	2	36	56	0.35	11/05/2015
Plimpton & Hills Corp.	Wholesalers	92 Research Drive	Stamford	06906	Fairfield County	1	62	81	0.50	01/12/2015, 09/15/2015
Stamford Winnelson	Wholesalers	95 Elmcraft Road	Stamford	06902	Fairfield County	1	0	0	0.00	
The Bell Pump Company	Wholesalers	20 Victory Street	Stamford	06902	Fairfield County	1	44	46	0.29	08/31/2015
Trane Supply	Wholesalers	47 Harbor View Avenue	Stamford	06902	Fairfield County	1	4	11	0.07	08/31/2015
United Refrigeration #G6	Wholesalers	17 Viaduct Road	Stamford	06907	Fairfield County	1	19	66	0.41	08/31/2015
Carrier Enterprise	Wholesalers	650 Long Beach Blvd	Stratford	06615	Fairfield County	1	6	9	0.06	08/31/2015
Environmental Control, Inc.	Contractor	1265 Woodend Road	Stratford	06615	Fairfield County	1	0	0	0.00	
Main Enterprises	Contractor	1180 Stratford Rd.	Stratford	06615	Fairfield County	2	0	0	0.00	
R.E. Michel Company, Inc	Wholesalers	640 Access Road	Stratford	06615	Fairfield County	2	0	0	0.00	
Re Michel Co Inc.	Wholesalers	840 Access Road	Stratford	06615	Fairfield County	2	75	87	0.54	09/01/2015
Sid Harvey Industries	Wholesalers	1935 Stratford Ave.	Stratford	06615	Fairfield County	1	0	0	0.00	
Torrington Supply	Wholesalers	40 Mead Street	Stratford	06615	Fairfield County	1	50	50	0.31	09/01/2015

## APPENDIX 16: THERMOSTATS RETURNED BY COLLECTION LOCATION (SORTED ALPHABETICALLY BY CITY)

Tower Equipment Co Inc	Wholesalers	1320 West Broad St	Stratford	06615	Fairfield County	8	89	110	0.68	05/01/2015
Plimpton & Hills Corp.	Wholesalers	1415 East Main Street	Torrington	06790	Litchfield County	1	5	5	0.03	01/26/2015
Quality Mechanical Service	Contractor	95 Turner Avenue	Torrington	06790	Litchfield County	1	13	20	0.12	09/24/2015
Torrco	Wholesalers	261 Oak Avenue	Torrington	06790	Litchfield County	1	0	0	0.00	
Montville Hardware	Retailers	P.O. Box 506, 907 Rt 32	Uncasville	06382	New London County	1	0	0	0.00	
Carrier Enterprise (Homans Associates)	Wholesalers	2 Northrop Ind. Park Road	Wallingford	06492	New Haven County	1	0	0	0.00	
Plimpton & Hills Corp.	Wholesalers	148 South Colony Drive	Wallingford	06492	New Haven County	1	12	12	0.07	01/15/2015
Wallingford Winnelson Co.	Wholesalers	1068 N. Farms Road Bldg. 1	Wallingford	06492	New Haven County	1	6	6	0.04	05/01/2015
Fw Webb Company	Wholesalers	737 Bank St.	Waterbury	06708	New Haven County	1	67	79	0.49	08/20/2015
Sid Harvey Industries	Wholesalers	278 Railroad Hill St	Waterbury	06708	New Haven County	2	148	224	1.39	05/08/2015, 12/31/2015
Torrington Supply	Wholesalers	100 N. Elm Street	Waterbury	06723	New Haven County	2	0	0	0.00	
Wesson Energy	Contractor	165 Railroad Hill Street	Waterbury	06790	Litchfield County	3	79	81	0.50	06/18/2015

## APPENDIX 16: THERMOSTATS RETURNED BY COLLECTION LOCATION (SORTED ALPHABETICALLY BY CITY)

F.W. Webb	Wholesalers	570 Vauxhall Street Ext	Waterford	06385	New London County	1	0	0	0.00	
Michael R Mader Co, Inc	Contractor	33 Great Neck Rd	Waterford	06385	New London County	2	0	0	0.00	
Town Of Watertown	HHW Facility	91 Burton Street	Watertown	06795	Litchfield County	1	9	10	0.06	08/26/2015
Supply New England	Wholesalers	235 Newfield Ave.	West Hartford	06106	Hartford County	1	29	34	0.21	09/02/2015
Connecticut Refining Co.	Contractor	25 Bernhard Rd	West Haven	06473	New Haven County	1	0	0	0.00	
West Side Oil	Contractor	27 Babbs Road	West Suffield	06093	Hartford County	1	38	43	0.27	08/24/2015
Willimantic Winnelson	Wholesalers	65 Moalton Ct.	Willimantic	06226	Windham County	1	0	0	0.00	
Servco Oil Company	Contractor	387 Danbury Road	Wilton	06897	Fairfield County	1	0	0	0.00	

# PROGRAM PERFORMANCE REPORT & ASSESSMENT

**2016 Connecticut Mercury Thermostat Collection and Recycling**

March 2016

# APPENDIX 17: INDEPENDENT EVALUATION

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# APPENDIX 17: INDEPENDENT EVALUATION

## Thermostat Recycling Corporation's Collection Program in Connecticut

Mercury is an element that has made its way into the environment from both natural and anthropogenic sources, and can take many forms including inorganic and organic states. It has become more widely recognized that mercury released into the environment can easily make its way into aquatic ecosystems and lead to damaging effects in wildlife and humans including deformities in animal development, genetic alterations and harmful health impacts such as immune system and nervous system damage. Predominant sources of mercury include coal-burning power plants and gold mining, but mercury pollution can also be attributed to improper disposal of mercury containing products such as previous-generation thermostats. While significant steps have been taken to reduce the use of mercury in products in recent years, a variety of these older products utilized mercury - products such as thermometers, switches, certain types of light bulbs including fluorescents and older types of thermostats. Many of these products, including thermostats, have relatively small quantities of metallic mercury encapsulated in a glass bulb. If this glass enclosure is compromised and the contents is released into the environment, microbes can convert this mercury into highly toxic organometallic compounds such as methyl mercury which is damaging to both humans and wildlife.

In response to this concern, the EPA and many state environmental departments have taken measures to restrict the quantity of mercury that is released into the environment by emissions, as well as through landfill disposal. A number of states have implemented sales restrictions, disposal bans and product stewardship statutes that focus on products containing mercury. Connecticut has recently joined a growing list of states that require thermostat manufacturers to ensure a disposal alternative for thermostats through implementation of a convenient take-back program. To help serve this purpose, in 1998 major thermostat manufacturers created and funded the Thermostat Recycling Corporation (TRC), and the organization now has take-back participants in 47 states, including 17 state programs that have imposed regulations on the sale and/or disposal of these thermostats.

The goal of this report is to provide for the Connecticut Department of Energy and Environmental Protection an evaluation of the TRC's effectiveness in meeting the goals and requirements of the

# APPENDIX 17: INDEPENDENT EVALUATION

take-back program it conducts in Connecticut under Connecticut Public Act No. 12-54. Included in this report is a summary of the program's current operations, including its access to return channels and the characteristics of those channels, and how they are marketed and publicized. This report assesses the effectiveness of the TRC program in meeting its obligations to provide a convenient return channel for diverting and capturing thermostats removed from service.

## Methodology

Bin and thermostat receipts from 2015 were used to determine the collection performance of the TRC collection program in Connecticut, and this data was used in conjunction with historical program performance data including bin and thermostat submission data across Connecticut and all other states where TRC has operated collection programs. This data was analyzed both for technical accuracy as well as for measuring program performance.

# APPENDIX 17: INDEPENDENT EVALUATION

## Connecticut Program Performance

The Thermostat Recycling Corporation (TRC) is a non-profit stewardship organization that facilitates and manages the collection and proper disposal of mercury-containing thermostats. TRC is supported by 29 manufacturers and provides a network of collection sites around the United States with the aim of keeping mercury out of the waste stream and protecting the environment. The following analytical report details the annual program performance for mercury thermostat collection in the state of Connecticut (CT) in 2015. A few of the program highlights for 2015 are included below:

- In 2015 the program **collected 30.00 pounds of mercury** in CT. Since 2001, the annual pounds of mercury collected in CT has increased by an average of 41% per year. During the same time period, the pounds of mercury collected in the nation increased by 10% per year.
- The program collected a record high of **3,395 thermostats in 2015**. This was a 37% increase over the number of thermostats collected in 2014 and a 249% increase in the last decade. The number of thermostats collected annually in CT has increased by an average of 35% every year since 2001.
- The number of thermostats collected per bin in 2015 was **44.1 thermostats**. This was below the 15-year state average of 89.0 thermostats per bin.
- The **total pounds of mercury collected per 10,000 residents was 0.83 in 2015**. This is a record high for the state of CT and is a 25% increase over the 0.67 pounds of mercury collected per 10,000 residents in 2014. It is more than three times the 0.23 pounds per 10,000 residents collected a decade ago.
- The county with the most bins returned in 2015 was **Hartford (26 bins)**, followed by **Fairfield (22) and New Haven Counties (16 bins)**. Tolland County was the only county without a bin return in 2015.
- In 2015, **44.2% of the partner locations returned at least one bin** compared to a national average of 37.1%.
- In 2015, a total of **62 site visits were conducted in CT and 2 'Miss You' calls were placed**. Although the analysis suggests there is a positive relationship between the number of visits and the number of thermostats returned, there was not a statistically significant relationship between the two variables. In the future, it is recommended that TRC look into

# APPENDIX 17: INDEPENDENT EVALUATION

impacts at a delayed amount of time. For instance, did calls and site visits have a material impact on bin returns in following months?

## SECTION 1: Program Analytics

Section 1 of this report examines the annual performance of the thermostat collection recycling program in terms of bins, thermostats, and mercury collected as well as the year over year progression of the program.

### 1.1: PROGRAM PERFORMANCE OVER TIME

On average, the program has **collected 13.3 pounds of mercury** and **1,478 thermostats per year** since 2001. In 2015 the program **collected 30.00 pounds of mercury from 3,395 thermostats**, an increase from the previous year of 25.0% in pounds of mercury and 36.6% in thermostats. Figure 1.1 displays the total number of bins collected, the total number of thermostats, and the total pounds of mercury collected in Connecticut since the beginning of the program.

