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**Gross and Net Annual and Peak Demand Savings – 2009 Rewards for Recycling Program**

**To: Andrew Bishop; Kathryn Quail; Carrie Aloussis; Ryan Persaud, Yvonne Huang**

**From: Navigant Consulting – 2009 R4R Program Evaluation Team**

**Date: July 1, 2010**

**Re: Gross and Net Annual and Peak Demand Savings – 2009 Rewards for Recycling Program**

Dear Andrew, Kathryn and Ryan,

Please find herein Navigant Consulting’s draft Gross and Net Annual and Peak Demand Savings for the 2009 Rewards for Recycling Program.

Per the table below, the program resulted in total net annual savings of 1,649.5 MWh.

2009 R4R Program	Net Annual Energy Savings (MWh)	Net Peak Summer Savings (MW)	Net Peak Winter Savings (MW)	Lifetime Energy Savings (MWh)
Segment #1, Direct Program Savings	686.3	0.6539	0.0117	5,293.9
Segment #2, Spillover Savings	963.2	0.1916	0.1684	14,925.0
<b>Total</b>	<b>1,649.5</b>	<b>0.8455</b>	<b>0.1801</b>	<b>20,218.9</b>

Our calculation methodology is explained in detail in the sections that follow. We look forward to discussing this with you once you’ve had an opportunity to fully review this document.

Please let us know when you’re available for a follow-up call to review our findings and answer any questions you may have.

Thanks and very best regards,

Tim Douek & the 2009 R4R Program Evaluation Team  
Navigant Consulting, Inc.

## Overall Approach

Electricity savings as a result of the 2009 Rewards for Recycling (R4R) Program can be divided into 2 segments:

1. Direct savings as a result of the program; and
2. Spillover savings (other energy saving measures taken as a result of the program).

In order to determine the savings related to each segment, Navigant developed an approach to best quantify the specific circumstances of each segment. The methodology used for each segment is outlined in the section that follows.

## Methodology

### Segment #1: Direct savings as a result of the program

In order to determine the energy and peak demand savings resulting from participation in the R4R program, Navigant Consulting used the following conventional methodology outlined below:

*Gross Savings = per-unit savings x number of units recycled*

*Net Savings = per-unit savings x number of units recycled x Net-to-Gross Factor*

Per-unit savings for each unit recycled were based primarily on 2010 OPA PIAs, as well as participant survey results.

Additional factors that helped validate the estimated energy and peak demand savings of the products were also taken into account in the survey analysis, including

- A. If the equipment was in use prior to its recycling; and
- B. If the unit was replaced with an energy STAR® unit.

In order to determine the peak demand impact of each product, the seasonal savings profile for each product's end use and its end-use peak demand coincidence factors were used based on the peak demand savings methodology outlined in the 2010 OPA Prescriptive Measures and Assumption List<sup>1</sup>.

The total number of participants in the program was determined through the number of gift cards given away through the program.

Table 1: Gross Annual and Peak Demand Savings for Direct Program Effects

Segment #1, Direct Program Savings					
Measure	Average Per-Unit Savings (kWh)	Total Operable Units	Gross Annual Energy Savings (MWh)	Gross Coincident Summer Savings (kW)	Gross Coincident Winter Savings (kW)
ENERGY STAR Room Air Conditioner	31.9	4,610.7	147.0	148.8	-
ENERGY STAR Dehumidifier	300.3	4,192.2	1,258.8	1,274.5	-
ENERGY STAR Torchiera	58.4	1,409.0	82.3	2.6	23.1

The net-to-gross factor for the program was determined through a battery of free-ridership questions to determine the actual program influence on participants' use of the products. Respondents were each assigned a free-ridership rating based on their responses to the following questions: (1) if they had not recycled the appliance, how likely would they have been to use this appliance next summer/year, (2) if the recycling program had not been available, what would they have done with the appliance (thrown it away, given it to charity, let it sit, etc), and (3) their

<sup>1</sup> Ontario Power Authority, 2010 OPA Prescriptive Measures and Assumptions, v1, January 2010

level of agreement that they would have kept using the old appliance if it were not for the program. This approach is designed to account for the possible “halo” and “self-aggrandizement” effects (respondents providing the answer they believe the surveyor wants to hear, or providing the answer they believe makes them “look good”) by requiring that respondents consistently answer questions as free riders before they are considered free riders.

Table 2: Net Annual, Peak Demand and Lifetime Savings for Direct Program Effects

Segment #1, Direct Program Savings					
Measure	Net-to-Gross Ratio	Net Annual Energy Savings (MWh)	Net Peak Summer Savings (kW)	Net Peak Winter Savings (kW)	Lifetime Energy Savings (MWh)
ENERGY STAR Room Air Conditioner	0.4	56.0	56.7	-	324.1
ENERGY STAR Dehumidifier	0.5	588.5	595.9	-	4,540.0
ENERGY STAR Torchiere	0.5	41.8	1.3	11.7	429.8

**Segment #2: Spillover savings**

As with previous OPA program evaluations, Navigant Consulting considered the potential impact of participants who may have been influenced by the 2009 R4R Program to take additional energy savings actions in their home. Participant survey respondents were each asked the following questions:

1. Since the recycling program in October, have they removed, recycled, or stopped using any additional major appliances in their home;
2. Since participating in the recycling program in October, have they purchased any Energy STAR® qualifying products for their home;
3. How influential was the recycling program in their decision to take the additional action(s); and
4. Had they not participated in the recycling program, how likely they would have been to take the additional action(s) on their own.

The overall impact of these additional energy savings actions was determined based on the following methodology:

*Per participant savings = per-unit savings (top six actions) x number of surveyed participants who took action / number of surveyed participants*

*Net Savings = per participant savings x number of participating customers x Net-to-Gross Factor*

Per-unit savings for each of the six most frequently stated actions were based on existing OPA PIAs for all equipment-related measures and previous OPA evaluations (e.g., 2009 EKC PSE Program) for the behavioural related actions. The savings were then normalized on a per surveyed participant basis by multiplying the per-unit savings by the number of surveyed participants who stated they took the action and dividing by the total number of surveyed participants.

Finally, in order to determine appropriate net-to-gross factors for each of the top six actions, Navigant Consulting assigned a spillover percentage<sup>2</sup> to the responses to participants’ likelihood of taking that action, as well as the program’s influence on their action(s). A spillover percentage was determined for both types of spillover, i.e. for additional appliances recycled; and Energy STAR® appliances purchased. The final spillover percentages were calculated to be 36% and 18%, respectively.

<sup>2</sup> For a full description of this methodology, please refer to Appendix A of this document.

Table 3: Net Annual and Peak Demand Savings for Participant Spillover

Segment #2, Spillover Savings						
Measure	Gross Savings per Participant (kWh)	Net-to-Gross Ratio	Net Annual Energy Savings (MWh)	Net Peak Summer Savings (MW)	Net Peak Winter Savings (MW)	Lifetime Energy Savings (MWh)
Recycled second refrigerator	110.5	0.4	430.9	0.0	0.1	6,032.5
Recycled another room air conditioner	2.2	0.4	8.7	0.0	-	50.3
Recycled central air conditioner	5.0	0.4	19.5	0.0	-	350.8
Recycled another dehumidifier	24.0	0.4	93.7	0.1	-	722.6
ENERGY STAR Windows	187.2	0.2	373.8	0.0	0.1	7,475.7
ENERGY STAR CFLs	18.3	0.2	36.6	0.0	0.0	293.1
<b>Total</b>			<b>963.2</b>	<b>0.2</b>	<b>0.2</b>	<b>14,925.0</b>

## Conclusions

The following table summarizes the net annual and peak impact savings of both segments for the 2009 R4R Program.

