



Participant Satisfaction, Comfort Findings for the 2009 *peaksaver*® Program

Final Report



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Table of Contents

1.	Executive Summary	1-1
1.1	The Purpose and Scope of This Report	1-1
1.2	Introduction.....	1-1
1.3	Drivers of <i>peaksaver</i> Participation.....	1-2
1.4	Marketing and Program Information	1-2
1.4.1	How They Heard About the Program.....	1-2
1.4.2	Recalling Marketing Messages.....	1-3
1.4.3	Preferred Ways of Receiving Program Information	1-3
1.4.4	Rating General Program Information.....	1-3
1.4.5	Satisfaction with Responses to Program Information Queries	1-4
1.4.6	CAC/Thermostat Use.....	1-4
1.5	Awareness of the Control Events	1-6
1.6	Effects of the Control Events	1-6
1.7	Program Enrollment and Control Device Installation.....	1-7
1.7.1	Enrollment.....	1-7
1.7.2	Satisfaction with the Installation Process.....	1-8
1.8	Satisfaction with Incentives, Program in General	1-8
1.8.1	Satisfaction with the Incentive Payment	1-8
1.8.2	Overall Program Satisfaction	1-9
2.	Introduction	2-1
2.1	The Purpose and Scope of This Report	2-1
2.2	Program Description.....	2-2
2.3	Methodology	2-2
2.3.1	The 2009 M&V Sample.....	2-2
2.3.2	The Participant Surveys.....	2-3
3.	Findings from the 2009 Participant Surveys	3-1
3.1	Drivers of <i>peaksaver</i> Participation.....	3-1
3.2	Marketing and Program Information	3-5
3.2.1	How They Heard about the Program	3-6
3.2.2	Recalling Marketing Messages.....	3-7
3.2.3	Preferred Ways of Receiving Program Information	3-9
3.2.4	Rating Program Information.....	3-10

Table of Contents

3.3	CAC/Thermostat Use and Reactions to Load Control Events.....	3-15
3.3.1	CAC/Thermostat Use.....	3-15
3.3.2	Awareness of the Control Events	3-23
3.3.3	Effects of the Control Events	3-27
3.4	Program Enrollment and Control Device Installation.....	3-31
3.4.1	Enrollment Methods.....	3-32
3.4.2	Satisfaction with Enrollment.....	3-33
3.4.3	Satisfaction with the Installation Process.....	3-34
3.5	Satisfaction with Incentives, Program in General.....	3-36
3.5.1	Satisfaction with the Incentive Payment	3-36
3.5.2	Overall Program Satisfaction	3-37

List of Exhibits:

Figure 1-1	<i>peaksaver</i> Participant Satisfaction Levels for Multiple Program Characteristics	1-10
Figure 3-1	Main Reason for Joining the <i>Peaksaver</i> Program	3-2
Figure 3-2	Main Reason for Joining the <i>Peaksaver</i> Program by Participants' LDC.....	3-4
Figure 3-3	Other Reasons for Joining the <i>peaksaver</i> Program	3-5
Figure 3-4	How Participants Heard About the Program.....	3-7
Figure 3-5	Marketing Messages Recalled by Participants.....	3-8
Figure 3-6	Preferred Ways to Receive Program Information	3-9
Figure 3-7	Satisfaction with Program Information.....	3-11
Figure 3-8	Whether Participants Recalled the Reasons Their LDC Said They Should Join the <i>peaksaver</i> Program from the Information They Received from the LDC	3-12
Figure 3-9	What Participants Recalled from Program Information Were Reasons Why LDCs/OPA Said They Should Join <i>peaksaver</i>	3-13
Figure 3-10	Satisfaction with Program Response to Phone/Email Information Queries.....	3-14
Figure 3-11	Frequency of Air Conditioning Use.....	3-15
Figure 3-12	How Central Air Conditioners are Operated	3-16
Figure 3-13	Whether Typical Cooling Temperatures are Used	3-17
Figure 3-14	Whether ACs are Used on Weekday Afternoons	3-18
Figure 3-15	Ease of Operating Smart Thermostats Through <i>peaksaver</i> Website	3-19



Table of Contents

Figure 3-16 Whether Customers Participating in *peaksaver* via Smart Thermostats Had Programmable Thermostats Before They Joined the Program3-20

Figure 3-17 Whether Customers Participating in *peaksaver* via Smart Thermostats Changed Their Wintertime Temperature Settings After Getting New Thermostat3-21

Figure 3-18 Whether *peaksaver* Participants Have Changed Typical Cooling Temperatures Since Joining the Program.....3-22

Figure 3-19 How *peaksaver* Participants Have Changed Typical Cooling Temperatures Since Joining the Program.....3-23

Figure 3-20 Whether Participants Believed That Their LDC Has Remotely Raised Their Thermostat Settings or Activated Their AC Control Switch Since the Beginning of 2009-24

Figure 3-21 Recall of Control Event by Responsiveness of AC Unit3-25

Figure 3-22 Reporting of Control Events by LDC3-26

Figure 3-23 When Participants Estimated the Last Control Event Had Occurred.....3-27

Figure 3-24 Participant Comfort during Control Events3-28

Figure 3-25 Participant Comfort During Control Events by LDC.....3-29

Figure 3-26 Participants Turning on Fans During Control Events3-30

Figure 3-27 Activities to Keep Cool during Control Events3-31

Figure 3-28 How Recent Participants Enrolled in the *peaksaver* Program3-32

Figure 3-29 Enrolling in *Peaksaver* through the Internet Seniors vs. Non-Seniors.....3-33

Figure 3-30 Satisfaction with Program Enrollment Methods.....3-34

Figure 3-31 Satisfaction with the Scheduling and Installation of the Load Control Devices3-35

Figure 3-32 Whether Participants Had AC Mechanical Problem Since Joining the Program..3-36

Figure 3-33 Whether the Program Incentives Were Adequate3-37

Figure 3-34 Satisfaction with the *peaksaver* Program3-39

Figure 3-35 Whether Participants Would Recommend *peaksaver* to Friends, Neighbors, Co-Workers3-40

Figure 3-36 Reasons for Overall Dissatisfaction with the *peaksaver* Program3-41

1. Executive Summary

This is a summary of the detailed findings found later in the report. These later detailed findings provide much more information on how the responses of survey participants varied due to factors such as demographics, what their LDC was, and how they used their air conditioners.

1.1 The Purpose and Scope of This Report

Although the title of this report is “*Participant Satisfaction, Comfort Findings for the 2009 peaksaver® Program*,” it covers a much broader range of participant information than just satisfaction with program processes or comfort during control events. Topics covered by the report include:

- Reasons for participation;
- Recall of program marketing messages;
- Satisfaction with the program information;
- How participants use their air conditioning and thermostats;
- Recall of control events and behavior and comfort during these events;
- Satisfaction with the enrollment and device installation processes;
- Satisfaction with program incentives; and
- Satisfaction with the program in general and reasons for dissatisfaction.

The following subsection summarized the findings from the detailed sections of the report.

1.2 Introduction

The information in this report is primarily based on information from two surveys of *peaksaver®* participants who were also part of the Measurement and Verification (M&V) group. These surveys included:

- *The post-event survey*: This survey was conducted within a few days of a load control event so that participant reactions to these events could be recorded while their memories of the events were still fresh. It was fielded in September 2009. This survey primarily focused on

whether participants recalled the control events, whether they were comfortable during these events, and how they behaved during these events.

- *The post-season survey:* This survey, which was conducted in November 2009, focused on a much broader range of topics including recall of marketing messages and program information; preferences for receiving program information; and satisfaction with various program processes and characteristics including enrollment, device installation, responses to information inquiries, the *peaksaver* thermostat website, the load control devices, and the financial incentives.

1.3 Drivers of *peaksaver* Participation

The most-cited reason (39% of participants) for participating in the *peaksaver* program was saving their own energy. We have seen similar results from other evaluations of DLC programs. While one might assume that this was due to customers who are receiving programmable thermostats for the first time anticipating garnering some energy savings from these devices, this was not the case. The *peaksaver* participants who participated via a switch were actually much more likely (46% of respondents) than smart thermostat participants (25%) to cite “saving my energy” as their main reason for joining the program. Therefore a more likely explanation is that participants are simply assuming that a device that interrupts air conditioner operation during peak summer days would ultimately result in energy savings. They are likely not aware of “snapback” effects. The reasons for joining the *peaksaver* program varied significantly depending on what LDC served them, whether they used their air conditioner to keep someone cool during the peak hours, and their level of education.

1.4 Marketing and Program Information

1.4.1 How They Heard About the Program

When we asked *peaksaver* participants how they heard about the program, the most-cited response was the utility bill insert, but quite a few of the participants also reported seeing an ad in a newspaper, receiving a telephone call, or receiving a utility letter or post card. The *peaksaver* program has a greater diversity of marketing channels than other DLC programs that we have evaluated – which almost exclusively rely on direct mail or bill inserts. This should insure a broader range of program participants than these other programs.

1.4.2 Recalling Marketing Messages

We asked the *peaksaver* participants what reasons for joining the program, if any, they recall from the program marketing. On the positive side only 17 percent of the respondents could not recall any marketing message. This is a lower percentage than we have found in other DLC program evaluations and may be an effect of the broader array of marketing channels used by the *peaksaver* program. On the negative side the marketing message that participants recalled the most (46% of respondents) was that they would save energy, something that *peaksaver* and most other DLC programs do not advertise. However, we have found from evaluations of other DLC programs that it is fairly common for participants to recall an energy savings message even though the programs do not broadcast it. The next most-cited marketing messages were getting a rebate/incentive (31% of respondents) and helping the environment (21% of respondents).

1.4.3 Preferred Ways of Receiving Program Information

The *peaksaver* participants cited a variety of preferred ways of receiving information with utility bill inserts (37% of respondents), email (24%), and utility letters/post cards (18%) being the top three. We have found through our evaluation of other DLC programs that email is growing as a preferred source of program information.

1.4.4 Rating General Program Information

We asked the *peaksaver* participants who recalled receiving information from the program – who accounted for 55 percent of the total respondents – how satisfied they were with this information in helping understand how the program works. Eighty-eight percent of the respondents were satisfied with scores of four or five on the five-point satisfaction scale.

Although the Toronto Hydro and Hydro Ottawa *peaksaver* participants gave similar satisfaction ratings for the program information, there was an interesting difference in the frequency with which these participants could recall from this information the reasons for joining the program. We asked the *peaksaver* participants: “In the information you received from [LDC] about this program, do you recall why the utility said you should join the *peaksaver* program?” Hydro Ottawa participants were much less likely to recall this information (46% of respondents) than participants from Toronto Hydro (78%) or other LDCs (73%). We also asked the participants about the reasons why their LDC or the Ontario Power Authority said that they should join the *peaksaver* program. The most-cited reason was helping Ontario reduce the strain on its power system during peak hours.

1.4.5 Satisfaction with Responses to Program Information Queries

Another indicator of the effectiveness of program information is how many participants had to call or email the utility or program to get additional information. We asked the *peaksaver* participants whether they had done this. Only five percent of them said that they had. We asked the participants who had sought this additional information how satisfied they were with responses that they received to their questions. There was some dissatisfaction with these responses with 30 percent saying they were “very dissatisfied” and another 26 percent indicating that they were less than satisfied. When asked why they were dissatisfied, the most common response (57%) was that the utility/program responders had not been able to answer/address their questions/concerns. Based on our experience evaluating other DLC programs, we have found that such dissatisfaction with the utility/program response to questions is often related to a customer calling the utility/program due to discomfort from a cycling event. We have also found that it is difficult to determine whether a participant was calling a dedicated DLC program hotline or a more general utility hotline where call center staff may lack the specialized knowledge to answer questions about the DLC program.

1.4.6 CAC/Thermostat Use

The OPA staff was interested in learning more about how *peaksaver* participants use their air conditioners and how the program’s introduction of programmable thermostats to some customers might affect their temperature-setting behavior.

- *How participants use their air conditioner:* We asked the *peaksaver* participants how often they used their central air conditioners. The large majority (69%) said that they only use them on the hottest days (Figure 3-11). There was little variation in these responses among participants from the various LDCs. Seventy-nine percent of the participants said that they turn their air conditioner on and off as needed throughout the summer (as opposed to turning on their air conditioner once and letting the temperature setting regulate its operation). When asked how often they turn their air conditioner on and off, the average estimate was 14 times.

We asked the *peaksaver* participants when they turn on their air conditioner whether they have a typical temperature setting that they use for cooling their house. Ninety-two percent of them said that they do have a typical temperature setting and this was reported to be 74 degrees Fahrenheit on average. We also asked the participants whether their air conditioners are typically used to keep someone at home comfortable at weekday afternoons before 5 PM. Sixty-eight percent of the respondents said that they did.

- *Using the peaksaver website for remote thermostat operation:* We asked the customers who were participating in *peaksaver* through a smart thermostat (n=78) whether they had used the *peaksaver* website to operate their thermostat and, if so, how often they had done this. Only twelve percent said that they had operated their thermostat through the website with an average usage of 4.4 times. We asked these few users whether it very easy, somewhat easy, somewhat difficult, or very difficult to operate their thermostat through the website. Over half (51%) said it was very easy and another 13 percent said it was somewhat easy.
- *The impact of new programmable thermostats on participant behavior:* The OPA staff was interested in knowing what impacts the use of programmable thermostats by the *peaksaver* program might have on the temperature setting behavior of the participants. So we asked the customers who were participating in the program via a smart thermostat whether they already had a programmable thermostat before joining the program. Thirty-seven percent of the customers who received the smart thermostats through *peaksaver* said that they did not have a programmable thermostat before joining the program.

The staff was also interested in knowing whether the participants who received a programmable thermostat through *peaksaver* engaged in new energy saving behavior during the wintertime. Thirty-five percent of the respondents said that they changed their wintertime settings after they got their new thermostats. When asked how they changed their setting, 61 percent of them said that they now use a cooler setpoint during the overnight period and 50 percent said that they now use a cooler setpoint during the daytime period when their house is unoccupied. This suggests that there were some small potential energy savings among this group. However, it is important to remember that the 17-19 people who were making these changes only accounted for about five percent of the respondents in our sample.

We also asked the participants who previously had programmable thermostats whether before joining the program they changed the cooling or heating temperature settings when people were not home in order to save energy. Sixty-three percent of them said that they had. When those who said that they changed these settings were asked whether they did this regularly or occasionally, 65 percent said that they did this regularly. Finally we asked all the *peaksaver* participants – whether they were participating via a smart thermostat or an air conditioner switch – whether they have changed their typical cooling temperatures since joining the program. Only 12 percent said that they had.

1.5 Awareness of the Control Events

One of the key topics of interest for any evaluation of a DLC program is the level to which participants are aware of the control events when they occur. We asked the participants whether their LDC had remotely raised their thermostats settings (for smart thermostat participants) or activated their air conditioner control switch (for switch participants) since the beginning of 2009. Forty percent of the participants thought this had occurred. We asked those who recalled a control event how often these had occurred. The mean estimate was 1.1 events and the median estimate was one event. This compares to the actual number of four load control events in 2009 for those in the M&V group. Only four of the 134 participants who recalled a control event reported the correct number of control events (4).

One question raised by the OPA staff during the evaluator presentation of the results was how much these levels of control event recall might have changed if the “non-responsive” participants were removed. Non-responsive participants are those participants who had air-conditioning units that did not reduce its load in response to the control event. The most likely explanations for these non-responsive units were signal problems (permanent or temporary) and DLC device malfunction. Of the 353 participants who responded to the surveys, 52 (15%) were determined to be non-responsive. In addition to these, there were 17 survey respondents (5%) for which no logger data was recovered. So in these cases it was impossible to determine whether the air conditioning units had been responsive to the load control signals or not.

Isolating the 80 percent (n=284) of participants who had responsive air conditioning units only raised the recall level from 40 percent to 41 percent. This small change was due to the fact that 67 percent of the participants with no logger data said that they recalled the event. In addition, 29 percent of the respondents with non-responsive air conditioners still recalled control events. We have seen similar levels of “false positives” with evaluations of other DLC programs.

Ottawa Hydro participants were much less likely than participants from the other LDCs to report that a control event had occurred and much more likely to say that a control event had not occurred. The Toronto Hydro participants were least likely to say that a control event had *not* occurred. The detailed findings in this report discuss other statistically-significant differences among participant subgroups as to the frequency with which they reported control events.

1.6 Effects of the Control Events

We asked the participants who reported that a control event had occurred in 2009 whether they had been home during the most recent control event. Fifty-four percent said that they had been.

We then asked those who said that they had been home during the last control event whether they were comfortable when it occurred. Only five percent said that they were very uncomfortable and eleven percent said that they were somewhat uncomfortable. Over half of the participants said that they were very comfortable. We also examined whether the percentage of participants reporting that they were uncomfortable varied depending on whether they had air-conditioning units that were responsive to the control events or not. We found no statistically significant difference between those who had responsive units and those who did not.

We asked the *peaksaver* participants who recalled control events whether they, or other members of their household, had turned on any fans to keep cool during these events. Twenty percent of them said that they did. The *peaksaver* participants were also asked about other ways -- besides turning on fans -- by which they tried to keep cool during control events. Participants named a wide variety of ways to keep cool although the most common responses were either that they continued their normal activities or they could not recall what they did. Seventy-eight percent of those who mentioned ways they keep cool during control events said that these were things they normally did during hot weather. We asked those who recalled a control event and who participated through *peaksaver* via a smart thermostat: whether they ever tried to lower their thermostat settings when the control event was going on. Twenty-nine percent of them said that they did.