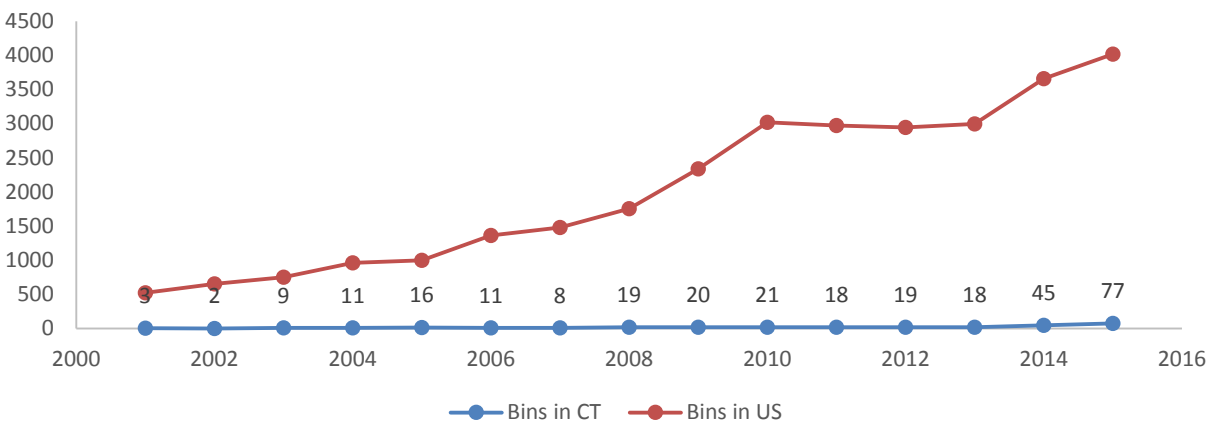
**FIGURE 1.1: PROGRAM PERFORMANCE OVER TIME**

Year	Number Bins	Number Stats	Lbs Mercury
2001	3	305	2.47
2002	2	224	1.49
2003	9	901	6.39
2004	11	909	6.85
2005	16	1,309	13.26
2006	11	972	7.99
2007	8	839	7.39
2008	19	1,838	17.84
2009	20	2,109	22.36
2010	21	1,918	16.24
2011	18	1,538	14.20
2012	19	1,831	15.42
2013	18	1,600	12.86
2014	45	2,485	23.99
2015	77	3,395	30.00
<i>Average</i>	<i>19.8</i>	<i>1,478.2</i>	<i>13.3</i>
<i>Total</i>	<i>297</i>	<i>22,173</i>	<i>199</i>

# APPENDIX 17: INDEPENDENT EVALUATION

Figure 1.2 graphically displays the number of bins collected in Connecticut over time as well as the total number of bins collected in the US over the same time period. The figure shows that the number of bins collected annually increased from 2001 to 2010, with a small dip in 2006 and 2007. From 2010 to 2013, the number of bins collected plateaued, but collection performance jumped in 2014, the first full year after mandatory program was implemented, and a new record number of bins were returned in 2015, bringing in a record number 3,395 thermostats with 30 lbs. of mercury.

**FIGURE 1.2. BINS COLLECTED OVER TIME IN CT AND NATIONALLY**



# APPENDIX 17: INDEPENDENT EVALUATION

In CT, the **pounds of mercury collected in 2015 increased by 25% over 2014 levels**. Since 2001, the annual pounds of mercury collected in CT has increased by an average of 41%. During the same time period, the pounds of mercury collected in the nation increased by 16% per year. Figure 1.3 displays the total number of pounds of mercury collected in Connecticut over time as well as the year over year percent increase (or decrease) in Connecticut and the US as a whole.

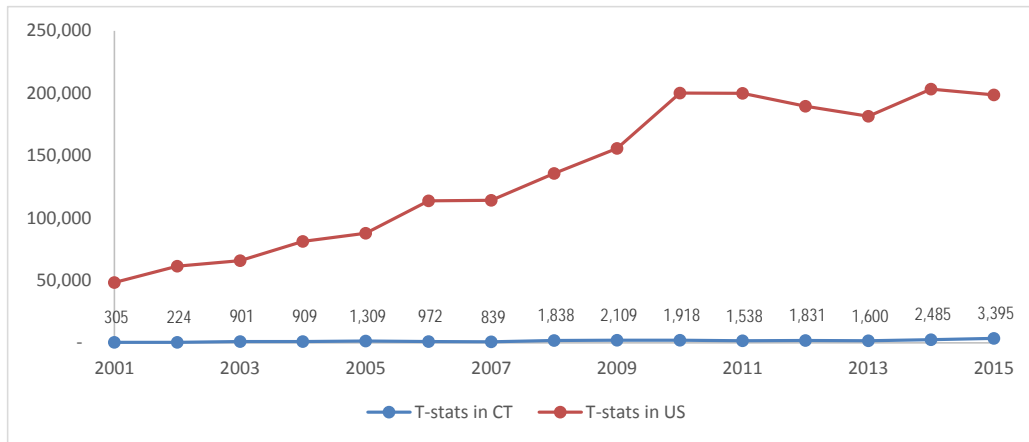
**FIGURE 1.3: POUNDS OF MERCURY COLLECTED IN PROGRAM AND YEAR OVER YEAR CHANGES IN STATE AND US.**

Year	Total Lbs Hg	% Change State	% Change US
2001	2.47	N/A	89.4%
2002	1.49	-39.4%	13.7%
2003	6.39	327.8%	11.0%
2004	6.85	7.2%	17.0%
2005	13.26	93.5%	11.1%
2006	7.99	-39.8%	32.1%
2007	7.39	-7.5%	2.0%
2008	17.84	141.4%	16.3%
2009	22.36	25.3%	16.3%
2010	16.24	-27.3%	26.1%
2011	14.20	-12.6%	3.6%
2012	15.42	8.6%	-5.3%
2013	12.86	-16.6%	-4.8%
2014	23.99	86.6%	12.9%
2015	30.00	25.0%	-1.4%
<i>Average</i>	<i>13.25</i>	<i>41%</i>	<i>16%</i>

# APPENDIX 17: INDEPENDENT EVALUATION

The state of CT collected 3,395 thermostats in 2015. This was a **37% increase over the number of thermostats collected in 2014** and a **249% increase in the last decade**. The number of thermostats collected annually in CT has increased by an **average of 35% every year since 2001**. During the same time period, the number of thermostats collected in the US has increased by an annual average rate of 11%. Figure 1.4 displays the total number of thermostats collected in Connecticut and the nation and figure 1.5 shares the underlying data as well as the calculated year over year percent change.

**FIGURE 1.4: NUMBER OF THERMOSTATS COLLECTED OVER TIME STATE AND NATIONAL**



**FIGURE 1.5: THERMOSTATS COLLECTED IN CT AND US OVER TIME AND YEAR OVER YEAR PERCENT CHANGE**

Year	T-stats in CT	T-stats in US	% Change State	% Change US
2001	305	48,350	NA	NA
2002	224	61,422	-27%	27%
2003	901	65,778	302%	7%
2004	909	81,115	1%	23%
2005	1,309	87,754	44%	8%
2006	972	113,658	-26%	30%
2007	839	114,158	-14%	0%
2008	1,838	135,646	119%	19%
2009	2,109	155,731	15%	15%
2010	1,918	200,064	-9%	28%
2011	1,538	199,918	-20%	0%
2012	1,831	189,619	19%	-5%
2013	1,600	181,600	-13%	-4%
2014	2,485	203,346	55%	12%
2015	3,395	198,603	37%	-2%
Average	1,478.2	135,784.1	35%	11%

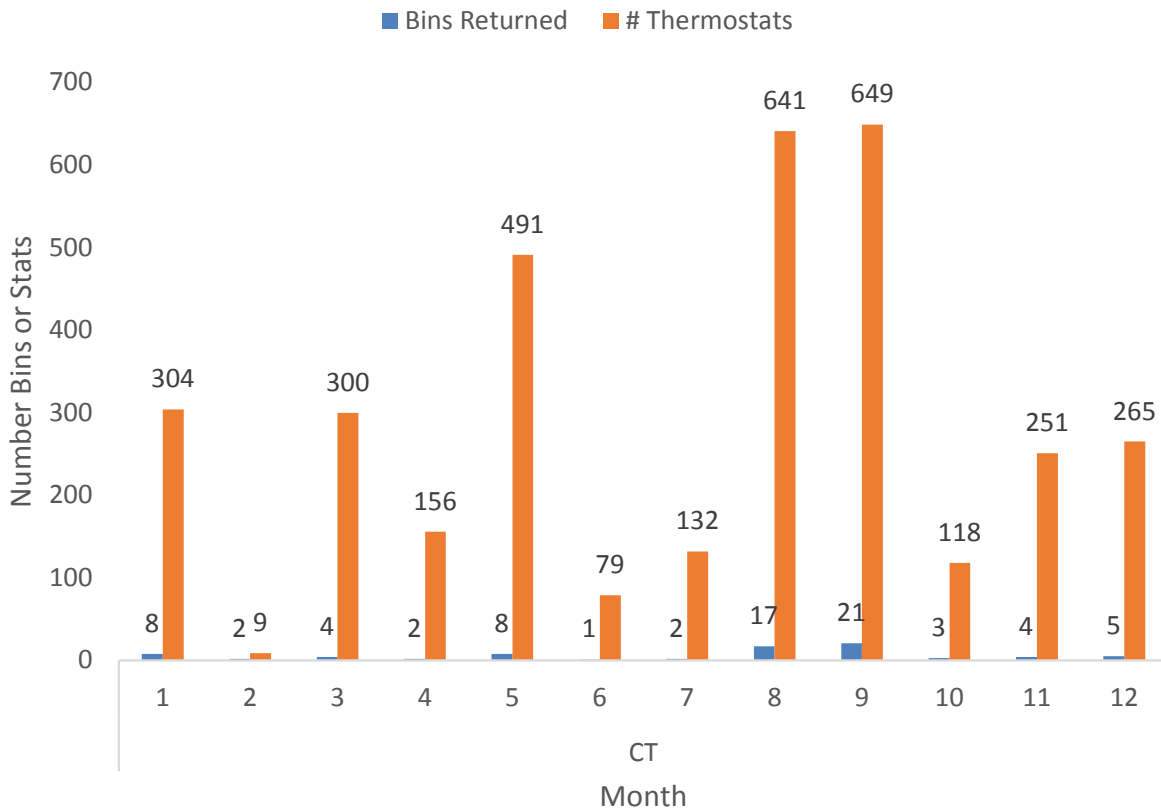


# APPENDIX 17: INDEPENDENT EVALUATION

## 1.2: MONTHLY PROGRAM PERFORMANCE

Figure 1.6 displays the monthly distribution of bins and thermostats returned in Connecticut over 2015. The months with the greatest number of bins returned were **September** (21 bins), **August** (17 bins) and **January and May** (8 bins each). The months with the greatest number of thermostats returned were **September** (649 thermostats), **August** (641 thermostats), and **May** (491 thermostats). Conversely, the months with the fewest number of thermostats returned in 2015 were February, June and October.