Table 4: Summary of 2009 Rewards for Recycling Program Energy and Peak Demand Savings

2009 R4R Program	Net Annual Energy Savings (MWh)	Net Peak Summer Savings (MW)	Net Peak Winter Savings (MW)	Lifetime Energy Savings (MWh)
Segment #1, Direct Program Savings	686.3	0.6539	0.0117	5,293.9
Segment #2, Spillover Savings	963.2	0.1916	0.1684	14,925.0
<b>Total</b>	<b>1,649.5</b>	<b>0.8455</b>	<b>0.1801</b>	<b>20,218.9</b>

As indicated in Table 4, the total net savings resulting from the 2009 R4R Program are 1649.5 MWh. Lifetime energy savings are approximately 20 GWh. Navigant's detailed analysis of the participant surveys is presented in an Appendix to the 2009 EKC PSE Consolidate Program Evaluation Report, delivered separately to the OPA.

## Appendix A - Net-To-Gross Estimation Methodology

### Derivation of Free Ridership for Rewards for Recycling Program

For this program, savings result from removing a unit from use, either by the customer or by someone to whom the customer might give/sell to the unit. A free rider is someone who participated but whose device would not have been in use even if there had been no program. For example, the unit might not be in working condition, might have been replaced even without the program, or might have been disposed of (i.e., removed from use) in some other way in the absence of the program.

The following key questions were used to address free ridership:

1. Was the unit that was recycled in working order?
2. Was the unit used the previous summer/year and, if not, was it for some reason other than there was not enough need for it (e.g., weather not hot enough)?
3. How likely would the respondent have been to use the unit the next summer/year if it had not been recycled? (0-10 scale, where "10" = extremely likely)
4. If there had been no program, what would the respondent have done with the unit?
5. To what extent does the respondent agree with the statement "I would have kept using the [recycled unit] if it were not for the program?" (4-point scale – very much agree, somewhat agree, somewhat disagree, disagree)

Free ridership percentages were assigned to each respondent based on how they answered the questions above. In estimating free ridership for this program, we made the following assumptions regarding survey responses and participant actions:

1. It takes effort (and sometimes specific circumstances) for a customer to take a unit out of use on their own, raising doubt regarding whether someone would take the action (e.g., take the unit to a dump, take it out to the curb, etc.) even if they intended to do so. If they do not, the unit might continue to be in use. Therefore, when a respondent indicates that they would have disposed of a unit themselves in the absence of the program, that is not deemed to be sufficiently reliable by itself to lead to an immediate decision that the respondent is a free rider. Such an assertion has to be supported by other survey question responses indicating free ridership. This is also the case with a response indicating that the respondent would have stored the unit unused. While this does not require action to be taken, it is not sufficient in and of itself to warrant labeling the respondent a free rider. This is because it is the converse of the more direct question – if not for the program, would you have used the unit.
2. Additional doubts regarding a respondent's free ridership are raised if a customer indicates that, in the absence of the program, they would have disposed of a unit indirectly, that is, by giving it to someone else, selling it to someone else, having someone else pick it up, etc. Each of these actions might result in the unit being placed into use again. If that is true, then the respondent is not a free rider, because the program would have caused the unit to be taken out of use instead of being used by someone else. Again, in this scenario the respondent has to take an action, as discussed above, but now that action also has to be possible (and it may not be). The action now depends on the action(s) of another parties and their ability and willingness to take that action regarding the specific piece of equipment being addressed. If the respondent follows through on their intention (action #1) and the other party does accept/come to get the unit (action #2), the unit may or may not end up in use again (action #3), rather than be disposed of. For all of these reasons, greater doubt is raised about whether the actions implied by this type

of response would be taken. All other factors being equal, we estimate that a response indicating indirect disposal for possible use by another party would have a 15-20% higher probability of continued usage (through use by another party) than if the respondent had stated they would have disposed of it themselves. Therefore, for a given combination of other responses not related to the disposition of the device, free ridership is reduced by 15-20% if the respondents stated they would have given it away compared with a statement that they would have disposed of the unit themselves, that is, it is somewhat more likely that the program prevented the unit from being further used.

3. A statement by the respondent that they “probably” would have used the unit in the absence of the program, when asked directly to rate their agreement with such a statement, may understate their intention to continue to use the unit in the absence of the program. This is because (1) the respondent was already sufficiently motivated by the program to take an action (taking the unit to have it recycled) and (2) continuing to use the unit in the absence of the program can be seen as taking less of an effort than finding a different way to replace the benefit obtained from using the unit (e.g., buying a replacement unit). Therefore, while by itself the response to this question is not considered sufficient to state that the respondent is not a free rider, it is considered a very important indicator of a lack of free ridership. Under these circumstances, we have assigned a maximum free ridership of 25%.
4. Any strong statement regarding intention to use the unit in the absence of the program is considered sufficient for the respondent not to be considered a free rider (free ridership = 0%). For example, the following statements by the respondent were considered sufficient for the respondent not to be considered a free rider:
  - a) When asked to rate their likelihood of using the unit the following summer/year, they gave a rating that was unambiguously high (8-10 on a 10-point scale).
  - b) When asked to express their level of agreement with the statement that if it were not for the program, they would have kept using the unit, they said “very much agree”, the strongest positive statement of intent on our 4-point scale.
  - c) When asked what they would have done with the unit in the absence of the program, they said that they would have continued to use it.

Each of these statements is a strong indicator of intent to continue to use the unit in the absence of the program and are very inconsistent with the actions/intentions of someone who would have not used the unit if the absence of the program.

5. On the other hand, certain survey responses, in and of themselves, do indicate that the respondent is a free rider (100% free ridership):
  - a) If Q9/Q49/Q85 = “c” (i.e. if the respondent said the unit was not working when they recycled it), free ridership = 100%.
  - b) If the respondent in Q16/Q57/Q93 indicated they did not use the unit in the previous year and the follow-up Q18/Q58/Q94 indicates that this was not merely because of lack of need for it, free ridership = 100%.

In each of these situations the program would have resulted in no change in energy use.

The table below presents the assignment of free ridership percentages based on how the respondent answered survey questions. Note that for the last free ridership group (0% free ridership), any of the criteria shown resulted in receiving the 0% free ridership designation. For all other free ridership groups, all of the criteria shown had to apply.

Table 5: Assignment of R4R Free Ridership Percentages

Free Ridership Percentage	Q10/Q50/Q86 How Likely To Use It If Not Recycled? (0 – 10 scale, with “10” Extremely Likely)	Q13/Q53/Q89 If No Program, Disposition of Device (Selected Responses)	Q15a/Q55a/Q91 Agree That Would’ve Used It If No Program (1-4 scale, with 1=very much agree)	
100%*	Unit not working or not being used			
100%	<5	Would have disposed of it (b, e, g, or j)	3-4	
80%		Would have given it away (c, d, f, h, or i)		
75%	5	Would have disposed of it		
55%		Would have given it away		
50%	6-7	Would have disposed of it		
30%		Would have given it away		
25%	<6	Would have disposed of it		2
10%		Would have given it away		
20%	6-7	Would have disposed of it		
5%		Would have given it away		
0%	>7 OR**	Would have used it (a) OR**	1 OR**	

\*See comments above table regarding scenarios in which free ridership is estimated as 100%.

\*\*If any one of these three conditions is true, than the participant is given a 0% free ridership rating.

## A - Derivation of Spillover for Rewards for Recycling Program

Spillover in the program consists of the program influencing the respondent to take an additional action to reduce the amount of energy demand in the territory – either removing/ recycling/ stopping use of another piece of energy-using equipment or purchasing a new efficient ENERGY STAR® qualifying product.

The following questions were used to estimate spillover:

- Has the respondent removed/recycled/stopped using any additional major appliances since their participation in the program? (Yes/No and specification of which of six categories of appliances – refrigerator, stand-alone or upright freezer, room air conditioner, central air conditioner, dehumidifier, and other major appliance)

- (If so)How influential was the program in the respondent’s decision to take that action? (10-point scale where 10=extremely influential)
- If the respondent had not participated in the program, how likely would they have been to take that action? (5-point scale, where 1=extremely likely)

These questions were also asked with regard to the program’s influence on the respondent purchasing ENERGY STAR® qualified equipment, including appliances, heating systems, windows, lighting products, and home electronics.