1.7 Program Enrollment and Control Device Installation

1.7.1 Enrollment

When asked how they enrolled in the program, 34 percent mentioned calling the toll-free number, 26 percent mentioned mailing in a sign-up card, and 17 percent said that they enrolled online. Non-seniors were twice as likely as seniors to use the Internet to enroll in *peaksaver*.

Sixty-one of the respondents were very satisfied with the enrollment process and 87 percent of them gave ratings of either four or five on the five-point satisfaction scale. We asked the 33 respondents who were less than satisfied with the enrollment process why they were dissatisfied with this enrollment process. The most-cited reason (18%) was lack of information or instruction, but there were many other reasons and some of these -- such as noticing energy savings (14%) or "my costs increased" (10%) -- could not be attributed to the enrollment process but reflected dissatisfaction with other aspects of the *peaksaver* program.

1.7.2 Satisfaction with the Installation Process

We asked the *peaksaver* participants who recalled a contractor coming to their house to install a smart thermostat or air-conditioning control switch how long after they called their LDC to participate in *peaksaver* did a contractor come to install the device. Less than half (48%) of these participants were willing or able to provide an estimate. Of those providing an estimate the mean estimate was 16 days and the median estimate was 11 days.

We also asked the participants who recalled a contractor coming to their house to install a smart thermostat or air-conditioning control switch how satisfied they were with the whole process of scheduling and installing the thermostat or switch. Depending on which LDC they belonged to, 91-95% of the participants were satisfied with these scheduling and installation processes. While the installation of a smart thermostat, because it requires entry into the home, is inherently more intrusive than the installation of a switch, the percentage of smart thermostat participants that were satisfied (92%) was not much different than the percentage of switch participants that were (94%).

The *peaksaver* participants were asked whether they have had any mechanical problems with their air conditioner since joining the program. Seven percent of the respondents reported mechanical problems and 31 percent of these – accounting for four participants -- thought that there was a relationship between their mechanical problems and their participation in the program. While this sounds like a small number, it's important to remember that if this 1-2% of participants in the sample is extrapolated across the whole *peaksaver* program, it could account for a significant volume of phone complaints.

1.8 Satisfaction with Incentives, Program in General

1.8.1 Satisfaction with the Incentive Payment

We told the *peaksaver* participants that they would receive a \$25 bill credit for participating in the program and asked them whether this was adequate compensation for their LDC cycling their air conditioner over the course of the summer. Eighty-two percent of the participants said it was adequate compensation. Participants who had been less than satisfied with at least one aspect of the *peaksaver* program were much less likely to think the \$25 was adequate compensation (59% of 72 respondents) than those who were totally satisfied with the program (89% of 164 respondents). Toronto Hydro participants were less likely (79% of respondents) to say it was adequate compensation than respondents from the other LDCs (89-92%). We asked

those who thought the \$25 bill credit was not adequate what adequate compensation would be. The mean response was \$69 and the median response was \$75.

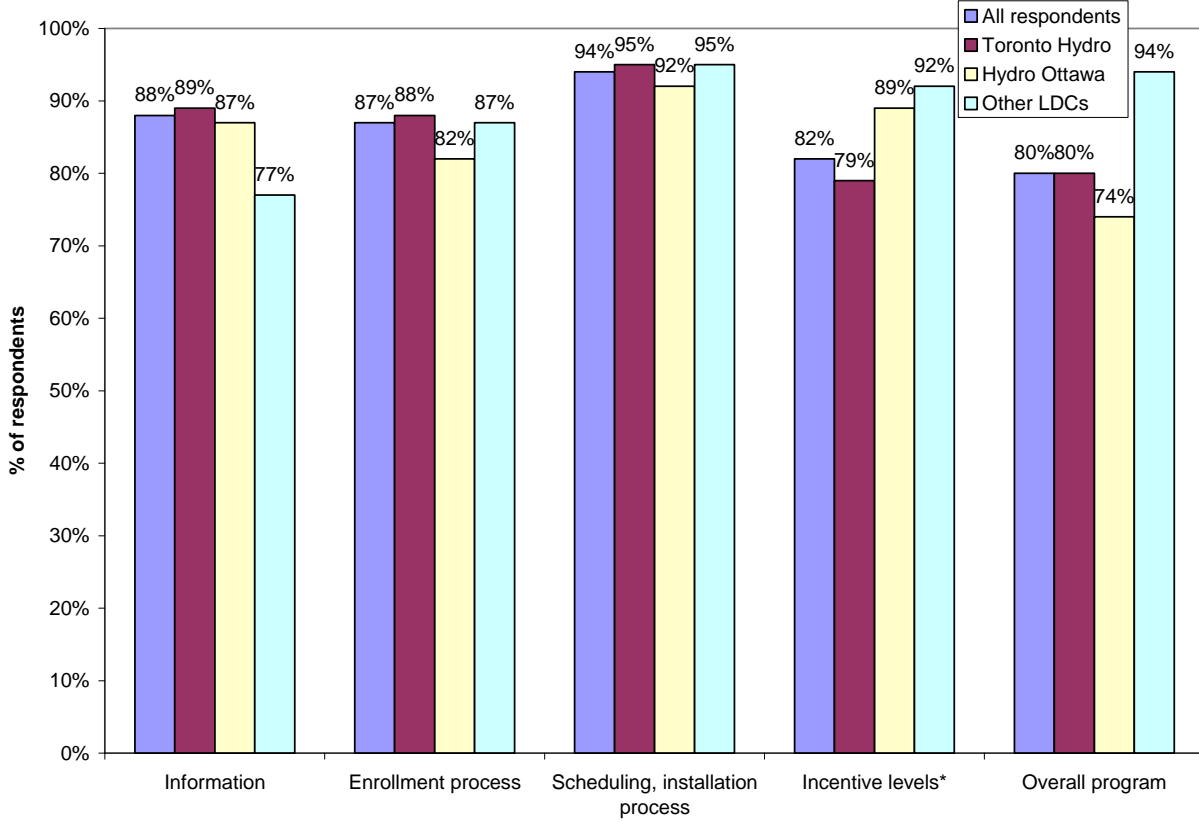
1.8.2 Overall Program Satisfaction

We asked the participants to rate their satisfaction with the *peaksaver* program in general, using a five-point satisfaction scale. The percentage of participants satisfied with the whole program ranged from 74 percent for Hydro Ottawa participants to 80 percent for Toronto Hydro participants and up to 94 percent for the other LDCs. The detailed findings discuss some differences in satisfaction levels among participant subgroups. We also asked the participants whether they would recommend the *peaksaver* program to friends, neighbors, or co-workers. Eighty-two percent of them said that they would.

We asked the participants who said they were less than satisfied with the *peaksaver* program why they were dissatisfied. They cited a wide variety of reasons with the top two concerning participants not seeing the energy/cost savings they were expecting.

Figure 1-1 shows the satisfaction levels of the *peaksaver* participants across multiple program characteristics. The chart shows while most of the satisfaction ratings are very high, all the LDC categories have at least one satisfaction rating below eighty percent.

**Figure 1-1
peaksaver Participant Satisfaction Levels
for Multiple Program Characteristics**



2. Introduction

2.1 The Purpose and Scope of This Report

This report covers a broad range of information collected from participants in the 2009 *peaksaver* program including:

- Reasons for participation;
- Recall of sources of first program information;
- Recall of program marketing messages;
- Participants' preferred ways of receiving program information;
- Satisfaction with the program information and response to program inquiries;
- Awareness of the program incentives;
- Use of the *peaksaver* website (for smart thermostat participants);
- Satisfaction with the enrollment and device installation processes;
- Recall of control events and behavior and comfort during these events;
- Satisfaction with the control devices;
- Satisfaction with program incentives;
- Satisfaction with the program in general and intentions for participation in future seasons; and
- Air conditioning practices and whether the receipt of a programmable thermostat changed set-point behavior.

2.2 Program Description

The Residential and Small Commercial Demand Response (R&SC DR) program, also known as *peaksaver*®, is a direct load control (DLC) program that first began enlisting customers in 2007. As of the first quarter of 2010 the program had over 135,000 load control devices (both smart thermostats and switches) for air conditioners installed with the vast majority installed on residential sites. Twenty-two Ontario Local Distribution Companies (LDCs) are participating in the program. The primary objectives of the *peaksaver* program include:

- Enhancing the reliability of Independent Electricity System Operator (IESO)-controlled electricity grid by aggregating residential and small commercial central air-conditioning units and electric water heaters; and
- Increasing awareness of the important role individual consumers have in reducing the province's overall peak summer demand and the benefits of a reliable IESO controlled electricity grid.

The *peaksaver* program uses two types of load control devices – programmable communicating thermostats (PCTs also known as “smart thermostats”) and relay-based switches. The program controls central air conditioners and electric water heaters. The program is allowed to activate control events during the months of May to September with a four-hour limit on the length of any given control event. There is also a forty hour limit on the cumulative length of system activations over the course of the May-September period. The program pays all participants a one-time \$25 payment. Participants that choose the smart thermostat also receive the thermostat for free.

2.3 Methodology

2.3.1 The 2009 M&V Sample

As part of its impact analysis of the *peaksaver* program, KEMA recruited 434 *peaksaver* participant sites to be part of a Measurement and Verification (M&V) sample. These participants volunteered to be cycled more frequently than a typical *peaksaver* participant in return for additional financial incentives. The two participant surveys that are summarized in this report were targeted at customers in this M&V sample group.

2.3.2 The Participant Surveys

The evaluators conducted two surveys of *peaksaver* participants who were also part of the M&V group: The following is a short description of them:

- *The post-event survey:* The first survey, which we will refer to as the “post-event survey,” was conducted within a few days of a load control event so that participant reactions to these events could be recorded while their memories of the events were still fresh. It was fielded in September 2009. This survey primarily focused on whether participants recalled the control events, whether they were comfortable during these events, and how they behaved during these events. The survey also asked a few questions about reasons for participation, satisfaction with the program overall, and air conditioning and thermostat usage patterns. The post-event survey was completed with 283 of the *peaksaver* participants who were in the M&V group.
- *The post-season survey:* This survey, which was conducted in November 2009, focused on a much broader range of topics including recall of marketing messages and program information; preferences for receiving program information; and satisfaction with various program processes and characteristics including enrollment, device installation, responses to information inquiries, the *peaksaver* thermostat website, the load control devices, and the financial incentives. The survey also asked those who had not responded to the post-event survey about their recall of the control events and their reaction to these events. The post-season survey was completed with 290 of the *peaksaver* participants who were in the M&V group.

The surveying protocol was that almost all the questions in the post-event survey were only repeated in the post-season survey if the participant had not completed the first survey.

3. Findings from the 2009 Participant Surveys

This section provides the detailed findings from the post-event and post-season surveys of *peaksaver* participants. Key topics covered in this section include:

- What motivated participants to join the *peaksaver* program;
- The effectiveness of the program marketing and information and their preferred ways to receive program information;
- How participants used their central air conditioners and thermostats;
- Whether participants thought that load control events had occurred, whether they were comfortable during such events, and how they reacted to these events;
- How they enrolled in the program and whether they were satisfied with the enrollment and device installation processes;
- Their satisfaction with the program incentives; and
- Their overall program satisfaction and their reasons for dissatisfaction.

3.1 Drivers of *peaksaver* Participation

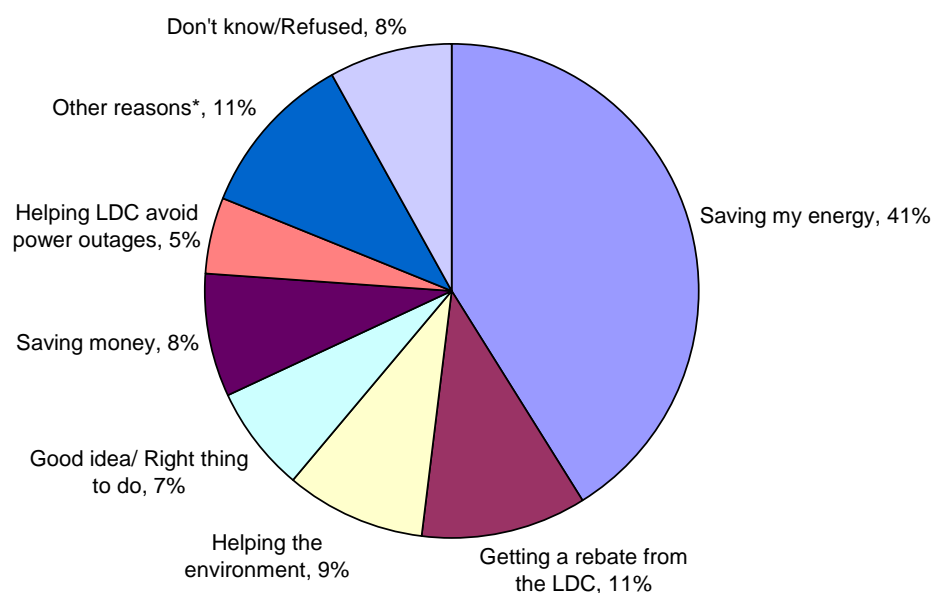
We asked the *peaksaver* participants what was their main reason for participating in the program. Figure 3-1 shows their responses. The most-cited reason (39% of participants) was that they would save energy. We have seen similar results from other evaluations of DLC programs. One possible explanation is that customers who are receiving programmable thermostats for the first time are anticipating garnering some energy savings from these devices. However, the *peaksaver* participants who participated via a switch were actually much more likely (46% of respondents) than smart thermostat participants (25%) to cite “saving my energy” as their main reason for joining the program.¹ Therefore a more likely explanation is that participants are simply assuming that a device that interrupts air conditioner operation during peak summer days would ultimately result in energy savings. They are likely not aware of

¹ Our evaluations of DLC programs which only use air conditioning switches have also found that “saving energy” is the most-cited reason for joining the programs.

“snapback” effects. Figure 3-1 also shows that 59 percent of the respondents joined for reasons of personal benefit (e.g., saving their energy, getting the rebate, saving money) as opposed to more altruistic reasons, although saving one’s own energy can have broader societal benefits.

**Figure 3-1
Main Reason for Joining the *Peaksaver* Program**

All participants (n=241)



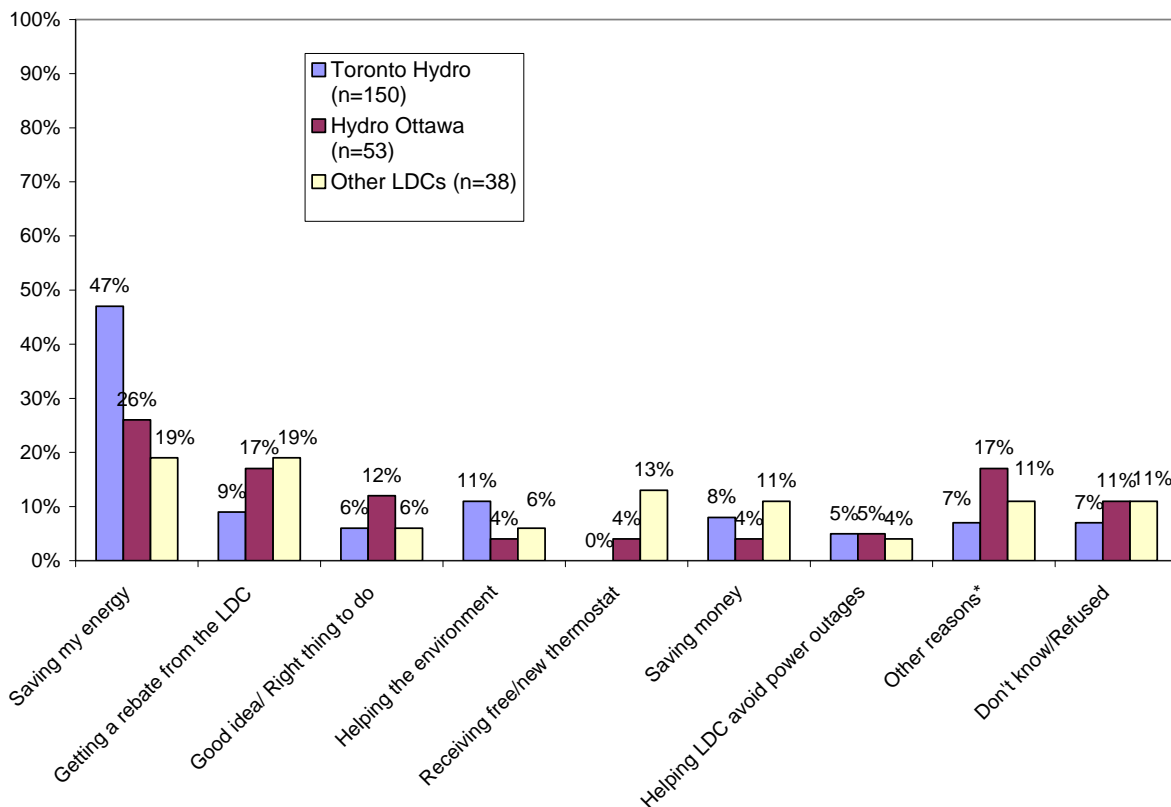
*Other reasons include fighting global warming, helping LDC avoid building power plants, don't use AC that much, monitor our usage, I was curious, they asked me to participate.