**FIGURE 1.6. THERMOSTATS AND BINS COLLECTED PER MONTH 2015**

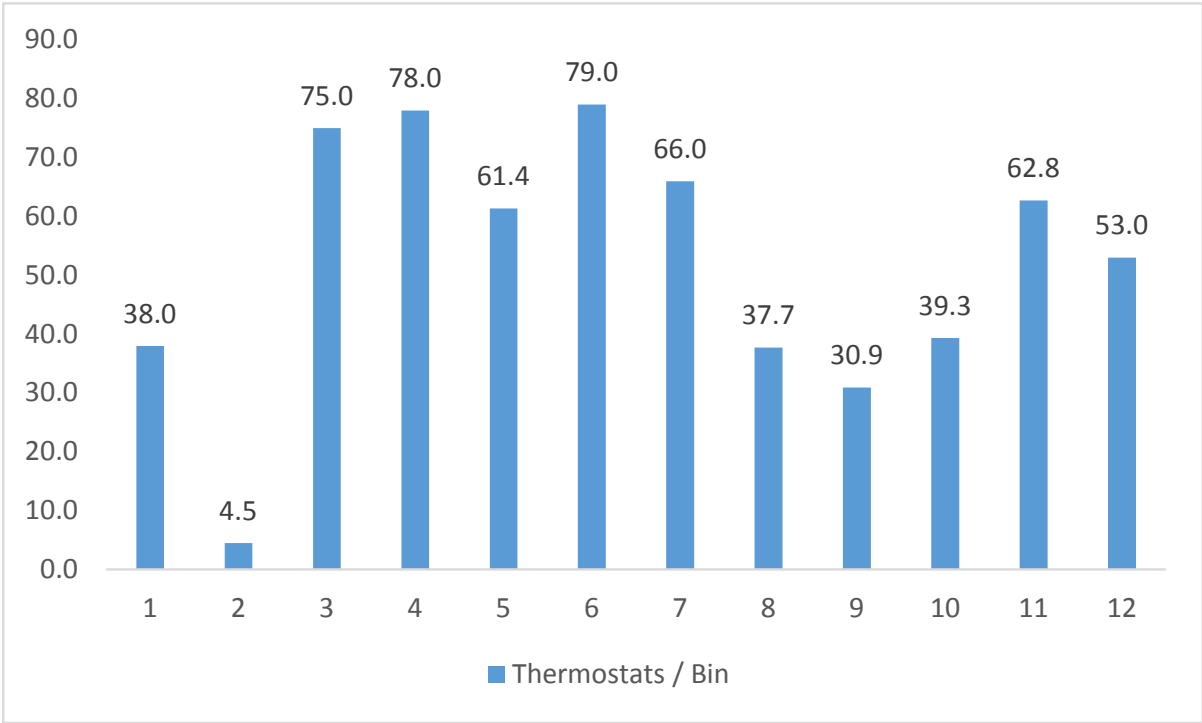


# APPENDIX 17: INDEPENDENT EVALUATION

## 1.3: THERMOSTATS RETURNED PER BIN

The highest number of thermostats per bin were in **June** (79.0) and **April** (78.0). Figure 1.7 shows the average number of thermostats per returned bin per month for the year.

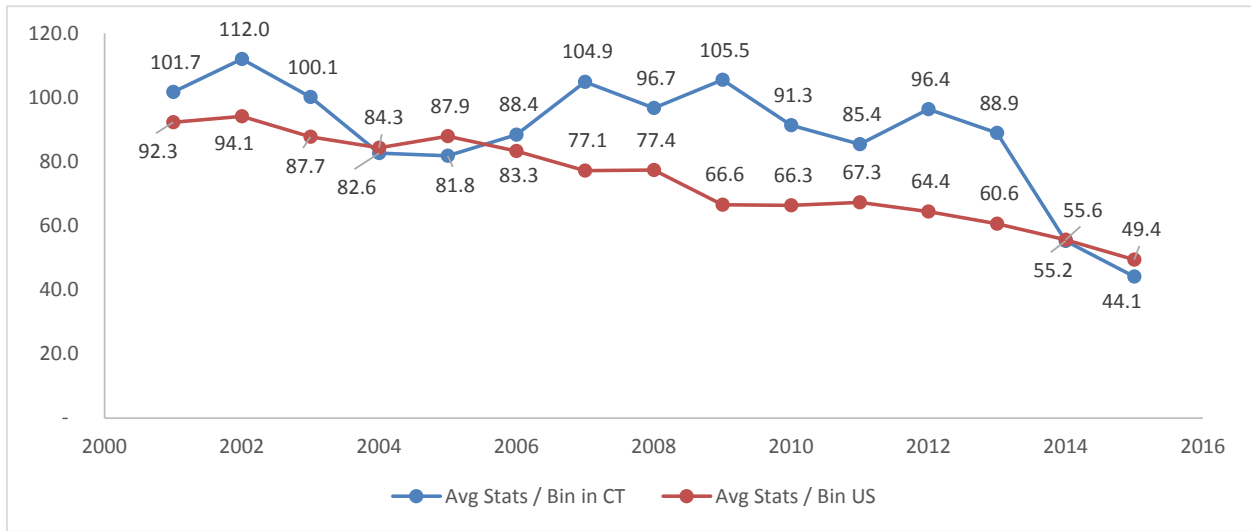
**FIGURE 1.7: AVERAGE THERMOSTATS PER BIN RETURNED PER MONTH**



# APPENDIX 17: INDEPENDENT EVALUATION

Figure 1.8 displays the average number of thermostats returned per bin in Connecticut and in the US since the beginning of the collection program in Connecticut. Nationally, the number of thermostats per bin has been decreasing annually since 2000, and this trend can be seen in recent years in CT as well. In CT the number of thermostats per bin in 2015 (**44.1 thermostats / bin avg.**) was the lowest on record. The 2015 number of thermostats per bin returned was below the 15-year average of 89.0 thermostats per bin.

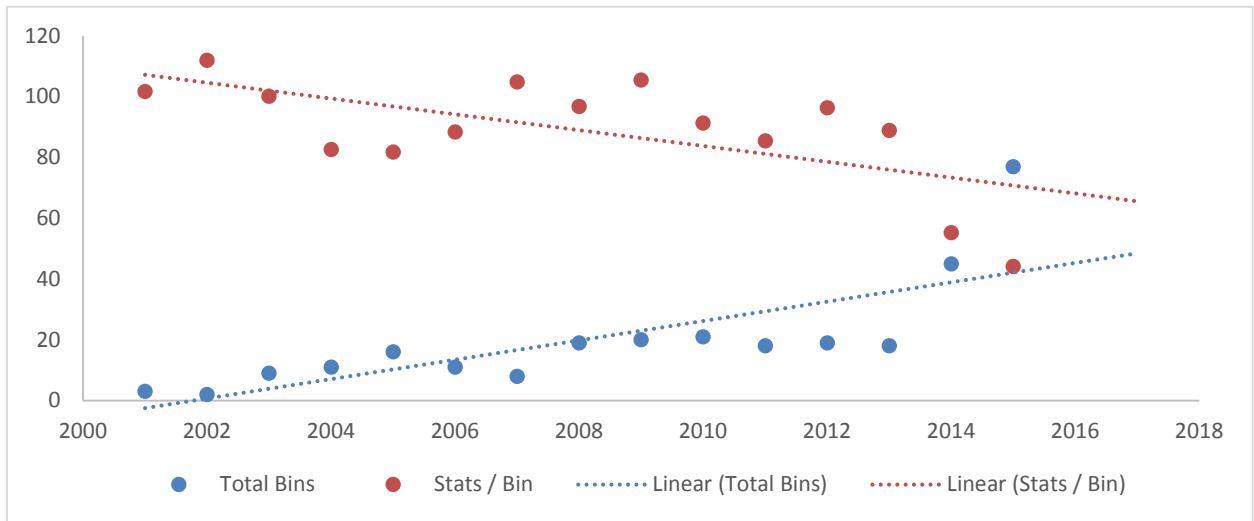
**FIGURE 1.8: AVERAGE NUMBER OF THERMOSTATS PER BIN OVER TIME IN STATE AND NATIONAL**



# APPENDIX 17: INDEPENDENT EVALUATION

Figure 1.9 plots the total bins returned over time along with the average number of thermostats per bin over the same period to see whether or not there is a relationship between the two. A linear regression found a strong negative correlation ( $r=-.88$ , slope $=-.862$ ) between the two variables. This indicates that as more bins are returned, the number of thermostats per bin declines. This relationship underscores the need for technicians to return thermostats to collection centers, and locations such as wholesalers must effectively communicate the proper procedure for participating in the TRC program.

