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Net Load Impact Analysis of Conservation and Demand Management

September, 2009

1.0 Overview

This report presents a bottom-up analysis of Conservation and Demand Management (CDM) impact using information as of September 2009. The analysis was prepared by Hydro One’s load forecasting staff to help assess the CDM impact on the load forecast.

The CDM impact on Hydro One Distribution load can be grouped in the following categories:

- CDM impact resulted from programs initiated by Hydro One Distribution;
- CDM impact resulted from programs initiated by other agencies such as the OPA, federal and provincial governments;
- CDM impact resulted from conservation actions initiated by Hydro One Distribution’s retail customers on their own;
- CDM impact resulted from Hydro One Distribution’s embedded direct and LDC customers.

Table 1: CDM Impact Analysis on Hydro One Retail Load (GWh)

| Year | Hydro One Programs (1) | OPA Programs (2) | Federal and Provincial Government Programs (3) | Annual Program Savings (1-3) | Cumulative Program Savings (1-3) | Additional Impact from Customer Conservation Actions |
|--------------|------------------------|------------------|--|------------------------------|----------------------------------|--|
| 2005 | 9 | n/a | 64 | 73 | 73 | At least 170 |
| 2006 | 147 | 6 | 67 | 221 | 294 | |
| 2007 | 105 | 61 | 62 | 228 | 522 | |
| 2008 | 9 | 49 | 60 | 118 | 640 | |
| Total | 270 | 116 | 253 | 640 | | 170 |

Note: N/A denotes not available. CDM impacts are shown at the wholesale purchase level.

Table 1 summarizes the CDM impact on Hydro One retail load since 2005. Compared to the CDM impact forecast used in EB-2009-0096 (see Appendix A for details), the analysis in this report shows that the CDM forecast for Hydro One retail customers is

conservative. Based on the analysis undertaken in this report, CDM program results for Hydro One retail customers have exceeded the CDM forecast for 2008.

Table 2: CDM Impact Analysis for Embedded LDC Customers (GWh)

| Year | LDC Programs (1) | OPA Programs (2) | Federal and Provincial Government Programs (3) | Annual Program Savings (1-3) | Cumulative Program Savings (1-3) | Additional Impact from Customer Conservation Actions |
|--------------|------------------|------------------|--|------------------------------|----------------------------------|--|
| 2005 | 19 | n/a | 39 | 58 | 58 | At least 150 |
| 2006 | 57 | 3 | 36 | 95 | 153 | |
| 2007 | 39 | 21 | 39 | 99 | 252 | |
| 2008 | 2 | 23 | 39 | 64 | 315 | |
| Total | 116 | 47 | 152 | 315 | | 150 |

Note: N/A denotes not available. CDM impacts are shown at the wholesale purchase level.

Table 2 summarizes the CDM impact analysis for the embedded LDC customers (see Appendix J for details). Similar analysis cannot be undertaken for the embedded direct customers due to lack of information. In 2007, program results from Hydro One Distribution's Double Return program for embedded direct customers are estimated to be about 24 MW for the winter months and 20 MW for the summer months. The Double Return program achieved a further reduction of 16 MW from embedded direct customers in the summer of 2008. Based on the analysis undertaken in this report, CDM program results for embedded LDC customers have exceeded the CDM forecast for 2008.

2.0 CDM Programs Initiated by Hydro One Distribution

In 2005, Hydro One Distribution received approval from the Board for the \$39.5 million CDM Plan for 2005-2007. After the 3rd tranche funding, Hydro One Distribution relies on the OPA managed funds from the Global Adjustment Mechanism for its CDM initiatives in 2008 and beyond.

1 Table 3 summarizes the CDM impact resulting from programs initiated by Hydro One
2 Distribution (see Appendix B for more details). These results are based on the annual
3 CDM results submitted by Hydro One Distribution to the OEB each year.

4
5 **Table 3: Net Load Impact of CDM Programs Initiated by Hydro One Distribution**

| Year | Annual Peak Savings (MW) | Annual Energy Savings (GWh) | Cumulative Energy Savings (GWh) |
|------|--------------------------|-----------------------------|---------------------------------|
| 2005 | 0.6 | 8.6 | 8.6 |
| 2006 | 10.8 | 146.9 | 155.5 |
| 2007 | 58.8 | 105.3 | 260.8 |
| 2008 | 3.2 | 9.1 | 269.9 |

6 Note: CDM impacts are shown at the wholesale purchase level.

7
8 **3.0 CDM Programs Initiated by Other Agencies**

9
10 In addition to CDM programs offered by Hydro One Distribution, there are many
11 programs offered by other agencies such as the OPA and the federal and provincial
12 governments. The CDM programs initiated by these agencies will have an impact on
13 Hydro One Distribution load. The following sections provide a brief description of these
14 programs. More details are provided in Appendices C, D and E.

15
16 **CDM Programs Initiated by OPA**

17 The OPA is responsible for meeting the CDM targets set by the Ontario Government.
18 Since 2006, the OPA has funded a number of conservation pilots and province-wide
19 programs. The impact of the OPA programs on Hydro One Distribution retail customers
20 is estimated to be about 6 GWh, 61 GWh and 49 GWh for 2006, 2007 and 2008
21 respectively. Detailed OPA program impacts on Hydro One Distribution load are
22 presented in Appendix C.

1 **CDM Programs Initiated by Federal and Provincial Governments**

2 Natural Resources Canada (NRCan) is the lead federal department delivering energy
3 efficiency programs in Canada. Aside from setting the overall energy policy, the
4 department plans to spend over \$300M during 2007-2010 on energy efficiency programs
5 of various types. The Government of Ontario also implements a number of CDM
6 programs, such as the Home Energy Savings program. There are at least 30 federal and
7 provincial government-initiated CDM programs in Ontario each year, with an estimated
8 impact of 64 GWh, 67 GWh and 62 GWh on Hydro One Distribution retail customers in
9 2005, 2006 and 2007 respectively. The program impact for 2008 is not yet available, but
10 is expected to be in the same range as in previous years. Details of programs offered by
11 the federal and provincial government can be found in Appendix D.

12
13 **CDM Programs Initiated by Other Agencies**

14 Over the past few years, various associations and communities in Ontario have also
15 offered pilot projects and educational information, such as Energy Efficient Premium
16 Refund program offered by Canada Mortgage and Housing Corporation (CMHC).
17 Quantitative results of these CDM activities are not readily available; however, it is
18 reasonable to expect that there will be spill-over effects on Hydro One Distribution retail
19 customers. A sample list of these programs is presented in Appendix E.

20
21 **4.0 Conservation Actions Initiated by Customers**

22
23 CDM programs initiated by Hydro One Distribution, the OPA and other federal and
24 provincial governments are mostly program-specific and as such the program results are
25 tracked and measured. Conservation actions initiated by customers on their own are
26 difficult to measure because there are no specific evaluations to capture these impacts.
27 For example, it is very difficult to measure the “cultural change” associated with the
28 CDM education and communication materials circulated by Hydro One Distribution to its
29 retail customers (see Appendix F for details).

1

2 Hydro One Distribution undertook two studies to measure the conservation actions of
3 customers. The first study is an econometric analysis to measure the net impact of CDM
4 programs for 2004-2008 using the hourly load profile analysis approach. This is the
5 same methodology used in Hydro One's Transmission 2009-2010 rate application (EB-
6 2008-0272). The second study is an analysis to measure customer conservation actions
7 using customer billing data. Again, this is the same methodology used in Hydro One's
8 Distribution 2008 rate application (EB-2007-0681). The results of these two studies
9 show that there are additional energy savings attributed to conservation actions from our
10 retail customers (see Appendix G for details).

11

12 In 2009, Hydro One undertook another CDM survey to assess the conservation actions
13 undertaken by our customers. Of the 9,450 customers who received the survey invitation,
14 2,829 customers (30%) responded. Detailed analysis of the survey results can be found
15 in Appendix H. Based on the survey responses, it is clear that Hydro One Distribution
16 retail customers have responded to the conservation challenge, have participated in CDM
17 programs offered by Hydro One Distribution, the OPA and other government agencies
18 and have taken various conservation actions on their own to save electricity. The survey
19 results support the findings of the econometric analysis and the customer billing analysis
20 discussed above.

21

22 **5.0 CDM Programs for 2009**

23

24 At the time this report was prepared, final CDM program results for 2009 are not yet
25 available. In 2009, Hydro One Distribution expects to spend \$1 million from distribution
26 rates on administration of CDM work, \$1.4 million from the Ontario Ministry of Energy
27 and Infrastructure for a renewable energy pilot (PowerHouse) program and \$15.5 million
28 from the LDC fund administered by the OPA. Table 4 below illustrates the expected

1 spending, participants, savings (MW and MWh) and TRC Net Benefits of conservation
 2 programs, which will have an impact on Hydro One retail customers.

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Table 5: 2009 Conservation Programs

| 2009 Forecast | | | | | |
|---|--|---|---------------------------------|-------------------------|--|
| YEAR 2009 | 2009 Forecasted Expenditure (program costs + incentives) (\$K) | ESTIMATED PARTICIPANTS (customers or units) | 2009 est. ANNUAL SAVINGS (MWh)* | 2009 est. SAVINGS (MW)* | Hydro One's portion of TRC Net Benefit 2009 (\$K)* |
| Rate Funded Administration of CDM Work | | | | | |
| Maintenance of MARR Funded Programs and Minimum Capability | \$ 1,000 | Not available | Not available | Not available | Not available |
| Ministry of Energy Funding | | | | | |
| PowerHouse program | \$ 1,400 | 153 | (501) | 0 | \$ 2,815 |
| Global Adjustment Mechanism Funding - OPA Core Program | | | | | |
| Electricity Retrofit Incentive Program* | \$ 2,650 | 160 | 12,900 | 3.6 | \$ 8,476 |
| Great Refrigerator Roundup | \$ 500 | 23,000 | 11,400 | 1.3 | \$ 1,708 |
| PeakSaver | \$ 4,125 | 7,500 | 2,000 | 7.0 | \$ 10,463 |
| Power Savings Blitz** | \$ 7,100 | 5,350 | 20,000 | 5.8 | \$ 4,149 |
| Global Adjustment Mechanism Funding - OPA Custom Program | | | | | |
| Double Return | \$ 1,200 | 119 | | | |
| Distribution | | 111 | 44,280 | 19.6 | \$ 2,159 |
| Transmission | | 8 | 70,831 | 22.5 | \$ 3,614 |
| Total | \$ 17,975 | 36,282 | 160,911 | 59.8 | \$ 33,384 |

5 * Assumptions for various technologies and programs not yet finalized by OPA; EM&V will commence in 2010
 6 Source: Estimates prepared by Hydro One Distribution using best available information from OPA as of
 7 September, 2009. Please note that all numbers are shown at customer end-use level.

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Beyond 2009, Hydro One Distribution supports the CDM target for the province and will contribute towards meeting that target. Appendix K provides further details of future program to be offered by the OPA and Hydro One.

1 **Appendix A: Hydro One Distribution CDM Forecast**

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3 This appendix summarizes the CDM forecast prepared by Hydro One Distribution
4 submitted to the Board in 2005 (EB-2005-0378), 2007 (EB-2007-0681) and 2009 (EB-
5 2009-0096).

6 **Table A1: CDM Forecast (in GWh) Submitted in 2005 (EB-2005-0378)**

| Year | Hydro One Retail | Embedded Direct and LDC Customers | Total |
|------|------------------|-----------------------------------|-------|
| 2004 | 0 | 0 | 0 |
| 2005 | 49 | 39 | 88 |
| 2006 | 194 | 157 | 351 |

7 Note: Figures presented are cumulative CDM impact since 2004

8
9 The CDM forecast presented in Table A1 was prepared in April 2005 based on the
10 assumption that 675 MW of the 1,350 MW peak load reduction target for 2007 would be
11 achieved by 2006 and the rest would be achieved in 2007. Of the 675 MW to be
12 achieved by 2006, 375 MW were assumed to be achieved through load management
13 programs (and assumed to have no impact on energy) and 300 MW were assumed to be
14 achieved through conservation programs. Of the 300 MW, 43.6 MW were prorated to
15 Hydro One Distribution using Hydro One Distribution's share of the provincial peak in
16 2004. Using an average load factor of 62.5% for Hydro One Distribution's CDM
17 initiatives, 194 GWh of energy impact were estimated. Similarly, 35.9 MW and 157
18 GWh were estimated for the embedded customers using their provincial share of
19 electricity consumption and an average load factor of 50%.