In addition to examining how the main reasons for joining *peaksaver* varied depending on the load control device, we also looked at how the reasons for joining fluctuated based on other participant characteristics. These included which LDC served them, whether they recalled a control event, whether they were comfortable during this control event, when and how often they used their air conditioning, whether they were satisfied with the *peaksaver* program, their demographics (age, education, income, gender) and how they responded to the OPA market segmentation questions.

The reasons for joining the *peaksaver* program varied significantly depending on what LDC served them, whether they used their air conditioner to keep someone cool during the peak hours, and their level of education. Figure 3-2 shows that the Toronto Hydro participants were more likely to cite “saving my energy” as their main reason than participants with other LDCs. It is not clear why this would be the case.² Those who said that their air conditioning is typically used to keep someone cool before 7 PM were more likely (44% of respondents cited this) to say that they joined the program to save their energy than participants who typically did not use their air conditioning during peak hours (32%). Those with at least some college education were more likely (43%) to say that they joined the program to save their energy than those who had no college education (30%).

² One theory we had was that this might be due to the Toronto Hydro participants being more educated on average, since college educated people in general tended to cite this reason more often. However, the Toronto Hydro participants were not more educated (in terms of % having at least some college education) than the Hydro Ottawa participants, although they were more educated than the “Other LDC” participants.

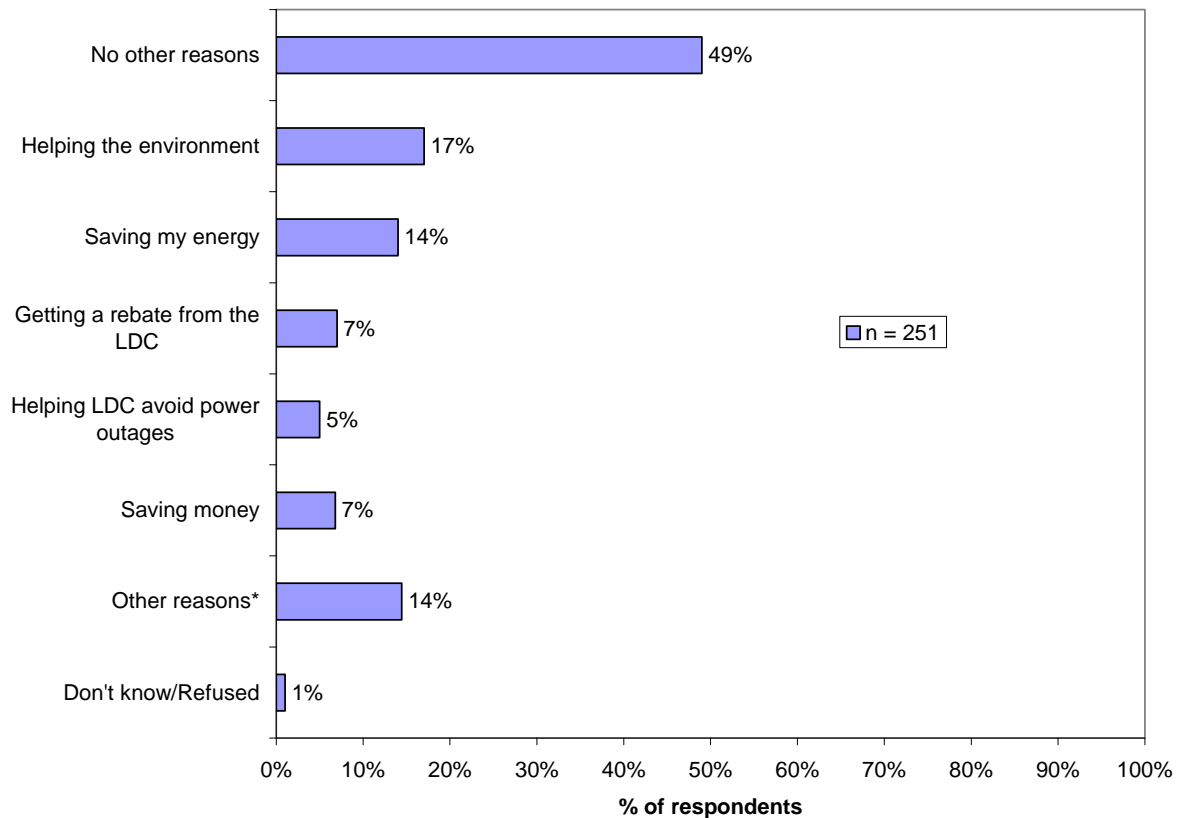
**Figure 3-2
Main Reason for Joining the *Peaksaver* Program
by Participants' LDC**



*Other reasons include fighting global warming, helping LDC avoid building power plants, don't use AC that much, monitor our usage, I was curious, they asked me to participate.

We also asked the participants for other reasons why they joined the *peaksaver* program. Figure 3-3 shows that nearly half (49%) had no other reasons besides the main reason they had already cited. Helping the environment and saving their energy were the most-cited of the secondary reasons.

Figure 3-3
Other Reasons for Joining the *peaksaver* Program



Note: Total exceeds 100% because respondents were allowed multiple responses. *Other reasons included helping LDC avoid building power plants, receiving a free thermostat, because we don't use the AC that much, because it's the right thing to do, to monitor our usage, fighting global warming, I was curious, et al.

3.2 Marketing and Program Information

This section summarizes findings from the post-event and post-season surveys concerning:

- How *peaksaver* participants heard about the program;
- What program marketing messages participants recalled;
- Participants' preferred ways for receiving program information;
- How satisfied they were with the program information they received and the utility/program response to any additional phone/email inquiries they may have made about the program; and

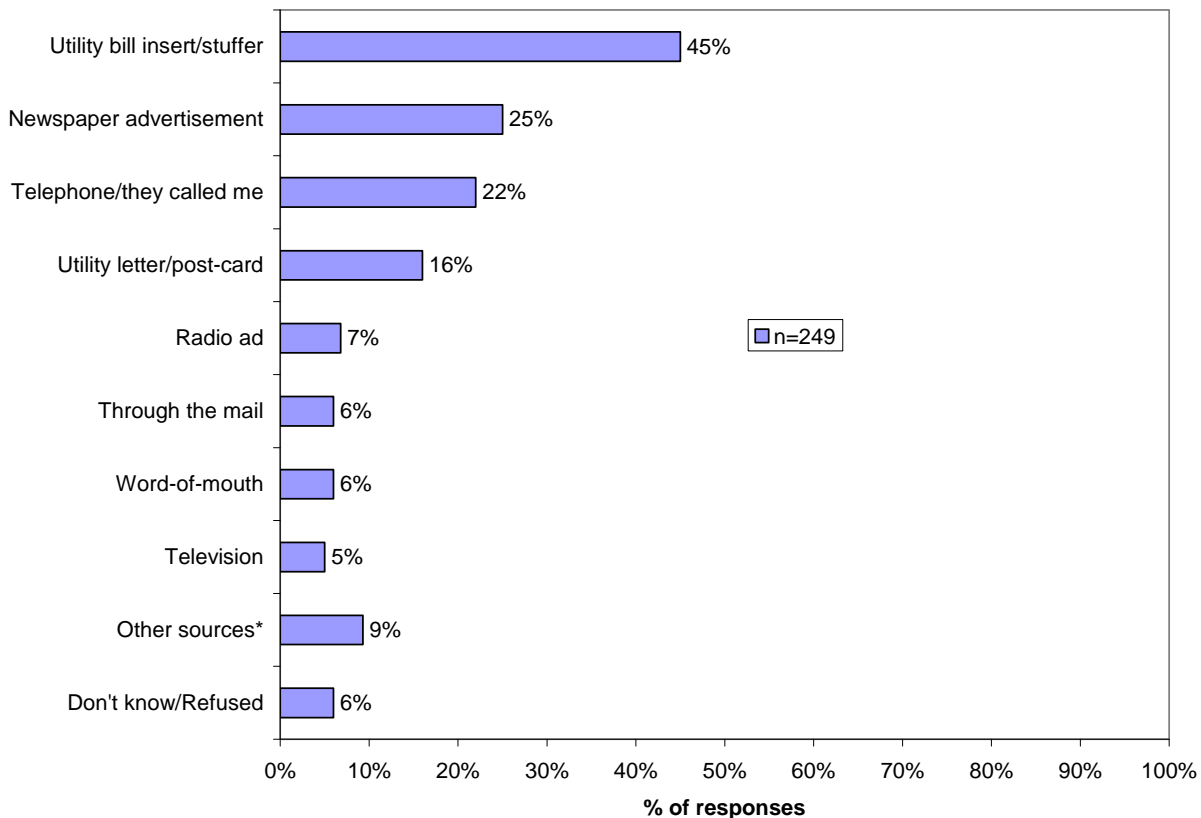
-
- Whether customers who were participating in the *peaksaver* program via a smart thermostat were using the *peaksaver* website to operate their thermostat, how often they were doing this, and how easy or difficult they found this remote operation to be.

3.2.1 How They Heard about the Program

We asked the *peaksaver* participants how they heard about the program. The most-cited response was the utility bill insert, but quite a few of the participants also reported seeing an ad in a newspaper, receiving a telephone call, or receiving a utility letter or post card (Figure 3-4). The *peaksaver* program has a greater diversity of marketing channels than other DLC programs that we have evaluated – which almost exclusively rely on direct mail or bill inserts. This should insure a broader range of program participants than these other programs. For example, we have found in previous research that older customers are much more likely to favor bill inserts for program information than younger customers who often pay their utility bills online. The greater diversity of the *peaksaver* marketing is likely due to the fact that a wide variety of LDCs as well as the OPA are involved in the marketing efforts.

We also asked those who said they first heard about the program through newspaper ads or radio ads whether they recalled who placed those ads. However, the large majority could not recall who placed the ads.

Figure 3-4
How Participants Heard About the Program



Note: Total exceeds 100% because respondents were allowed multiple responses. Other sources included unspecified flyers/brochures, online ads, websites, door-to-door, et al.

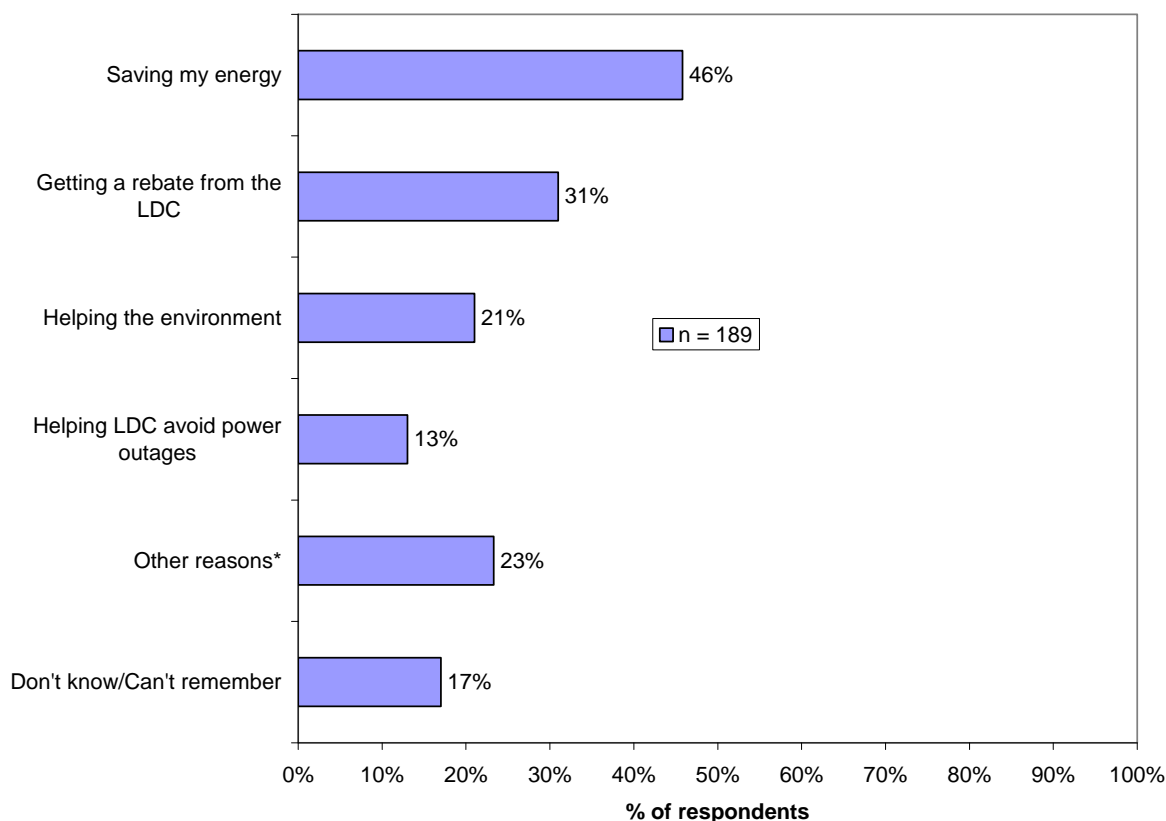
3.2.2 Recalling Marketing Messages

One way to measure the effectiveness of program marketing efforts is to determine whether respondents recalled the program's marketing messages and which messages resonated with them. We asked the *peaksaver* participants what reasons for joining the program, if any, they recall from the program marketing.³ Figure 3-5 shows their responses. On the positive side only 17 percent of the respondents could not recall any marketing message. This is a lower percentage than we have found in other DLC program evaluations and may be an effect of the

³ This question was not asked of people who had reported ways of first hearing about the program such as word-of-mouth.

broader array of marketing channels used by the *peaksaver* program. On the negative side the marketing message that participants recalled the most (46% of respondents) was that they would save energy, something that *peaksaver* and most other DLC programs do not advertise. However, we have found from evaluations of other DLC programs that it is fairly common for participants to recall an energy savings message even though the programs do not broadcast it. As noted, it is logical that customers who are not aware of snapback effects would assume that the interruption of their air conditioners during peak hours would reduce their energy bills. Finally, participants often tune into and remember the marketing messages that they want to hear and it is not surprising that the frequencies of marketing message recall in Figure 3-5 closely resemble the frequencies for main reasons for joining the *peaksaver* program (Figure 3-1).

Figure 3-5
Marketing Messages Recalled by Participants

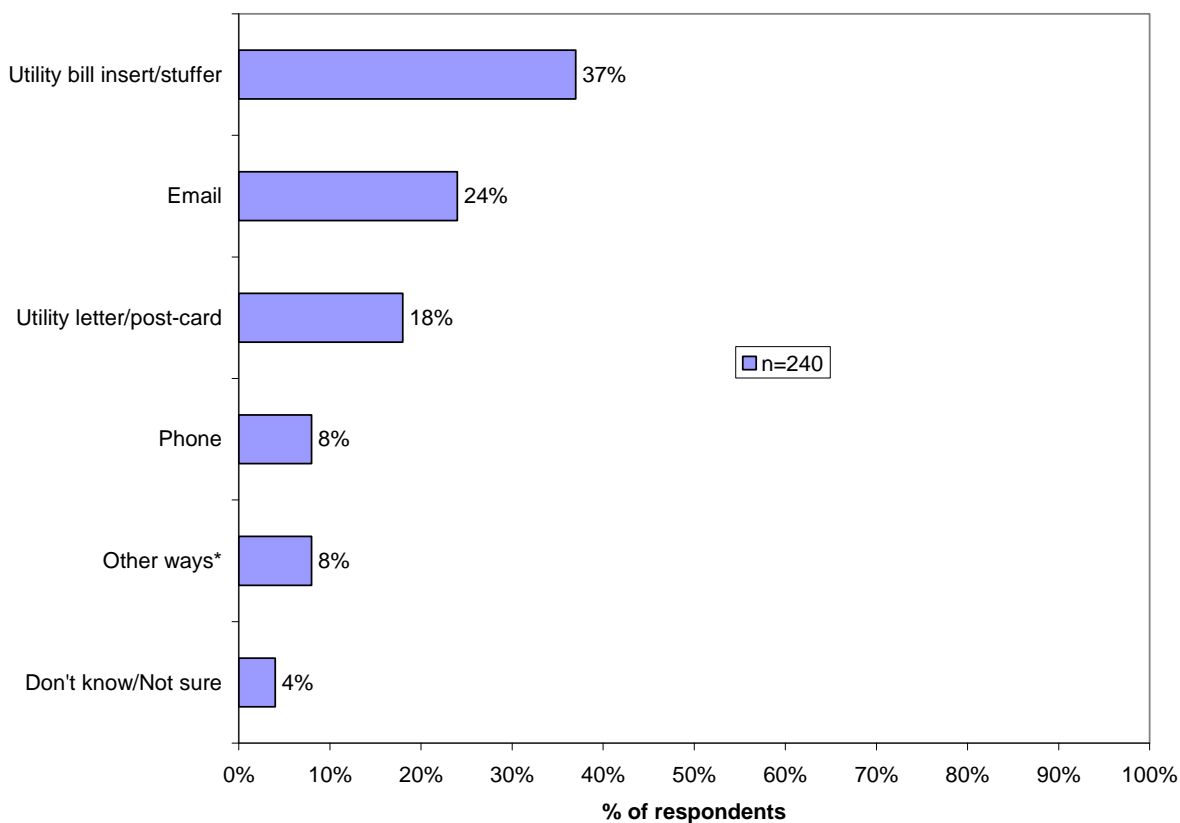


Note: Total exceeds 100% because respondents were allowed multiple responses. Other reasons included because we don't use the AC that much, getting a new/free thermostat, to gauge the effects of the program, helping to fight global warming, ability to control thermostat online, helping LDC avoid building power plant, et al.