**FIGURE 1.9: TOTAL BINS AND AVERAGE NUMBER OF THERMOSTATS PER BIN OVER TIME**

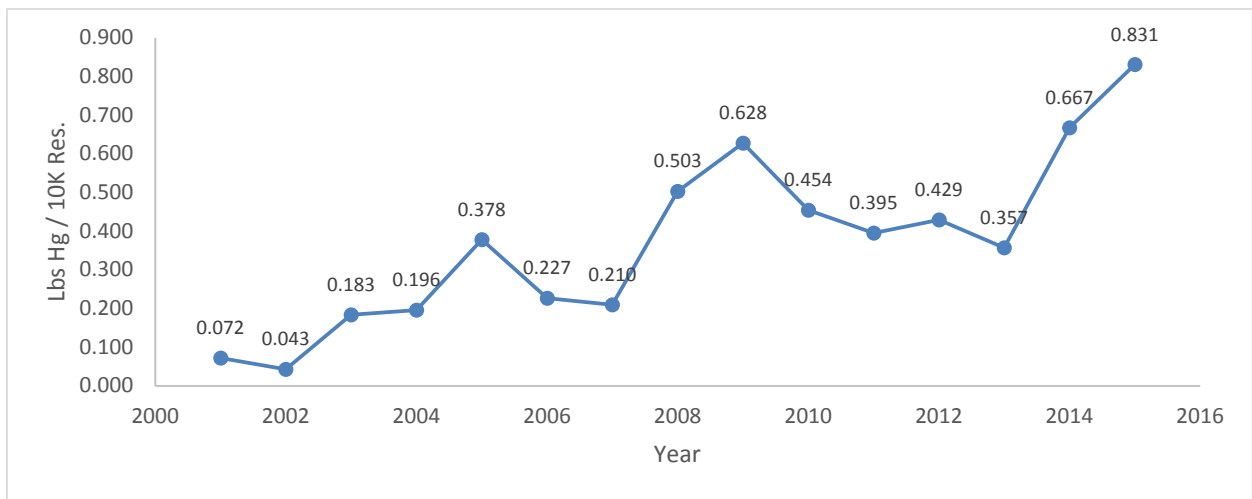


# APPENDIX 17: INDEPENDENT EVALUATION

## 1.4: PER CAPITA COLLECTION PERFORMANCE

The **total amount of mercury (in lbs.) collected per 10,000 residents was 0.83 in 2015**. This is a record high for the state of CT and is a 25% increase over the 0.67 pounds per 10,000 residents collected in 2014 and more than three and a half times the 0.23 pounds per 10,000 residents collected a decade ago. Figure 1.10 displays normalize data for the total pounds of mercury collected per 10,000 state residents over time.

**FIGURE 1.10: POUNDS OF MERCURY COLLECTED ANNUALLY PER 10,000 RESIDENTS**



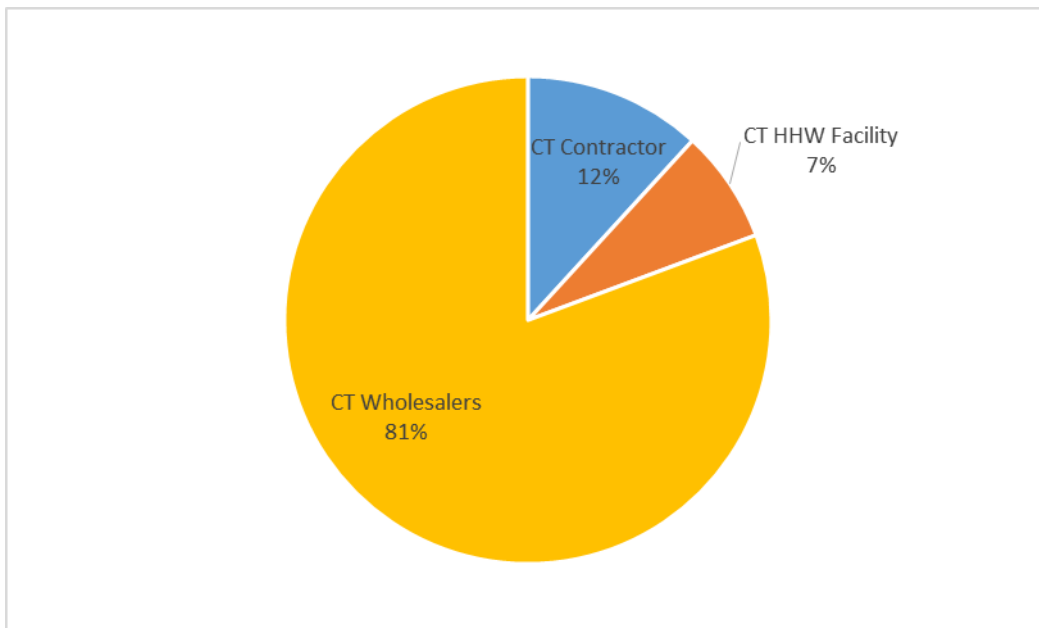
# APPENDIX 17: INDEPENDENT EVALUATION

## SECTION 2: Channel Partner Analysis

### 2.1: COLLECTION BY FACILITY TYPE

Section 2 of the report examines the partner locations in more detail. The majority of thermostats collected in state were through **wholesalers (80.7%)**, followed by **contractors (11.8%)** and **household hazardous waste facilities (7.5%)**. Figure 2.1 shows the distribution of thermostats collected by location type in 2015.

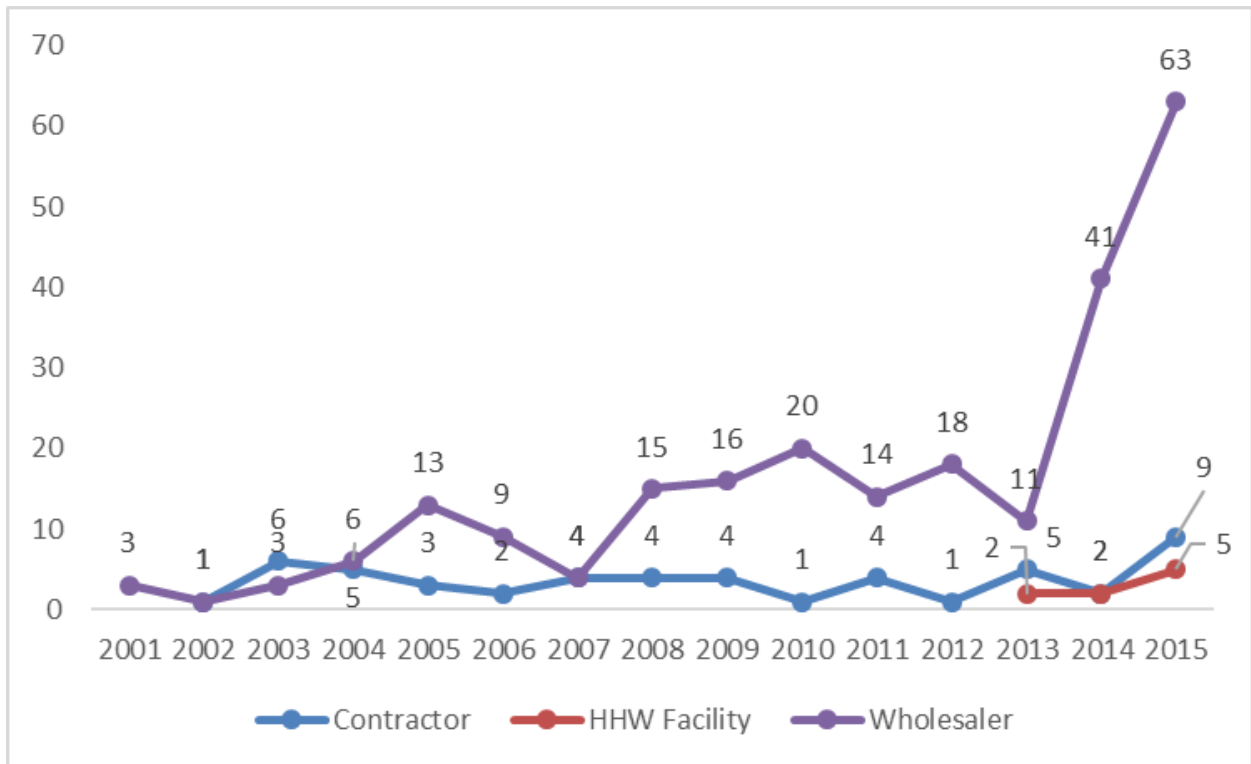
**FIGURE 2.1: THERMOSTATS COLLECTED BY LOCATION TYPE IN 2015**



# APPENDIX 17: INDEPENDENT EVALUATION

The number of bins returned by wholesalers increased from 41 bins in 2014 to 63 bins from wholesalers in 2015. At the same time, the number of bins returned by contractors increased from two bins in 2014 to nine bins in 2015. The number returned by household hazardous waste facilities increased from two bins in 2014 to five in 2015. Figure 2.2 displays the change in the number of bins returned by thermostat collection type over time in the state.