Each respondent was assigned a spillover percentage based on their responses to these questions. Guiding this evaluation was the philosophy that if a respondent was inconsistent in their responses, i.e. indicating in one answer that they were influenced by the program and in another answer that they were not influenced by the program, such respondents were assigned a spillover percentage of 0%.

The spillover question battery was asked both in regards to major appliances that the respondent had recycled, removed, or discontinued, and in regard to ENERGY STAR® products the respondent had purchased. However, it was not asked for every major appliance recycled, removed or whose use had been discontinued, and was not asked for every ENERGY STAR® product purchased. If the respondent only recycled one appliance and/or only purchased one ENERGY STAR® product, the spillover findings were applied to that recycled or purchased product. However, if more than one major appliance was recycled/removed/discontinued or more than one ENERGY STAR® product were purchased, the spillover question results might or might not be applicable to all of those appliances or products. Therefore, in the case of multiple appliances or products, we applied the results only to the appliance or product mentioned having the lowest level of energy savings associated with it (based on the PIA for that appliance removal or product purchase). Again, this is a conservative assumption, and it was made to avoid overstating the spillover savings from the program.

#### Spillover Decision Rules:

1. If the response to Q123/Q127 (program influence rating) was a number less than 5 (low program influence) and the response to Q124/Q128 (likelihood of acting in absence of program) was “not very likely” or “not at all likely” (high program influence or low likelihood to take the action in the absence of the program), the respondent demonstrated conflicting intentions and so spillover was assigned as 0%. The same thinking was applied for the converse, when the program influence rating seemed high, yet the likelihood of acting in the absence of the program was also high. Again, conflicting intentions were assigned a spillover percentage of 0%.
2. For all other respondents, the responses to the two questions were converted to the same percentage scale, with anything other than a positive spillover response assigned a spillover percentage of 0%. Again, to be conservative, the lower spillover percentage of the two responses was used.

The table below shows how the responses to these two questions were converted to spillover percentage scales that could be compared with one another.



Table 6: Assignment of R4R Spillover Percentages

Likelihood Response	Likelihood Response	Likelihood Rating Spillover Percentage	Program Influence Rating	Influence Rating Spillover Percentage
Extremely	a	0%	0-2	0%
Very	b	0%	3-4	0%
Somewhat	c	50%	5-6	50%
Not Very	d	75%	7-8	75%
Not At All	e	100%	9-10	100%

The final spillover percentage was applied to the estimated savings from taking the energy-saving action, as noted above.

**DRAFT EVALUATION REPORT**  
**2009 REWARDS FOR RECYCLING**  
**SURVEY ANALYSIS**

**Presented to**



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## OVERVIEW OF PROGRAM SURVEY

### Key Findings

The Rewards for Recycling Program (R4R) was designed to motivate Ontario households to retire their inefficient appliances and recycle them in an environmentally friendly manner in exchange for a \$10 or \$25 gift card.

While the gift card was an important factor in motivating respondents to participate in the R4R program, it was not the only driver. When asked to rate the importance of receiving the gift card on a scale of 1 to 10, with 10 being extremely important, most respondents gave an average response of 6.8, as shown in Table 1.

*Table 1 – Importance of gift card in decision to recycle appliances*

Importance of \$10/\$25 Gift Card	
Air Conditioners	6.75
Dehumidifiers	6.87
Halogen Lamps	6.90

When asked if they would still have participated without being offered a gift card, most participants (92%) said they would still have participated.

Surveyed participants found the R4R program very easy to use. When asked to rate the recycling process on a scale of 1 to 10, where 10 is extremely easy, participants generally gave a 9 rating. These results are presented in Table 2.

*Table 2 – Ease of participating in the R4R program*

Ease of Using R4R Program	
Air Conditioners	9.07
Dehumidifiers	9.19
Halogen Lamps	8.72

Although the R4R program was designed to promote early retirement of inefficient appliances, many participants simply used the program to dispose of old appliances that they were no longer using. At least 40% of all appliances recycled through the R4R program were reportedly sitting unused in the participants' households.

Finally, it appears as though there was a missed opportunity for cross-program promotion between the R4R and the Fall Power Savings Event (PSE). Only 36% of R4R participants who were aware of the PSE program recalled hearing about the PSE promotion and available rebates

from Canadian Tire staff when they brought their appliance in to be recycled. This suggests that bundling the \$10/\$25 gift card with an information packet containing PSE coupons (or other cross-promotional approach) might be an effective approach to drive awareness of the PSE program in the future.

Detailed survey results from the R4R program are presented in the sections that follow.

## **Survey Approach and Demographics**

### *Participant Surveys*

The Rewards for Recycling program was delivered to market via Canadian Tire stores across Ontario during the weekends of October 17th and 18th and October 24th and 25<sup>th</sup>, 2009. Participants who deposited a used room air conditioning unit or dehumidifier received a \$25 gift card in return for leaving their units at a Canadian Tire Store, while those depositing a halogen floor lamp were rewarded with a \$10 gift card.

Surveys of 605 participants were completed by Navigant Consulting and our research partner Opinion Search in the weeks following the program. These participants accounted for 236 decommissioned air conditioners, 339 decommissioned dehumidifiers and 89 decommissioned halogen lamps through the program.

### *Survey Demographics*

Table 3 provides a comparison of key demographics for the 605 surveyed participants. As indicated, participants are overwhelmingly those who own their own single family home. This could be accounted for by the fact that newer apartment buildings are less likely to have in-window air conditioners and in those apartment buildings that do have in window AC units or dehumidifiers, there is a higher likelihood that these units are owned by the building (as opposed to the residents). Income levels were split evenly, and a higher proportion of participants attended college.



*Table 3 - Participant and non-participant customer demographics*

<b>Customer Characteristics</b>	<b>Participants</b>
<i>Dwelling Type:</i>	
Single Family	86%
Apartment/townhouse	12%
Other	3%
<i>Home Ownership:</i>	
Own	90%
Rent	10%
<i>Household income:</i>	
Below \$60,000	51%
Above \$60,000	49%
University/college degree	62%

In terms of geographical distribution of survey respondents, as indicated in Table 4, approximately 61% of the R4R participants reside in either Southwestern Ontario or the Greater Toronto Area (GTA).

*Table 4 - Geographical distribution of survey responses*

<b>Geographical Area</b>	<b>Participants</b>
Southwestern Ontario	37%
Greater Toronto Area (GTA)	24%
Central Ontario	9%
Eastern Ontario	16%
Northern Ontario	14%

## **Background Information**

The Rewards for Recycling Program (R4R) was designed to motivate Ontario households to retire their inefficient appliances and recycle them in an environmentally friendly manner in exchange for a \$10 or \$25 gift card.

Table 5 outlines the number of participants who responded that they recycled one or more of the eligible appliances listed below. As indicated, approximately 40% of the surveyed respondents recycled an air conditioner, 56% of respondents recycled a dehumidifier and 15% recycled a halogen lamp.

Table 5 - Distribution of products recycled in R4R program

Type	Total # of Survey Responses	% of Surveyed Participants
Air conditioner	236	39%
Dehumidifier	339	56%
Halogen Lamp	89	15%
<b>Total Surveyed Respondents<sup>1</sup></b>	<b>605</b>	

Dehumidifiers were the most popular appliance to recycle, with a total of 339 participants turning them in during the Fall R4R campaign.

**R4R: Participant Feedback**

Participants were asked to rate how easy the R4R program was to participate in (0-extremely difficult, to 10-extremely easy). In general, surveyed participants felt that R4R program was very easy to use (9.0 mean response). Table 6 shows the results of this question.