Table A2: CDM Forecast (in GWh) Submitted in August 2007 (EB-2007-0681)

| Year | Hydro One Retail | Embedded Direct and LDC Customers | Total |
|------|------------------|-----------------------------------|-------|
| 2006 | 194 | 151 | 345 |
| 2007 | 420 | 327 | 747 |
| 2008 | 568 | 441 | 1,009 |

Note: Figures presented are cumulative CDM impact since 2004

The CDM forecast presented in Table A2 was prepared in April 2007 using the same approach as in Table A1. For 2008, an additional 450 MW of CDM impact were assumed using a straight line allocation method for the additional peak load reduction target of 1,350 MW for 2010. At the time the forecast was prepared, OPA's IPSP CDM forecast was not yet available.

Table A3: CDM Forecast (in GWh) Submitted in December 2007 (EB-2007-0681)

| Year | Hydro One Retail | Embedded Direct and LDC Customers | Total |
|------|------------------|-----------------------------------|-------|
| 2006 | 194 | 151 | 345 |
| 2007 | 311 | 242 | 554 |
| 2008 | 437 | 333 | 770 |

Note: (1) Figures presented are cumulative CDM impact since 2004

(2) 2007 numbers in Table A2 was prorated by the ratio of 1000/1350

(3) OPA's IPSP CDM forecast of 251 MW and 0.8 TWh for 2008 were used

In September 2007, the CDM forecast was revised (see Table A3) incorporating the Board's decision in EB-2006-0501 to include 350 MW of natural conservation in the provincial CDM target for 2007. The CDM impact in 2008 for the province was provided by the OPA consistent with the IPSP CDM forecast filed to the Board on August 29, 2007. The same allocation method was used as in Table A1 and A2.

Table A4: CDM Forecast (in GWh) used in EB-2009-0096

| Year | Hydro One Retail | Embedded Direct and LDC Customers | Total |
|---------------|-------------------------|--|--------------|
| 2006 | 194 | 151 | 345 |
| 2007 | 311 | 245 | 557 |
| 2008 | 432 | 340 | 771 |
| 2009 (Bridge) | 601 | 471 | 1,072 |
| 2010 | 1,325 | 1,035 | 2,360 |
| 2011 | 1,604 | 1,249 | 2,853 |

1 Note: CDM impacts are shown at the wholesale purchase level.

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3 The CDM forecast was updated (see Table A4) in April 2009. Hydro One Distribution's
4 2008 CDM impact was approved by the Board in its Decision on December 18, 2008 for
5 EB-2007-0681. The CDM impacts for 2009, 2010 and 2011 are based on Hydro One
6 Distribution's share of approximately 15 percent of the provincial CDM target consistent
7 with the IPSP filed by the OPA with the Board on August 29, 2007. The aggregate
8 provincial CDM target from the IPSP for 2008-2010 was approved by the Board in
9 Hydro One's 2008 Transmission Rate case (EB-2008-0272).

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Appendix B: Summary of CDM Program Results Initiated by Hydro One Distribution

This appendix summarizes the CDM program results for Hydro One retail customers since 2005. Tables B1 to B5 provide a “bottom up” view of the CDM impact between 2005 and 2008 by program and sector.

Table B1: CDM Program Results for 2005:

| PROGRAM | 3 YEAR BUDGET (\$K) | SPENDING TO DEC 2005 (\$K) | ANNUAL SAVINGS KW | ANNUAL SAVINGS kWh | LIFECYCLE SAVINGS kWh | LIFECYCLE \$/kWh |
|--|---------------------|----------------------------|-------------------|--------------------|-----------------------|------------------|
| Residential | | | | | | |
| Smart Meters | 7,800 | 519 | | | | |
| Real Time Monitoring Pilot | 425 | 467 | 38 | 401,482 | 2,007,410 | 0.23 |
| Real Time Monitoring Program | 1,400 | | | | | |
| Mass Market Coupon Initiative | 1,500 | 277 | 285 | 7,261,874 | 70,142,678 | 0.004 |
| LED | 430 | 171 | | 219,079 | 6,572,370 | 0.026 |
| Low Income/Social Housing | 5,000 | 46 | | | | |
| Load Control Pilot | 1,220 | 783 | 358 | | | |
| Load Control Program | 3,500 | 0 | | | | |
| Energy Audits/Analysis | 230 | 0 | | | | |
| Total | 21,505 | 2,263 | 681 | 7,882,435 | 78,722,458 | 0.012 |
| Commercial/Industrial, Farm, MUSH | | | | | | |
| Interim Time of Use | 475 | 238 | | | | |
| C/I MUSH Conservation | 600 | 261 | | | | |
| C/I & Farm Load Control | 3,500 | 0 | | | | |
| Farm Energy Efficiency | 750 | 110 | | | | |
| Total | 5,325 | 609 | 0 | 0 | 0 | 0 |
| Common | | | | | | |
| Distribution Loss Reduction | 8,000 | 0 | | | | |
| Program Management and Research | 3,700 | 804 | | | | |
| Communication and Education | 1,000 | 305 | | 286,578 | 1,146,312 | 0.266 |
| Carrying Charge | | 25 | | n/a | | |
| Total | 12,700 | 1,134 | 0 | 286,578 | 1,146,312 | 0 |
| Grand Total | 39,530 | 4,006 | 681 | 8,169,013 | 79,868,770 | 0.021 |

Source: Hydro One Networks Inc. Conservation and Demand Management Plan Annual Report, Appendix C to December 31, 2005, 9RP-2004-0203\EB-2005-0198 filed March 31st, 2006. Please note that all savings in this table are shown at the customer end-use level. Annual energy savings for 2005 are approximately 9 GWh at the wholesale purchase level.

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Table B2: CDM Program Results for 2006:

| PROGRAM | 3 YEAR BUDGET (\$K)* | LTD SPENDING TO DEC 2006 (\$K) | Cumulative SAVINGS KW** | Cumulative ANNUAL SAVINGS kWh** | Cumulative LIFECYCLE SAVINGS kWh |
|--|-------------------------|---|-------------------------------|---------------------------------------|--|
| Residential | | | | | |
| Smart Meters | 7,800 | 7,800 | - | - | - |
| Real Time Monitoring Pilot | 425 | 466 | 38 | 401,482 | 2,007,410 |
| Real Time Monitoring Program | 4,075 | 3,242 | 3,357 | 14,809,145 | 74,047,076 |
| Mass Markets | 1,870 | 1,382 | 4,671 | 81,724,679 | 526,034,109 |
| LED | 380 | 296 | - | 546,454 | 16,393,624 |
| Low Income/Social Housing | 4,400 | 497 | 6 | 294,078 | 5,263,750 |
| Load Control Pilot | 710 | 710 | 358 | - | - |
| Load Control Program | 3,500 | 2,117 | 2,169 | 806,435 | 8,780,648 |
| Total | 23,160 | 16,510 | 10,599 | 98,582,273 | 632,526,617 |
| Commercial/Industrial, Farm, MUSH | | | | | |
| Interim Time of Use | 920 | 632 | - | - | - |
| C/I MUSH Conservation | 600 | 240 | 21 | 185,396 | 1,870,103 |
| C/I & Farm Load Control | 3,500 | 2 | - | - | - |
| Farm Energy Efficiency | 750 | 114 | 9 | 64,000 | 408,009 |
| Total | 5,770 | 988 | 30 | 249,396 | 2,278,112 |
| Common | | | | | |
| Distribution Loss Reduction | 7,200 | 877 | - | - | - |
| Program Management and Research | 2,600 | 1,576 | - | - | - |
| Communication and Education | 800 | 463 | - | 286,578 | 1,146,312 |
| Carrying Charge | - | 25 | - | - | - |
| Total | 10,600 | 2,941 | - | 286,578 | 1,146,312 |
| Grand Total | 39,530 | 20,438 | 10,629 | 99,118,247 | 635,951,041 |

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Note: *The budget has been reallocated from approved plan and the reallocations are within the 20% flexibility allowed by the Board. The new allocation has already been provided to the Board in the 2006 Q4 report.

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**Cumulative annual and lifecycle KW and kWh savings are reported as per calculations in 2006 CDM Annual Report, Appendix B.

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Source: Hydro One Networks Inc. Conservation and Demand Management Plan Annual Report, Appendix C to December 31, 2006, RP-2004-0203\EB-2005-0198 filed April 2nd, 2007. Please note that all savings in this table are shown at the customer end-use level. Together with 48.79 GWh and 0.13 MW of savings assigned by the OPA in July 2009 for the Every Kilowatt Counts program (not shown in Table B2), total annual energy savings for 2006 attributed to Hydro One Distribution programs are approximately 147 GWh at the wholesale purchase level.

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Table B3: CDM Program Results for 2007

| PROGRAM | 3 YEAR BUDGET (\$K)* | LTD SPENDING TO DEC 2007 (\$K) | Cumulative SAVINGS KW** | Cumulative ANNUAL SAVINGS kWh** | Cumulative LIFECYCLE SAVINGS kWh |
|--|----------------------|--------------------------------|-------------------------|---------------------------------|----------------------------------|
| Residential | | | | | |
| Smart Meters | 7,800 | 7,800 | - | - | - |
| Real Time Monitoring Pilot | 470 | 466 | 38 | 401,482 | 2,007,410 |
| Real Time Monitoring Program | 5,085 | 5,082 | 4,767 | 22,946,131 | 114,732,007 |
| Mass Markets | 2,465 | 2,465 | 5,854 | 98,915,451 | 635,802,470 |
| LED | 430 | 424 | - | 546,454 | 16,393,624 |
| Low Income/Social Housing | 3,200 | 3,163 | 879 | 8,373,080 | 115,751,166 |
| Load Control Pilot | 710 | 710 | 358 | - | - |
| Load Control Program | 4,660 | 4,536 | 13,198 | 4,113,097 | 48,811,867 |
| Energy Audit Analysis | 215 | 213 | - | - | - |
| Total | 25,035 | 24,859 | 25,094 | 135,295,696 | 933,498,544 |
| Commercial/Industrial, Farm, MUSH | | | | | |
| Interim Time of Use | 1,130 | 997 | - | - | - |
| C/I MUSH Conservation | 1,040 | 948 | 2,011 | 14,503,166 | 210,511,025 |
| C/I & Load Control | 2,390 | 2,339 | 33,773 | 108,854,220 | 108,898,068 |
| Farm Energy Efficiency & Farm Load control | 510 | 458 | 349 | 1,970,695 | 17,454,329 |
| Total | 5,070 | 4,742 | 36,132 | 125,328,081 | 336,863,422 |
| Common | | | | | |
| Distribution Loss Reduction | 6,175 | 5,399 | 2,362 | 7,207,655 | 144,153,108 |
| Program Management and Research | 2,500 | 2,425 | 43 | 396,185 | 3,248,037 |
| Communication and Education | 765 | 744 | 140 | 3,649,933 | 30,145,133 |
| Carrying Charge | - | 25 | - | - | - |
| Total | 9,440 | 8,593 | 2,545 | 11,253,773 | 177,546,278 |
| Grand Total | 39,545 | 38,194 | 63,771 | 271,877,550 | 1,447,908,244 |

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Note: *The budget has been reallocated from approved plan and the reallocations are within the 20% flexibility allowed by the Board.

** Cumulative annual and lifecycle KW and kWh savings are reported as per calculations in 2007 CDM Annual Report, Appendix B.

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Source: Hydro One Networks Inc. Conservation and Demand Management Plan Annual Report, Appendix C to December 31, 2007, RP-2004-0203\EB-2005-0198 filed March 31st, 2008. Please note that all savings in this table are shown at the customer end-use level. Together with 31.45 GWh and 1.62 MW of savings assigned by the OPA in July 2009 for the Every Kilowatt Counts program (not shown in Table B3), total annual energy savings for 2007 attributed to Hydro One Distribution programs are approximately 105 GWh at the wholesale purchase level.