**FIGURE 2.2: THERMOSTAT BIN RETURNS BY LOCATIONS OVER TIME**

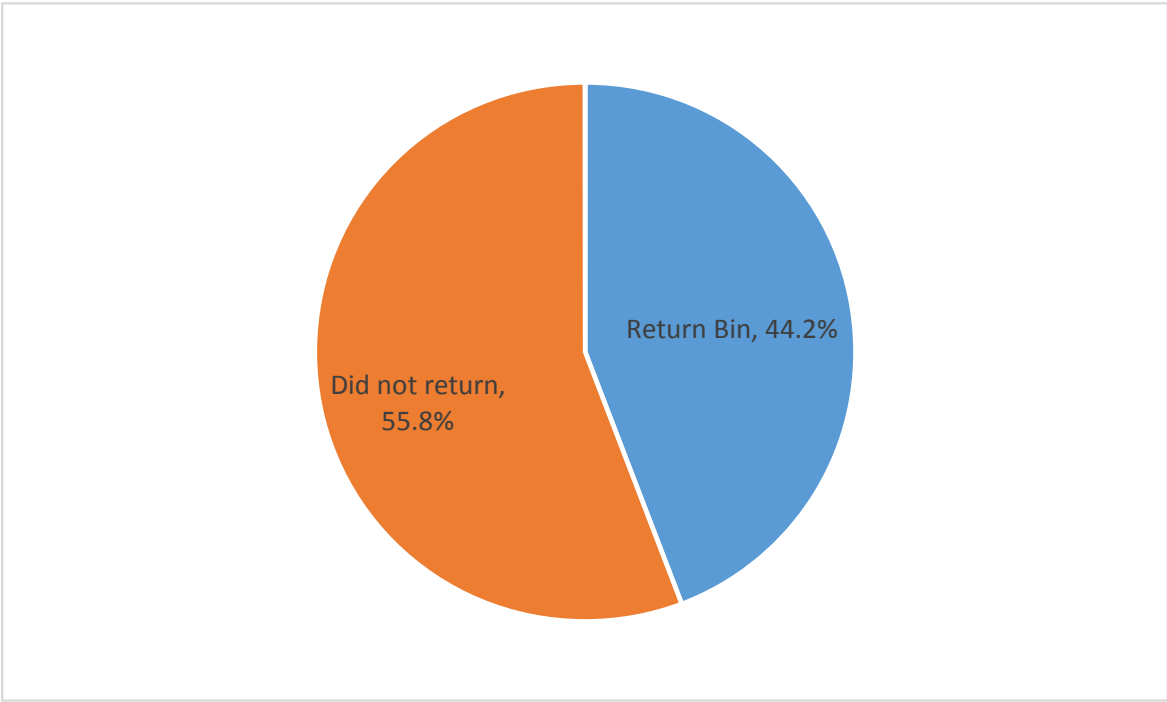


# APPENDIX 17: INDEPENDENT EVALUATION

## 2.2: PARTICIPATION

In 2015, **44.2% of the locations** that had a bin in the state of CT sent back at least one bin for recycling. The distribution is displayed in Figure 2.3.

**FIGURE 2.3: PERCENTAGE OF STORES RETURNING A BIN IN 2015**

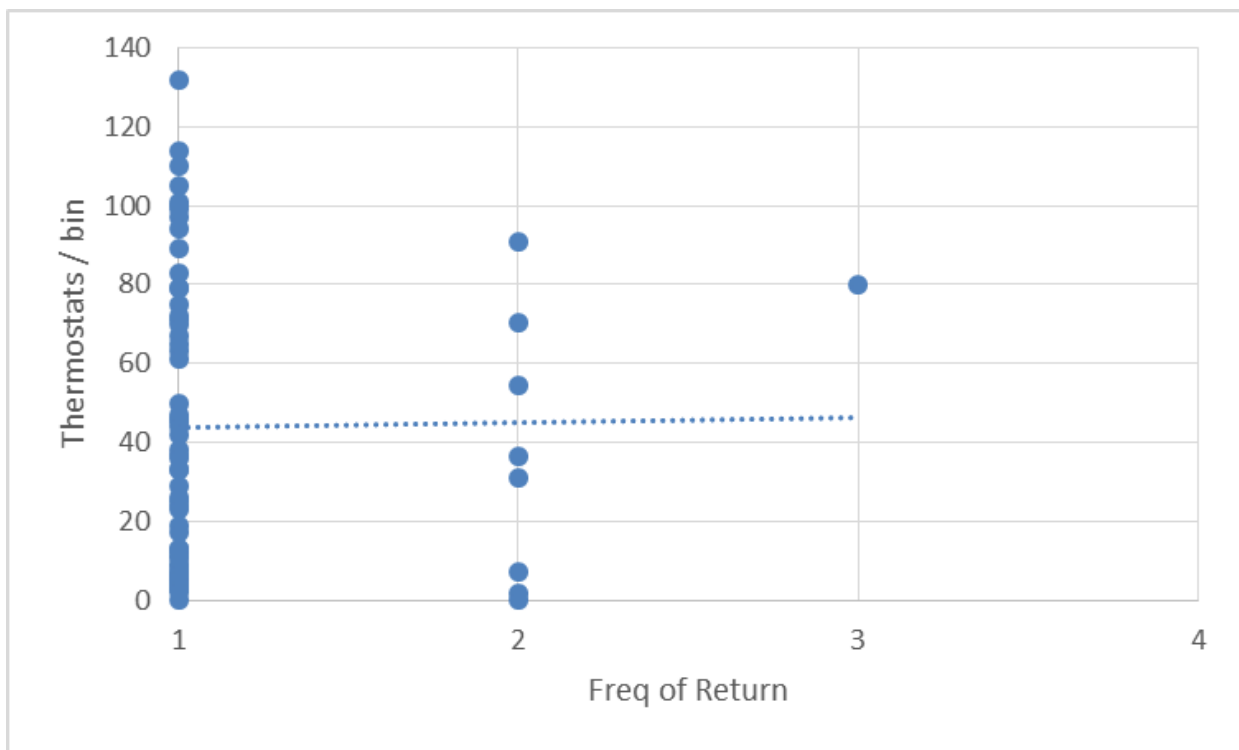




# APPENDIX 17: INDEPENDENT EVALUATION

Figure 2.4 is a scatter plot comparing the frequency of bin returns per location and the number of thermostats per bin. The analysis sought to determine whether there was any correlation between the frequency of return and the number of thermostats per bin. While there was only a weak statistical correlation between the two variables, the scatter data does seem to slightly indicate that bins that were returned more frequently also tended to have more thermostats per bin in CT.

**FIGURE 2.4: CORRELATION OF FREQUENCY OF BIN RETURN AND NUMBER OF THERMOSTATS PER BIN**



# APPENDIX 17: INDEPENDENT EVALUATION

## 2.3: GEOGRAPHIC PERFORMANCE

An analysis of the top performing counties in terms of total bin returns and total thermostats returned in 2015 was conducted. The counties with the most bins returned in 2015 were **Hartford (26 bins)**, **Fairfield (22 bins)** and **New Haven (16 bins)**. The counties with the most thermostats returned in 2015 were **Hartford (1,138 thermostats)**, **New Haven (1,036 thermostats)** and **Fairfield (692 thermostats)**. Figure 2.5 displays the total bins and thermostats returned, segregated by county, in 2015.

**FIGURE 2.5: BIN RETURNS AND TOTAL THERMOSTATS RETURNED IN 2015 BY COUNTY**

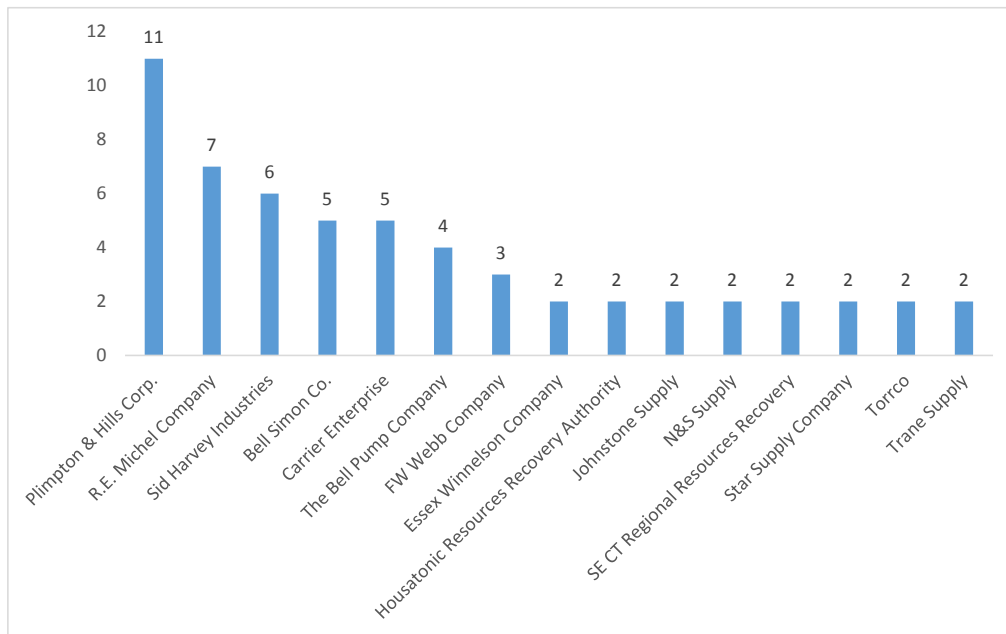
County	Total Bins	Total T-stats
Hartford County	26	1,138
Fairfield County	22	692
New Haven County	16	1,036
Litchfield County	4	34
Middlesex County	4	124
New London County	4	369
Windham County	1	2

# APPENDIX 17: INDEPENDENT EVALUATION

## 2.4: CHANNEL PARTNER PERFORMANCE OVER TIME

TRC works in coordination with channel partners to implement the takeback program, and it is insightful to identify the performance of individual wholesale brands to observe collection. **Plimpton & Hills Corp. (11 bins)** returned the highest number of bins in Connecticut in 2015, followed by **R. E. Michel Company (7 bins)** and **Sid Harvey Industries (6 bins)**. R.E. Michel Company ran a promotion with “5 for \$5 Dunkin Donuts®,” in Connecticut and they returned the second highest number of bins but the *greatest number of thermostats* (520 thermostats versus Plimpton & Hills Corp.’s 222 thermostats). This result suggests that the coupon incentive for a coupon to Dunkin Donuts® likely has an overall positive impact on collection of thermostats in CT, though the net impact for the promotion is not entirely clear as some of the thermostats returned to R.E Michel may have been transferred from other nearby collection points, Petro Oil also offered a branch incentive, but they did not appear as one of the top performing partners in Connecticut. In addition to the top performers included in the figure, 19 additional program partners returned 1 bin each (at least one bin did not contain any thermostats). Figure 2.6 displays the top performing partners in terms of total bins returned in 2015.

**FIGURE 2.6. TOP PERFORMING CHANNEL PARTNERS IN STATE**



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Figure 2.7 looks at the top performers in more detail. The figure includes the top performers for the year by each of the following categories: total bins returned, total thermostats, and average number of thermostats per bin. Note that Star Supply only returned a bin twice, but collected far more thermostats per bin than any other participant, at 121 t-stats/bin. This places Star Supply Co. in third position for total number of thermostats collected in CT in 2015.