Table 6 - Ease of recycling appliances in the R4R program

Ease of Using R4R Program	Air Conditioners		Dehumidifiers		Halogen Lamps	
	Count	%	Count	%	Count	%
0 - 2	5	2%	4	1%	5	6%
3 - 4	2	1%	7	2%	0	0%
5 - 6	9	4%	13	4%	2	2%
7 - 8	36	15%	44	13%	20	23%
9 - 10	182	78%	271	80%	61	69%
<b>TOTAL</b>	234	100%	339	100%	88	100%
<b>AVERAGE</b>	9.07265		9.188791		8.715909	

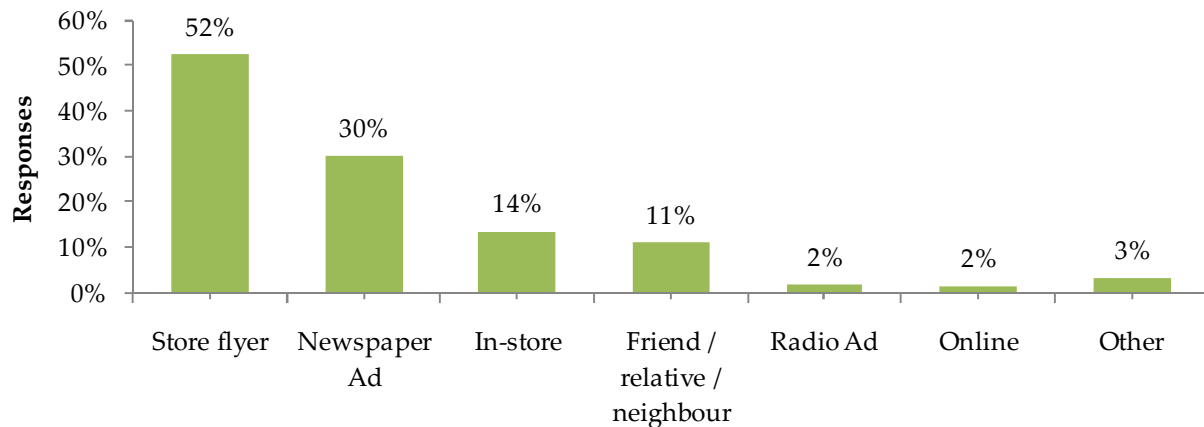
<sup>1</sup> Some participants recycled more than 1 eligible item.

## Marketing and Awareness

### *Marketing and Awareness – General*

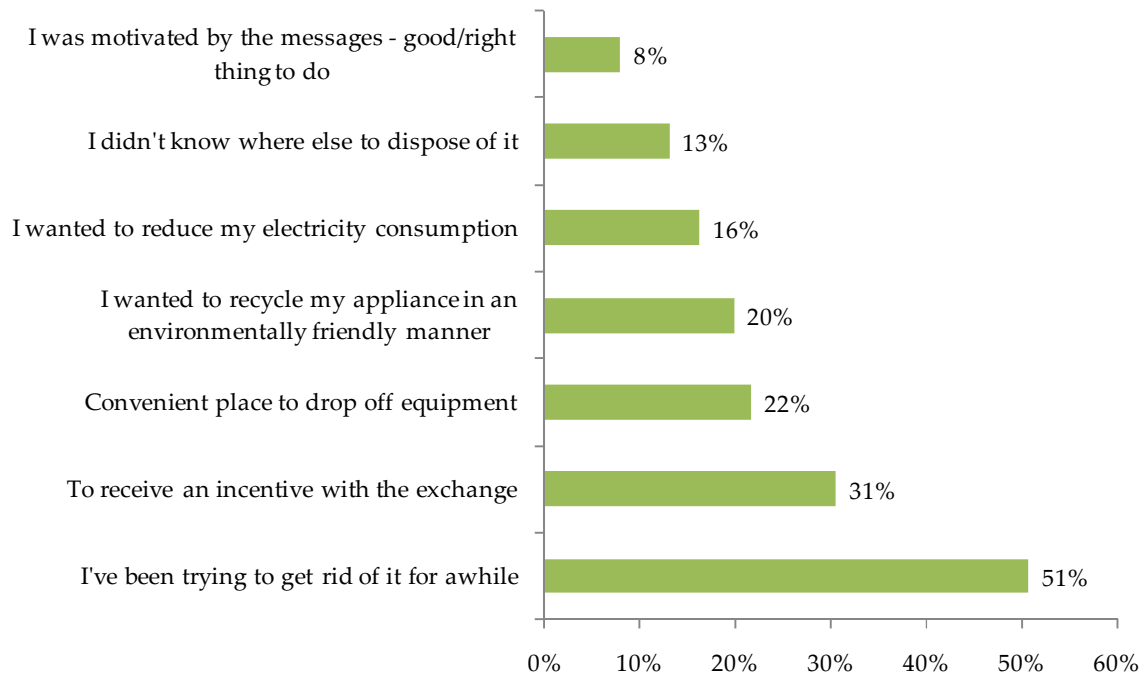
The OPA used several types of promotions for the R4R program. Figure 1 shows how participant respondents became aware of the R4R event. In-store fliers were the most successful promotion tactic, followed by newspaper ads. In-store flyers target current Canadian Tire customers so although effective, participants in the program would, by default, be skewed to customers of that particular store chain. More emphasis on marketing effort outside of Canadian Tire could be utilized to reach a greater population.

*Figure 1 – Distribution of participant awareness sources for the R4R event*



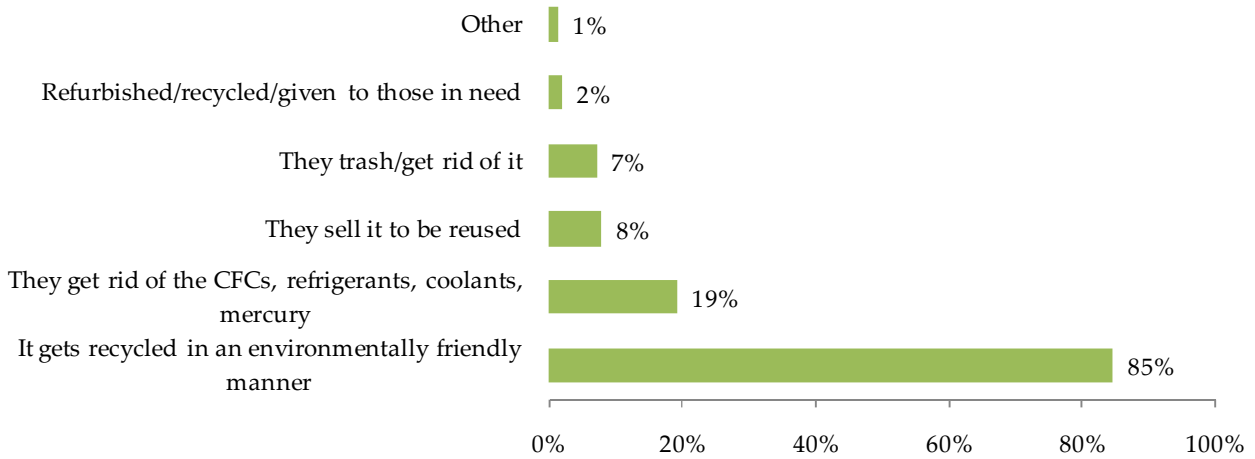
Participants were also asked why they decided to participate in the R4R program. The distribution of their responses is shown in Figure 2. Most program participants (51%) were trying to dispose of their old appliance and the program was a convenient way to do so. The incentive was also a somewhat influential factor, with 31% of respondents citing that as their reason to participate.

Figure 2 – Distribution of drivers for participation in the R4R event



Participation in the program was also largely dependent on the customer’s perception of what happens to their appliance once it is given to Canadian Tire. The vast majority of participants believed that Canadian Tire would recycle their appliances in an environmentally friendly manner, as seen in Figure 3.