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Table B4: CDM Program Results for 2008

| PROGRAM | 3 YEAR BUDGET(5) (\$k) | LTD SPENDING 2008 (\$k) | Cumulative SAVINGS kW | Cumulative ANNUAL SAVINGS (kWh) | Cumulative LIFECYCLE SAVINGS (kWh) |
|---|------------------------|-------------------------|-----------------------|---------------------------------|------------------------------------|
| Residential | | | | | |
| Smart Meters | 7,800 | 7,800 | - | - | - |
| Real Time Monitoring Pilot | 470 | 466 | 38 | 401,482 | 2,007,410 |
| Real Time Monitoring Program | 5,085 | 5,082 | 4,767 | 22,946,131 | 114,732,007 |
| Mass Markets(1) | 2,465 | 2,467 | 6,681 | 103,475,092 | 673,451,075 |
| Seasonal LED Light Exchange | 430 | 432 | - | 546,454 | 16,393,624 |
| Low Income / Social Housing(2) | 3,200 | 3,167 | 879 | 8,373,080 | 115,751,166 |
| Load Control Pilot | 710 | 710 | 358 | | |
| Load Control Program | 4,660 | 4,536 | 13,198 | 4,113,097 | 48,811,867 |
| Energy Audit (Power Saver Plus Online Energy Audit) | 215 | 213 | | | |
| Subtotal | 25,035 | 24,872 | 25,921 | 139,855,336 | 971,147,149 |
| Commercial/Industrial, Farm, MUSH | | | | | |
| Interim Time of Use | 1,130 | 1,145 | - | - | - |
| C/I MUSH Conservation(3) | 1,040 | 1,015 | 2,207 | 15,404,813 | 217,294,721 |
| C/I Load Control (Double Return) | 2,390 | 2,339 | 33,773 | 108,854,220 | 108,898,068 |
| Farm Energy Efficiency(4) | 510 | 458 | 349 | 1,970,695 | 17,454,329 |
| Subtotal | 5,070 | 4,958 | 36,329 | 126,229,728 | 343,647,118 |
| Common | | | | | |
| Distribution Loss Reduction | 6,175 | 6,552 | 4,998 | 14,444,110 | 288,882,198 |
| Program Management and Research (incl. TOU Pilot) | 2,500 | 2,425 | 43 | 396,185 | 3,248,037 |
| Communication and Education (incl. Smart Pak) | 765 | 749 | 140 | 3,649,933 | 30,145,133 |
| Carrying Charge | | 25 | - | - | - |
| Subtotal | 9,440 | 9,752 | 5,181 | 18,490,228 | 322,275,368 |
| Total | 39,545 | 39,581 | 67,431 | 284,575,292 | 1,637,069,635 |

Notes:

- 1 Mass Market includes Cold Shoulder Appliance Pickup, Every Kilowatt Counts, PowerSaver Tour, Mass Market Coupon Initiative, Keep Cold and Cool Shops Program
- 2 Low Income/Social Housing includes Low Income Retrofit, Low Income CMHC / NRCan, First Nations Retrofits, First Nations In-Home Displays and Social Housing Programs
- 3 C/I MUSH conservation includes PowerSaver Business Incentive Program (Commercial / Industrial), Toronto Region Conservation Authority, Municipal Traffic Signal LED
- 4 Farm Energy Efficiency includes PowerSaver Business Incentive Program (Farm), Learnington and Farm Energy Audit
- 5 The Budget has been reallocated from approved plan and the reallocations are within 20% flexibility allowed by the Board

Source: Hydro One Networks Inc. Conservation and Demand Management Plan Annual Report, Appendix C to April 30, 2008, RP-2004-0203\EB-2005-0198 filed March 31st, 2009. Please note that all savings in this table are shown at the customer end-use level.

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Table B5: Incremental CDM Results for 2008

| PROGRAM ACTIVITIES | 2008 Incremental Expenditures (\$K) | PEAK SAVINGS (kW) | ANNUAL SAVINGS kWh | LIFECYCLE SAVINGS kWh |
|---|--|--------------------------|---------------------------|------------------------------|
| Maintenance of current programs | | | | |
| Residential | | | | |
| Cold Shoulder Appliance Pickup | 16 | 23 | 119,809 | 1,084,806 |
| Load Control Program | 78 | - | - | - |
| PowerSaver Plus Online Energy Audit | 60 | - | - | - |
| Low Income/Social Housing | | | | |
| Low Income/Social Housing | 46 | 15 | 108,904 | 2,178,073 |
| Commercial/Industrial, Farm, MUSH | | | | |
| PowerSaver Business Incentive Program | 1 | 1 | 6,868 | 112,086 |
| C/I Load control (Double Return) | 104 | 7 | 168,245 | 3,364,891 |
| Interim Time of Use | 43 | - | - | - |
| Farm Load control (Leamington DG) | 51 | - | - | - |
| Maintenance of current programs Subtotal | 399 | 46 | 403,825 | 6,739,856 |
| PowerHouse Pilot Program Subtotal | 200 | 5 | (107,890) | (2,157,799) |
| Program Management and Research | | | | |
| - Survey | 33 | - | - | - |
| - Research | 214 | - | - | - |
| - Education | 2 | - | - | - |
| Program Management and Research Subtotal | 249 | - | - | - |
| Total | 848 | 51 | 295,935 | 4,582,057 |

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Source: Hydro One Networks Inc. Conservation and Demand Management Plan Reporting of Incremental CDM Funding Approved in Rates, Appendix C filed April 30th, 2009. Please note that all savings in this table are shown at the customer end-use level. Annual energy savings are approximately 9 GWh at the wholesale purchase level.

Appendix C: Summary of OPA-Initiated Program Results

This appendix summarizes the OPA program results for Hydro One Retail customers for 2006, 2007 and 2008. Latest program savings allocated to Hydro One were provided by the OPA in July 2009. Allocation methods used by the OPA are summarized as follows:

- For LDC-delivered programs, savings were allocated based on participation data that was tracked by individual LDCs.
- For third party (non-LDC delivered) programs, savings were allocated to corresponding LDC territory when LDC-specific geographic data on program participation was readily available. When LDC-specific geographic data on program participation was not readily available, savings were allocated based on each LDC's share of the provincial energy consumption for the customer class targeted by the program, based on data from the OEB Yearbook of Electricity Distributors.

Table C1 presents the share assumptions for Hydro One Distribution retail and embedded LDCs.

Table C1: Share Assumption from OEB Yearbook of Electricity Distributors

| Year | Hydro One Retail | | Embedded LDC | |
|------|-----------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|
| | Residential Energy Throughput (%) | Non-Residential Energy Throughput (%) | Residential Energy Throughput (%) | Non-Residential Energy Throughput (%) |
| 2005 | 30.1% | 12.7% | 12.3% | 8.5% |
| 2006 | 30.4% | 12.7% | 12.4% | 7.7% |
| 2007 | 30.7% | 12.5% | 12.4% | 8.9% |
| 2008 | 30.6% | 12.4% | 12.2% | 8.8% |

The five OPA-coordinated CDM programs in 2006 resulted in annual savings of 407 GWh and summer peak reduction of approximately 217 MW. Table C2 below presents the province-wide savings and the savings allocated to Hydro One Distribution retail customers.

Table C2: OPA-Initiated Program Results in 2006

| OPA Program | Total Provincial Annual GWh Savings | Total Provincial Annual MW Savings | GWh Savings Assigned to Hydro One Retail Customers | MW Savings Assigned to Hydro One Retail Customers |
|-----------------------------------|--|---|---|--|
| Every Kilowatt Counts * | 385.9 | 4.6 | 117.4 | 1.4 |
| Cool Savings Rebate | 11.2 | 11.5 | 3.4 | 3.5 |
| Hot Savings Rebate | 4.0 | 3.2 | 1.2 | 1.0 |
| Secondary Refrigerator Retirement | 6.0 | 1.4 | 1.8 | 0.4 |
| Demand Response 1 | 0.0 | 196.2 | 0.0 | 24.9 |
| Total | 407.2 | 216.8 | 123.9 | 31.0 |

Source: OPA 2006 Conservation Bureau Annual Report.

Note: *The results from Every Kilowatt Counts were already included in the CDM Annual reports shown in Table B2. The additional energy and peak savings not yet reported in the CDM Annual report are about 6.5 GWh and 29.7 MW respectively.

In 2007, OPA-coordinated CDM programs resulted in province-wide annual savings of approximately 333 GWh and peak reduction of 469 MW. Table C3 below summarizes the energy and peak impacts allocated to Hydro One Distribution retail customers.

Table C3: OPA-Initiated Program Results in 2007

| OPA Program | Total Provincial Annual GWh Savings | Total Provincial Annual MW Savings | GWh Savings Assigned to Hydro One Retail Customers | MW Savings Assigned to Hydro One Retail Customers |
|---|--|---|---|--|
| Every Kilowatt Counts * | 142.3 | 5.5 | 43.7 | 1.7 |
| Great Refrigerator Roundup | 14.6 | 1.7 | 5.8 | 1.1 |
| Cool Savings Rebate | 32.5 | 21.4 | 10.0 | 6.6 |
| Aboriginal – Pilot | 21.3 | 1.0 | 7.6 | 0.4 |
| Peaksaver® | 0.0 | 14.4 | 0.6 ** | 5.4** |
| Summer Savings | 87.3 | 48.5 | 25.2 | 14.0 |
| Affordable Housing – Pilot | 4.6 | 0.3 | 0.0 | 0.0 |
| Social Housing – Pilot | 12.8 | 1.5 | 3.9 | 0.5 |
| Energy Efficiency Assistance for Houses – Pilot | 2.5 | 0.5 | 1.0 | 0.2 |
| Electricity Retrofit Incentive Program | 5.4 | 1.9 | 0.1 | 0.1 |
| Demand Response 1 | 0.0 | 342.2 | 0.0 | 42.7 |
| Other Demand Response | 0.0 | 28.5 | 0.0 | 3.5 |
| Renewable Energy Standard Offer | 9.3 | 2.1 | 6.6 | 1.3 |
| Total | 332.7 | 469.4 | 104.7 | 77.3 |

Source: OPA Progress Report on Electricity Conservation 2007 and OPA 2007 Final Conservation Results.

Note: * The results from Every Kilowatt Counts were already included in the CDM Annual report shown in Table B3. The additional energy and peak savings not yet reported in the CDM Annual report are about 60.9 GWh and 75.6 MW respectively.

1 ** The energy savings for Peaksaver® program included savings attributed to programmable thermostat
 2 offered to Hydro One retail customers.
 3

4 In 2008, the OPA funded the following CDM programs:

- 5 • Mass markets – Every Kilowatt Counts Power Savings Event, Peaksaver®, The
6 Great Refrigerator Roundup, Summer Sweepstakes, Hot and Cool Savings
7 Rebate, Power Savings Blitz, Aboriginal Pilot program, Local Distribution
8 Company Custom Programs
- 9 • Business markets – Electricity Retrofit Incentive Program, High Performance
10 New Construction, Toronto Comprehensive Program
- 11 • Demand Response Programs

12
 13 Although final results are not yet available, preliminary results indicate that OPA-
 14 coordinated CDM programs in 2008 resulted in an annual savings of approximately 49
 15 GWh for Hydro One retail customers. Table C4 shows the energy and peak impacts of
 16 OPA-coordinated conservation programs in 2008 for Hydro One Distribution retail
 17 customers.

18 **Table C4: OPA-Initiated Program Results in 2008**

| OPA Program | GWh Savings for Hydro One Retail Customers | MW Savings for Hydro One Retail Customers |
|--------------------------------|--|---|
| Great Refrigerator Roundup | 12.3 | 1.4 |
| Peaksaver® | 1.2 | 6.4 |
| Summer Sweepstakes | 1.9 | 0.0 |
| Every Kilowatt Counts | 14.8 | 2.0 |
| Cool Savings Rebate | 5.5 | 8.3 |
| Electricity Retrofit Incentive | 13.3 | 2.9 |
| Double Return | 0.0 | 7.4 |
| Total | 49.0 | 28.5 |

19 Source: Estimates prepared by Hydro One Distribution using latest information from OPA as of September,
 20 2009.
 21
 22

Appendix D: Summary of CDM Program Results Initiated by Federal and Provincial Governments and Other Organizations

This appendix summarizes the program results initiated by federal and provincial governments and other organizations for Hydro One retail customers since 2005. Tables D1 to D3 provide the estimated CDM impacts between 2005 and 2007 for Hydro One retail customers using Hydro One Retail's share of the provincial energy consumption by customer class and program. At the time this report is prepared, the federal and provincial government program results for 2008 are not yet finalized. Based on recent trends of these programs, we assume energy savings of 60 GWh in 2008 for Hydro One retail customers. The programs presented in Table D4 are based on best available information as of September, 2009.