3.2.3 Preferred Ways of Receiving Program Information

To inform future program marketing efforts, we asked the *peaksaver* participants: “If [participant’s LDC] wanted to give you more information about the *peaksaver* program, or any of their programs, what would be the best way to do this?” Figure 3-6 shows that *peaksaver* participants cited a variety of preferred ways of receiving information with utility bill inserts, email, and utility letters/post cards being the top three. We have found through our evaluation of other DLC programs that email is growing as a preferred source of program information.

Figure 3-6
Preferred Ways to Receive Program Information



Note: Total exceeds 100% because respondents were allowed multiple responses. *Other ways included radio ads, newspaper ads, and door-to-door.

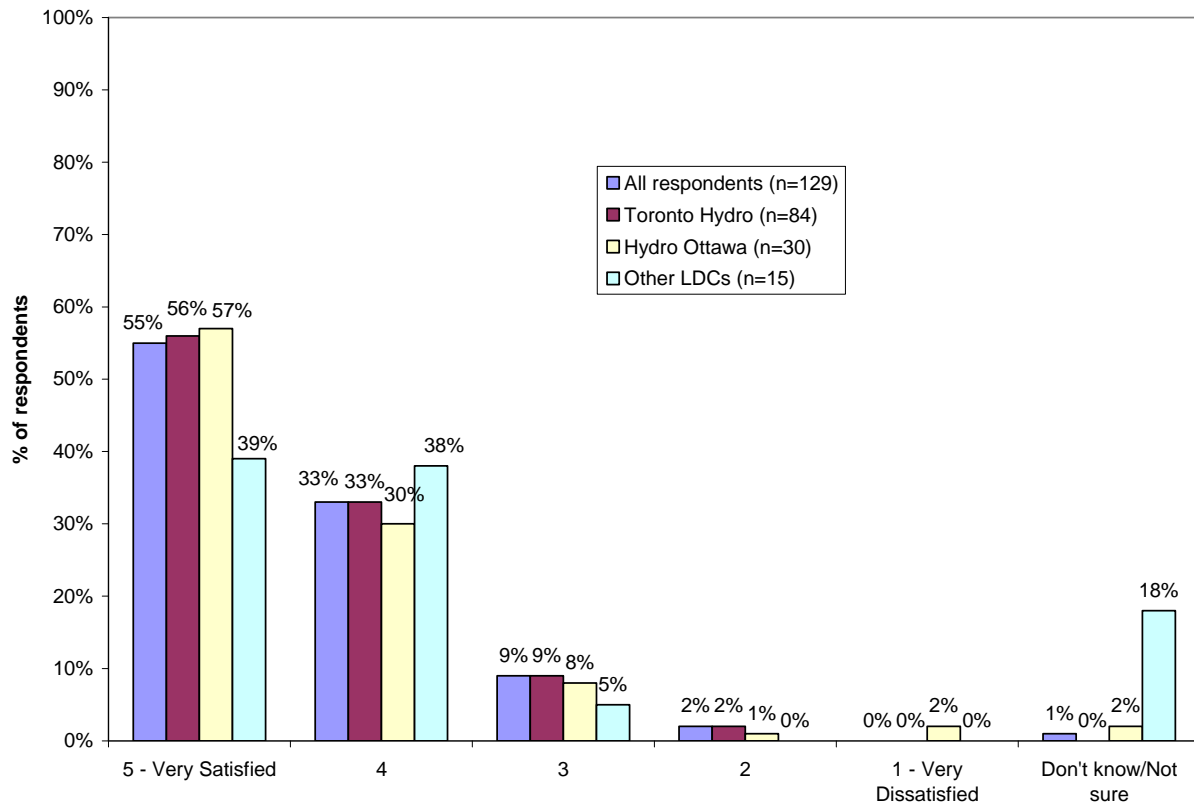
3.2.4 Rating Program Information

This subsection discusses how satisfied *peaksaver* participants were with the program information they received and the utility/program response to any additional phone/email inquiries they may have made about the program.

3.2.4.1 Satisfaction with General Program Information

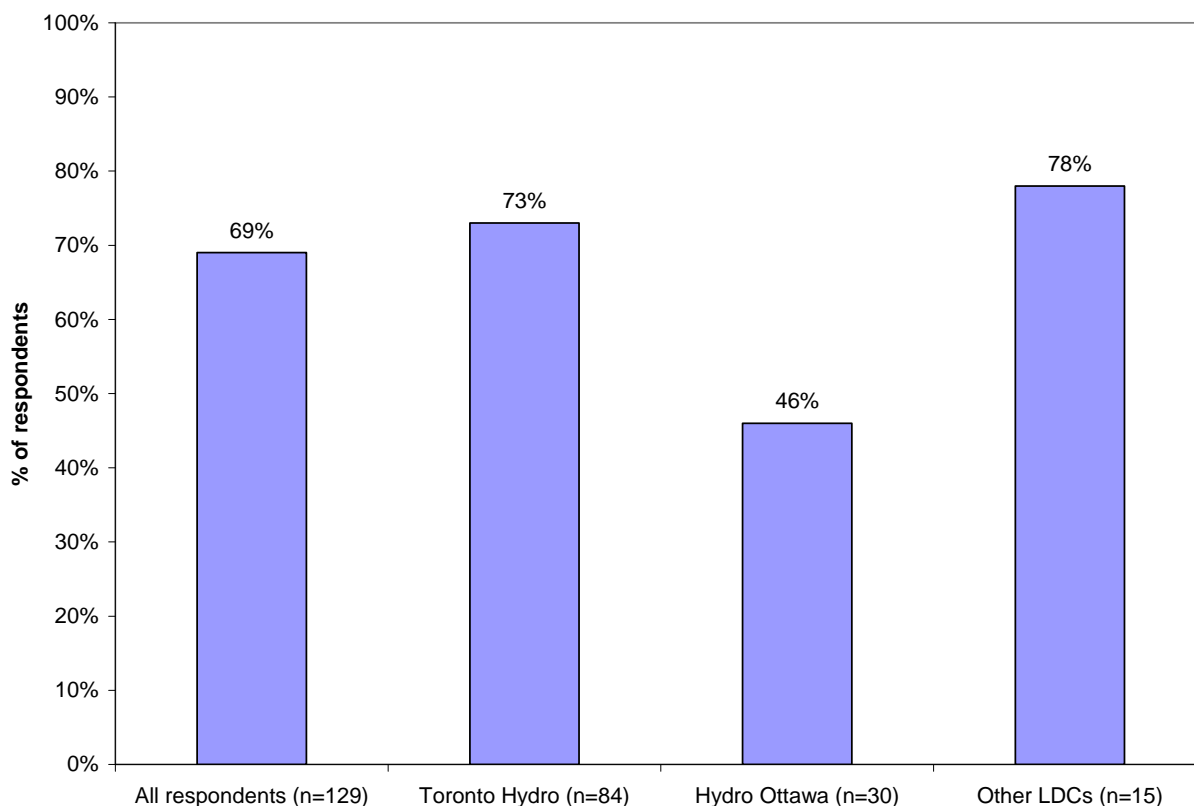
We asked the *peaksaver* participants who recalled receiving information from the program – who accounted for 55 percent of the total respondents – how satisfied they were with this information in helping understand how the program works. They were told to use a five-point satisfaction scale in which five signified “very satisfied” and one signified “very dissatisfied.” Figure 3-7 provides the breakdown of satisfaction ratings for all respondents as well as for the major LDC categories. It shows that 88 percent of the respondents were satisfied with scores of four or five on the five-point scale. The Toronto Hydro and Hydro Ottawa participants gave similar satisfaction ratings. The participants with the other LDCs were less likely to give higher satisfaction ratings but this was mainly because a higher percentage of the respondents were not sure what rating to give. In general the participants from the other LDCs seemed less able to remember the program information. For example, only 45 percent even recalled receiving the program information compared to 55 percent for Toronto Hydro and 56 for Hydro Ottawa.

Figure 3-7
Satisfaction with Program Information



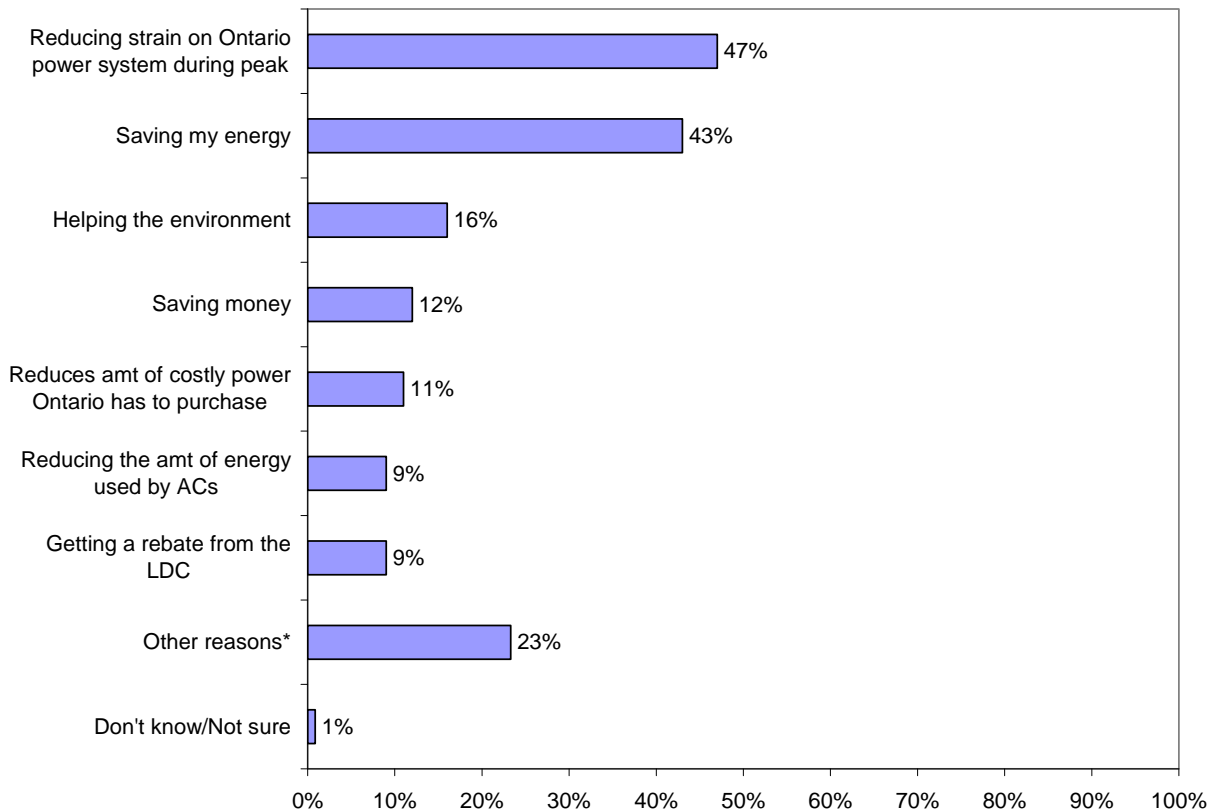
Although the Toronto Hydro and Hydro Ottawa peaksaver participants gave similar satisfaction ratings for the program information, there was an interesting difference in the frequency with which these participants could recall from this information the reasons for joining the program. We asked the peaksaver participants: “In the information you received from [LDC] about this program, do you recall why the utility said you should join the peaksaver program?” Figure 3-8 show that the Hydro Ottawa participants were much less likely to recall this information than participants from Toronto Hydro or other LDCs.

Figure 3-8
Whether Participants Recalled the Reasons
Their LDC Said They Should Join the *peaksaver* Program
from the Information They Received from the LDC



We also asked the participants about the reasons why their LDC or the Ontario Power Authority said that they should join the *peaksaver* program. Figure 3-9 shows that the most-cited reason was helping Ontario reduce the strain on its power system during peak hours. It is interesting to contrast these responses with those from Figure 3-5 which asked about the reason for joining from a broader array of program advertising (e.g. more than just the program information they received in the mail). For example, in Figure 3-5 helping reduce the strain on the power system was a much more minor factor (only 13% of respondents). One possible explanation is that the question for the responses show in Figure 3-9 mentioned the Ontario Power Authority while the question for Figure 3-5 did not. Another possible explanation is that the responses in Figure 3-5 concerned a broader range of program advertising.

Figure 3-9
What Participants Recalled from Program Information
Were Reasons Why LDCs/OPA Said They Should Join *peaksaver*



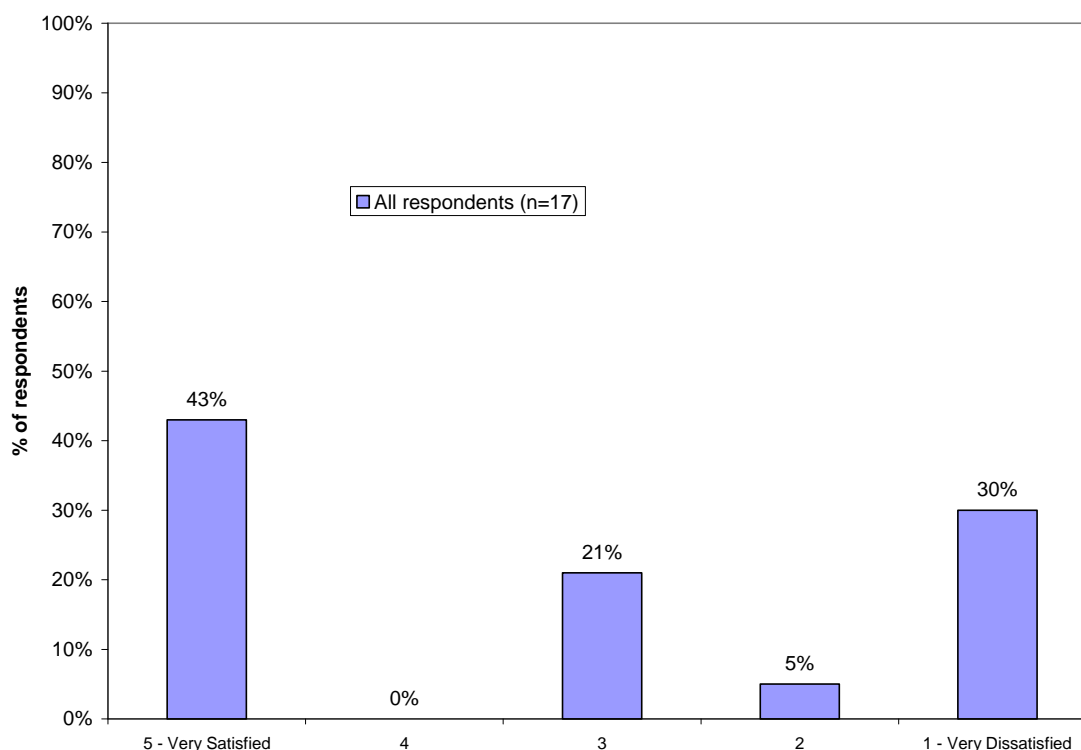
Note: Total exceeds 100% because respondents were allowed multiple responses. *Other reasons included helping prevent power outages, helping to reduce global warming, doing well with little hassle, getting a free programmable thermostat, doing good while staying comfortable, et al.

3.2.4.2 Satisfaction with Responses to Program Information Queries

Another indicator of the effectiveness of program information is how many participants had to call or email the utility or program to get additional information. We asked the *peaksaver* participants whether they had done this. Only five percent of them said that they had. We asked the participants who had sought this additional information how satisfied they were with responses that they received to their questions. Figure 3-10 shows that there was some dissatisfaction with these responses with 30 percent saying they were “very dissatisfied” and another 26 percent indicating that they were less than satisfied. When asked why they were dissatisfied, the most common response (57%) was that the utility/program responders had not been unable to answer/address their questions/concerns. Based on our experience evaluating

other DLC programs, we have found that such dissatisfaction with the utility/program response to questions is often related to a customer calling the utility/program due to discomfort from a cycling event. We have also found that it is difficult to determine whether a participant was calling a dedicated DLC program hotline or a more general utility hotline where call center staff may lack the specialized knowledge to answer questions about the DLC program.⁴

Figure 3-10
Satisfaction with Program Response to
Phone/Email Information Queries



⁴ A third of the *peaksaver* participants that had been less than satisfied (1-3 ratings on 5-point satisfaction scale) with the response they had received to their inquiries mentioned that it took multiple calls or transfers to get the needed information. This might indicate that some participants were calling generic LDC call centers first before being transferred to program-specific call centers.