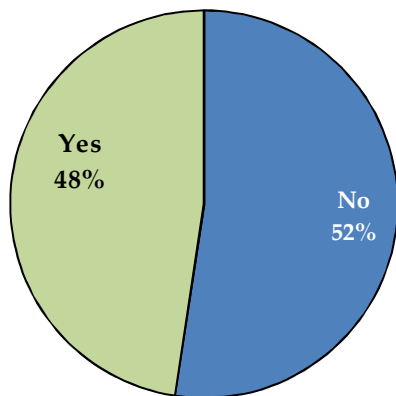
Figure 3 –Participant understanding of how Canadian Tire handles appliances returned number R4R program



Approximately 85% of program participants reported that the appliance would be recycled and decommissioned in an environmentally friendly manner with a further 19% noting that the appliances would have any toxic liquids and gases removed. Clearly the program is effective in conveying the environmental benefits of participation.

However, the OPA’s role in the R4R program was not always clear to participants. In fact, as shown in Figure 4, over half of all surveyed program participants were not aware that the R4R program was sponsored by the OPA.

Figure 4 – Awareness of OPA’s sponsorship of R4R program



It is possible that if it was made clear that the R4R program was sponsored by the OPA rather than Canadian Tire, more people might participate in the program, regardless of whether they shop at Canadian Tire, particularly if the program is promoted more widely.

## Product-Specific Results

### *Air Conditioners*

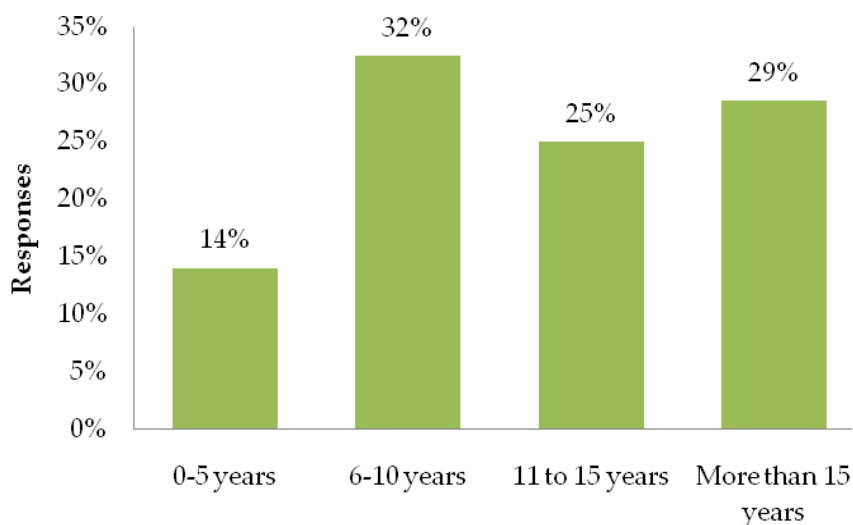
Approximately 40% of surveyed participants recycled a room air conditioner. Each participant was asked detailed questions about their recycled appliance. The majority (91%) of room air conditioners recycled were window air conditioners. Table 7 shows the distribution of the types of air conditioners that were recycled through the program.

*Table 7 – Type of air conditioner recycled*

	Count	%
Window	137	91%
Cut out in the wall	9	6%
Stand alone or portable	5	3%
<b>TOTAL</b>	151	100%

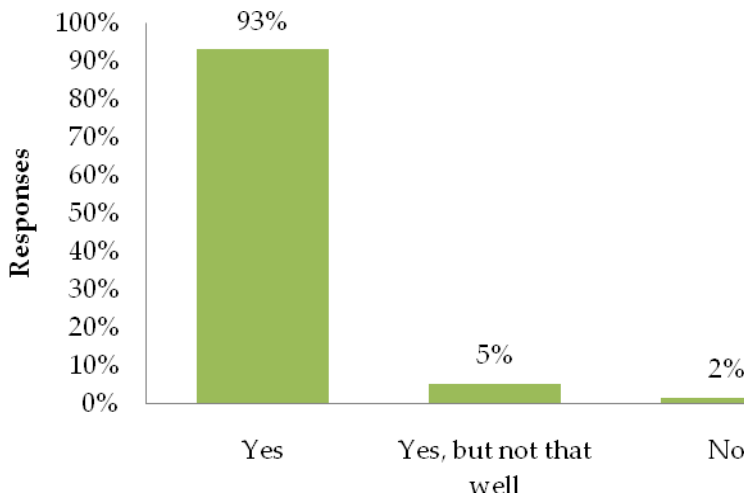
Air conditioners of all ages were recycled through the R4R program. As seen in Figure 5, the age of air conditioners that were recycled was fairly evenly distributed for the participant sample, with air conditioners that were between 6 and 10 years old holding a slight majority.

*Figure 5 – Age of recycled air conditioners*



Nearly all of the air conditioners that were recycled were reported as being in good working condition. Figure 6 shows the distribution of survey responses about the working state of the recycled air conditioners.

*Figure 6 – Distribution of operability of recycled air conditioners*



Because the vast majority of air conditioners were reportedly in working condition, the program can be credited with successfully influencing these participants to recycle their older and less efficient appliance. However, only 40% of respondents used the room air conditioner that they recycled in the previous summer. This means that 60% of respondents were not using (and had not recently used) the disposed of unit. Further, when asked about their likelihood of using their air conditioner during the coming summer, on a scale of 1 to 10, respondents reported a likelihood of only a 2.6. So these participants, if not for the R4R program, would likely have disposed of their air conditioners in another way, or left them unused.

For those respondents who did not use their air conditioner, the majority (55%) had another room air conditioner or central AC that they used instead.

Table 8 shows the distribution of participant reasons for not using their air conditioner.



*Table 8 – Reasons for not using room air conditioner*

	<b>Count</b>	<b>%</b>
I had another room AC / central AC	76	55%
This past summer was not warm enough	24	18%
Not energy efficient	7	5%
It didn't work very well	6	4%
Away from home/out of the country/not living at that house	5	4%
Did not fit in the windows/had new windows installed	4	3%
Other	15	11%
<b>TOTAL</b>	<b>137</b>	<b>10%</b>

Table 9 shows the distribution of participant responses for their reason for recycling their room air conditioner. The R4R program incentive was listed as the biggest motivation for recycling the air conditioner, followed by a desire to act in an environmentally responsible manner.

*Table 9 – Motivation to recycle room air conditioner*

	<b>Count</b>	<b>%</b>
Gift card/bounty to turn in/they paid me with a gift card	56	24%
Better for the environment	46	20%
Never used it	41	18%
Bought a more energy efficient air conditioner	39	17%
Installed central air conditioning	28	12%
The program really motivated me to turn it in	23	10%
Didn't need the air conditioner in that room anymore	22	10%
Bought a new room air conditioner	21	9%
Easy to turn it in	16	7%
Old unit was not working well	15	7%
No other way to get rid of it/trash collection would not accept	11	5%
Recycling it saves me money	9	4%
Other	54	23%
<b>TOTAL</b>	<b>230</b>	

Had the R4R program not been available, respondents would have either stored the room air conditioner somewhere, taken it somewhere to be correctly recycled, or would have disposed of it at a dump. The distribution of responses is shown in Table 10.

*Table 10 – Likely alternative actions if R4R program unavailable*

	Count	%
Stored it unused	50	22%
Taken it somewhere to have it properly recycled	43	19%
Threw it away at dump yourself	36	16%
Sold it	22	10%
Put it out on the curb	19	8%
Given it away	17	8%
Continued to use it	13	6%
Donated it to a charity/church	13	6%
Called someone to come and haul it away	5	2%
Other	8	4%
<b>TOTAL</b>	<b>226</b>	

In absence of the program, only about 30% of respondents would have continued to use their room air conditioner. The R4R program offerings played an important role in motivating respondents to participate. The gift card and program promotions influenced approximately 75% of respondents to participate. The distribution of motivating factors is shown in Table 11.