Table D1: CDM Program Results by Federal and Provincial Governments in 2005

| <i>Federal / Provincial</i> | <i>Federal and Provincial Programs</i> | <i>Total Energy Saved (GWh)</i> | <i>Total Summer Peak Saved (MW)</i> | <i>Hydro One Share (GWh)</i> | <i>Hydro One Share (MW)</i> |
|-----------------------------|--|---------------------------------|-------------------------------------|------------------------------|-----------------------------|
| Federal | Existing Buildings Initiative | 116.4 | 29.1 | 14.8 | 3.7 |
| Federal | FCM-Green Municipal Funds | 0.0 | 20.4 | 0.0 | 2.6 |
| Federal | CIPEC-Dollars to \$ense | 73.2 | 12.7 | 9.3 | 1.6 |
| Federal | Energy Star Labelling | 51.7 | 8.9 | 9.6 | 1.5 |
| Federal | CIPEC-Other Achievements | 49.3 | 7.6 | 6.3 | 1.0 |
| Federal | EnerGuide for Existing Homes | 11.5 | 1.3 | 3.5 | 0.4 |
| Federal | R-2000 | 0.5 | 0.1 | 0.1 | 0.0 |
| Federal | EnerGuide for New Homes | 0.3 | 0.0 | 0.1 | 0.0 |
| Federal | CIPEC-Industrial Energy Audit Incentive | 132.5 | 0.0 | 16.9 | 0.0 |
| Federal | Commercial Building Incentive Program (CBIP) | 16.2 | 0.0 | 2.1 | 0.0 |
| Federal | ecoENERGY for Industry-Dollars to \$ense | 0.0 | 4.0 | 0.0 | 0.5 |
| Federal | Industrial Building Incentive Program (IBIP) | 0.1 | 0.0 | 0.0 | 0.0 |
| Non-Profit | Non-profit Total* | 6.8 | 5.0 | 1.7 | 1.4 |
| Total | | 458.6 | 89.2 | 64.4 | 12.7 |

Source: Summary of Electricity Conservation Program & Initiatives in Ontario from 2005-2007, Excluding OPA Funded Programs and Ontario Government Buildings (Ref ID#: 28028), Marbek Resource Consultants, June 2008

Note: * Details of non-profit organizations are shown in Appendix E, Table E1.

1 **Table D2: CDM Program Results by Federal and Provincial Governments in 2006**

| <i>Federal / Provincial</i> | <i>Federal and Provincial Programs</i> | <i>Total Energy Saved (GWh)</i> | <i>Total Summer Peak Saved (MW)</i> | <i>Hydro One Share (GWh)</i> | <i>Hydro One Share (MW)</i> |
|-----------------------------|--|---------------------------------|-------------------------------------|------------------------------|-----------------------------|
| Federal | Existing Buildings Initiative | 51.7 | 12.9 | 6.6 | 1.6 |
| Federal | FCM-Green Municipal Funds | 55.2 | 15.6 | 7.0 | 2.0 |
| Federal | CIPEC-Dollars to \$ense | 73.2 | 12.7 | 9.3 | 1.6 |
| Federal | Energy Star Labelling | 51.7 | 8.9 | 9.6 | 1.5 |
| Federal | CIPEC-Other Achievements | 49.3 | 7.6 | 6.3 | 1.0 |
| Federal | EnerGuide for Existing Homes | 20.4 | 2.3 | 6.2 | 0.7 |
| Federal | EnerGuide for New Homes | 1.0 | 0.1 | 0.3 | 0.0 |
| Federal | R-2000 | 0.4 | 0.0 | 0.1 | 0.0 |
| Federal | CIPEC-Industrial Energy Audit Incentive | 101.3 | 13.8 | 12.9 | 1.8 |
| Federal | Commercial Building Incentive Program (CBIP) | 27.8 | 0.0 | 3.5 | 0.0 |
| Federal | ecoENERGY for Industry-Dollars to \$ense | 0.0 | 6.9 | 0.0 | 0.9 |
| Federal | Industrial Building Incentive Program (IBIP) | 0.9 | 0.1 | 0.1 | 0.0 |
| Provincial | OME-Net Metering | 5.5 | 0.9 | 1.1 | 0.2 |
| Non-Profit | Non-profit Total* | 16.9 | 12.3 | 4.1 | 3.5 |
| Total | | 455.4 | 94.3 | 67.3 | 14.8 |

2 Source: Summary of Electricity Conservation Program & Initiatives in Ontario from 2005-2007, Excluding
 3 OPA Funded Programs and Ontario Government Buildings (Ref ID#: 28028), Marbek Resource
 4 Consultants, June 2008
 5 Note: * Details of non-profit organizations are shown in Appendix E, Table E1.
 6

7 **Table D3: Program Results by Federal and Provincial Governments in 2007**

| <i>Federal / Provincial</i> | <i>Federal and Provincial Programs</i> | <i>Total Energy Saved (GWh)</i> | <i>Total Summer Peak Saved (MW)</i> | <i>Hydro One Share (GWh)</i> | <i>Hydro One Share (MW)</i> |
|-----------------------------|--|---------------------------------|-------------------------------------|------------------------------|-----------------------------|
| Federal | Existing Buildings Initiative | 94.9 | 23.7 | 11.8 | 3.0 |
| Federal | FCM-Green Municipal Funds | 111.0 | 0.0 | 13.8 | 0.0 |
| Federal | ecoENERGY for Equipment | 51.7 | 9.4 | 11.2 | 1.7 |
| Federal | ecoENERGY Retrofit-Homes | 5.7 | 0.6 | 1.7 | 0.2 |
| Federal | ecoENERGY for Industry-Other CIPEC | 49.3 | 7.6 | 6.1 | 0.9 |
| Federal | CIPEC-Industrial Energy Audit Incentive | 0.0 | 27.8 | 0.0 | 3.5 |
| Federal | Commercial Building Incentive Program (CBIP) | 14.6 | 12.7 | 1.8 | 1.6 |
| Federal | ecoENERGY for Industry-Dollars to \$ense | 73.2 | 3.7 | 9.1 | 0.5 |
| Federal | ecoENERGY for Buildings and Houses-Housing | 2.2 | 0.2 | 0.7 | 0.1 |
| Provincial | Ontario's Refrigerants Regulation | 16.6 | 5.4 | 2.1 | 0.7 |

| | | | | | |
|--------------|--------------------|--------------|-------------|-------------|-------------|
| Provincial | OME-Net Metering | 5.5 | 0.9 | 1.1 | 0.2 |
| Non-Profit | Non-profit Total * | 8.8 | 7.0 | 2.2 | 2.0 |
| Total | | 433.4 | 99.0 | 61.8 | 14.2 |

1 Source: Summary of Electricity Conservation Program & Initiatives in Ontario from 2005-2007, Excluding
 2 OPA Funded Programs and Ontario Government Buildings (Ref ID#: 28028), Marbek Resource
 3 Consultants, June 2008

4 Note: Since the CDM forecast prepared by Hydro One Distribution is net of Codes and Standards, the
 5 savings from Equipment Performance Standard are not included in this report.

6 * Details of non-profit organizations are shown in Appendix E, Table E1.
 7
 8

9 **Table D4: CDM Programs Initiated by Federal and Provincial Governments**

| <i>Federal / Provincial</i> | <i>Programs</i> | <i>Source</i> |
|--|--|---|
| Federal | ecoENERGY for Buildings and Houses | www.ecoaction.gc.ca/buildings |
| Federal | ecoENERGY Retrofit - Homes | http://www.ecoaction.gc.ca/homes |
| Federal | ecoENERGY Retrofit - Small and Medium Organizations | http://www.ecoaction.gc.ca/retrofit |
| Federal | ecoENERGY for Industry | http://www.ecoaction.gc.ca/industry |
| Federal | ecoENERGY for Renewable Heat | http://www.ecoaction.gc.ca/heat |
| Federal | Canadian Textiles Program (CANtex) | http://strategis.ic.gc.ca/epic/internet/inctp-ptc.nsf/en/Home |
| Federal | Dollars to Sense Energy Management Workshops | http://www.oe.nrcan.gc.ca/industrial/training-awareness |
| Federal | RET Screen International Clean Energy | http://www.retscreen.net/ang/home.php |
| Federal | Federal Buildings Initiative | http://oe.nrcan.gc.ca/communities-government/buildings/federal/federal-buildings-initiative.cfm |
| Federal | EnerGuide Rating Service | http://oe.nrcan.gc.ca/residential/personal/new-homes/upgrade-packages/energuide-service.cfm?attr=4 |
| Federal | R-2000 Standard | http://oe.nrcan.gc.ca/residential/personal/new-homes/r-2000/standard/current/purpose.cfm?attr=4 |
| Provincial | Ontario Solar Thermal Heating Incentive (OSTHI) | http://www.mei.gov.on.ca/english/energy/conservation/?page=OSTHI |
| Provincial | Home Energy Savings Program (HESP) | http://www.mei.gov.on.ca/english/energy/conservation/?page=home-energy-savings-program |
| Provincial | Retail Sales Tax (RST) Exemption on Renewable Energy Systems | http://www.rev.gov.on.ca/english/taxtips/rst/pdf/04.pdf |
| Provincial | Retails Sales Tax (RST) Exemption on ENERGY STAR® products | http://www.rev.gov.on.ca/english/taxtips/rst/pdf/04.pdf |
| Provincial | Northern Ontario Heritage Fund: Northern Energy Program | http://www.mndm.gov.on.ca/nohfc/program_nep_e.asp |
| Provincial | Green Light On a Better Environment (GLOBE) | http://www.globeservices.ca/?page=1 |
| Provincial | Community Conservation Initiative Fund | http://www.mei.gov.on.ca/english/energy/conservation/?page=cci |
| Provincial | Municipal Eco Challenge Fund (Discontinued) | http://www.mei.gov.on.ca/english/energy/conservation/?page=MECF |

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EB-2009-0096

Exhibit H

Tab 12

Schedule 2

Attachment 1

Page 22 of 49

| | | |
|------------|---|---|
| Provincial | Smart Metering Policy | http://www.mei.gov.on.ca.wsd6.korax.net/english/energy/electricity/?page=smart-meters |
| Other | Doors Closed Campaign (Conservation Council of Ontario) | http://weconserve.ca/doorsclosed/?page_id=3 |
| Other | Greening Sacred Spaces (Faith and the Common Good) | http://www.faith-commongood.net/gss/index.asp |
| Other | Flick Off | http://www.flickoff.org/home |
| Other | Green Roofs for Healthy Cities | http://www.greenroofs.org/ |
| Other | Ontario Eco Schools | http://ontarioecoschools.org/ |
| Other | Reduce the Juice | http://www.reducethejuice.ca/ |

1 Source: OPA Ontario's Chief Energy Conservation Officer 2008 Annual Report.

2 Conservation Bureau website: <http://www.conservationbureau.on.ca/>

3

4

Appendix E: Other CDM Programs and Educational Initiatives in Ontario

This appendix presents a sample of CDM programs and educational initiatives offered by other organizations which will have an impact on Hydro One retail customers. Table E1 below summarizes the CDM programs initiated by non-profit organizations between 2005 and 2007. Energy and peak impacts from these programs for Hydro One Distribution retail are presented in Appendix D, Table D1 - D3. Table E2 provides more detailed information for other CDM programs and educational initiatives.