3.3 CAC/Thermostat Use and Reactions to Load Control Events

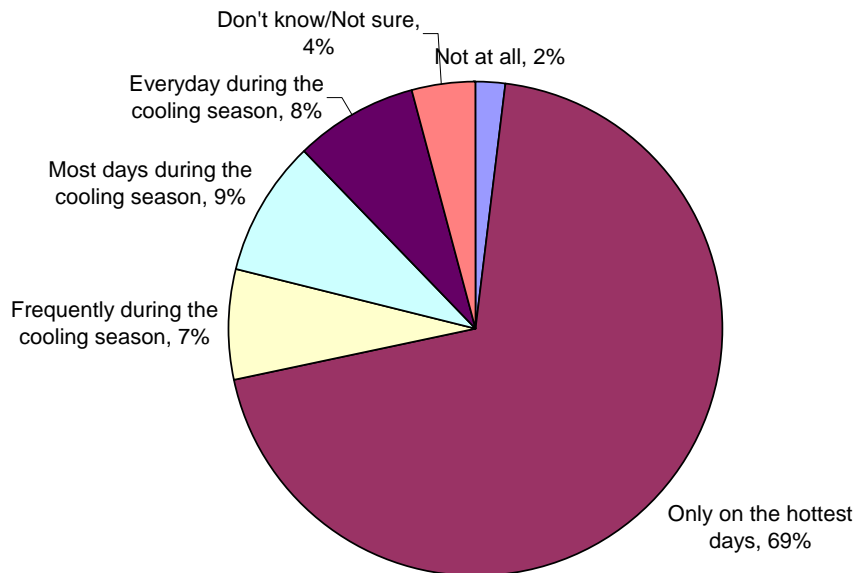
This section summarizes findings concerning how participants use their air conditioners and thermostats. It also discusses whether participants thought that load control events had occurred, whether they were comfortable during such events, and how they reacted to these events.

3.3.1 CAC/Thermostat Use

We asked the *peaksaver* participants how often they used their central air conditioners. The large majority (69%) said that they only use them on the hottest days (Figure 3-11). There was little variation in these responses among participants from the various LDCs.

Figure 3-11
Frequency of Air Conditioning Use

n = 353

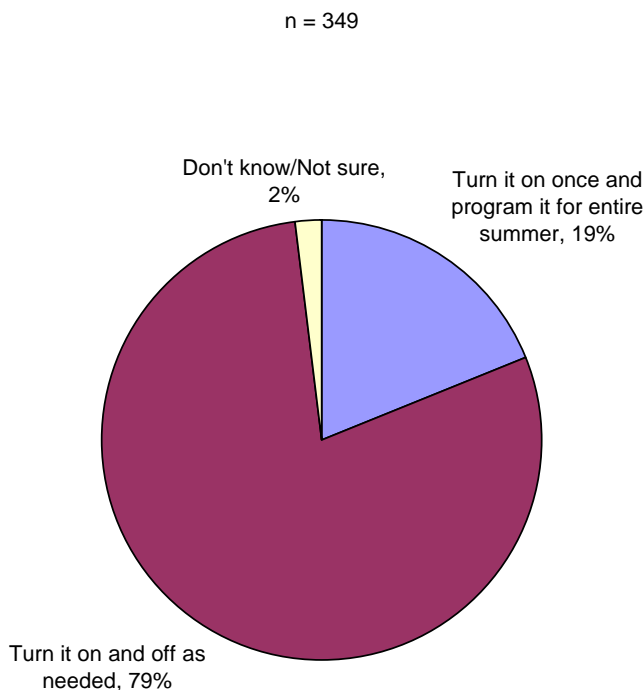


We were also interested in how these participants operated their central air conditioners. We asked them to choose one of the following to characterize their air conditioning use:

- 1) “you turn on your air conditioner in your home once, program your thermostat to one constant temperature and only turn it off at the end of the summer,” or
- 2) “you turn your air conditioner on and off as needed throughout the summer.”⁵

Figure 3-12 shows that over three quarters of the participants said that they turn their air conditioner on and off as needed throughout the summer. We asked these participants how often over the course of a typical summer they turn on their air conditioners. The average estimate was 14 times.

Figure 3-12
How Central Air Conditioners are Operated

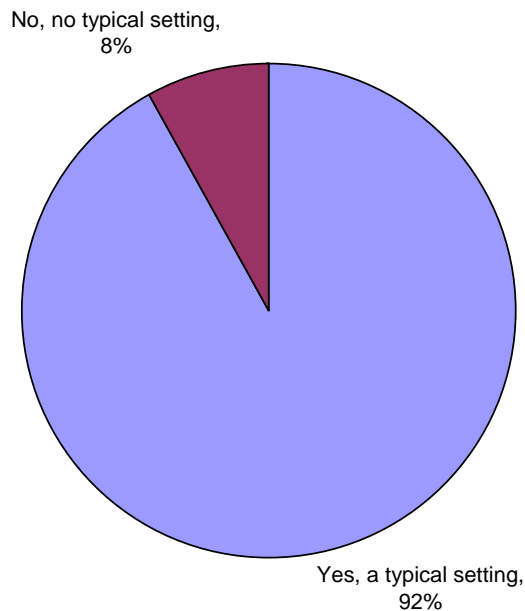


⁵ For commercial customers the words “at your place of business” was used in place of “in your home.”

We asked the participants when they turn on their air conditioner whether they have a typical temperature setting that they use for cooling their house. Figure 3-13 shows that the vast majority of the participants do have a typical temperature setting. When asked what this typical temperature setting was, the average response was 74 degrees Fahrenheit.

Figure 3-13
Whether Typical Cooling Temperatures are Used

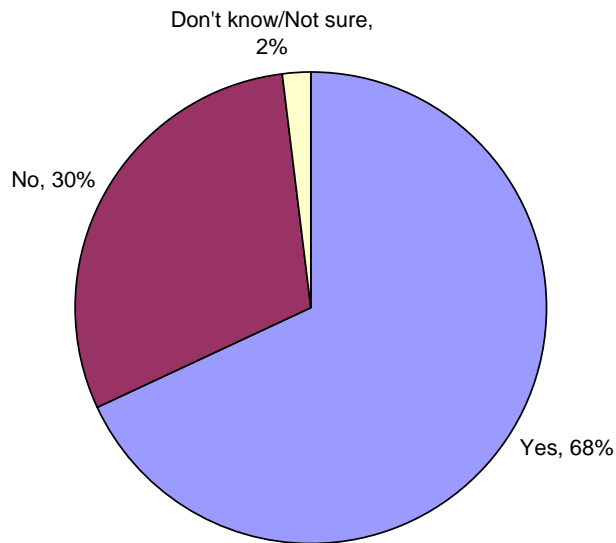
n = 347



We also asked the *peaksaver* participants whether their air conditioners are typically used to keep someone at home comfortable at weekday afternoons before 5 PM. Figure 3-14 shows that over two thirds of the respondents said that they did.

Figure 3-14
Whether ACs are Used on Weekday Afternoons

Is the air conditioner typically used to keep someone at home comfortable on weekday afternoons before 5 P.M.? (n=343)

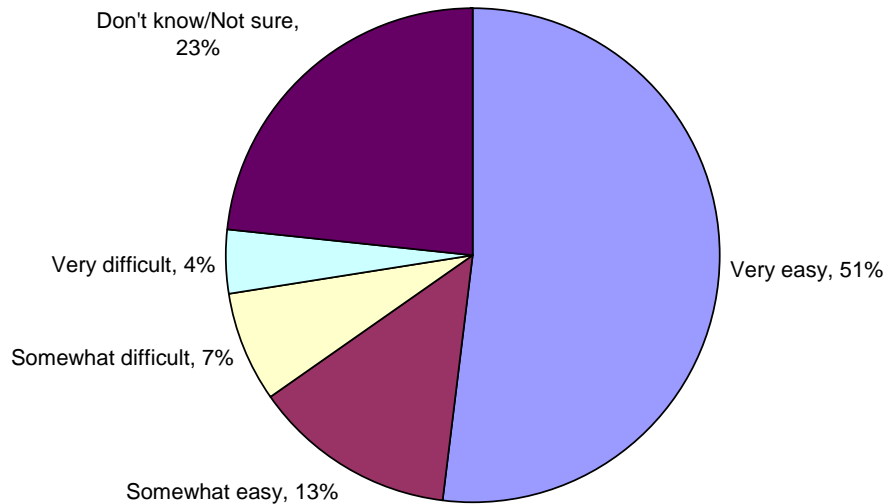


We asked the customers who were participating in *peaksaver* through a smart thermostat (n=78) whether they had used the *peaksaver* website to operate their thermostat and, if so, how often they had done this. Only twelve percent said that they had operated their thermostat through the website with an average usage of 4.4 times.⁶ Finally we asked these few users whether it very easy, somewhat easy, somewhat difficult, or very difficult to operate their thermostat through the website. Over half (51%) said it was very easy and another 13 percent said it was somewhat easy (Figure 3-15).

⁶ Due to concerns about survey length, we did not ask those who were not using the *peaksaver* website to operate their thermostats whether this was due to preference or because they did not realize that they had this capability.

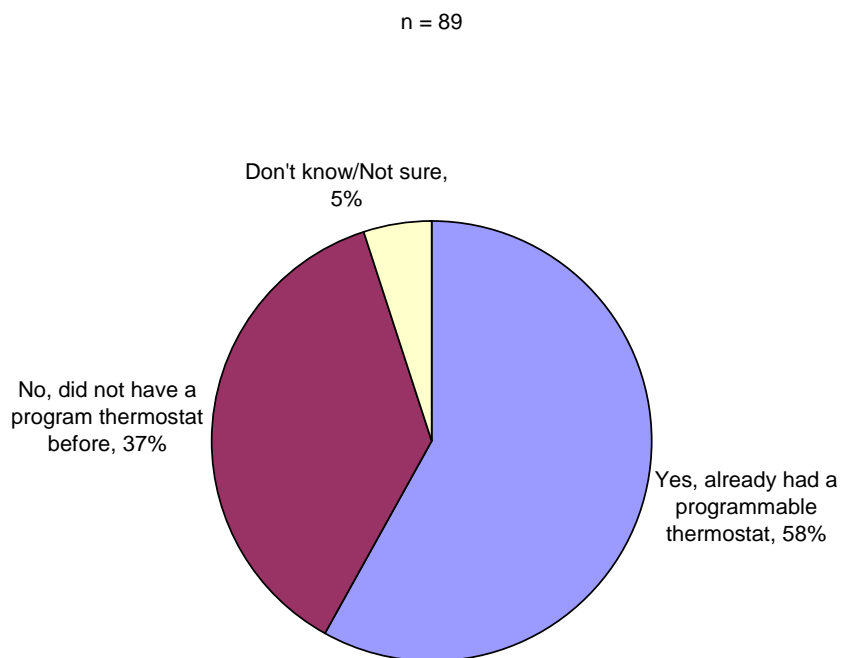
Figure 3-15
Ease of Operating Smart Thermostats Through *peaksaver* Website

n = 9



The OPA staff was interested in knowing what impacts the use of programmable thermostats by the *peaksaver* program might have on the temperature setting behavior of the participants. So we asked the customers who were participating in the program via a smart thermostat whether they already had a programmable thermostat before joining the program. Figure 3-16 shows that 37 percent of the customers who received the smart thermostats through *peaksaver* said that they did not have a programmable thermostat before joining the program.

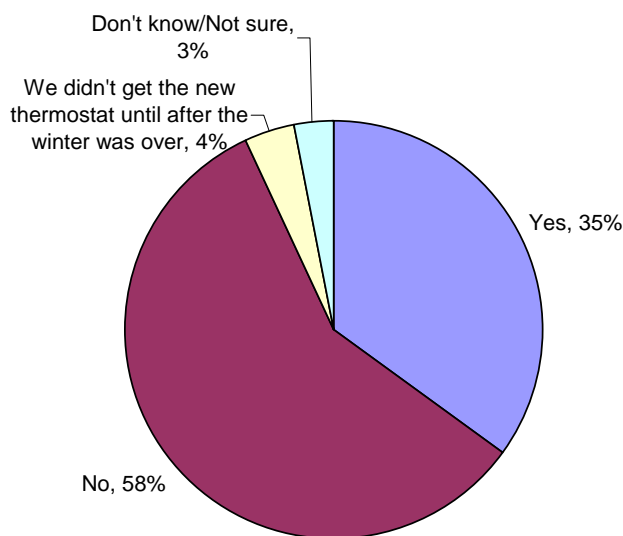
Figure 3-16
Whether Customers Participating in *peaksaver* via Smart Thermostats
Had Programmable Thermostats Before They Joined the Program



The staff was also interested in knowing whether the participants who received a programmable thermostat through *peaksaver* engaged in new energy saving behavior during the wintertime. We asked them: “Since getting a new programmable thermostat from the *peaksaver* program, have you used different temperature settings during the wintertime than you did before you got this new thermostat?” Figure 3-17 shows that a little over a third said that they changed their wintertime settings after they got their new thermostats. We asked the respondents who said that they had changed their wintertime settings how they had done so. Sixty-one percent of them said that they now use a cooler setpoint during the overnight period and 50 percent said that they now use a cooler setpoint during the daytime period when their house is unoccupied. This suggests that there were some small potential energy savings among this group. However, it is important to remember that the 17-19 people who were making these changes only accounted for about five percent of the respondents in our sample.

Figure 3-17
Whether Customers Participating in *peaksaver* via Smart Thermostats Changed Their Wintertime Temperature Settings After Getting New Thermostat

Have you used different temperature settings during the wintertime than you did before you got this new thermostat? (n=89)



We also asked the participants who previously had programmable thermostats whether before joining the program they changed the cooling or heating temperature settings when people were not home in order to save energy. Sixty-three percent of them said that they had. When those who said that they changed these settings were asked whether they did this regularly or occasionally, 65 percent said that they did this regularly.

Finally we asked all the *peaksaver* participants – whether they were participating via a smart thermostat or an air conditioner switch – whether they have changed their typical cooling temperatures since joining the program. Only 12 percent said that they had (Figure 3-18). When we asked them how they had changed their cooling settings they gave a wide variety of responses as shown in Figure 3-19. Without further analysis it is impossible to tell whether the net effect of the new programmable thermostats on behavior is likely to lead to energy savings for these participants.

Figure 3-18
Whether *peaksaver* Participants Have Changed Typical Cooling Temperatures Since Joining the Program

Since joining the peaksaver program, have you changed the typical temperature setting that you use for cooling your house? (n = 347)

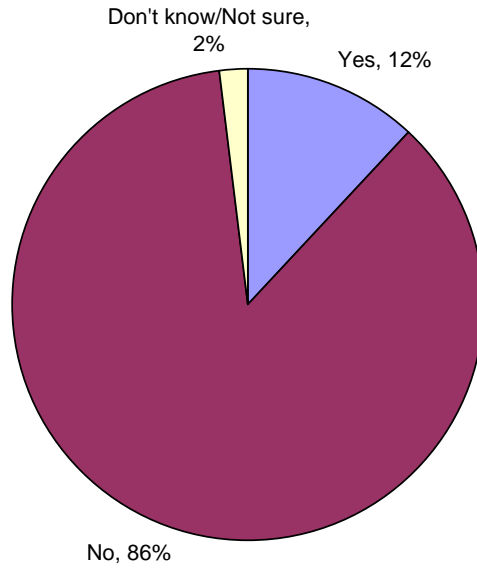
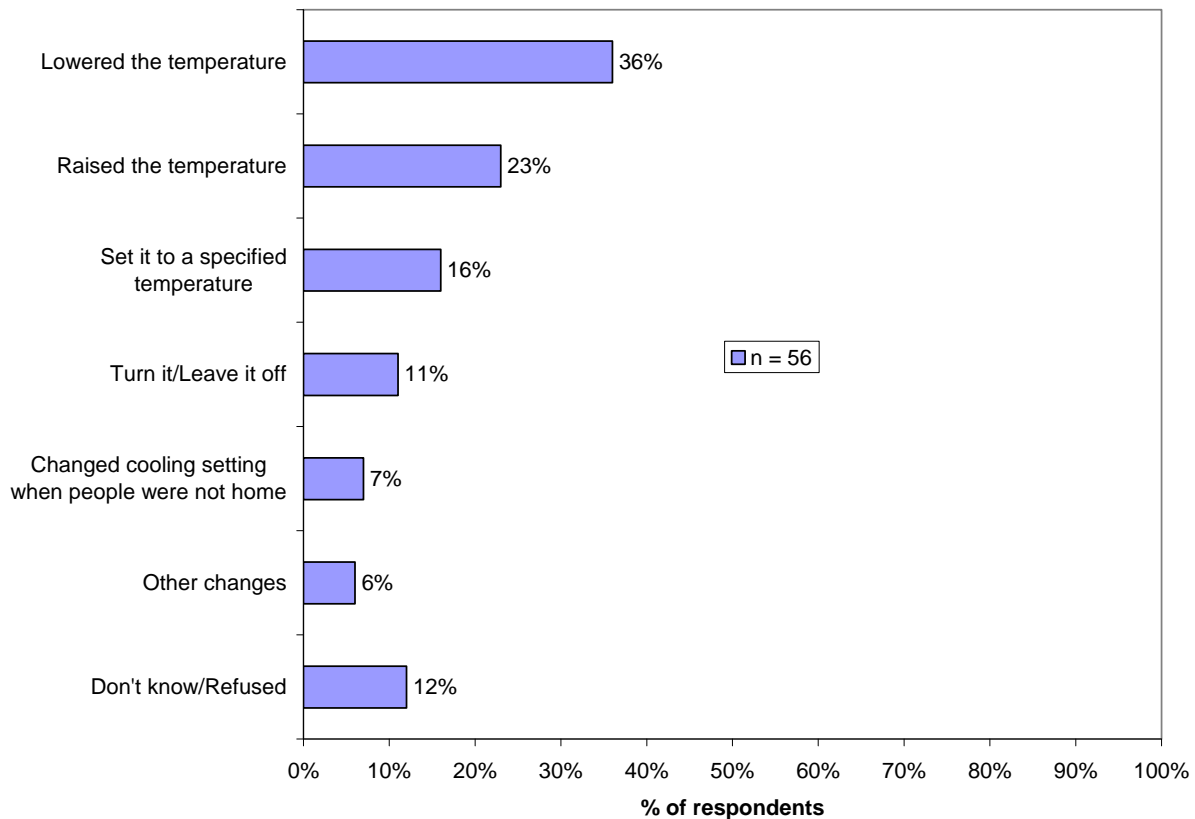


Figure 3-19
How *peaksaver* Participants Have Changed Typical Cooling Temperatures Since Joining the Program



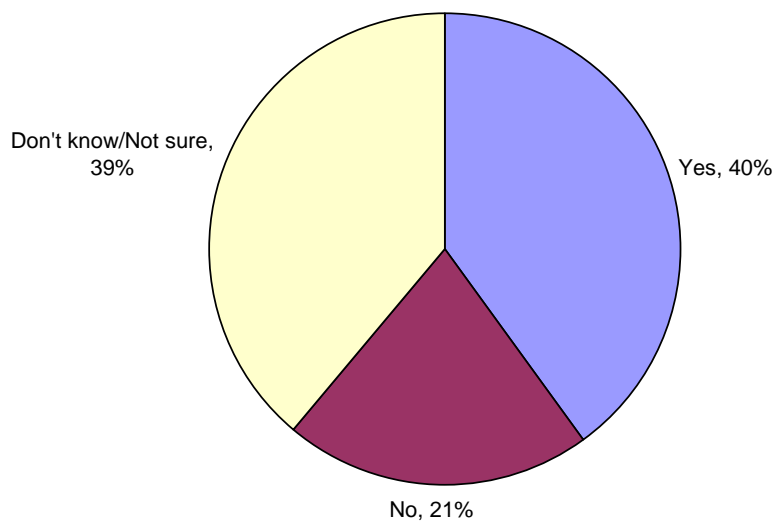
Note: Total exceeds 100% because respondents were allowed multiple responses.