*Table 11 – Main motivation to participate*

	Count	%
The \$25 gift card	85	37%
Both \$25 gift card and program promotions	78	34%
The program promotions	10	4%
None of the above	57	25%
<b>TOTAL</b>	<b>230</b>	<b>100%</b>

While the gift card was influential for participants, 84% of respondents said they would still have recycled their old air conditioner even if there had not been a \$25 gift card offered through the R4R program. Further, had the gift card been only \$15, 86% of respondents said they would still have participated. When asked to rate the importance of the \$25 gift card on a scale of 1 to 10,

where 10 is extremely important, respondents who recycled room air conditioners gave the importance of the gift card a 6.75 average rating.

The program was also influential in raising awareness about energy conservation. Approximately 85% of respondents stated that they agree that participating in the program raised their awareness of energy conservation and responsible environmental behaviour.

Respondents were asked if they replaced their room air conditioner after they recycled their old one. As shown in Table 12, most participants (57%) did not replace the air conditioner that they recycled through the program.

*Table 12 – Replacement of appliance after recycling*

	Count	%
Did not replace	132	57%
I replaced it with a brand new room air conditioner	65	28%
I installed central air conditioning	25	11%
I replaced it with a used room air conditioner	10	4%
<b>TOTAL</b>	232	100%

For those that did replace their old air conditioner with a new one, 80% of respondents acquired their replacement before they recycled their old unit. The majority of replacement air conditioners were purchased at a retail store, as shown in Table 13, with only 3% purchased from Canadian Tire. Almost all of the replacement air conditioners (96%) are Energy Star labelled air conditioners.

*Table 13 – Where replacement air conditioner was purchased*

	Count	%
Retail store	56	79%
Friend / relative	7	10%
Canadian Tire	2	3%
Yard sale / garage sale	1	1%
Through an ad (unspecified)	1	1%
Other	4	6%
<b>TOTAL</b>	71	100%

Those who did not replace their air conditioners were asked how likely they would be to replace their room air conditioner before the next cooling season. As seen in Table 14, about 65% of respondents are not likely to purchase a replacement.

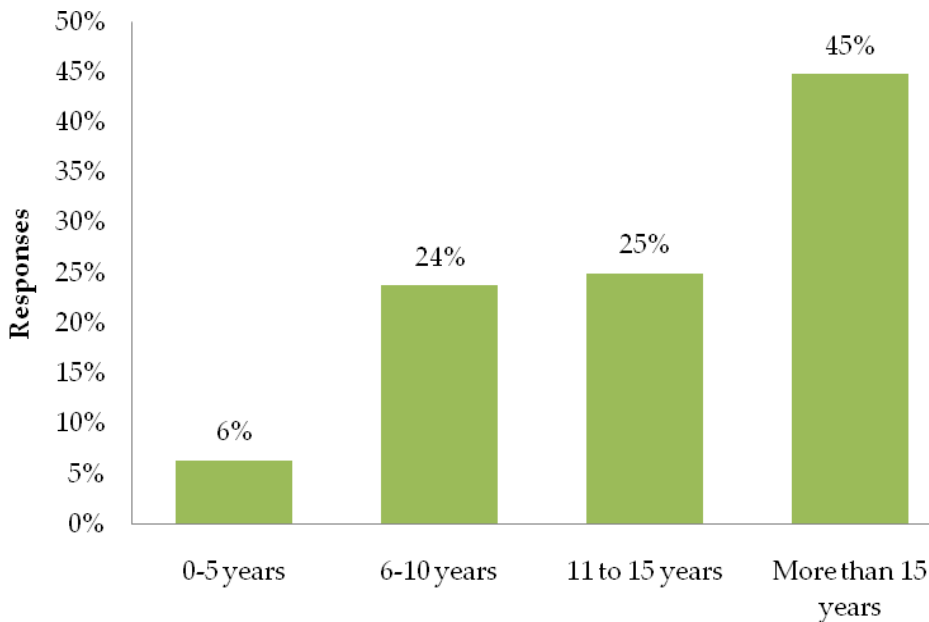
Table 14 – Likelihood of replacing air conditioner

	Count	%
Extremely likely	8	6%
Very likely	15	12%
Somewhat likely	21	17%
Not Very likely	13	10%
Not likely at all	22	17%
I will not replace my room air conditioner	48	38%
<b>TOTAL</b>	127	100%

**Dehumidifiers**

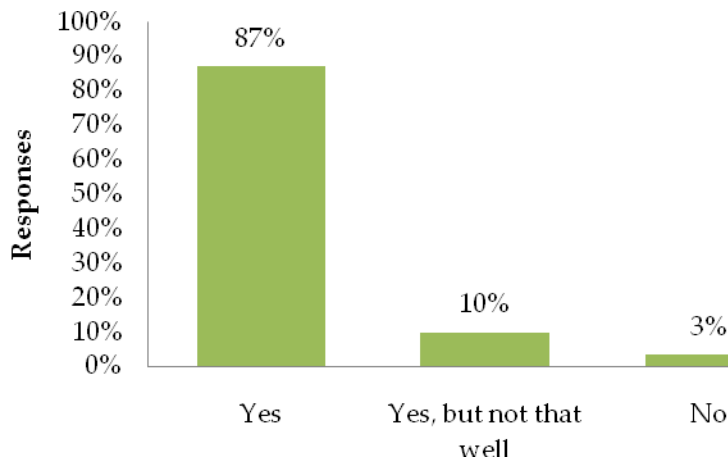
Approximately 55% of surveyed participants recycled a dehumidifier. Each of these participants was asked detailed questions about the appliance that they recycled. Typically, older dehumidifiers were recycled through the R4R program. As seen in Figure 7, the majority of dehumidifiers that were recycled were more than 15 years old, and therefore less efficient units than those currently available.

Figure 7 – Age of recycled dehumidifiers



Nearly all of the dehumidifiers that were recycled were reported to be in good working condition, as shown in Figure 8.

Figure 8- Distribution of working state of recycled dehumidifiers



Because the vast majority of dehumidifiers were in working condition, the program successfully influenced these participants to recycle their appliance and replace it with a more efficient one. However, only 60% of respondents used the dehumidifier that they recycled throughout the previous year. 40% of the retired dehumidifiers were sitting unused. Further, when asked about their likelihood of continuing to use their dehumidifier, on a scale of 1 to 10, respondents reported a likelihood of only a 3.6. These participants, if not for the R4R program, would likely have disposed of their dehumidifiers in another way or simply left them unused.

For those respondents who did not use their dehumidifier, 36% had replaced it with a newer unit. Table 15 shows the distribution of reasons for not using their dehumidifier.

Table 15 – Reasons for not using dehumidifier

	Count	%
I had another dehumidifier	48	36%
I didn't need it	35	26%
It didn't work very well	23	17%
We use other equipment for dehumidification	9	7%
It was stored away in my garage / basement / shed	5	4%
Not energy efficient	5	4%
Too expensive/not cost efficient	3	2%
Too old	3	2%
Other	3	2%
<b>TOTAL</b>	134	100%

Table 16 shows the distribution of participant responses for their reason for recycling their dehumidifier. The R4R program incentive was listed as the most significant motivator for recycling the dehumidifier, followed by respondents not needing their appliance or purchasing a more energy efficient unit.

*Table 16 – Motivation to recycle dehumidifier*

	<b>Count</b>	<b>%</b>
Gift card/bounty to turn in/they paid me with a gift card	102	31%
Didn't need it anymore / never used it	68	21%
Bought a more energy efficient dehumidifier	66	20%
Better for the environment	59	18%
Old unit was not working well	45	14%
The program really motivated me to turn it in	42	13%
Bought a new dehumidifier	41	13%
Easy to turn it in	33	10%
No other way to get rid of it/trash collection would not accept	16	5%
Recycling it saves me money	10	3%
Not energy efficient	10	3%
Bought a model that would save me money	8	2%
Other	56	17%
<b>TOTAL</b>	<b>328</b>	

Had the R4R program not been available, respondents would have either thrown the dehumidifier away or stored it somewhere. The distribution of responses is shown in Table 17.