Table E1: Non-Profit Organizations Initiated CDM Programs 2005-2007

| <i>Program Name</i> | <i>Institution</i> |
|--|---|
| Eneract Smart Living Programs | Eneract |
| Green Tbiz | Toronto Association of Business Improvement Areas (TABIA) |
| Keep Cool | Clean Air Foundation |
| Cool Shops | Clean Air Foundation |
| Go Solar | Clean Air Foundation |
| Northern Energy Program | Northern Ontario Heritage Funds Corp. (NOHFC) |
| FLICK OFF Campaign | Flick Off organization |
| Wattwize | Citizens' Environment Watch |
| Green Sacred Places | Faith and Common Good |
| EnerGuide for Houses / ecoENERGY Program | Green Communities Canada |
| EcoSchools | Ontario EcoSchools |
| Green Roofs for Healthy Cities | North America Inc. |

Source: Summary of Electricity Conservation Program & Initiatives in Ontario from 2005-2007, Excluding OPA Funded Programs and Ontario Government Buildings (Ref ID#: 28028), Marbek Resource Consultants, June 2008

Table E2: Selected CDM / Educational Initiatives in Ontario

| <i>Program Name</i> | <i>Institution</i> |
|--|--|
| Convenience store program | Ontario Convenience Stores Association |
| Compressed Air Leak Management System | Ontario Mining Association |
| Direct Install Small Business Pilot Project | Sustainable Buildings Canada |
| Direct Install Small Business Pilot Project | Greensaver |
| Energy Benchmarking Practices in the Ontario Wine Industry | Wine Council of Ontario |
| Energy Management for University Health Network hospitals | University Health Network |
| Energy Management Best Practices in Multi-Use Facilities | Ontario Energy Association |

| | |
|--|---|
| Energy Star for New Homes | EnerQuality Corporation |
| Forest Industries Energy Manager and CDM Pilot | Ontario Forest Industries Association |
| Agricultural Learning Locations | AgEnergy Cooperative Inc. |
| Conservation through Dialogue and Design | Association of Major Power Consumers in Ontario |
| Convenience Stores Conservation Pilot | Ontario Convenience Store Association |
| Effective Demand Side Management (DSM): Webinar Series | Canadian Energy Efficiency Alliance |
| Energy Efficiency Education Program for Trade Contractors Serving SME Sector | Energy Efficient Contractors Network |
| Energy Efficiency Secretariat for the College System | Association of Colleges of Applied Arts and Training of Ontario |
| Energy Savings & Capital Renewal Symposium | Association of Colleges of Applied Arts and Training of Ontario |
| ENERGY STAR® for New Homes | Enerquality |
| Feasibility of Expanding the Toronto Atmospheric Fund (TAF) | Clean Air Partnership |
| First Nations Conservation Project: Chippewas of Georgina Island | WindFall EcoWorks |
| Flick Off! / Unplug!: Text-Messaging Pilot | Summerhill Group |
| Greenlearning.ca | Pembina Institute |
| Market-Driven Incentives for the Residential Sector - Pilot Project | GreenSaver |
| Net-Zero Energy homes - Building Capacity in Ontario | Net-Zero Energy Home Coalition |
| OFIA 2007 Energy Management Program | Ontario Forest Industries Association |
| OFIA Interim Energy Management Program | Ontario Forest Industries Association |
| On-farm Energy Audits | Ontario Ministry of Agriculture, Food and Rural Affairs |
| Pilot Energy Program (PEP) for Food Processors | Ontario Ministry of Agriculture, Food and Rural Affairs |
| Project Porchlight | One Change |
| Reduce the Juice | Power Up Renewable Energy |
| Restaurants and Green Grocers Energy Efficiency Pilot | GreenSaver |
| Rogers Centre Charette | Sustainable Buildings Canada |
| Skills for Energy Efficient Construction | Clean Air Partnership |
| Virtual Power Plant: Exploring the Potential for Aggregated Cogeneration | Canadian Energy Efficiency Alliance |
| Energy Efficient Premium Refund | Canada Mortgage and Housing Corporation (CMHC) |

1 Source: Conservation Bureau Website, www.conservationbureau.on.ca

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 5
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1 **Appendix F: CDM Education and Communication Programs**

2
3 This appendix describes the CDM education and communication programs and activities
4 offered by Hydro One Distribution and other government agencies. In the past few years,
5 Hydro One Distribution has used bill inserts, newspapers, special events, conferences and
6 workshops, radio and TV series, fact sheets, energy efficiency guides, brochures, on-line
7 energy audits and direct mail to promote energy efficiency and conservation. The
8 availability of this information will help our customers build the “conservation culture”.
9 Please visit www.PowerSaver.ca for more information.

10
11 Table F1 shows all energy conservation related bill inserts sent out to customers in 2005
12 by Hydro One.

13
14 **Table F1: Distribution of Bill Inserts and Energy Saving Tips in 2005**

| Topic | Printed and distributed pieces (000s) |
|-------------------------------|---------------------------------------|
| Home Energy Efficiency Grant | 22 |
| Switch to Cold – 1 | 1,215 |
| Switch to Cold – 2 | 1,215 |
| Lighten Your Electricity Bill | 1,215 |
| Total | 3,667 |

15 Source: Hydro One Communications Department

16
17 Compared to 2005, Hydro One in 2006 distributed 18% more inserts and energy saving
18 tips with customer’s monthly bills. Table F2 below lists all the energy saving or
19 conservation related inserts sent to customers.

20
21 **Table F2: Distribution of Bill Inserts and Energy Saving Tips in 2006**

| Topic | Printed and distributed pieces (000s) |
|--------------------------------|---------------------------------------|
| Staying Connected - Winter '05 | 1,215 |
| Staying Connected - Spring '06 | 1,215 |
| Staying Connected - Summer '06 | 1,215 |
| Power Cost Monitors | 140 |

| | |
|---------------------------------|--------------|
| Power Cost Monitors v2 | 140 |
| Cold Shoulder Fridge Retirement | 350 |
| SmartStat P. Thermostats | 25 |
| Don't be a Fridge Magnet | 22 |
| LED Traffic Lights | 1 |
| LED Traffic Lights | 1 |
| LED Light Exchange | 1 |
| Total | 4,325 |

Source: Hydro One Communications Department

In 2007, the number of energy saving bill inserts more than doubled in comparison to 2006. Table F3 provides details of inserts sent to customers in 2007.

Table F3: Distribution of Bill Inserts and Energy Saving Tips in 2007

| Topic | Printed and distributed pieces (000s) |
|---|--|
| Staying Connected - Winter 06-07 | 1,215 |
| Staying Connected - Summer '07 | 1,215 |
| Staying Connected - Fall '07 | 1,215 |
| Smartstat thermostat, Zones 1&2 | 150 |
| Online Appliance Survey | 100 |
| Cold Shoulder Fridge Retirement | 1,500 |
| 10/10 Summer Savings program | 950 |
| Peaksaver thermostat program | 1,215 |
| OPA Great Refrigerator Roundup | 1,500 |
| PowerSaverPlus for Residential & Business Customers | 1,500 |
| Electricity Retrofit Incentive Program – ERIP | 15 |
| ERIP | 15 |
| ERIP promotional card on heavy stock | 11 |
| Total | 10,609 |

Source: Hydro One Communications Department

Table F4 presents all energy conservation related bill inserts sent out to customers in 2008 by Hydro One.

1 **Table F4: Distribution of Bill Inserts and Energy Saving Tips in 2008**

| Topic | Printed and distributed pieces (000s) |
|---|--|
| Staying Connected - Spring '08 | 1,215 |
| Staying Connected - Fall '08 | 1,215 |
| Summer Sweepstakes cover letter | 80 |
| Summer Sweepstakes program | 1,001 |
| OPA Great Refrigerator Roundup | 1,650 |
| PowerSaverPlus for Residential & Business Customers | 1,650 |
| PeakSaver program | 1,100 |
| Electricity Retrofit Incentive Program - ERIP | 93 |
| PowerSavings Blitz | 15 |
| Double Return | 2 |
| Conserving Energy Together | 5 |
| Total | 8,026 |

2 Source: Hydro One Communications Department

3

4 **Other Sources**

5

6 In addition to Hydro One Distribution CDM education and communication program and
7 activities, similar CDM materials and communication programs are offered by other
8 government agencies that may have an impact on Hydro One Retail customers. They can
9 be found on the following websites:

10

- 11 • OPA - <http://www.powerauthority.on.ca>
- 12 • Office of Energy Efficiency - <http://oee.nrcan.gc.ca>
- 13 • Ministry of Energy - <http://www.energy.gov.on.ca>
- 14 • Powerwise - <http://www.powerwise.ca>

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1 **Appendix G: Net Load Impact Analysis of Conservation Actions Undertaken by**
2 **Customers**

3
4 This appendix summarizes the results of two studies undertaken by Hydro One
5 Distribution to measure the conservation actions of customers. The first study is an
6 econometric analysis to measure the net impact of CDM programs on energy
7 consumption for 2004-2008 using the hourly load profile approach. This is the same
8 methodology used in Hydro One's Transmission 2009-2010 rate application (EB-2008-
9 0272). The second study is an analysis to measure conservation actions using customer
10 billing data. This is the same methodology used in Hydro One Distribution's 2008 rate
11 application (EB-2007-0681).

12
13 **Load Profile Analysis**

14 Hydro One undertook a study to measure the load impact of CDM programs for Hydro
15 One retail customers using the hourly load profile analysis approach. This methodology
16 captures the CDM impact by comparing the normalized hourly load profiles for 2004-
17 2008 using actual hourly data for Hydro One retail customers. In this analysis, 2004
18 represents the base year without CDM programs and 2008 represents latest year with
19 CDM programs. The difference of the load profiles between these four years provides a
20 measure of the net CDM impact achieved to date. CDM impact could be attributed to a
21 numbers of reasons, including the following:

- 22 1. Conservation programs initiated by Hydro One Distribution
- 23 2. Conservation programs initiated by other government agencies such as the OPA,
24 federal and provincial governments.
- 25 3. Conservation actions initiated by customers on their own that are not captured and
26 reported in (1) and (2).

1 Hydro One Distribution undertook this analysis to measure the CDM impact associated
2 with conservation actions undertaken by its customers. Two regressions methods were
3 examined in this study.

4
5 The first method is an in-house econometric model built to analyse the hourly loads for
6 2004-2008. The functional form of load shape analysis for each hour i ($i=1, 2, 3 \dots 24$) is
7 defined as:

8
9 *Actual Load in hour $i = f\{CDD, HDD, Day\ type\}$* where CDD represents cooling degree
10 days and HDD represents heating degree days

11
12 Regression equations were used to generate weather normalized hourly load profiles for
13 2004-2008. “Weather adjustment”, the difference between the predicted load using normal
14 weather conditions and actual load, was added to the actual hourly load to produce a
15 “normalized” hourly load shape. Thirty-one years of weather data were used to set the
16 typical weather conditions. The economic growth between 2004 and 2008 was removed
17 using the historical relationship between the economic activities (i.e. GDP) and the load.
18 The estimated CDM impact is the difference between the load for 2004-2008 after removing
19 economic growth.

20
21 The second method is similar to the first method discussed above in terms of the functional
22 form, actual hourly data for Hydro One retail customers, weather data and removal of
23 economic growth. The only difference is the use of hourly forecasting software program,
24 MetrixND, developed by Itron to generate the weather normalized hourly load profiles.

25
26 The regression results for both load profile models are statistically significant. The load
27 profile results from the two models (see Table G1) show that Hydro One retail customers
28 have achieved energy savings in the range of 810 GWh to 995 GWh between 2004 and
29 2008. Based on this analysis, after adjusting for savings due to CDM programs initiated

1 from Hydro One Distribution and other agencies as presented in Table 1, CDM impacts
2 attributed to conservation actions initiated by customers on their own are estimated to
3 range from 170 GWh to 355 GWh for 2004-2008. Please note that these savings are
4 above and beyond the natural conservation efforts assumed in the load forecast. These
5 conservation actions are difficult to measure because they are not program specific and
6 therefore the savings are not easily traceable and measureable.

7
8 **Table G1: Results of CDM Impact Using Econometric Analysis**

| | In-House Econometric Model | MetrixND Model |
|---|---------------------------------------|-----------------------|
| Total CDM impact (2004-2008) | 810 GWh | 995 GWh |
| Minus Identified conservation program savings (2004-2008) from Table 1 | 640 GWh | 640 GWh |
| CDM impact due to customer own conservation actions | 170 GWh | 355 GWh |

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11 **Customer Billing Data Analysis**

12 Hydro One Distribution undertook an analysis to measure the energy savings associated
13 with conservation actions using actual monthly customer billing data. The methodology
14 used by Hydro One Distribution for this analysis is summarized below:

- 15 1. A database was created for 2004-2008 for customers who had billing information
16 (and associated meter readings) covering the entire period. New customers or
17 customers cancelling their service during this period were excluded. As a result, a
18 database was created with about 381,000 residential and 76,000 general service
19 customers.
- 20 2. Customer electricity consumption data were normalized to take out changes due
21 to unusual weather effects. The weather normalization methodology used by
22 Hydro One Distribution was approved by the Board in the Distribution Cost
23 Allocation Review (EB-2005-0317) and Hydro One's 2006 Distribution Rate case
24 (EB-2005-0378).

Table G2: Residential and Farm Consumption 2004 - 2008

| Customer Class | Customer Count | 2004 (GWh) | 2005 (GWh) | 2006 (GWh) | 2007 (GWh) | 2008 (GWh) |
|---|----------------|------------|---------------|---------------|---------------|---------------|
| Farm | 37,378 | 912 | 895 | 861 | 847 | 830 |
| Residential - High Density | 119,228 | 1,626 | 1,619 | 1,567 | 1,543 | 1,538 |
| Residential - Low Density | 121,300 | 1,909 | 1,880 | 1,830 | 1,798 | 1,805 |
| Residential - Acquired | 69,210 | 783 | 792 | 773 | 759 | 745 |
| Urban | 34,281 | 382 | 395 | 382 | 379 | 370 |
| Total | 381,397 | 5,612 | 5,580 | 5,414 | 5,326 | 5,287 |
| % change for all residential customers | | | -0.57% | -2.98% | -1.63% | -0.72% |
| % change during 2004 and 2008 | | | | | | -5.9% |

Note: All figures are weather-normal. Only customers with complete monthly billing data for all five years are used in the analysis.