**FIGURE 2.7. TOP PERFORMING PARTNERS BY TOTAL BINS, TOTAL THERMOSTATS, AND THERMOSTATS PER BIN**

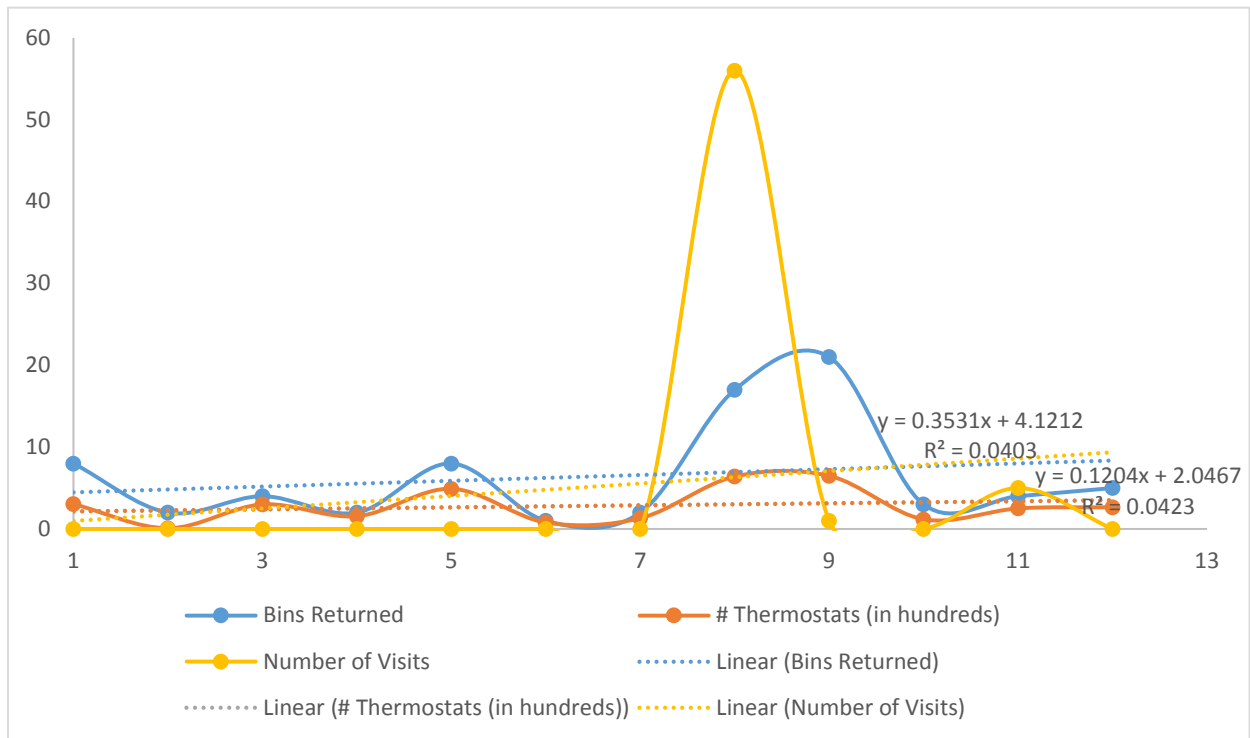
	No. of Bins	No. of Thermostats	Thermostats / Bin
Plimpton & Hills Corp.	11	222	20.2
R.E. Michel Company	7	520	74.3
Sid Harvey Industries	6	410	68.3
Bell Simon Co.	5	240	48.0
Carrier Enterprise	5	183	36.6
The Bell Pump Company	4	218	54.5
FW Webb Company	3	122	40.7
Essex Winnelson Company	2	14	7.0
Housatonic Resources Recovery Authority	2	75	37.5
Johnstone Supply	2	141	70.5
N&S Supply	2	3	1.5
SE CT Regional Resources Recovery	2	171	85.5
Star Supply Company	2	242	121.0
Torrco	2	61	30.5
Trane Supply	2	15	7.5

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## 2.5: TRC OUTREACH EFFECTIVENESS TOWARDS PARTICIPATION

TRC conducted several activities in 2015 as a way to increase the number of bins and thermostats returned in Connecticut. These activities included site visits and ‘miss you’ calls to collection locations that may not have participated in the program recently. In 2015, a total of 62 site visits were conducted in CT and two ‘Miss You’ calls were placed. Figure 2.8 displays the relationship between the number of site visits per month, the bin returns per month, and the number of thermostats (in 100’s) returned per month. There was not a statistically significant relationship between the two variables, though the figure seems to suggest that site visits have had a positive impact on prompting bin returns.

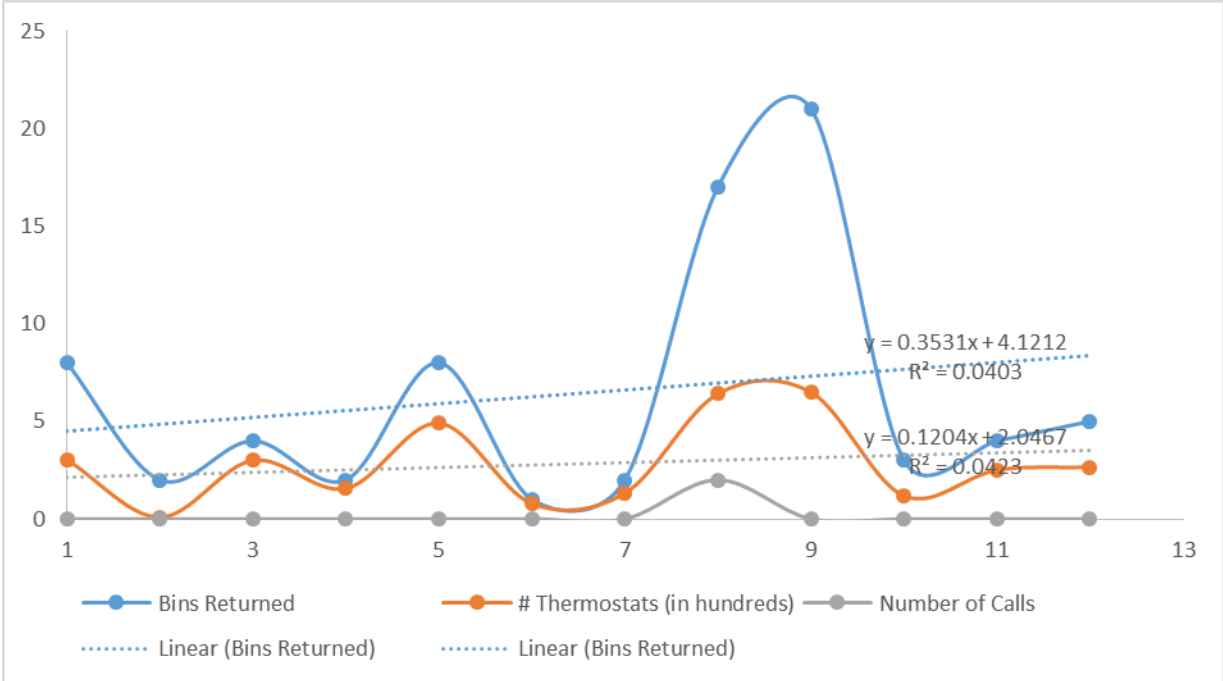
**FIGURE 2.8: RELATIONSHIP BETWEEN SITE VISITS AND BINS AND THERMOSTATS RETURNED PER MONTH**



# APPENDIX 17: INDEPENDENT EVALUATION

Figure 2.9 displays the relationship between the number of calls per month, the bin returns per month, and the number of thermostats (by 100's) returned per month. Once again there was not a statistically significant relationship between the two variables, noting the returns in August and September came from different stores than those which received calls.

**FIGURE 2.9: RELATIONSHIP BETWEEN 'MISS YOU' CALLS AND BINS AND THERMOSTATS RETURNED PER MONTH**



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## Section 3: Comparisons To National And Other States' Data

### 3.1 PERFORMANCE BY CHANNEL PARTNERS

To compare how Connecticut collection partners performed in 2015, the national averages for the number of bins returned per total locations since 2012 was calculated and compared to Connecticut average over the same time period. The average number of bins includes locations that did not return any bins in a given year. It should be noted that when making comparisons each state has different regulations, housing stock mix, local policies, and incentives that may have a significant impact on returns. Overall, the average number of bin returns per location per year was lower in CT than the US average and the annual averages are shown in figure 3.1. However, the rate of increase since the mandatory program was implemented in 2013 has far exceeded the national state average, which would suggest CT may be on track to be on par with the national average soon.

**FIGURE 3.1: AVERAGE NUMBER OF BINS RETURNED PER LOCATION PER YEAR**

	2012	2013	2014	2015
US Total	1.4	1.4	1.6	1.8
CT Average	0.2	0.2	0.6	1.0

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Figure 3.2 displays the locations in CT that returned more than one bin in a given year since 2012 and figure 3.3 displays the top 10 partners in the US over the same time period in terms of the number of bins returned. United Refrigeration is the only partner that appears on both Connecticut and the national lists.