*Table 17 – Actions to take if R4R program unavailable*

	Count	%
Threw it way / dump / special garbage	73	22%
Stored it unused	68	21%
Continued to use it	50	15%
Took it to have it properly disposed	41	13%
Put it out on the curb	28	9%
Sold it / garage sale	19	6%
Donated it to a charity/church	16	5%
Given it away	12	4%
Called someone to come and haul it away	6	2%
Other	15	5%
<b>TOTAL</b>	<b>328</b>	

The R4R program offerings played an important role in motivating respondents to participate. In absence of the program, about 55% of respondents would have continued to use their dehumidifier. Approximately 75% of respondents chose to participate in the program due to being given an incentive such as a gift card or because of the program’s promotion. The distribution of motivating factors is shown in Table 18

*Table 18 – Main motivation to participate*

	Count	%
The \$25 gift card	124	38%
Both \$25 gift card and program promotions	108	33%
The program promotions	16	5%
None of the above	80	24%
<b>TOTAL</b>	<b>328</b>	<b>100%</b>

While the gift card was influential to participants, 93% of respondents said they would still have recycled their old dehumidifier even if there had not been a \$25 gift card offered through the R4R program. Further, had the gift card value been only \$15, 90% of respondents said they still would have participated. When asked to rate the importance of the \$25 gift card on a scale of 1 to 10,

where 10 is extremely important, respondents who recycled room dehumidifiers gave the importance of the gift card a 6.87 average rating.

The program was also influential in raising awareness about energy conservation. Approximately 85% of respondents stated that they agree that participating in the program raised their awareness of energy conservation and responsible environmental behaviour.

Respondents were asked if they replaced their dehumidifier after they recycled their old one. As seen in Table 12, most participants (56%) bought a new dehumidifier.

*Table 19 – Replacement of appliance after recycling*

	Count	%
Replaced, brand new	183	56%
Did not replace	135	41%
Replaced, used	9	3%
<b>TOTAL</b>	327	100%

For those who did replace their old dehumidifier, 60% of respondents acquired their replacement before they recycled their old unit. The vast majority of replacement dehumidifiers were purchased at a retail store, as shown in Table 20, with only 4% purchased from Canadian Tire. Almost all of the replacement dehumidifiers (96%) are Energy Star labelled dehumidifiers.

*Table 20 – Where replacement dehumidifier was purchased*

	Count	%
Retail store	163	86%
Friend / relative	8	4%
Canadian Tire	8	4%
Yard sale / garage sale	3	2%
Sears	3	2%
Through an ad (unspecified)	2	1%
Gift/someone gave it to us	1	1%
Other	2	1%
<b>TOTAL</b>	190	100%

Those who did not replace their air conditioners were asked how likely they would be to replace their dehumidifier. As seen in Table 14, about 54% of respondents are likely (somewhat, very, extremely) to purchase a replacement.



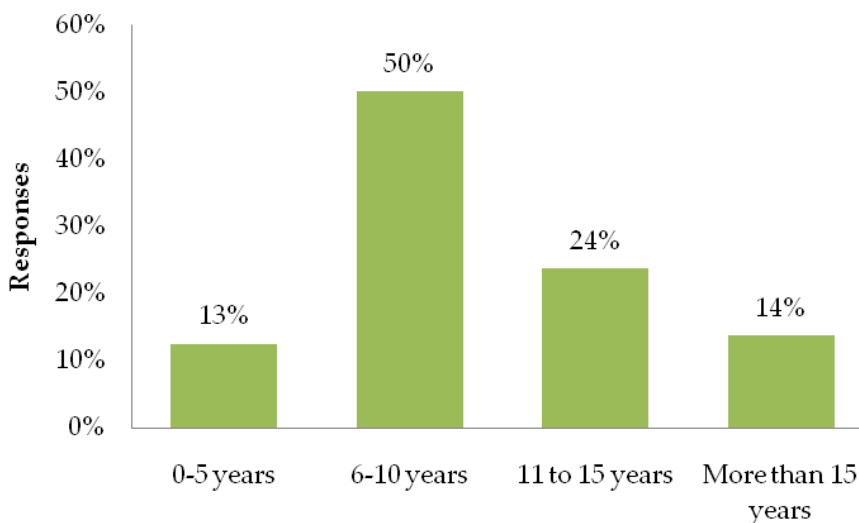
Table 21 – Likelihood of replacing dehumidifier

	Count	%
Extremely likely	51	23%
Very likely	40	18%
Somewhat likely	26	12%
Not Very likely	29	13%
Not likely at all	31	14%
I will not replace my dehumidifier	41	19%
<b>TOTAL</b>	<b>218</b>	<b>100%</b>

### Halogen Lamps

Approximately 15% of surveyed participants recycled a halogen lamp. Each of these participants was asked detailed questions about the lamp that they recycled. Typically, old halogen lamps were recycled through the R4R program. As seen in Figure 9, approximately 85% of lamps that were recycled were over 6 years old.

Figure 9 – Age of recycled halogen lamps



All of the halogen lamps that were recycled were reported to be in good working condition. This suggests that the program successfully influenced these participants to recycle their lamp.. However, only 55% of respondents used the halogen lamp that they recycled during the previous year, meaning 45% of respondents had their halogen lamp sitting unused. In fact, nearly 90% of those not using their lamp had not used their lamps in over two years. Further, when asked about their likelihood of continuing to use their halogen lamp, on a scale of 1 to 10, respondents reported

a likelihood of only a 3.3. So these participants, if not for the R4R program, would likely have disposed of their halogen lamp in another way or left it unused.

For those respondents who did not use their halogen lamp, some had another lamp that they used instead, or simply had no need for it. Table 22 shows the distribution of reasons for not using their halogen lamp.

*Table 22 – Reasons for not using halogen lamp*

	<b>Count</b>	<b>%</b>
I had another lamp	7	19%
I didn't need it	7	19%
It was stored away in my garage / basement / shed	6	16%
Unattractive/did not fit the décor/out of style	5	14%
Safety concerns/fire hazard/dangerous/gets too hot	4	11%
Not energy efficient	4	11%
Other	4	11%
<b>TOTAL</b>	<b>37</b>	<b>100%</b>

Table 23 shows the distribution of participant responses for their reason for recycling their halogen lamp. The R4R program incentive was listed as the biggest motivation for recycling the lamp, followed by not needing the lamp anymore.

*Table 23 – Motivation to recycle halogen lamp*

	<b>Count</b>	<b>%</b>
Gift card/bounty to turn in/they paid me with a gift card	26	30%
Didn't need it any more	25	28%
Better for the environment	15	17%
Bought a more energy efficient lamp	13	15%
Safety concerns/fire hazard/dangerous/gets too hot	9	10%
Bought a new lamp	6	7%
Easy to turn it in	5	6%
Recycling it saves me money	5	6%
The program really motivated me to turn it in	5	6%
No other way to get rid of it/trash collection would not accept	4	5%
Not energy efficient	4	5%
Unattractive/did not fit the décor/out of style	4	5%
Other	4	5%
<b>TOTAL</b>	<b>230</b>	

Had the R4R program not been available, respondents would have thrown away their halogen lamp, stored it somewhere, or continued to use it. The distribution of responses is shown in Table 24.

*Table 24 – Actions to take if R4R program unavailable*

	Count	%
Threw it way / dump / special garbage	24	27%
Continued to use it	18	20%
Stored it unused	18	20%
Donated it to a charity/church	11	12%
Sold it / garage sale	6	7%
Put it out on the curb	5	6%
Given it away	4	4%
Taken it to a recycling facility	2	2%
Gave it to a retail store	1	1%
<b>TOTAL</b>	<b>89</b>	<b>100%</b>

In absence of the program, about 45% of respondents would have continued to use their halogen lamp. The R4R program offerings played an important role in motivating respondents to participate with the gift card and program promotions influencing approximately 75% of respondents to participate. The distribution of motivating factors is shown in Table 25.