Table G3: General Service Consumption 2004 - 2008

| Customer Class | Customer Count | 2004 (GWh) | 2005 (GWh) | 2006 (GWh) | 2007 (GWh) | 2008 (GWh) |
|---|----------------|------------|--------------|---------------|---------------|---------------|
| Farm - Phase 1 | 6,774 | 227 | 230 | 221 | 218 | 212 |
| Farm - Phase 3 | 702 | 149 | 153 | 151 | 146 | 143 |
| Small General Service | 41,156 | 902 | 909 | 880 | 877 | 884 |
| Large General Service | 10,098 | 1,806 | 1,862 | 1,816 | 1,789 | 1,754 |
| General Service - Acquired | 13,399 | 1,184 | 1,212 | 1,183 | 1,162 | 1,136 |
| Urban | 4,130 | 465 | 482 | 477 | 469 | 469 |
| Total | 76,259 | 4,733 | 4,849 | 4,729 | 4,661 | 4,598 |
| % change for all General Service customers | | | 2.40% | -2.50% | -1.40% | -1.40% |
| % change during 2004 and 2008 | | | | | | -2.80% |

Note: All figures are weather-normal. Only customers with complete monthly billing data for all five years are used in the analysis.

Table G4: MUSH sector Consumption 2004 - 2008

| | Customer Count | 2004 (GWh) | 2005 (GWh) | 2006 (GWh) | 2007 (GWh) | 2008 (GWh) |
|--|----------------|------------|--------------|---------------|---------------|---------------|
| Total | 3,704 | 658 | 659 | 642 | 641 | 639 |
| % change for all MUSH customers | | | 0.16% | -2.56% | -0.15% | -0.40% |
| % change during 2004 and 2008 | | | | | | -2.95% |

Note: All figures are weather-normal. Only customers with complete monthly billing data for all five years are used in the analysis.

1 Table G2 shows the weather-normalized consumption for over 381,000 residential
2 customers with good monthly billing data for 2004-2008 by customer rate class. A
3 decline of 5.9% in energy consumption was observed for the residential customers during
4 this period. Table G3 presents the weather-normalized consumption for general service
5 customers with good monthly billing data over the same period. Table G4 shows the
6 same analysis for the MUSH customers (Municipalities, Universities, Schools and
7 Hospitals). During this period, energy savings of 2.8% and 3.0% are observed for the
8 general service and MUSH customers respectively. It is noteworthy that the decline in
9 load (i.e. energy savings) started to become noticeable in 2006 for all customer rate
10 classes and 2006 is the year where increased CDM efforts were launched across the
11 province. The decline in load starting in 2006 can be attributed to a number of factors,
12 including the CDM program impacts initiated by Hydro One Distribution, the OPA, other
13 government agencies as well as customer conservation actions on their own. This finding
14 is consistent with the econometric analysis as well as the CDM survey results presented
15 in Appendix H.

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Appendix H: Summary Result of Hydro One 2009 CDM Survey

This appendix summarizes the key results of a CDM survey initiated by Hydro One Distribution in June 2009. A similar CDM survey was completed in 2007, for which over 1,740 customers responded (39.2% response rate). The main objective of the 2009 CDM survey was to assess the conservation actions undertaken by Hydro One Retail customer in 2008 and 2009 that are not easily captured by CDM program results reported by Hydro One Distribution, the OPA and the federal and provincial government agencies. The questionnaire used for the 2009 survey is presented in Appendix J.

The 2009 CDM survey results have clearly demonstrated that Ontario residential customers have continued to participate in the conservation challenge and have taken various conservation actions on their own to save electricity.

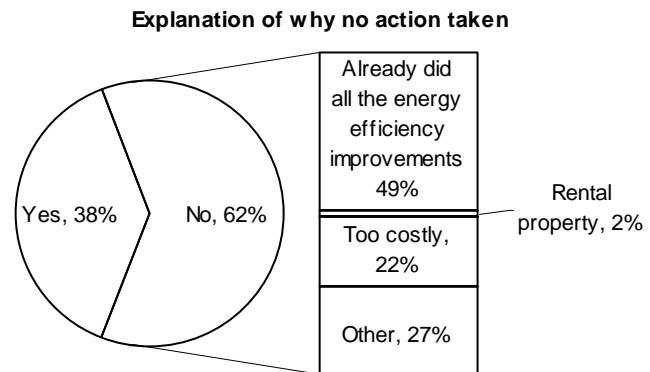
Survey Response Rate:

- Total number of survey requests sent out: 9,450
- Total number of responses received: 2,829
- Overall response rate: 29.9%

Participation in Conservation programs in 2008 or 2009

- In Question 1, 38% of the survey respondents said they participated in CDM programs in 2008 or 2009.
- For those who did not participate in any CDM programs in the last 2 years, about half of the respondents said they have already done all the energy efficiency improvements already.

| Have you participated in any CDM programs in 2008 or 2009? | Percentage |
|---|-------------------|
| Yes | 38% |
| No | 62% |



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- Survey results show about 25% of Hydro One customers plan to undertake conservation actions in the next two years.

| Type of Conservation Action | Customers answered "No" in Question 1 | | Customers answered "Yes" in Question 1 | |
|--|---|---|---|---|
| | Percent of customers who plan to do CDM | How much \$ they plan to spend per home | Percent of customers who plan to do CDM | How much \$ they plan to spend per home |
| Increased Home Insulation | 23.4% | \$1,970 | 26.6% | \$1,881 |
| Upgraded Windows / Skylights / Doors | 29.2% | \$3,453 | 32.2% | \$3,862 |
| Upgraded Heating System | 14.7% | \$7,103 | 12.5% | \$5,059 |
| Installed ENERGY STAR® Central AC | 7.0% | \$2,950 | 7.2% | \$3,224 |
| Installed ENERGY STAR® Window AC | 3.6% | \$343 | 1.5% | \$342 |
| Installed Energy Efficient Light Bulbs | 57.7% | \$93 | 53.2% | \$73 |
| Purchased ENERGY STAR® Appliances | 28.1% | \$1,940 | 27.6% | \$1,459 |
| Installed Programmable Thermostat | 18.0% | \$111 | 11.4% | \$119 |
| Others | 15.5% | \$5,028 | 15.3% | \$4,447 |

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Spill-over effects

Survey results show a significant number of customers who undertook CDM actions without receiving incentives. This finding confirms that Hydro One Distribution retail customers are taking CDM actions on their own and these actions are not yet captured in CDM program results reported by Hydro One Distribution, the OPA or other programs initiated by the federal and provincial governments.

| Conservation Actions | Number of customers in total | Number of customers who received incentives | Ratio for customers who did not receive incentives versus customers who received incentives |
|--|------------------------------|---|---|
| Increased Home Insulation | 156 | 25 | 5.24 |
| Upgraded Windows / Skylights / Doors | 249 | 29 | 7.59 |
| Upgraded Heating System | 164 | 73 | 1.25 |
| Installed ENERGY STAR® Central AC | 49 | 20 | 1.45 |
| Installed ENERGY STAR® Window AC | 36 | 3 | 11.00 |
| Installed Energy Efficient Light Bulbs | 616 | 133 | 3.63 |
| Purchased ENERGY STAR® Appliances | 356 | 80 | 3.45 |
| Installed Programmable Thermostat | 200 | 64 | 2.13 |
| Others | 88 | 26 | 2.38 |

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16

Conservation Culture

1 The 2009 survey results are consistent with the 2007 survey results with respect to
 2 conservation culture. Both survey results show that Hydro One Distribution retail
 3 customers are increasingly taking conservation actions on their own, such as turning off
 4 lights when not required, using natural cooling (i.e. not using air conditioning), setting
 5 thermostat lower during the day, the night and when away, and using cold water for
 6 laundry.

7
 8 These conservation actions save energy, but they are not easily measureable and the
 9 saving impacts are not properly captured.

| Conservation Action | 2003 | 2004 | 2005 | 2006 | 2007 | 2008* | 2009* |
|---|------|------|------|------|------|-------|-------|
| Use a programmable thermostat | 38% | 42% | 47% | 53% | 57% | 63% | 69% |
| Set thermostat lower during the day and when away | 65% | 71% | 75% | 80% | 82% | 93% | 93% |
| Set thermostat lower during the night | 63% | 69% | 72% | 77% | 80% | 91% | 91% |
| Turn off air conditioner when not at home | 39% | 43% | 48% | 53% | 56% | 63% | 70% |
| Natural cooling | 68% | 73% | 77% | 82% | 85% | 95% | 95% |
| Regular maintenance of air conditioning | 55% | 59% | 63% | 67% | 69% | 63% | 71% |
| Switch to non-electric space heating equipment | 22% | 25% | 27% | 29% | 30% | 38% | 41% |
| Insulate electric water heater and pipes | 34% | 37% | 40% | 43% | 46% | 47% | 52% |
| Use cold water doing laundry | 49% | 54% | 62% | 70% | 75% | 80% | 91% |
| Switch to non-electric water heating equipment | 22% | 24% | 25% | 25% | 26% | 38% | 41% |
| Turn off lights when not required | 85% | 90% | 91% | 95% | 96% | 96% | 96% |
| Use timer for indoor lights | 25% | 27% | 29% | 30% | 31% | 37% | 41% |
| Use timer for outdoor lights | 36% | 39% | 43% | 45% | 48% | 48% | 53% |
| Use a dimmer switch | 45% | 48% | 51% | 53% | 55% | 64% | 69% |
| Use motion sensor | 36% | 39% | 43% | 45% | 46% | 50% | 55% |
| Switch to LED holiday lights | 8% | 12% | 23% | 45% | 56% | 70% | 78% |
| Switch to other LED lights | 4% | 3% | 6% | 11% | 14% | 35% | 41% |
| Use timer on pool pump or heater | 7% | 8% | 9% | 10% | 11% | 11% | 12% |
| Use insulating or solar blanket to keep the pool water warm | 11% | 12% | 13% | 14% | 15% | 13% | 14% |
| Switch to non-electric pool heating | - | - | - | - | - | 4% | 5% |
| Hang clothes to dry | 54% | 57% | 61% | 63% | 65% | 74% | 83% |
| Wash dishes by hand | 46% | 48% | 51% | 53% | 55% | 56% | 63% |
| Air sealing and weatherization | 37% | 41% | 47% | 52% | 54% | 64% | 71% |
| Control other equipment with timers | 11% | 11% | 12% | 13% | 15% | 24% | 27% |

11 Note: *2008 and 2009 data are based on results from the 2009 CDM survey; the rest are based on results
 12 from the 2007 CDM survey.

13
 14 The following table highlights the conservation efforts our retail customers have achieved
 15 over the last few years. The survey results clearly show Hydro One Distribution Retail

1 customers have responded to the conservation challenge, have participated in CDM
2 programs offered by Hydro One Distribution, the OPA and other federal government
3 agencies and have taken various conservation efforts on their own to save electricity.
4 This finding further supports the saving impacts identified in the net load impact analysis
5 using the econometric models and customer billing analysis as presented in Appendix G
6 in this report.

7

| Conservation Action | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Set thermostat lower during the day and when away | 65% | 71% | 75% | 80% | 82% | 93% | 93% |
| Set thermostat lower during the night | 63% | 69% | 72% | 77% | 80% | 91% | 91% |
| Natural cooling | 68% | 73% | 77% | 82% | 85% | 95% | 95% |
| Turn off lights when not required | 85% | 90% | 91% | 95% | 96% | 96% | 96% |

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Appendix I: Questionnaire Used in 2009 CDM Survey



Hydro One Account Number: _____ Postal Code: _____

Hydro One Customer Conservation Survey

1. Have you participated in any electricity conservation programs in 2008 or 2009?

Examples of conservation programs include:

- Provincial sales tax rebate on new energy efficient appliances/equipments;
- Hydro One programs (the Great Refrigerator Roundup program, Peaksaver® program, etc.)
- Grant or loan from government for energy efficiency improvements;
- Rebate (coupon or mail in) for purchasing an energy efficient appliance/product.