**FIGURE 3.2: PARTNER LOCATIONS IN CT RETURNING > 1 BIN PER YEAR 2012-2015**

Location	2012 Bins	Location	2015 Bins
STAR SUPPLY COMPANY	8	Plimpton & Hills Corp.	11
R.E. Michel Company	4	R.E. Michel Company	7
Sid Harvey	2	Carrier Enterprise	5
Location	2013 Bins	Location	2015 Bins
TOWER EQUIPMENT CO INC	4	Bell Simons Company	5
Automatic TLC	3	Sid Harvey Industries	4
STAR SUPPLY COMPANY	2	THE BELL PUMP COMPANY	4
The Granite Group	2	FW Webb Company	3
		Sid Harvey	2
Location	2014 Bins	Location	2015 Bins
R.E. Michel Company	9	Torrco	2
The Granite Group	6	Southeast CT Regional Resources Recovery Authority	2
Sid Harvey Industries	5	Johnstone Supply	2
Bell Simons Company	3	Trane Supply	2
Johnstone Supply	3	N&S Supply Inc.	2
TOWER EQUIPMENT CO INC	3	Essex Winnelson Company	2
Carrier Enterprise	2	STAR SUPPLY COMPANY	2
Torrco	2	Housatonic Resources Recovery Authority	2
SHELTON WINAIR CO.,	2		



# APPENDIX 17: INDEPENDENT EVALUATION

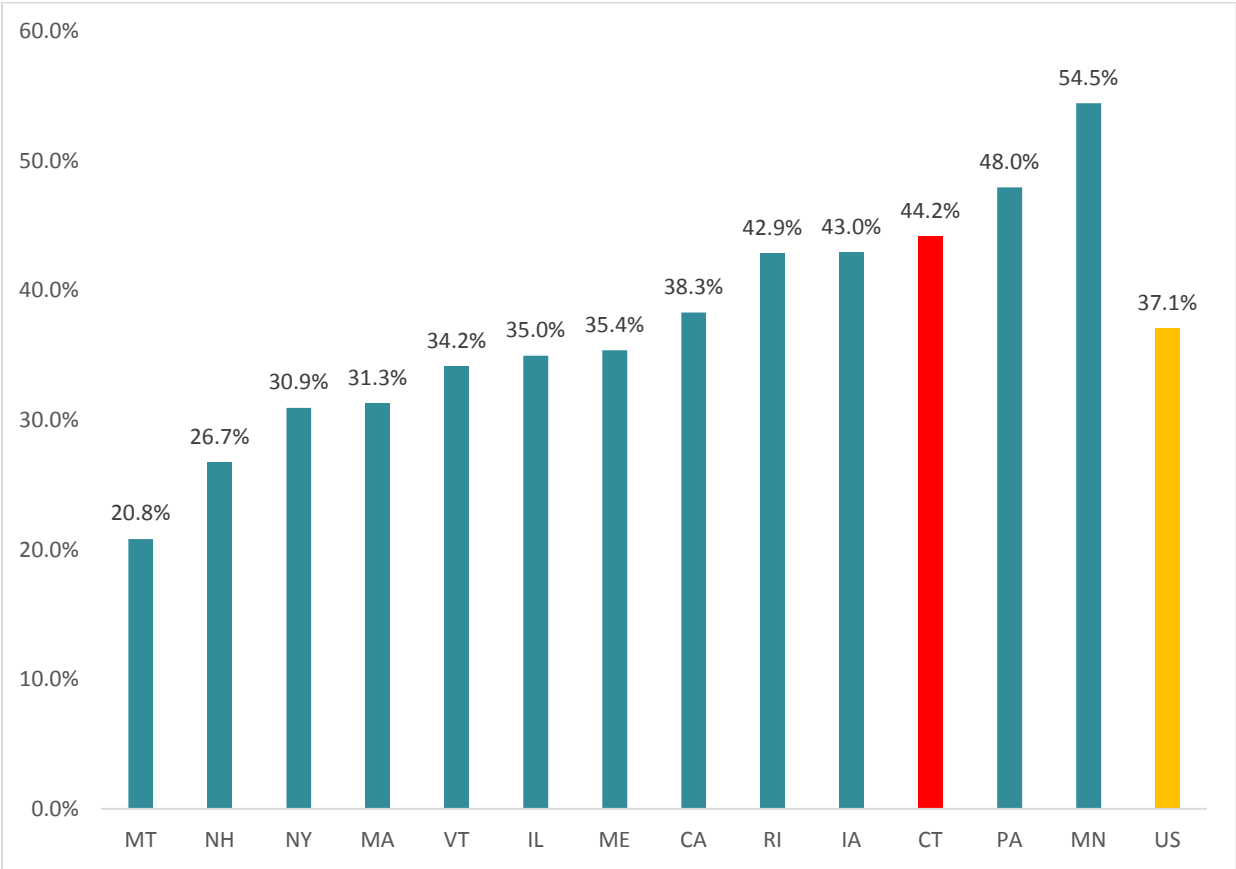
**FIGURE 3.3: TOP PERFORMING PARTNER LOCATIONS NATIONWIDE IN BIN RETURNS 2012 TO 2015**

Location	2012	Location	2014
R.E. Michel Company	276	R.E. Michel Company	461
Honeywell Inc.	195	Johnstone Supply	460
Johnstone Supply	176	US Air Conditioning Distributors, Inc.	127
United Refrigeration	107	Ferguson Enterprises	119
Ferguson Enterprises	94	United Refrigeration	114
Refrigeration Supplies Distributor	88	Goodman Distribution Inc.	95
Comverge	69	Honeywell Inc.	77
US Air Conditioning Distributors, Inc.	67	Gustave A Larson Company	67
Goodman Distribution Inc.	67	Refrigeration Supplies Distributor	60
Franklin Energy Services	47	Lennox Industries Inc	60
Lennox Industries Inc	45	C.C. Dickson Company	55
Location	2013	Location	2015
R.E. Michel Company	311	Johnstone Supply	519
Johnstone Supply	298	R.E. Michel Company	336
United Refrigeration	162	Ferguson Enterprises	184
Honeywell Inc.	118	United Refrigeration	176
Ferguson Enterprises	106	US Air Conditioning Distributors, Inc.	106
US Air Conditioning Distributors, Inc.	102	Goodman Distribution Inc.	70
Refrigeration Supplies Distributor	69	Gustave A Larson Company	62
Goodman Distribution Inc.	64	Refrigeration Supplies Distributor	54
Baker Distributing Company	47	Lennox Industries Inc	51
Comverge	41	Baker Distributing Company	50

Figure 3.4 displays the total percentage of locations per state and for the entire US with a bin that participated in the program in 2015 (participation is defined as sending back at least one bin). **In 2015, 44.2% of the locations in CT returned a bin compared to a national average of 37.1%.** The state with the highest percentage of locations returning a bin in 2015 was MN (54.5%).

# APPENDIX 17: INDEPENDENT EVALUATION

**FIGURE 3.4: PERCENTAGE OF LOCATIONS RETURNING A BIN IN 2015**



# APPENDIX 17: INDEPENDENT EVALUATION

## 3.2 PERFORMANCE BY CHANNEL PARTNERS

Figure 3.5 compares 2015 state and national rates for a number of metrics. These include: the total thermostats and bins collected, the number of collection locations in each state per 10,000 residents, the number of thermostats collected by total locations and per participating location, the number of thermostats per bin returned on average in 2015, and the number of thermostats collected in each state and the US per 10,000 residents.

**FIGURE 3.5: COMPARISONS OF STATES AND US AVERAGES AMONG SEVERAL CATEGORIES**

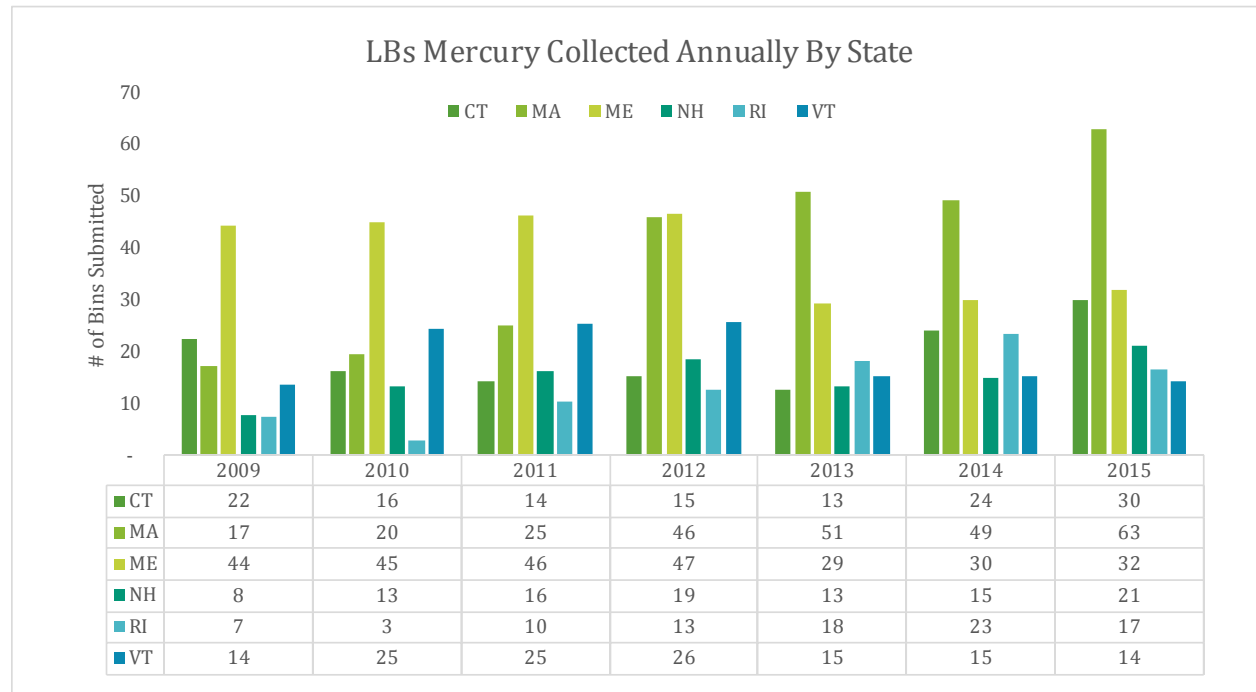
State	Total Thermostats	Total Bins	Number locations per 10K Res (avg.)	Thermostats per total locations (avg.)	Thermostats per bin (avg.)	Thermostats per location returning a bin (avg.)	Thermostats per 10K residents (avg.)
CA	18,260	513	0.19	25.1	35.6	65.4	4.7
CT	3,395	77	0.38	24.6	44.1	55.7	9.4
IA	2,795	63	0.39	23.1	44.4	53.8	9.0
IL	10,193	236	0.41	19.3	43.2	55.1	7.9
MA	7,881	128	0.41	28.0	61.6	89.6	11.6
ME	4,571	112	1.82	18.8	40.8	53.2	34.3
MN	9,864	127	0.26	68.0	77.7	124.9	17.9
MT	229	6	0.23	9.5	38.2	45.8	2.2
NH	2,652	61	1.51	13.1	43.5	49.1	19.9
NY	6,466	201	0.26	12.5	32.2	40.4	3.3
PA	14,338	256	0.29	38.9	56.0	81.0	11.2
RI	2,212	39	0.53	39.5	56.7	92.2	21.0
VT	2,000	83	3.22	9.9	24.1	29.0	31.9
US	84,856	1902	0.33	23.9	44.6	64.3	7.8

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## 3.3 REGIONAL PEER STATE COMPARISON METRICS

Figure 3.6 below shows the quantity of mercury collected through TRC's program in Connecticut and neighboring states since 2009. Collection of mercury in CT 2015 increased by 130% over 2013 levels and by 25% over 2014 levels.