*Table 25 – Main motivation to participate*

	Count	%
The \$10 gift card	33	37%
Both \$10 gift card and program promotions	29	33%
The program promotions	4	4%
None of the above	23	26%
<b>TOTAL</b>	<b>89</b>	<b>100%</b>

While the gift card was influential to participants, 100% of respondents said they would still have recycled their old halogen lamp through the R4R program even if there had not been a \$10 gift card. Further, had the gift card been only \$5, 85% of respondents said they still would have participated. When asked to rate the importance of the \$10 gift card on a scale of 1 to 10, where 10 is extremely important, respondents who recycled room air conditioners gave the importance of the gift card a 6.9 average rating.

The program was also influential in raising awareness about energy conservation. Approximately 85% of respondents stated that they agree that participating in the program raised their awareness of energy conservation and responsible environmental behaviour.

Respondents were asked if they replaced their halogen lamp after they recycled their old one. As seen in Table 26, most participants (52%) did not replace the lamp that they recycled through the program.

*Table 26 – Replacement of appliance after recycling*

	Count	%
Did not replace	46	52%
I replaced it with a brand new floor lamp	35	39%
I replaced it with a brand new light fixture/desk lamp	5	6%
I replaced it with a used floor lamp	2	2%
I replaced it with a used light fixture/desk lamp	1	1%
<b>TOTAL</b>	<b>89</b>	<b>100%</b>

For those that did replace their halogen lamp with a new one, 58% of respondents acquired their replacement on the same day or after they recycled their old one. The majority of replacement halogen lamps were purchased at a retail store, as shown in Table 27. Most of the replacement lamps (66%) are Energy Star labeled lamps or fixtures.

*Table 27 – Where replacement halogen lamp was purchased*

	Count	%
Retail store	33	85%
Gift/someone gave it to us	2	5%
Yard sale / garage sale	1	3%
Other	3	8%
<b>TOTAL</b>	<b>39</b>	<b>100%</b>

Those who did not replace their halogen lamps were asked how likely they would be to replace their lamp in the future. As seen in

Table 28, about 65% of respondents are not likely to purchase a replacement.

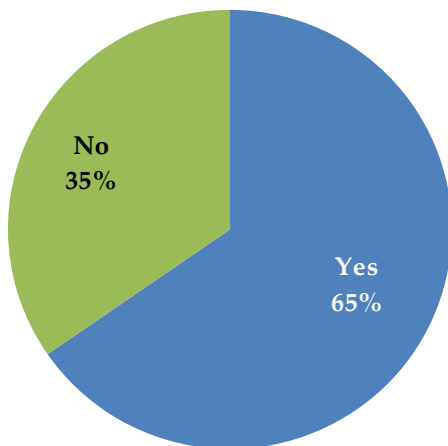
*Table 28 – Likelihood of replacing halogen lamp*

	Count	%
Extremely likely	7	15%
Very likely	5	11%
Somewhat likely	4	9%
Not Very likely	6	13%
Not likely at all	11	24%
I will not replace my room air conditioner	13	28%
<b>TOTAL</b>	<b>46</b>	<b>100%</b>

## Spillover

Participants in the R4R program were asked if they recalled hearing about the OPA’s Power Savings Event. As seen in Figure 10, 65% of R4R participants were aware of the Power Savings Event (PSE) program.

*Figure 10 – Awareness of Power Savings Event*



However, only 36% of participants who knew about the PSE recalled hearing about the promotion and available rebates from Canadian Tire staff when they brought their appliance in to be recycled. This is a missed opportunity for cross-promotion. Perhaps bundling the \$10/\$25 gift card with an information packet containing PSE coupons would be more effective in spreading awareness about the PSE program.

The gift card offered through the R4R program was valid toward any merchandise in Canadian Tire. Participants typically purchased general household items with their reward, as shown in Table 29.

*Table 29 – Items purchased with \$10/\$25 gift card*

	Count	%
Purchased general household items	163	40%
Purchased a different home appliance	29	7%
Purchased home electronics	31	8%
Purchased a replacement room air conditioner	4	1%
Purchased a replacement dehumidifier	41	10%
Purchased a replacement floor lamp	7	2%
Purchased a replacement light fixture / lamp	3	1%
Gave it away to relative / friend	7	2%
Other	119	29%
<b>TOTAL</b>	<b>404</b>	<b>100%</b>

Only 30% of participants used their \$10/\$25 gift card toward the purchase of an energy efficient product that was rebated through the PSE program.

Participants reported if after participating in the R4R program, they removed, recycled or stopped using any other major appliances. Most participants (89%) reported that they did not take any additional action after the R4R program. These results are shown in



Table 30.

Table 30 – Other appliances recycled or no longer in use

	Count	%
No	534	89%
Second Refrigerator	54	9%
Another room air conditioner	45	7%
Central air conditioner	42	7%
Another dehumidifier	47	8%
Washer/dryer	22	4%
Stove	13	2%
Fridge/freezer	11	2%
Dishwasher	10	2%
Furnace	10	2%
Microwave	6	1%
Computer/monitor	4	1%
Television	4	1%
Air conditioner/central air	2	0%
Heater (general)	2	0%
Fireplace	1	0%
Light bulbs	1	0%
Other	3	0%
<b>TOTAL</b>	602	

Though some additional actions were taken after participating in the program, most participants (61%) said that they were not influenced by the R4R program in their decision to recycle another appliance. These results are shown in Table 31.

Table 31 – Distribution of whether the R4R program directly influenced additional actions

	Count	%
Yes - probably so	74	37%
No - probably not	121	61%
Not sure	4	2%

<b>TOTAL</b>	199	100%
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For the 37% of participants that were influenced by the program when they recycled another appliance, they rated the R4R program’s influence a 7.5 on a 1 to 10 scale, where 10 is extremely influential. In fact, nearly 75% participants reported that in absence of the R4R program they would have recycled these appliances on their own. This shows that, overall, the R4R program had a minor influence on a participant’s decision to recycle other appliances.

Participants were also asked if they purchased any new Energy Star products (appliances, heating systems, windows, etc) after their participation in the R4R program. Most participants did not purchase any Energy Star products, though for those that did, lighting was the most popular option, shown in Table 32.

*Table 32 – Energy Star products purchased after R4R program*

Category	Product Type	Count	%
Appliances	No	469	78%
	Fridge/freezer	43	7%
	Dehumidifier	26	4%
	Washer/dryer	25	4%
	Other Appliance	85	14%
Heating System	No	546	91%
	Furnace	32	5%
	Heater (general)	15	2%
	Thermostat	5	1%
	Other	9	1%
Windows	No	527	88%
	Yes	74	12%
Lighting	No	301	50%
	Light bulbs (unspecified)	157	26%
	Compact fluorescent light bulbs/CFL's/spiral/curly bulbs	92	15%
	Christmas lights/LED Christmas lights	25	4%
	Other	48	8%
Home Electronics	No	510	86%
	Television (general/LCD/plasma/flat screen)	49	8%
	Computer/laptop/monitor/printer	28	5%
	DVD player/recorder	13	2%

TOTAL		602	
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Though just as with additional recycled appliances, only about 37% of participants said that the R4R program directly influenced them to purchase an Energy Star labeled product.

*Table 33 – Distribution of R4R’s influence on decision to purchase Energy Star products*

	Count	%
Yes - probably so	147	37%
No - probably not	239	61%
Not sure	8	2%
<b>TOTAL</b>	394	100%

For the 37% of participants that were influenced by the program when they purchased an Energy Star product, they rated the R4R program’s influence a 7.8 on a 1 to 10 scale, where 10 is extremely influential. In fact, participants reported that in absence of the R4R program, nearly 90% would have purchased Energy Star products on their own. These results show that the R4R program had very little influence on participants’ decisions regarding the purchasing of Energy Star products in the future.