Yes No

2. **(If “No” in Q1)** In the previous question, you answered “No”. Please provide an explanation:

- Already did all the energy efficiency improvements
- Too costly
- Rental property
- Other (Please provide detail _____)

Do you plan to undertake any of the following actions over the next 2 years?

| | Yes/No | How much do you plan to spend? | Describe action(s) you plan to take |
|--|--------|--------------------------------|-------------------------------------|
| Increase Home Insulation | | | |
| Upgrade Windows / Skylights / Doors | | | |
| Upgrade Heating System | | | |
| Install ENERGY STAR® Central Air Conditioner | | | |
| Install ENERGY STAR® Window AC | | | |
| Install Energy Efficient Light Bulbs | | | |

| | | | |
|----------------------------------|--|--|--|
| Purchase ENERGY STAR® Appliances | | | |
| Install Programmable Thermostat | | | |
| Others | | | |

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(If “Yes” in Q1) In the previous question, you answered “Yes”. Please provide details of the actions you have undertaken.

| | Year action was taken | | | How much did you spend in total? | If you received an incentive, how much did you receive? | Describe action taken in more detail |
|--|-----------------------|------|-----------------|----------------------------------|---|--------------------------------------|
| | 2008 | 2009 | No Action Taken | | | |
| Increased Home Insulation | | | | | | |
| Upgraded Windows / Skylights / Doors | | | | | | |
| Upgraded Heating System | | | | | | |
| Installed ENERGY STAR® Central AC | | | | | | |
| Installed ENERGY STAR® Window AC | | | | | | |
| Installed Energy Efficient Light Bulbs | | | | | | |
| Purchased ENERGY STAR® Appliances | | | | | | |
| Installed Programmable Thermostat | | | | | | |
| Others | | | | | | |

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Do you plan to undertake any further actions over the next 2 years?

| | Yes/No | How much do you plan to spend? | Describe action(s) you plan to take |
|--|--------|--------------------------------|-------------------------------------|
| Increase Home Insulation | | | |
| Upgrade Windows / Skylights / Doors | | | |
| Upgrade Heating System | | | |
| Install ENERGY STAR® Central Air Conditioner | | | |
| Install ENERGY STAR® Window Air Conditioner | | | |
| Install Energy Efficient Light Bulbs | | | |
| Purchase ENERGY STAR® Appliances | | | |
| Install Programmable Thermostat | | | |
| Others | | | |

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10

- 1 3. Please identify all conservation actions you have undertaken that are **NOT**
 2 specifically related any program initiatives identified in the previous question and
 3 please indicate the year you implemented it.
 4

| | Prior to 2008 | 2008 | 2009 |
|---|---------------|------|------|
| Heating and Cooling | | | |
| Use a programmable thermostat | | | |
| Set your home thermostat lower during the day and when away | | | |
| Set your home thermostat lower during the night | | | |
| Turn off air conditioner when not at home | | | |
| Use a fan or open windows instead of using air conditioner | | | |
| Regular maintenance of air conditioning such as changing or cleaning the filter | | | |
| Switch to non-electric space heating equipment | | | |
| Electric water heating | | | |
| Insulate electric water heater and pipes | | | |
| Use cold water doing laundry | | | |
| Switch to non-electric water heating equipment (e.g. natural gas) | | | |
| Lighting | | | |
| Turn off lights when not required | | | |
| Use timer for indoor lights | | | |
| Use timer for outdoor lights | | | |
| Use a dimmer switch | | | |
| Use motion sensor | | | |
| Switch to LED holiday lights | | | |
| Switch to other LED lights | | | |
| Pool | | | |
| Use timer on pool pump or heater | | | |
| Use insulating or solar blanket to keep the pool water warm | | | |
| Switch from electric to non-electric pool heating (e.g. natural gas) | | | |
| Other actions | | | |
| Hang clothes to dry | | | |
| Wash dishes by hand | | | |
| Air sealing and weatherization | | | |
| Control other equipment with timers | | | |

- 5
 6 4. What was your TOTAL household income before tax in 2008?
 7 Less than \$20,000 \$20,000 - \$39,999
 8 \$40,000 - \$59,999 Over \$60,000
 9

- 10 5. Please indicate the number of person(s) living in your household in 2008.
 11 1 2 3 4 More than 4
 12

Filed: October 19, 2009

EB-2009-0096

Exhibit H

Tab 12

Schedule 2

Attachment 1

Page 40 of 49

- 1 6. Please indicate how many light bulbs in your home those are NOT energy efficient.
2 Less than 5 bulbs 5-10 bulbs
3 11-20 bulbs More than 20 bulbs
4

- 5 7. Please provide suggestions for conservation programs that would benefit you :
6 _____
7

- 8 8. Your feedback is very important to us. Would you like to continue participating in
9 future web surveys about our services, programs and communications?
10 Yes No
11

Appendix J: Net Load Impact Analysis for Embedded Customers

This appendix summarizes the net load impact analysis for the embedded LDC customers for 2005-2008. The approach used here is similar to the methodology used for Hydro One Distribution retail customers as discussed in this report. Similar analysis could not be undertaken for the embedded direct customers due to lack of information. The CDM impact discussed in this appendix therefore should be considered as conservative because the CDM impact attributed to embedded direct customers are not considered.

The CDM impact analysis for the embedded LDC customers presented in this appendix includes the following:

- Conservation programs initiated by the embedded LDCs (Tables J2)
- Conservation programs launched by other organizations such as the OPA (Table J3, J4 and J5) and the federal and provincial governments (Table J6, J7, J8)
- Conservation actions initiated by customers of the embedded LDCs that have not been captured elsewhere (Table J9).

Table J1: CDM Impact for Embedded LDC Customers (GWh)

| Year | LDC Programs (1) | OPA Programs (2) | Federal and Provincial Government Programs (3) | Annual Program Savings (1-3) | Cumulative Program Savings (1-3) | Additional Impact from Customer Conservation Actions |
|--------------|------------------|------------------|--|------------------------------|----------------------------------|--|
| 2005 | 19 | n/a | 39 | 58 | 58 | At least 150 |
| 2006 | 57 | 3 | 36 | 95 | 153 | |
| 2007 | 39 | 21 | 39 | 99 | 252 | |
| 2008 | 2 | 23 | 39 | 64 | 315 | |
| Total | 116 | 47 | 152 | 315 | | 150 |

Note: N/A denotes not available. CDM impacts are shown at the wholesale purchase level.

Table J1 summarized the analysis presented in Table J2 to J9. Results show that at least 315 GWh of energy savings were identified for embedded LDC customers between 2005 and 2008.

1
 2

Table J2: Program Results Initiated by Embedded LDCs for 2005-2008

| Year | Total peak demand saved (MW) | Total in year kWh saved (GWh) |
|--------------|------------------------------|-------------------------------|
| 2005 | 5.8 | 19.1 |
| 2006 | 21.8 | 56.7 |
| 2007 | 11.9 | 38.6 |
| 2008 | 2.8 | 1.6 |
| Total | 42.3 | 116.0 |

3 Note: Please note that OPA allocated 2006 and 2007 program savings to LDCs in July 2009, the
 4 incremental savings from Every Kilowatt Counts have been included in this table.
 5 Source: 1. Conservation and Demand Management Plan Annual Reports, Appendix C to December 31,
 6 2005, RP-2004-0203 filed March 31st, 2006.
 7 2. Conservation and Demand Management Plan Annual Reports, Appendix C to December 31, 2006, RP-
 8 2004-0203 filed April 2nd, 2007.
 9 3. Conservation and Demand Management Plan Annual Reports, Appendix C to December 31, 2007, RP-
 10 2004-0203 filed March 31st, 2008.
 11 4. Conservation and Demand Management Plan Annual Reports, Appendix C to December 31, 2008, RP-
 12 2004-0203 filed March 31st, 2009.
 13

14 **Table J3: OPA-Initiated CDM Program Results for Embedded LDCs in 2006**

| OPA Program | Total Provincial Annual GWh savings | Total Provincial Annual MW Savings | GWh Savings Assigned to Embedded LDC Customers | MW Savings Assigned to Embedded LDC Customers |
|-----------------------------------|-------------------------------------|------------------------------------|--|---|
| Every Kilowatt Counts * | 370.2 | 4.4 | 46.0 | 0.5 |
| Cool Savings Rebate | 10.8 | 11.0 | 1.3 | 1.4 |
| Hot Savings Rebate | 3.8 | 3.1 | 0.5 | 0.4 |
| Secondary Refrigerator Retirement | 5.8 | 1.3 | 0.7 | 0.2 |
| Demand Response 1 | 0.0 | 188.2 | 0.0 | 14.5 |
| Total | 390.5 | 208.0 | 48.5 | 17.0 |

15 Source: 2006 Conservation Bureau Annual Report.
 16 Note: *The results from Every Kilowatt Counts were already included in the LDC Annual CDM reports
 17 shown in Table J2. The additional energy and peak savings not yet reported in the CDM annual report are
 18 about 2.5 GWh and 16.4 MW respectively.
 19

20 **Table J4: OPA-Initiated CDM Program Results for Embedded LDCs in 2007**

| OPA Program | Total Provincial Annual GWh Savings | Total Provincial Annual MW Savings | GWh Savings Assigned to Embedded LDC Customers | MW Savings Assigned to Embedded LDC Customers |
|----------------------------|-------------------------------------|------------------------------------|--|---|
| Every Kilowatt Counts * | 136.5 | 5.2 | 16.9 | 0.6 |
| Great Refrigerator Roundup | 14.0 | 1.6 | 1.7 | 0.2 |
| Cool Savings Rebate | 31.2 | 20.5 | 3.9 | 2.5 |
| Aboriginal – Pilot | 20.5 | 1.0 | 2.5 | 0.1 |

| | | | | |
|---|--------------|--------------|-------------|-------------|
| Peaksaver® | 0.0 | 13.8 | 0.0 | 1.7 |
| Summer Savings | 83.8 | 46.5 | 10.4 | 5.8 |
| Affordable Housing – Pilot | 4.4 | 0.3 | 0.4 | 0.0 |
| Social Housing – Pilot | 12.3 | 1.4 | 1.1 | 0.1 |
| Energy Efficiency Assistance for Houses – Pilot | 2.4 | 0.5 | 0.2 | 0.0 |
| Electricity Retrofit Incentive Program | 5.2 | 1.9 | 0.5 | 0.2 |
| Demand Response 1 | 0.0 | 328.2 | 0.0 | 29.3 |
| Other Demand Response | 0.0 | 27.3 | 0.0 | 2.4 |
| Renewable Energy Standard Offer | 8.9 | 2.0 | 0.8 | 0.2 |
| Total | 319.1 | 450.3 | 38.3 | 43.3 |

1 Source: OPA Progress Report on Electricity Conservation 2007 and OPA 2007 Final Conservation Results.
 2 **Note:** * The results from Every Kilowatt Counts were already included in the LDC Annual CDM reports
 3 shown in Table J2. The additional energy and peak savings not yet reported in the CDM annual report are
 4 about 21.4 GWh and 42.6 MW respectively.
 5

6 **Table J5: OPA-Initiated CDM Program Results for Embedded LDCs in 2008**

| OPA Program | GWh Savings for Embedded LDC Customers | MW Savings for Embedded LDC Customers |
|---|---|--|
| Great Refrigerator Roundup | 4.7 | 0.5 |
| Peaksaver® | 0.5 | 2.5 |
| Summer Sweepstakes | 0.7 | 0.0 |
| Every Kilowatt Counts Power Savings Event | 5.7 | 0.8 |
| Cool Savings Rebate | 2.1 | 3.2 |
| Electricity Retrofit Incentive | 9.2 | 2.0 |
| Total | 22.9 | 9.0 |

7 Source: Estimates prepared by Hydro One Distribution using best available information from OPA as of
 8 September, 2009.
 9