3.3.2 Awareness of the Control Events

One of the key topics of interest for any evaluation of a DLC program is the level to which participants are aware of the control events when they occur. We asked the participants whether their LDC had remotely raised their thermostats settings (for smart thermostat participants) or activated their air conditioner control switch (for switch participants) since the beginning of 2009. Figure 3-20 shows that 40 percent of the participants thought this had occurred. We asked those who recalled a control event how often these had occurred. The mean estimate was 1.1 events and the median estimate was one event. This compares to the actual number of four load control events in 2009 for those in the M&V group. Only four of the 134 participants who recalled a control event reported the correct number of control events (4).

Figure 3-20
Whether Participants Believed That Their LDC Has
Remotely Raised Their Thermostat Settings or
Activated Their AC Control Switch
Since the Beginning of 2009

Has [participant's LDC] remotely raised your thermostat settings or activated your AC control switch since the beginning of 2009? (n=353)

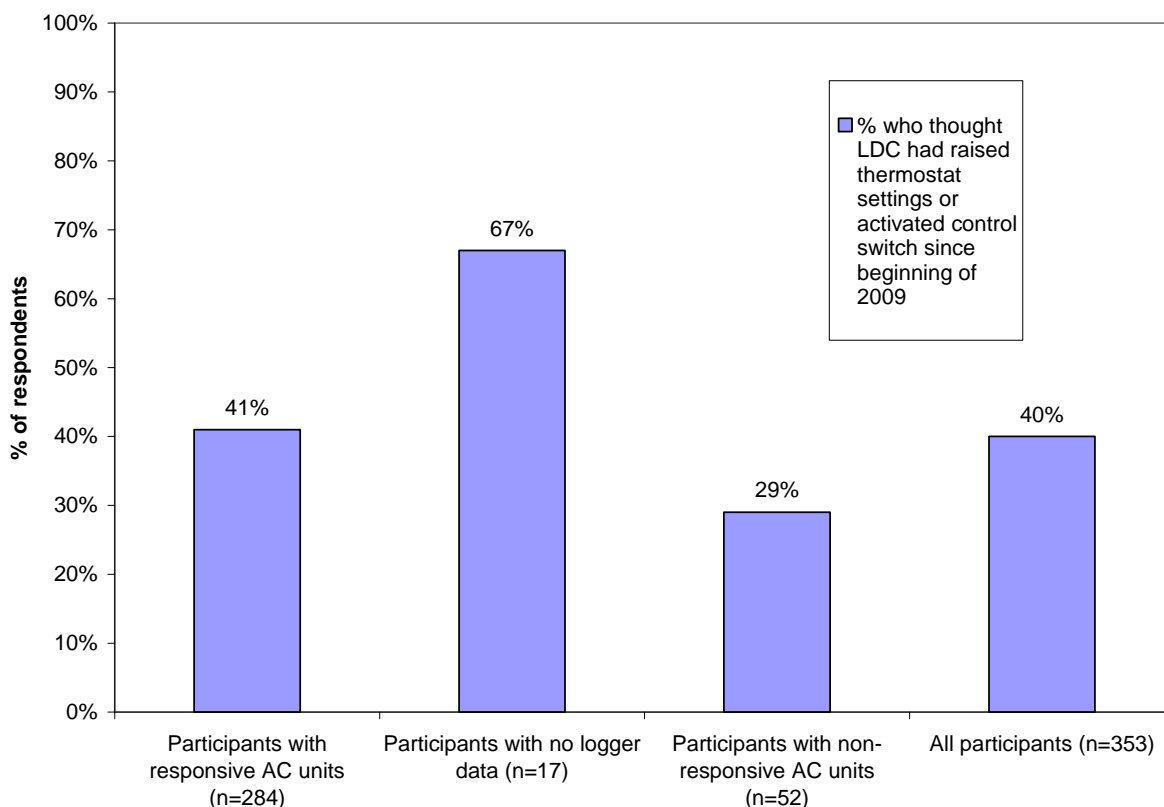


One question raised by the OPA staff during the evaluator presentation of the results was how much these levels of control event recall might have changed if the “non-responsive” participants were removed. Non-responsive participants are those participants who had air-conditioning units that did not reduce its load in response to the control event. The most likely explanations for these non-responsive units were signal problems (permanent or temporary) and DLC device malfunction. Of the 353 participants who responded to the surveys, 52 (15%) were determined to be non-responsive. In addition to these, there were 17 survey respondents (5%) for which no logger data was recovered. So in these cases it was impossible to determine whether the air conditioning units had been responsive to the load control signals or not.

Figure 3-21 shows the respondents who recalled control events occurring in 2009 broken down by the responsiveness of their air conditioning units to these events. It shows that separating out the respondents who had responsive air conditioning units only raises the recall level from 40

percent to 41 percent. It is also interesting to note that 29 percent of the respondents with non-responsive air conditioners still recalled control events. We have seen similar levels of “false positives” with evaluations of other DLC programs.

**Figure 3-21
Recall of Control Event
by Responsiveness of AC Unit**

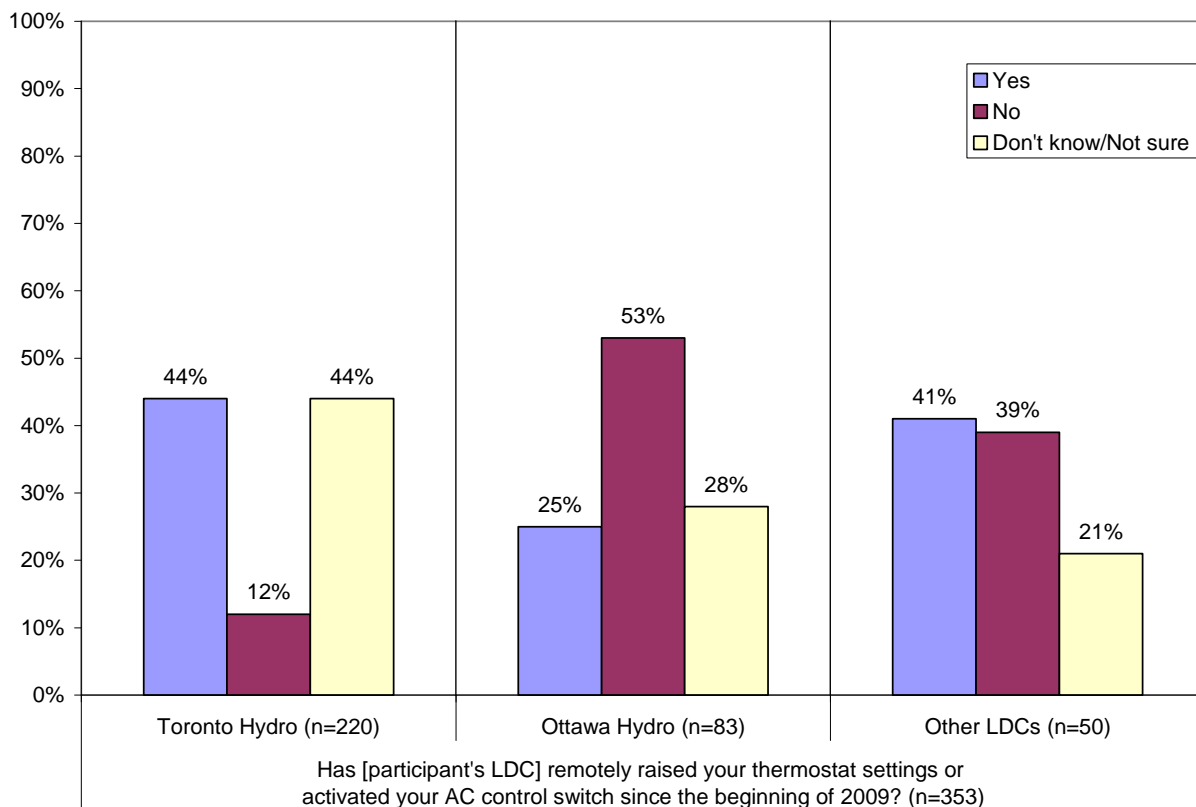


We also looked at whether the percentage of participants reporting the control events varied by other participant subcategory. There were some interesting differences depending on which LDC the participant was with. Figure 3-22 shows that the Ottawa Hydro participants were much less likely than participants from the other LDCs to report that a control event had occurred and much more likely to say that a control event had not occurred. The Toronto Hydro participants were least likely to say that a control event had *not* occurred. Other statistically-significant differences among participant subgroups included:

- Female participants were more likely (46% of respondents) to report the control events than male participants (35%);

- Participants in the lower-income group were less likely to report control events (29%) than participants from the middle-income (45%) or higher-income groups (43%); and
- Participants who joined the program for personal reasons were more likely (40%) to report control events than those who joined for societal reasons (28%).⁷

Figure 3-22
Reporting of Control Events
by LDC

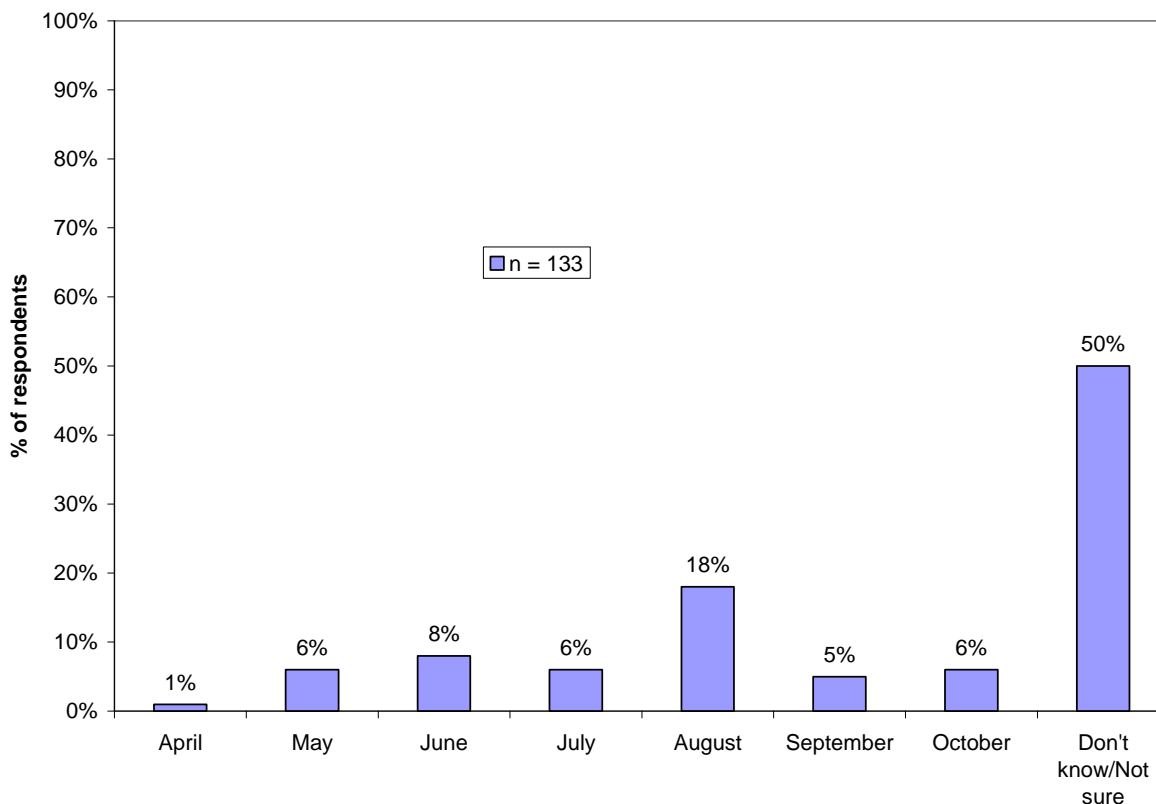


While the participants were not very accurate at estimating how many control events had occurred in 2009, they were better at estimating when the last control event had occurred. Figure 3-23 shows that although only half of the participants were willing or able to estimate when the last control event occurred, of those that did the most frequent estimate was August

⁷ Personal reasons included things such as saving their energy, getting the rebate, and saving money as opposed to societal reasons such as helping the environment or helping their LDC avoid power outages.

2009. This response was correct because most of the participants were asked this question in the early September post-event survey.

Figure 3-23
When Participants Estimated the Last Control Event Had Occurred

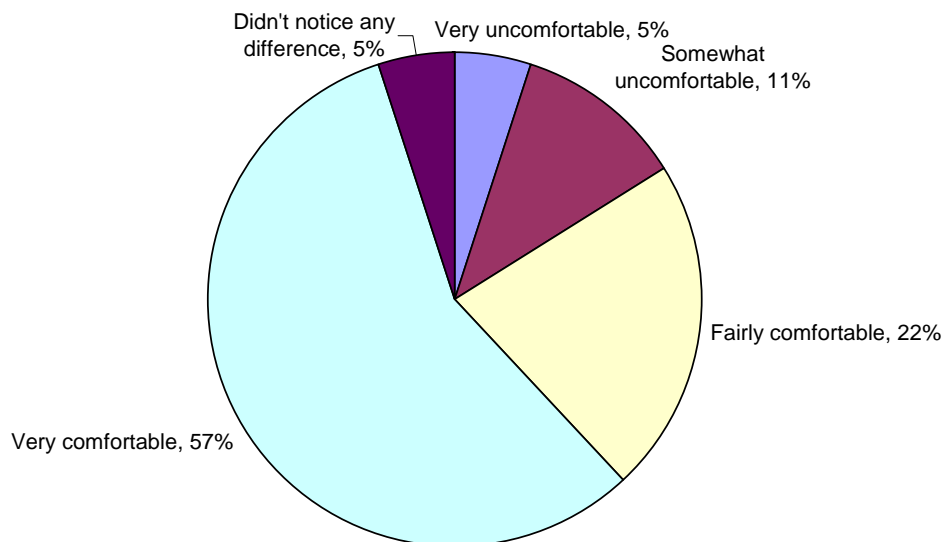


3.3.3 Effects of the Control Events

We asked the participants who reported that a control event had occurred in 2009 whether they had been home during the most recent control event. Slightly over half (54%) said that they had been. We then asked those who said that they had been home during the last control event whether they were comfortable when it occurred. Only five percent said that they were very uncomfortable and eleven percent said that they were somewhat uncomfortable (Figure 3-24). Over half of the participants said that they were very comfortable.