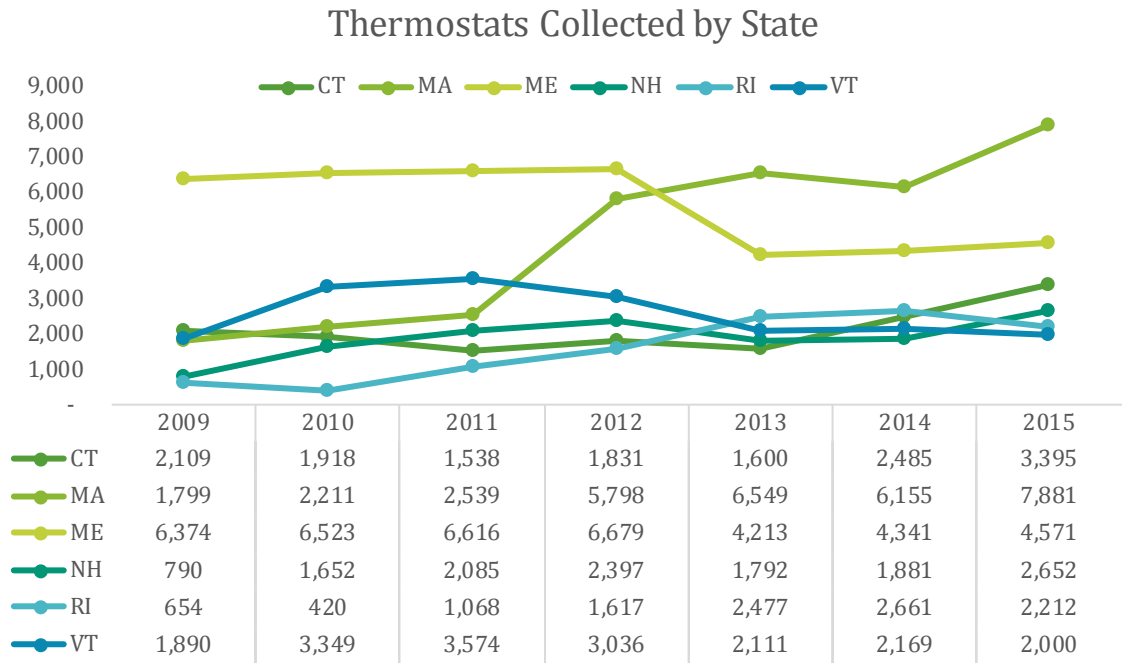
**FIGURE 3.6 MERCURY COLLECTION RELATIVE TO PEER NEW ENGLAND STATES**



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Below, Figure 3.7 illustrates thermostat collection relative to other New England States. Returns in Massachusetts grew the fastest in 2015 over the previous year, though New Hampshire and Connecticut both collected significantly more than in 2014.

**FIGURE 3.7 THERMOSTAT COLLECTION RELATIVE TO PEER NEW ENGLAND STATES**

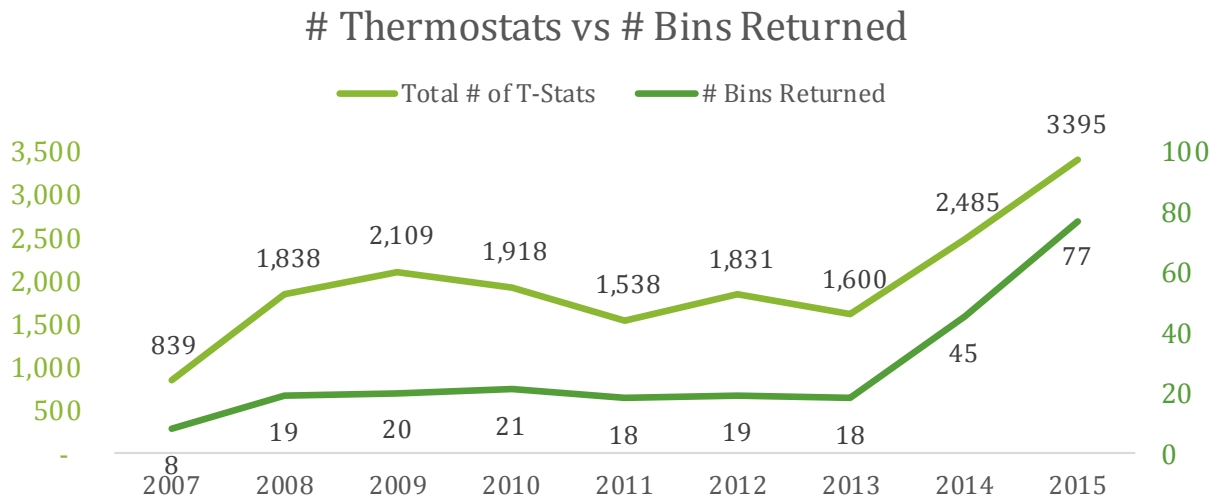


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**FIGURE 3.8 COMPARISON OF THERMOSTATS RETURNED VS BINS RECEIVED**

Thermostat returns generally track with bin returns, yet the two metrics of program performance are somewhat independent. Since the mandatory program inception in CT in 2013, the number of thermostats has increased somewhat linearly, as has the number of bins received. However, similar to 2013, the rate of increase for thermostats exceeded the rate of increase in bin returns.

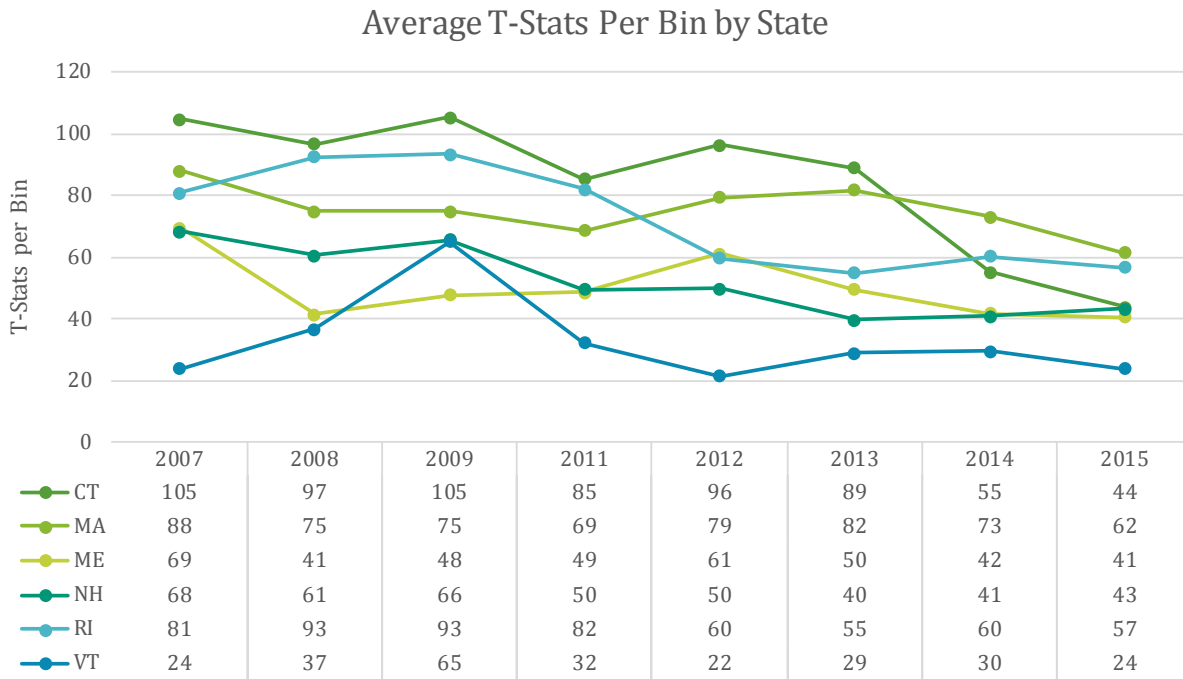
Thermostat collections increased 37% over 2014, but bin collections increased 71% during the same period. Figure 3.8 shows bin returns and thermostat collections concomitantly by year so relative rates of increase and decrease can be observed.



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**FIGURE 3.9 AVERAGE NUMBER THERMOSTATS PER BIN RELATIVE TO PEER STATES**

The rate of average thermostats per bin is graphed in Figure 3.9 below, which illustrates the relationship more clearly between increased bin returns and increased thermostat returns. Just as TRC was able to collect a record number of bins and a record number of thermostats in Connecticut in 2014, it collected a record number in 2015, but the number of thermostats per bin continued to drop, declining by 20% from 2014 and 51% from 2013.



# APPENDIX 17: INDEPENDENT EVALUATION

## SECTION 4: Conclusions

### **RESULTS AFTER SECOND YEAR OF MANDATORY TRC PROGRAM IN CONNECTICUT**

The performance results of the CT program to collect thermostats has continued improvement in the way of garnering participation from wholesalers as can be seen by the number of bin returns. It appears wholesalers responded positively to TRC outreach, particularly site visits, in 2015. The return of bins engages wholesalers, but does not ensure that more thermostats will be returned. Thermostat collection increased in 2015 as well, however, though the increase in thermostats did not increase linearly with bin receipts. The incentive offered by R.E. Michel for a Dunkin Donuts® coupon appears to have had a positive impact in influencing technicians to return thermostats to collection points. Potentially the type of incentive was effective, but also the ability to redeem these coupons immediately. TRC will investigate further this relationship to better understand the impacts the incentives of this type may have on returns at other neighboring locations.

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RRS reviewed the data and vetted for accuracy, and verify that the information and data presented in this report is accurate and consistent with the reported numbers.