10 **Table J6: Program Savings for Embedded LDCs from
 11 Federal and Provincial Governments in 2005**

| Federal / Provincial | Federal and Provincial Programs | Total Electricity Saved (GWh) | Total Summer Peak Saved (MW) | Embedded LDCs' Share (GWh) | Embedded LDCs' Share (MW) |
|-----------------------------|--|--------------------------------------|-------------------------------------|-----------------------------------|----------------------------------|
| Federal | Existing Buildings Initiative | 111.7 | 27.9 | 9.5 | 2.4 |
| Federal | FCM-Green Municipal Funds | 0.0 | 19.6 | 0.0 | 1.7 |
| Federal | CIPEC-Dollars to Sense | 70.2 | 12.1 | 6.0 | 1.0 |
| Federal | Energy Star Labelling | 49.6 | 8.6 | 4.9 | 0.8 |
| Federal | CIPEC-Other Achievements | 47.3 | 7.3 | 4.0 | 0.6 |
| Federal | EnerGuide for Existing Homes | 11.1 | 1.3 | 1.4 | 0.2 |
| Federal | R-2000 | 0.4 | 0.1 | 0.1 | 0.0 |
| Federal | EnerGuide for New Homes | 0.3 | 0.0 | 0.0 | 0.0 |
| Federal | CIPEC-Industrial Energy Audit | 127.1 | 0.0 | 10.8 | 0.0 |

| | Incentive | | | | |
|--------------|--|--------------|-------------|-------------|------------|
| Federal | Commercial Building Incentive Program (CBIP) | 15.5 | 0.0 | 1.3 | 0.0 |
| Federal | ecoENERGY for Industry-Dollars to \$ense | 0.0 | 3.9 | 0.0 | 0.3 |
| Federal | Industrial Building Incentive Program (IBIP) | 0.1 | 0.0 | 0.0 | 0.0 |
| Non-Profit | Non-profit Total * | 6.5 | 4.8 | 0.7 | 0.6 |
| Total | | 439.8 | 85.5 | 38.7 | 7.6 |

1 Source: Summary of Electricity Conservation Program & Initiatives in Ontario from 2005-2007, Excluding
 2 OPA Funded Programs and Ontario Government Buildings (Ref ID#: 28028), Marbek Resource
 3 Consultants, June 2008

4 Note: * The details of non-profit organizations are shown on Appendix E, Table E1.

5

6 **Table J7: Program Savings for Embedded LDCs from**
 7 **Federal and Provincial Governments in 2006**

| Federal / Provincial | Federal and Provincial Programs | Total Electricity Saved (GWh) | Total Summer Peak Saved (MW) | Embedded LDCs' Share (GWh) | Embedded LDCs' Share (MW) |
|-----------------------------|--|--------------------------------------|-------------------------------------|-----------------------------------|----------------------------------|
| Federal | Existing Buildings Initiative | 49.6 | 12.4 | 3.8 | 1.0 |
| Federal | FCM-Green Municipal Funds | 52.9 | 15.0 | 4.1 | 1.2 |
| Federal | CIPEC-Dollars to \$ense | 70.2 | 12.1 | 5.4 | 0.9 |
| Federal | Energy Star Labelling | 49.6 | 8.6 | 4.6 | 0.7 |
| Federal | CIPEC-Other Achievements | 47.3 | 7.3 | 3.6 | 0.6 |
| Federal | EnerGuide for Existing Homes | 19.6 | 2.2 | 2.4 | 0.3 |
| Federal | EnerGuide for New Homes | 1.0 | 0.1 | 0.1 | 0.0 |
| Federal | R-2000 | 0.4 | 0.0 | 0.0 | 0.0 |
| Federal | CIPEC-Industrial Energy Audit Incentive | 97.2 | 13.2 | 7.5 | 1.0 |
| Federal | Commercial Building Incentive Program (CBIP) | 26.6 | 0.0 | 2.1 | 0.0 |
| Federal | ecoENERGY for Industry-Dollars to \$ense | 0.0 | 6.7 | 0.0 | 0.5 |
| Federal | Industrial Building Incentive Program (IBIP) | 0.9 | 0.1 | 0.1 | 0.0 |
| Provincial | OME-Net Metering | 5.3 | 0.8 | 0.5 | 0.1 |
| Non-Profit | Non-profit Total * | 16.2 | 11.8 | 1.8 | 1.4 |
| Total | | 436.8 | 90.4 | 36.1 | 7.7 |

8 Source: Summary of Electricity Conservation Program & Initiatives in Ontario from 2005-2007, Excluding
 9 OPA Funded Programs and Ontario Government Buildings (Ref ID#: 28028), Marbek Resource
 10 Consultants, June 2008

11 Note: * The details of non-profit organizations are shown on Appendix E, Table E1.

**Table J8: Program Savings for Embedded LDCs from
 Federal and Provincial Governments in 2007**

| Federal / Provincial | Federal and Provincial Programs | Total Electricity Saved (GWh) | Total Summer Peak Saved (MW) | Embedded LDCs' Share (GWh) | Embedded LDCs' Share (MW) |
|---------------------------------|---|--|---|---|--|
| Federal | Existing Buildings Initiative | 91.0 | 22.7 | 8.1 | 2.0 |
| Federal | FCM-Green Municipal Funds | 106.5 | 0.0 | 9.5 | 0.0 |
| Federal | ecoENERGY for Equipment | 49.6 | 9.0 | 5.3 | 0.9 |
| Federal | ecoENERGY Retrofit-Homes | 5.4 | 0.6 | 0.7 | 0.1 |
| Federal | ecoENERGY for Industry-Other CIPEC | 47.3 | 7.3 | 4.2 | 0.6 |
| Federal | CIPEC-Industrial Energy Audit Incentive | 0.0 | 26.6 | 0.0 | 2.4 |
| Federal | Commercial Building Incentive Program (CBIP) | 14.1 | 12.1 | 1.3 | 1.1 |
| Federal | ecoENERGY for Industry-Dollars to Sense | 70.2 | 3.5 | 6.3 | 0.3 |
| Federal | ecoENERGY for Buildings and Houses-Housing | 2.1 | 0.2 | 0.3 | 0.0 |
| Provincial | Ontario's Refrigerants Regulation | 15.9 | 5.2 | 1.4 | 0.5 |
| Provincial | OME-Net Metering | 5.3 | 0.8 | 0.6 | 0.1 |
| Non-Profit | Non-profit Total * | 8.4 | 6.8 | 0.9 | 0.8 |
| Total | | 415.7 | 95.0 | 38.5 | 8.8 |

Source: Summary of Electricity Conservation Program & Initiatives in Ontario from 2005-2007, Excluding OPA Funded Programs and Ontario Government Buildings (Ref ID#: 28028), Marbek Resource Consultants, June 2008

Note: Since the CDM forecast is assumed to be net of Codes and Standards, the savings from Equipment Performance Standard are not included in this report.

*The details of non-profit organizations are shown in Appendix E, Table E1.

Program impact for 2008 is not yet available, but is expected to be in the same range as in previous year. Based on historical trends, the energy savings from federal and provincial government programs for embedded LDCs are assumed to be 39 GWh in 2008.

To measure conservation actions initiated by the embedded LDC customers on their own, Hydro One Distribution uses the same load profile analysis methodology as discussed in Appendix G to prepare the econometric analysis for embedded LDCs. The regression results are statistically significant. Table J9 shows that the embedded LDC customers had achieved energy savings in the range of 470 GWh to 745 GWh between 2004 and 2008. Based on this analysis, after adjusting for savings attributed to programs initiated by the

1 embedded LDCs and other agencies, CDM impact attributed to the embedded LDC
2 customers on their own are estimated to range from 155 GWh to 430 GWh for 2004-
3 2008.

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5 **Table J9: Results of CDM Impact for Embedded LDC Customers**
6 **Using Econometric Analysis**

| | In-House Econometric Model | MetrixND Model |
|---|---------------------------------------|-----------------------|
| Total CDM impact (2004-2008) | 745 GWh | 470 GWh |
| Minus Identified conservation program savings (2004-2008) from Table 2 | 315 GWh | 315 GWh |
| CDM impact due to customer own actions from embedded LDCs | 430 GWh | 155 GWh |

7

Appendix K: OPA Conservation Program Portfolio 2008-2010

This appendix presents the OPA’s conservation programs portfolio for 2008-2010. Tables K1 to K3 illustrate the projected CDM savings by program, region, and end-use profile.

Table K1: OPA Portfolio 2008-2010 by Program

| Program | Target (MW) | Net Savings (MW) |
|---|--------------------|-------------------------|
| Mass Market Programs (13 programs) | 451 | 315 |
| New Single Family Construction Program | 45 | 32 |
| LDC Appliance Retirement Program | 120 | 84 |
| LDC Demand Response Program | 108 | 76 |
| LDC Redesigned Summer Savings Program | 3 | 2 |
| LDC Home Energy Efficiency Program | 2 | 1 |
| LDC Custom Programs | 75 | 53 |
| LDC Small Com. Direct Install Program | 9 | 6 |
| Aboriginal Program | 3 | 2 |
| Cool Savings Program | 63 | 44 |
| Every Kilowatt Counts Program | 9 | 6 |
| Community Engagement Program | 6 | 4 |
| New Appliance Program | 8 | 5 |
| Conservation Awareness | N/A | N/A |
| Commercial / Institutional Programs (9 programs) | 587 | 410 |
| Low Income Single Family Program | 13 | 9 |
| New Commercial Buildings Construction Program | 30 | 21 |
| Agricultural Program | 3 | 2 |
| LDC Electricity Retrofit Incentive Program | 110 | 77 |
| Toronto Comprehensive Program | 228 | 159 |
| Multi Family Buildings Program | 43 | 30 |
| Chiller Plant Re-commissioning Program | 30 | 21 |
| Institutional Buildings Portfolio Program | 30 | 21 |
| Fuel Switching Program | 100 | 70 |
| Industrial Programs (5 programs) | 514 | 360 |
| Industrial Energy Efficiency Program | 113 | 79 |
| Demand Response 1 | 4 | 3 |
| Demand Response 2 | 42 | 29 |
| Demand Response 3 | 330 | 231 |
| Demand Response 4 (2009) | 25 | 18 |
| Other Programs and Costs | | |
| Customer-owned Generation (RESOP and CESOP Programs) | 212 | 148 |
| Smart Meter Program (Administered by Government) | 176 | 176 |
| Total | 1940 | 1409 |

Source: OPA LDC Web-enabled teleconference, “Conservation Portfolio Overview”, Feb. 2008

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Table K2: OPA Portfolio 2008-2010 by Region

| | System Peak Savings (MW) | | | Energy Savings (TWh) | | |
|------------------|--------------------------|------------|-------------|----------------------|----------|------------|
| | 2008 | 2009 | 2010 | 2008 | 2009 | 2010 |
| Northwest | 14 | 32 | 64 | 0 | 0.1 | 0.2 |
| West | 30 | 72 | 161 | 0.1 | 0.2 | 0.7 |
| Northeast | 17 | 42 | 91 | 0.1 | 0.1 | 0.6 |
| Essa | 17 | 43 | 96 | 0.1 | 0.1 | 0.5 |
| Ottawa | 15 | 39 | 97 | 0.1 | 0.1 | 0.6 |
| East | 15 | 37 | 83 | 0 | 0.1 | 0.4 |
| GTA | 80 | 201 | 478 | 0.3 | 0.7 | 2.5 |
| Niagara | 7 | 18 | 41 | 0 | 0.1 | 0.2 |
| Southwest | 55 | 135 | 296 | 0.2 | 0.4 | 1.3 |
| Ontario | 251 | 620 | 1407 | 0.8 | 2 | 6.9 |

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Source: Ontario Power Authority IPSP Pre-filed evidence in EB-2007-0707, Exhibit D, Tab 4, Schedule 1, Attachment 4, Table 5.

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Table K3: OPA Portfolio 2008-2010 by End Use Profile

| | System Peak Savings (MW) in 2010 | Energy Savings (TWh) in 2010 |
|----------------------------------|---|-------------------------------------|
| Residential | 213 | 1.4 |
| Space Heating SFD | 0 | 0.1 |
| Space Heating AP/AT | 0 | 0.2 |
| Room AC | 8 | 0 |
| Central AC | 90 | 0.1 |
| Furnace Fan | 47 | 0.1 |
| Lighting | 35 | 1 |
| Refrigeration | 4 | 0 |
| Freezer | 3 | 0 |
| Water Heating | 5 | 0.1 |
| Dish Washer | 1 | 0 |
| Clothes Washer / Dryer | 4 | 0 |
| Miscellaneous | 16 | 0.2 |
| Commercial/Institutional | 302 | 1.3 |
| Space Heating | 0 | 0.1 |
| Space Cooling | 118 | 0.1 |
| Ventilation | 30 | 0.2 |
| Lighting | 146 | 0.9 |
| Electric Auxiliary | 5 | 0 |
| Water Heating | 3 | 0 |
| Industrial | 107 | 0.8 |
| Process Machine Drive | 45 | 0.4 |
| Electrochemical Processes | 1 | 0 |
| Steam Production | 0 | 0 |
| Heat Production | 38 | 0.3 |
| HVAC | 20 | 0.1 |
| Lighting | 3 | 0 |

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Source: Ontario Power Authority IPSP Pre-filed evidence in EB-2007-0707, Exhibit D, Tab 4, Schedule 1, Attachment 4, Table 9.

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