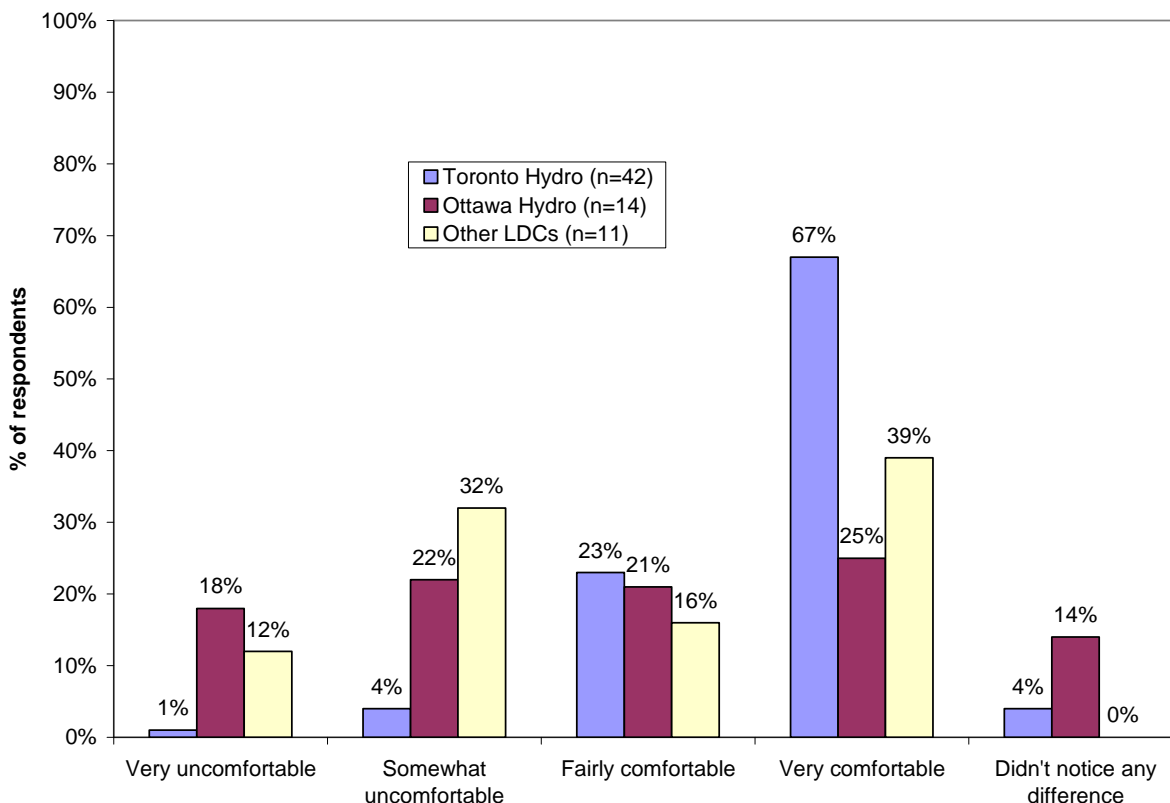
Figure 3-24
Participant Comfort during Control Events

n = 67



There were some interesting differences when these responses were broken down by LDC. Although the sample sizes were fairly small, Figure 3-25 shows that the Toronto Hydro participants were much more comfortable than those from other LDCs. One possible explanation for this is that since only 25 percent of the Hydro Ottawa reported experiencing a load control event (Figure 3-22), those that did report it were much more heat sensitive than the average participant. We also examined whether the percentage of participants reporting that they were uncomfortable varied depending on whether they had air-conditioning units that were responsive to the control events or not. We found no statistically significant difference between those who had responsive units and those who did not.

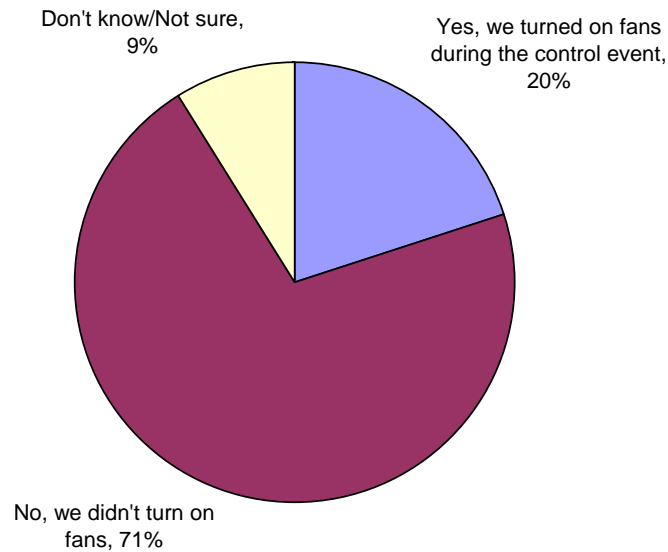
Figure 3-25
Participant Comfort During Control Events
by LDC



We asked the *peaksaver* participants who recalled control events whether they, or other members of their household, had turned on any fans to keep cool during these events. Figure 3-26 shows that a fifth of them said that they did.

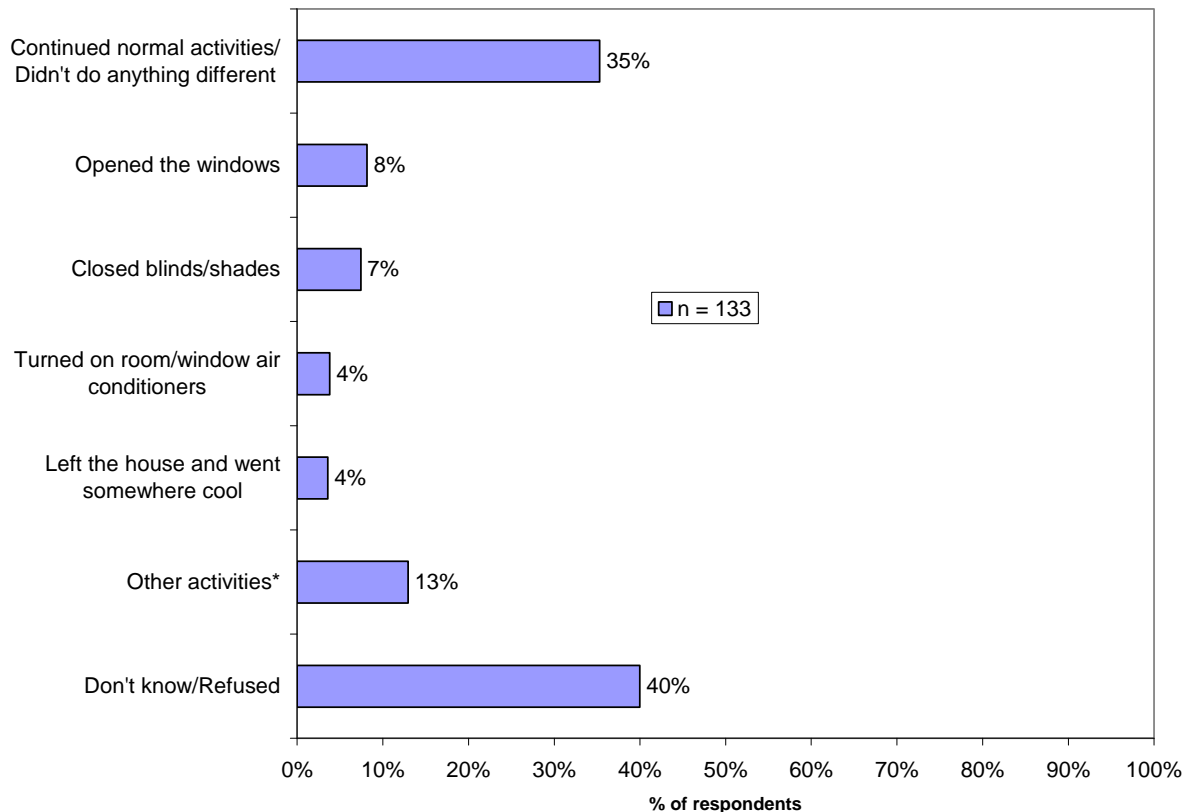
Figure 3-26
Participants Turning on Fans During Control Events

n = 130



The *peaksaver* participants were also asked about other ways -- besides turning on fans -- by which they tried to keep cool during control events. Participants named a wide variety of ways to keep cool (Figure 3-27); although the most common responses were either that they continued their normal activities or they could not recall what they did. We asked the participants who mentioned activities to keep cool whether these were things they normally did during hot weather or whether they only did this during control events. Seventy-eight percent of these participants said that these were things they normally do during hot weather.

Figure 3-27
Activities to Keep Cool during Control Events



Note: Other activities included lowering the thermostat settings, wearing less clothing, using the swimming pool, et al.

We asked those who recalled a control event and who participated through *peaksaver* via a smart thermostat: “when you thought that [LDC] was remotely raising your thermostat settings, did you ever try to lower your thermostat settings in response?” Twenty-nine percent of the participants said that they did.

3.4 Program Enrollment and Control Device Installation

This section summarizes findings concerning how participants enrolled in the program, whether they were satisfied with the enrollment process, and whether they were satisfied with the processes of scheduling and device installation.

3.4.1 Enrollment Methods

We asked the *peaksaver* participants who had joined the program in 2008 or 2009 how they enrolled in the program. Figure 3-28 shows that while the toll-free number was the most-cited means of enrollment, it was only cited by about a third of the recent participants. Non-seniors were twice as likely as seniors to use the Internet to enroll in *peaksaver* (Figure 3-29). This is similar to what we found in evaluations of other DLC programs.

Figure 3-28
How Recent Participants Enrolled in the *peaksaver* Program

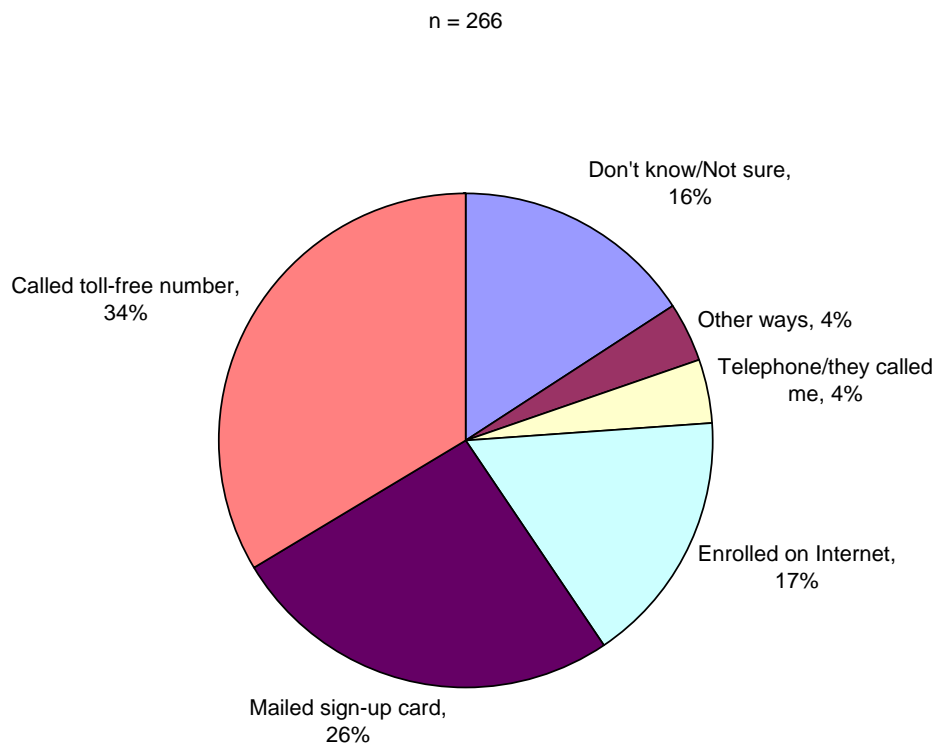
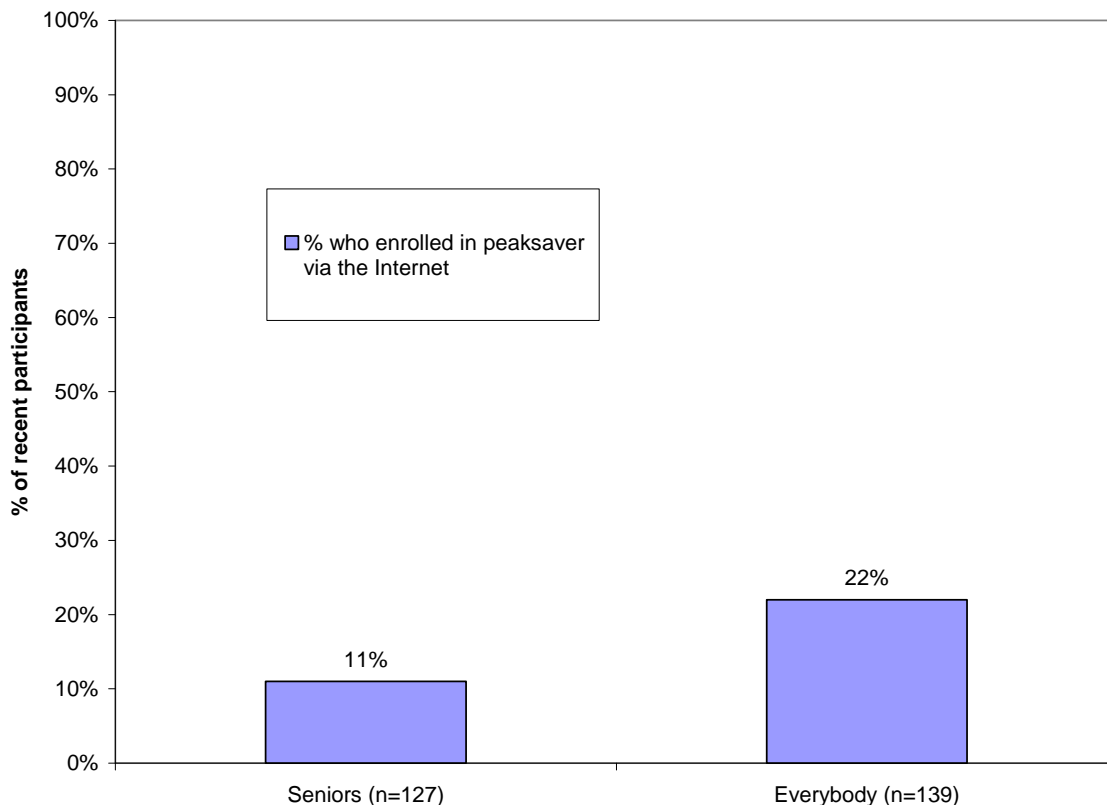


Figure 3-29
Enrolling in *Peaksaver* through the Internet
Seniors vs. Non-Seniors

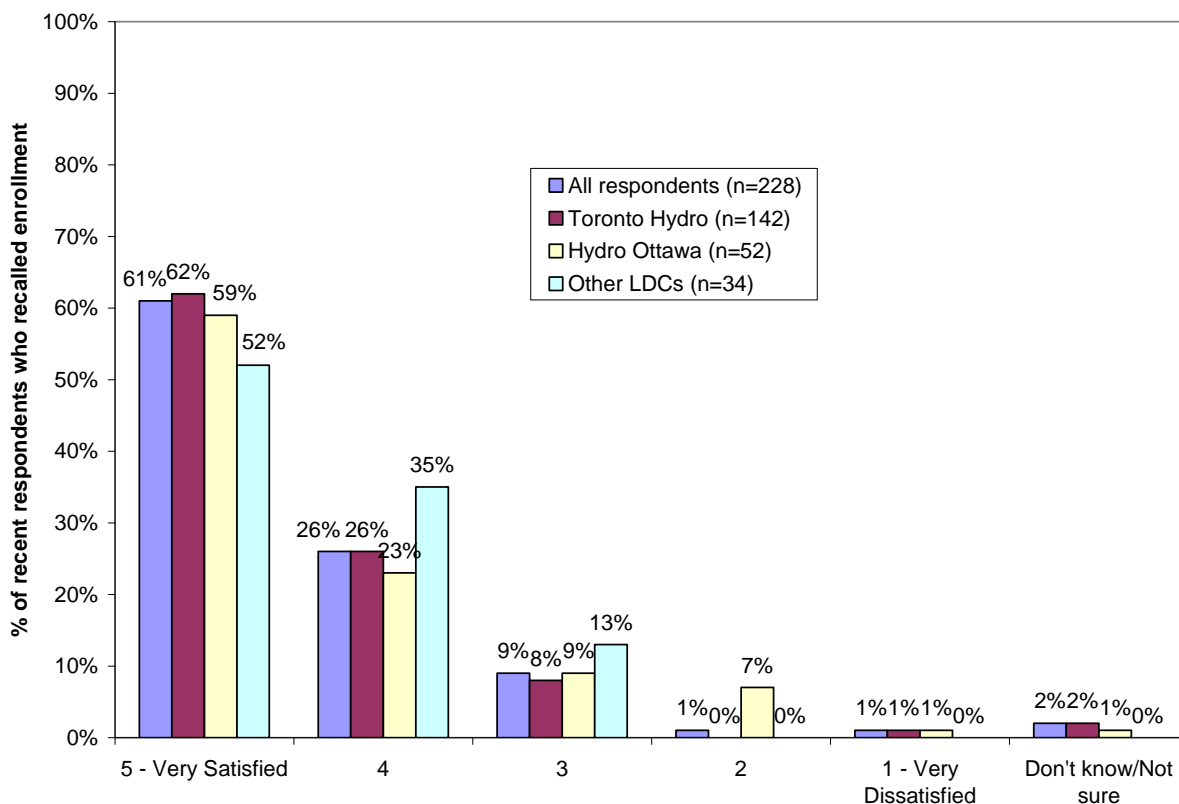


3.4.2 Satisfaction with Enrollment

We also asked the recent *peaksaver* participants who recalled how they joined the program to rate their satisfaction with the enrollment process, using a scale of 1 to 5 where 5 equaled “very satisfied” and one equaled “very dissatisfied.” Figure 3-30 shows that for all the LDCs over half of the respondents were very satisfied with the enrollment process and over eighty percent of them gave ratings of either four or five on the five-point satisfaction scale. We asked the 33 respondents who were less than satisfied with the enrollment process (1-3 on the five-point satisfaction scale) why they were dissatisfied with this enrollment process. The most-cited reason (18% of respondents) was lack of information or instruction, but there were many other reasons and some of these – such as noticing energy savings (14%) or “my costs increased”

(10%) – could not be attributed to the enrollment process but reflected dissatisfaction with other aspects of the *peaksaver* program.

Figure 3-30
Satisfaction with Program Enrollment Methods



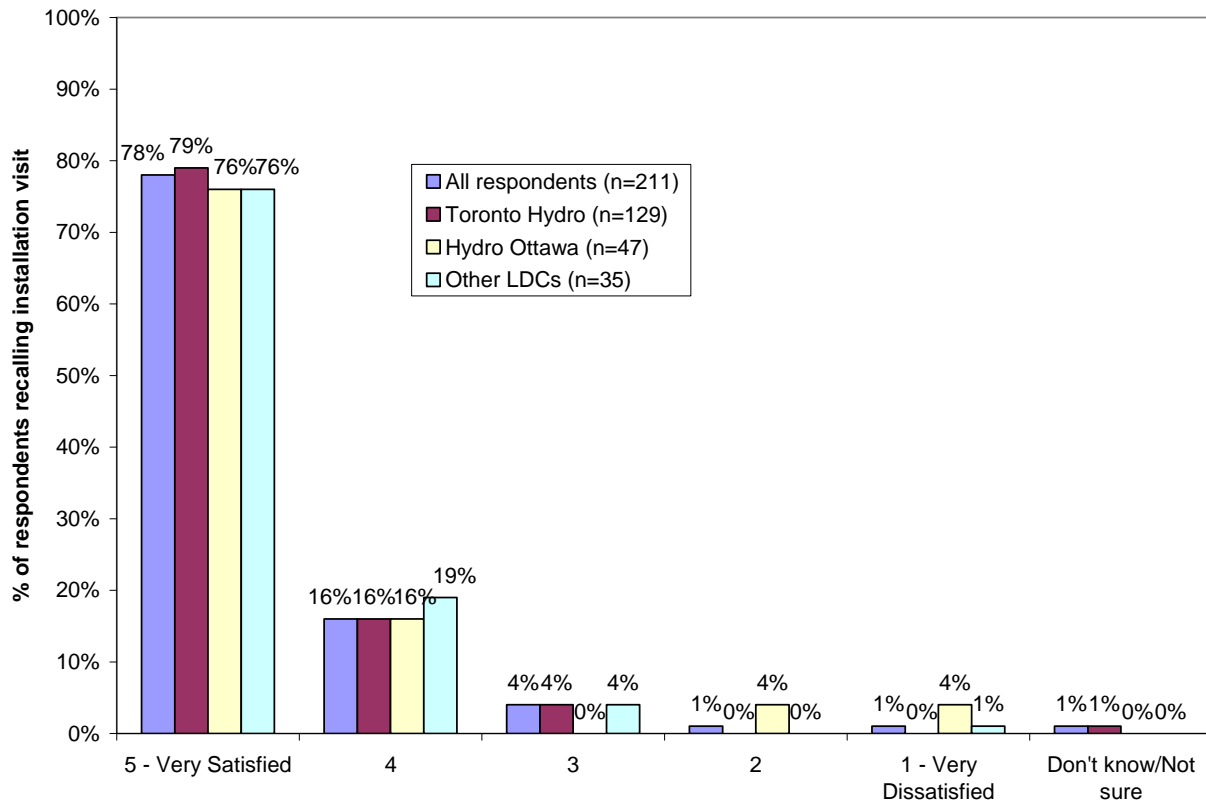
3.4.3 Satisfaction with the Installation Process

We asked the *peaksaver* participants who recalled a contractor coming to their house to install a smart thermostat or air-conditioning control switch how long after they called their LDC to participate in *peaksaver* did a contractor come to install the device. Less than half (48%) of these participants were willing or able to provide an estimate. Of those providing an estimate, the mean estimate was 16 days and the median estimate was 11 days.

We also asked the participants who recalled a contractor coming to their house to install a smart thermostat or air-conditioning control switch how satisfied they were with the whole process of scheduling and installing the thermostat or switch. Figure 3-31 shows that 91-95% of the participants, depending on which LDC they belong to, were satisfied (4 or 5 on the five-point satisfaction scale) with these scheduling and installation processes. While the installation of a

smart thermostat, because it requires entry into the home, is inherently more intrusive than the installation of a switch, the percentage of smart thermostat participants that were satisfied (92%) was not much different than the percentage of switch participants that were (94%).

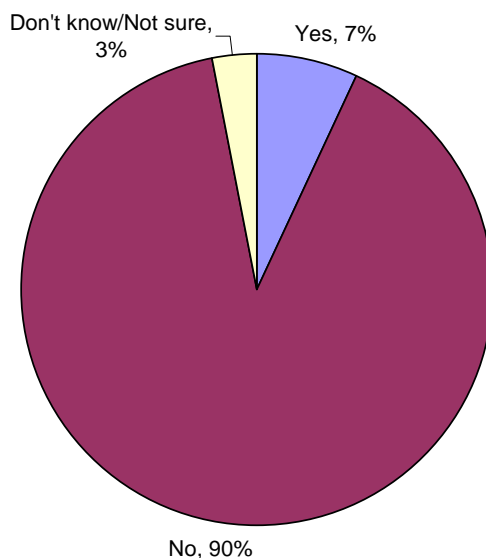
Figure 3-31
Satisfaction with the Scheduling and Installation of the Load Control Devices



The *peaksaver* participants were asked whether they have had any mechanical problems with their air conditioner since joining the program. Figure 3-32 shows that seven percent of the respondents reported mechanical problems. We asked these few respondents who reported mechanical problems whether they thought these problems might have been related to their participation in the *peaksaver* program. Thirty-one percent of them – accounting for four participants -- thought that there was a relationship between their mechanical problems and their participation in the program. While this sounds like a small number, it's important to remember that if this 1-2% of participants in the sample is extrapolated across the whole *peaksaver* program, it could account for a significant volume of phone complaints.

Figure 3-32
Whether Participants Had AC Mechanical Problem
Since Joining the Program

Have you had any mechanical problems with your air conditioner since you have been involved with the peaksaver program? (n=266)



3.5 Satisfaction with Incentives, Program in General

This section summarizes findings concerning participant satisfaction with program incentives and the program in general and reasons for dissatisfaction.

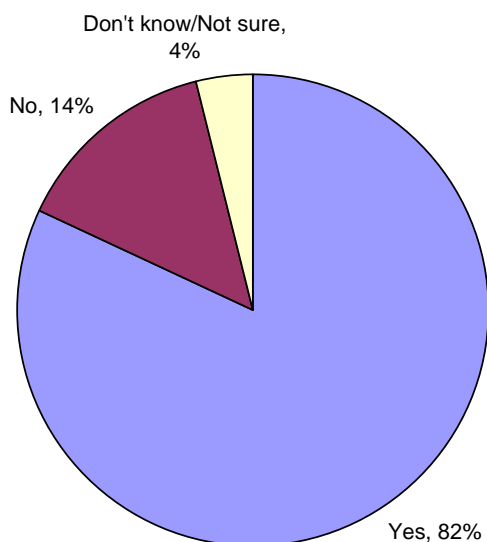
3.5.1 Satisfaction with the Incentive Payment

We told the *peaksaver* participants that they would receive a \$25 bill credit for participating in the program and asked them whether this was adequate compensation for their LDC cycling their air conditioner over the course of the summer. Eighty-two percent of the participants said it was adequate compensation (Figure 3-33). Participants who had been less than satisfied (1-3 on the five-point satisfaction scale) with at least one aspect of the *peaksaver* program were much less likely (59% of 72 respondents) to think the \$25 was adequate compensation than

those who were totally satisfied with the program (89% of 164 respondents). Toronto Hydro participants were less likely (79% of respondents) to say it was adequate compensation than respondents from the other LDCs (89-92%). We asked those who thought the \$25 bill credit was not adequate what adequate compensation would be. The mean response was \$69 and the median response was \$75.

Figure 3-33
Whether the Program Incentives Were Adequate

Do you think \$25 is adequate compensation for [participant's LDC] cycling your air conditioner over the summer? (n=266)



3.5.2 Overall Program Satisfaction

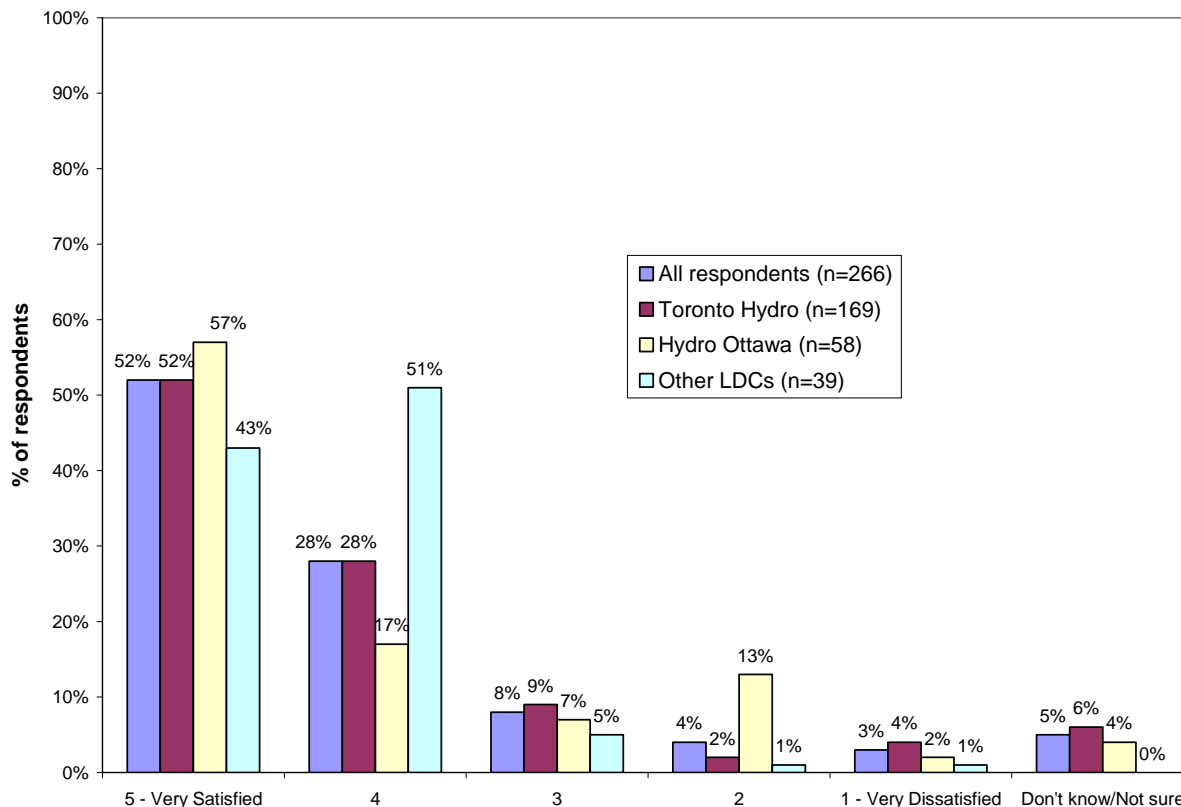
We asked the participants to rate their satisfaction with the *peaksaver* program in general, using a five-point satisfaction scale. Figure 3-34 shows that the percentage of participants satisfied (4 or 5 on the five-point satisfaction scale) with the whole program ranged from 74 percent for

Hydro Ottawa participants to 80 percent for Toronto Hydro participants and up to 94 percent for the other LDCs.⁸

Not surprisingly participants who had been less than satisfied (1-3 on the five-point satisfaction scale) with at least one aspect of the *peaksaver* program were much less likely (37% of 72 respondents) to be satisfied with the program as a whole than those who were satisfied with all the various program aspects (93% of 194 respondents were satisfied with the program as a whole, the remainder weren't sure). Similarly those who had reported some discomfort during the control events were more likely (38% of respondents) to be less than satisfied than those who reported no discomfort (11% of these were less than satisfied). The only other statistically-significant differences among the participant subgroups was that female respondents were more likely (87% of 125 respondents) to be satisfied with the whole program than male respondents (75% of 136 respondents).

⁸ The OPA staff was interested in learning whether the level of program satisfaction varied depending on whether participants had air-conditioning units that were responsive to the control events or not. We found no statistically significant difference between those who had responsive units and those who did not.

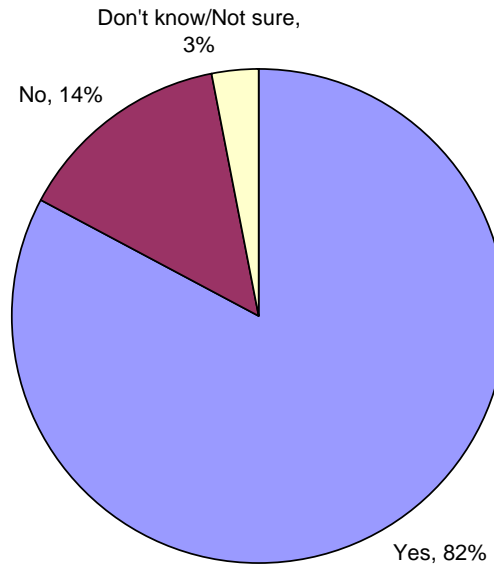
Figure 3-34
Satisfaction with the *peaksaver* Program



We also asked the participants whether they would recommend the *peaksaver* program to friends, neighbors, or co-workers. Figure 3-35 shows that the 82 percent of them said that they would –similar to the percentage (80%) who said that they were satisfied with the program as a whole. When those who said that they would not recommend the program were asked why, their top reasons were that they prefer not to make recommendations (16% of respondents), that they did not notice any energy/money savings (15%), they experienced unspecified difficulties with the program (13%), and they did not adequately understand how the program worked (12%).

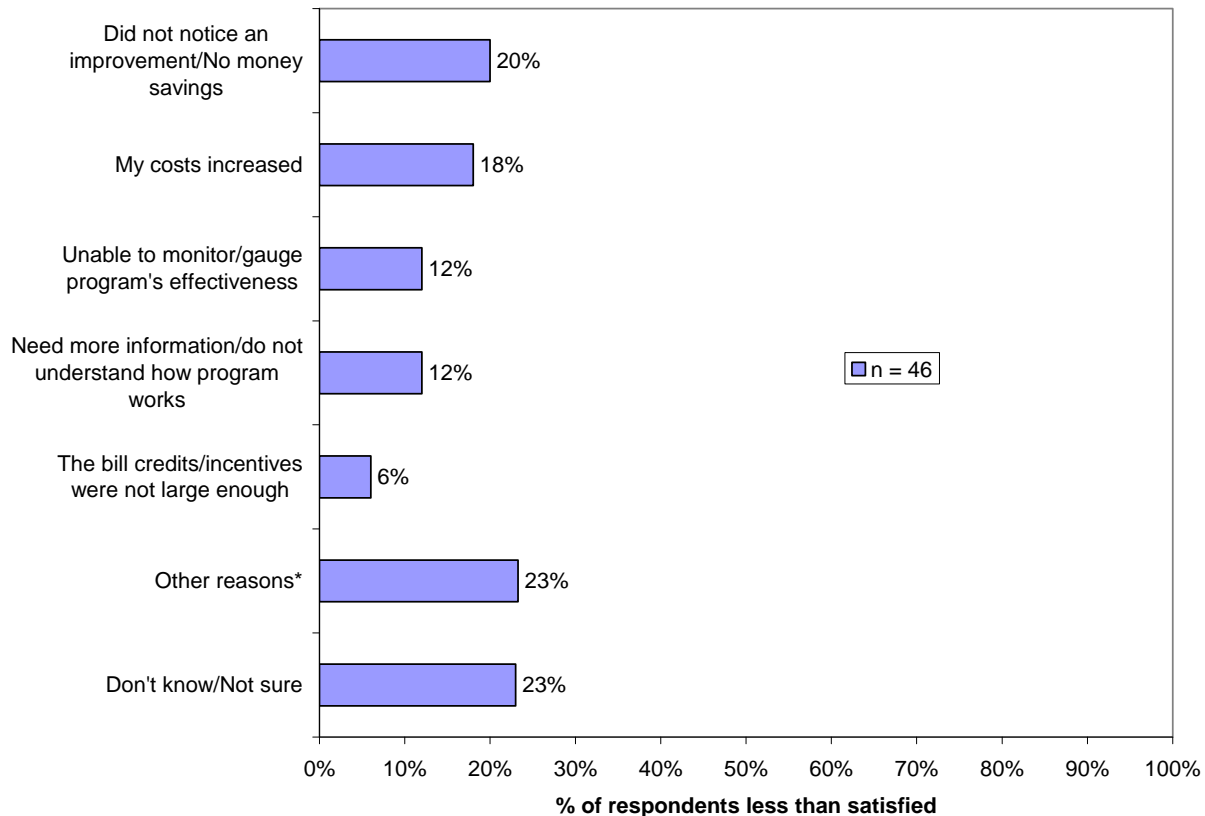
Figure 3-35
Whether Participants Would Recommend *peaksaver*
to Friends, Neighbors, Co-Workers

Would you recommend this program to a friend, neighbor, or co-worker? (n=266)



We asked the participants who said they were less than satisfied with the *peaksaver* program (satisfaction ratings of 3 or less) why they were dissatisfied. Figure 3-36 shows that they cited a wide variety of reasons with the top two concerning participants not seeing the energy/cost savings they were expecting.

Figure 3-36
Reasons for Overall Dissatisfaction with the *peaksaver* Program



Note: Total exceeds 100% because respondents were allowed multiple responses. *Other reasons included problems using thermostat/understanding directions, they activated my air conditioner control switch more often than I would like, I or a member of my household was uncomfortable when they activated the switch, et al.